Technický a zkušební ústav stavební Praha, s.p.
Prosecká 811/76a
190 00 Prague
Czech Republic
eota@tzus.cz

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Member of www.eota.eu

European Technical Assessment

ETA-24/0237
of 02/09/2026

General Part

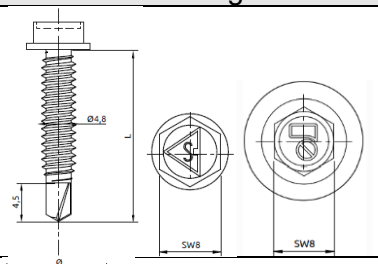
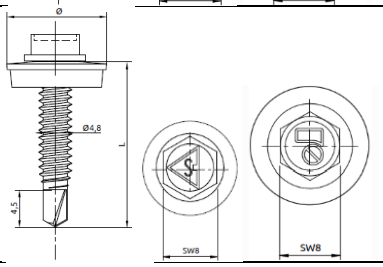
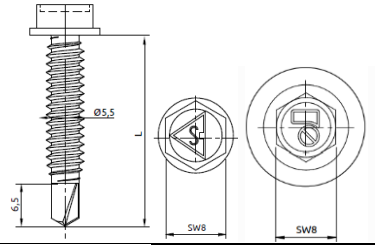
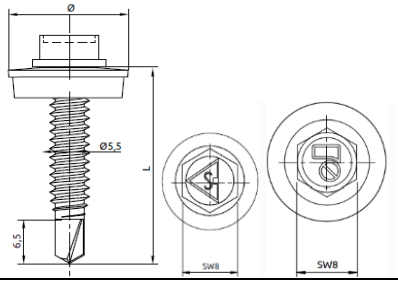
Technical Assessment Body issuing the European Technical Assessment Technický a zkušební ústav stavební Praha, s.p.	
Trade name of the construction product	**OC, OCW, ON, ONP, OD, ODX, OCF, OCFC, ODA, OCWS, OCS, ONS, ODWS**
Product family to which the construction product belongs	Product area code: 33 Fastening screws for metal members and sheeting
Manufacturer	Rawlplug S.A. Kwidzyńska 6, 51-416 Wrocław Republic of Poland
Manufacturing plant	Manufacturing Plant No 29 Manufacturing Plant No 33 Manufacturing Plant No 25 Manufacturing Plant No 22 Manufacturing Plant No 34 Manufacturing Plant No 2
This European Technical Assessment contains	69 pages including 3 Annexes, which form an integral part of this European Technical Assessment
This European Technical Assessment is issued in accordance with Article 95(4) of Regulation (EU) 2024/3110, on the basis of	EAD 330046-02-0602 Fastening screws for fastening metal members and sheeting to metal or timber structures
This version replaces	ETA 24/0237, version 01 issued on 20/12/2024

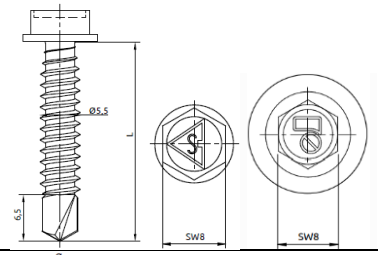
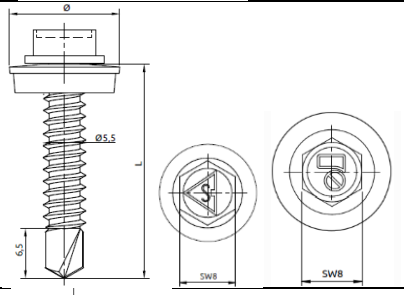
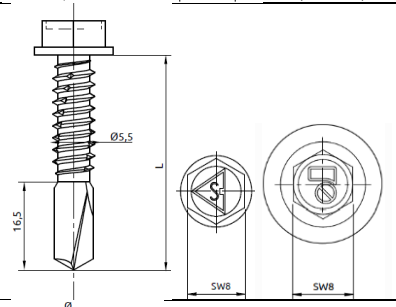
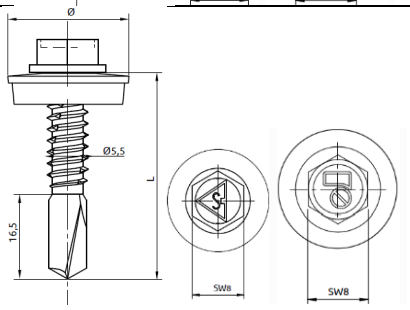
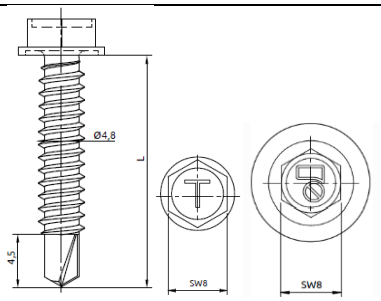
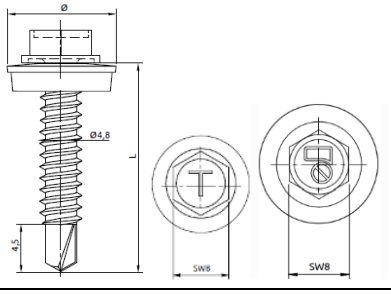
Specific Parts

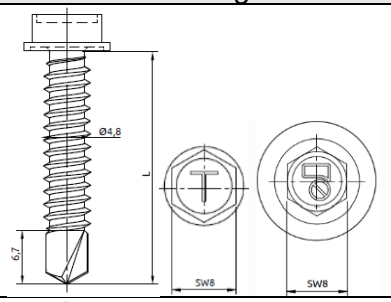
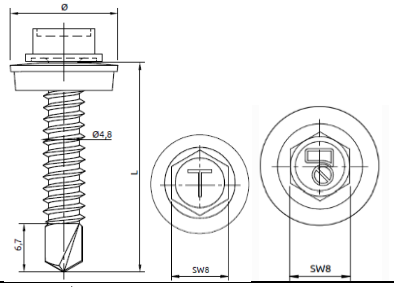
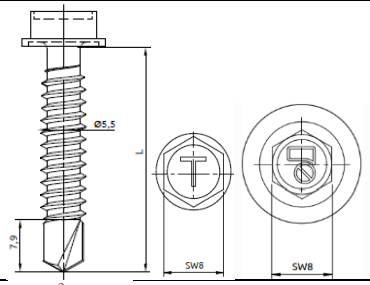
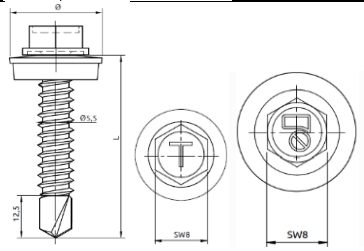
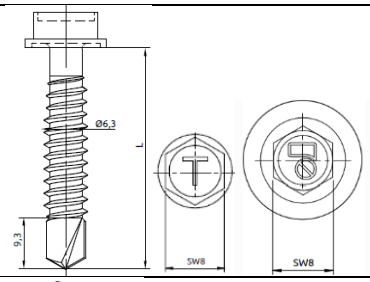
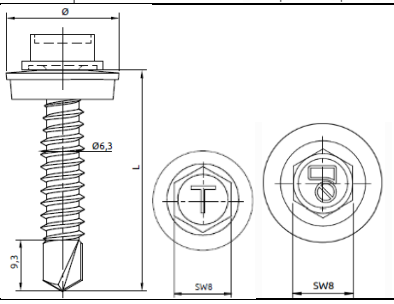
1 Technical description of the product

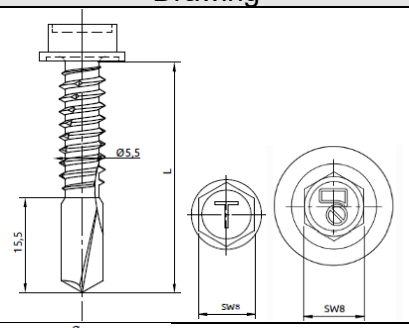
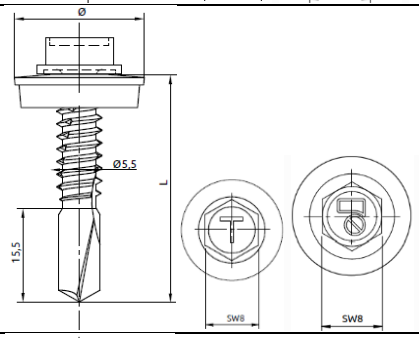
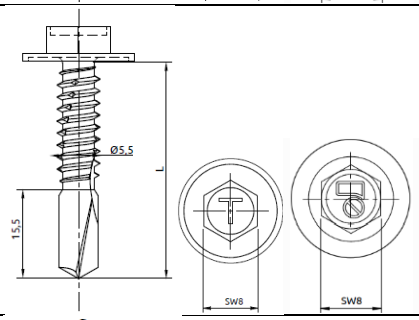
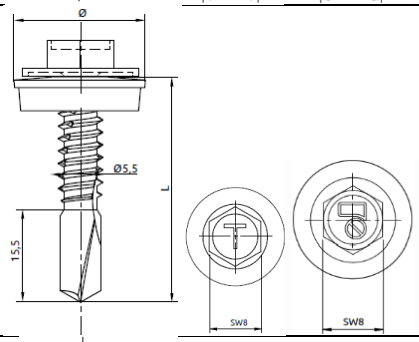
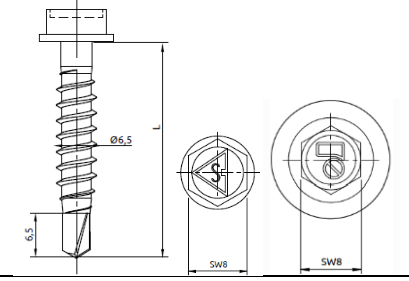
The fastening screws OC, OCW, ON, ONP, OD, ODX, OCF, OCFC, ODA, OCWS, OCS, ONS, ODWS are self-drilling or self-tapping screws. The screws may be manufactured from stainless steel (1.4301) according to EN 10088, carbon steel, aluminium, or Bi-Metal type. Carbon steel and Bi-Metal screws shall be provided with an anti-corrosion coating (galvanized with minimum thickness 12 µm or zinc-flake coating). Some screws are supplied with stainless steel (1.4301), carbon steel (galvanized) or aluminium washers with an EPDM seal. For details see table below. Examples of fastening screws and the corresponding connections are shown in Annex 1. The screws and the corresponding connections are subject to tension and shear forces.

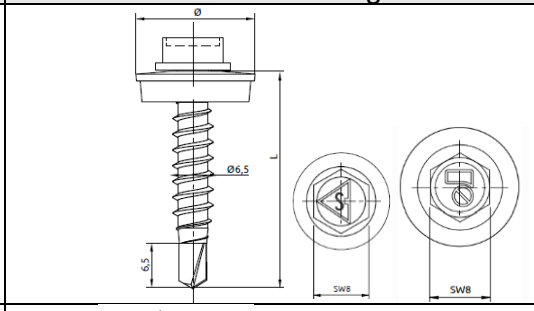
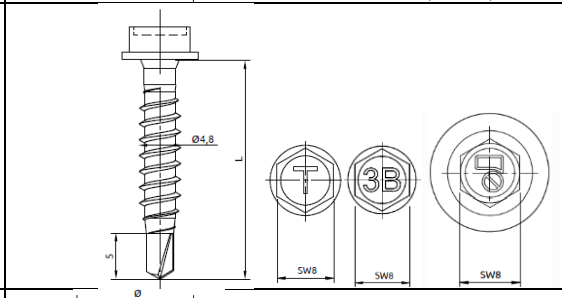
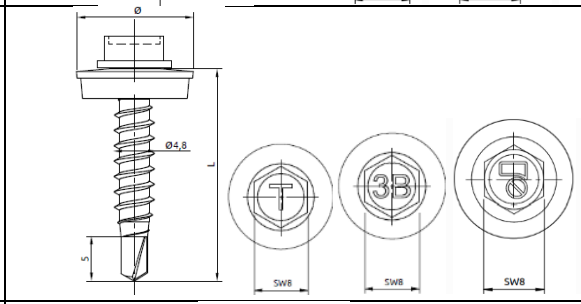
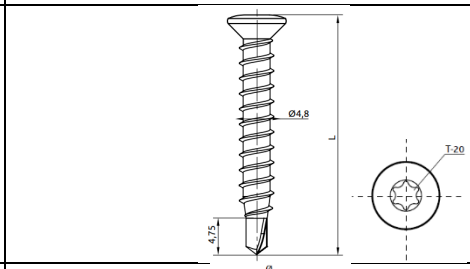
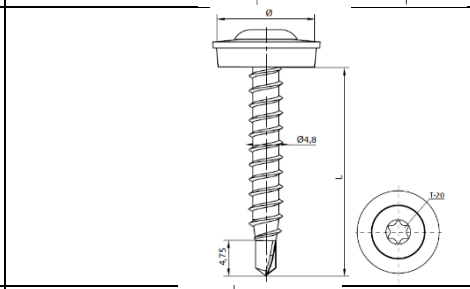
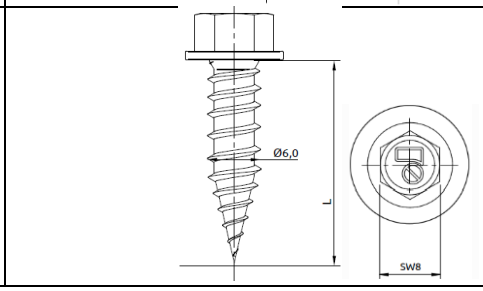
Specification of screws

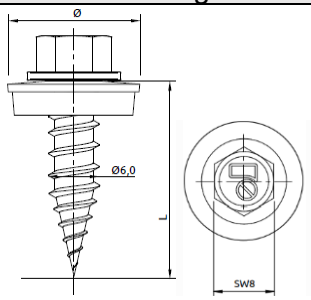
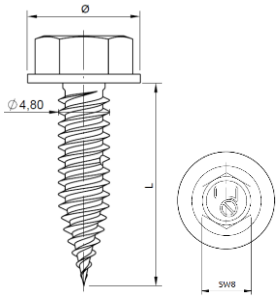
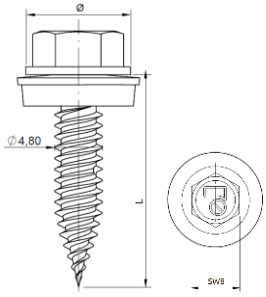
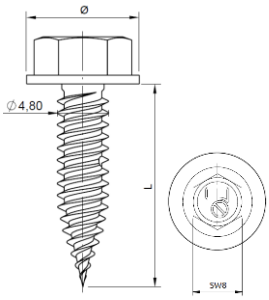
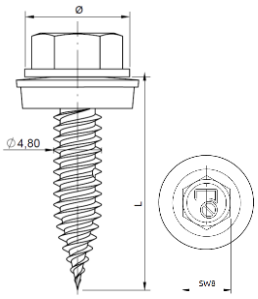
Element	Drawing	Material
OCWS 4,8xL		Stainless steel (1.4301) Bi-metal
OCWS 4,8xL washer ≥ ø 14 mm		Stainless steel (1.4301) Bi-metal EPDM-seal
OCWS 5,5xL		Stainless steel (1.4301) Bi-metal
OCWS 5,5xL washer ≥ ø 14 mm washer ≥ ø 16 mm		Stainless steel (1.4301) Bi-metal EPDM-seal

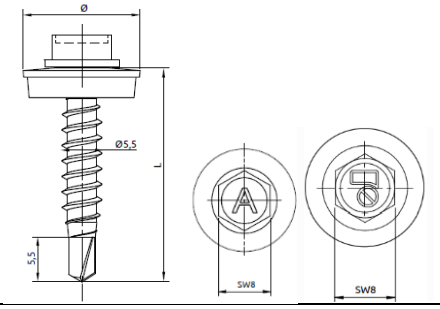
Element	Drawing	Material
OCS 5,5xL		Stainless steel (1.4301) Bi-metal
OCS 5,5xL washer ≥ ø 14 mm washer ≥ ø 16 mm		Stainless steel (1.4301) Bi-metal EPDM-seal
ONS 5,5xL		Stainless steel (1.4301) Bi-metal
ONS 5,5xL washer ≥ ø 14 mm washer ≥ ø 16 mm		Stainless steel (1.4301) Bi-metal EPDM-seal
OCW 4,8xL		Carbon steel (galvanized)
OCW 4,8xL washer ≥ ø 14 mm		Carbon steel (galvanized) EPDM-seal

Element	Drawing	Material
OC 4,8xL		Carbon steel (galvanized)
OC 4,8xL washer ≥ ø 14 mm		Carbon steel (galvanized) EPDM-seal
OC 5,5xL		Carbon steel (galvanized)
OC 5,5xL washer ≥ ø 14 mm washer ≥ ø 16 mm		Carbon steel (galvanized) EPDM-seal
OC 6,3xL		Carbon steel (galvanized)
OC 6,3xL washer ≥ ø 14 mm washer ≥ ø 16 mm		Carbon steel (galvanized) EPDM-seal

Element	Drawing	Material
ON 5,5xL		Carbon steel (galvanized)
ON 5,5xL washer ≥ ø 14 mm washer ≥ ø 16 mm		Carbon steel (galvanized) EPDM-seal
ONP 5,5xL		Carbon steel (galvanized)
ONP 5,5xL washer ≥ ø 14 mm washer ≥ ø 16 mm		Carbon steel (galvanized) EPDM-seal
ODWS 6,5xL		Stainless steel (1.4301) Bi-metal

Element	Drawing	Material
ODWS 6,5xL washer ≥ ø 14 mm washer ≥ ø 16 mm		Stainless steel (1.4301) Bi-metal EPDM-seal
OD 4,8xL		Carbon steel (galvanized)
OD 4,8xL washer ≥ ø 14 mm		Carbon steel (galvanized) EPDM-seal
ODX 4,8xL		Carbon steel (galvanized)
ODX 4,8xL washer ≥ ø 14 mm		Carbon steel (galvanized) EPDM-seal
OCF 6,0xL		Stainless steel (1.4301) Bi-metal

Element	Drawing	Material
OCF 6,0xL washer ≥ ø 14 mm washer ≥ ø 16 mm		Stainless steel (1.4301) Bi-metal EPDM-seal
OCF 4,8xL		Stainless steel (1.4301) Bi-metal
OCF 4,8xL washer ≥ ø 14 mm		Stainless steel (1.4301) Bi-metal EPDM-seal
OCFC 4,8xL		Carbon steel (galvanized)
OCFC 4,8xL washer ≥ ø 14 mm		Carbon steel (galvanized) EPDM-seal

Element	Drawing	Material
ODA 5,5xL washer ≥ ø 16 mm		Aluminum EPDM-seal

1.1 Characteristics of the product

The fastening screws shall correspond to the drawings given in table under clause 1. The characteristic material values, dimensions and tolerances of the fastening screws shall correspond to the respective values laid down in technical documentation deposited at Technický a zkušební ústav stavební Praha, s.p. The characteristic values of the shear and tension resistance of the connections made with the fastening screws are given in the Annex 2.

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 steel, aluminum alloy sheeting to steel, aluminum alloy or timber supporting structures. 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 component to be fastened is component I and the supporting structure is component II. The intended use comprises fastening screws and connections for indoor and outdoor applications. Fastening screws which are intended to be used in external environments shall be protected against corrosion. Furthermore, the intended use comprises connections with predominantly static loads (e.g. wind loads, dead loads).

The assessment methods included or referred to in the EAD have been written based on the manufacturer's request to take into account a working life of the fastening screws for metal members and sheeting for the intended use of 25 years when installed in the works. These provisions are based upon the current state of the art and the available knowledge and experience.

The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by EOTA when drafting the EAD, but are regarded only as a means for expressing the expected economically reasonable working life of the product.

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

The assessment of the fitness for use of the fastening screws according to the Basic Work Requirements (BWR) were carried out in compliance with EAD 330046-02-0602.

The European Technical Assessment is issued for the fastening screws on the basis of agreed data and information, deposited at Technický a zkušební ústav stavební Praha, s.p., which identifies fastening screws that has been assessed and judged. Changes to the fastening screws or production process which could result in this deposited data and information being incorrect should be notified to Technický a zkušební ústav stavební Praha, s.p. before the changes are introduced. Technický a zkušební ústav stavební Praha, s.p. will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alternations to the ETA shall be necessary.

Table 1 Essential characteristics of the product

	Essential characteristic	Performance
3.1 BWR 1: Mechanical resistance and stability		
3.1.1	Shear Resistance of the Connection	See Annex 2
3.1.2	Tension Resistance of the Connection	See Annex 2
3.2 BWR 2: Safety in case of fire		
3.2.1	Reaction to fire	The performance of the product is Class A1 according to EN 13501-1
3.3 BWR 3: Aspects of durability		
3.3.1	Corrosion protection	NPA

3.1 Mechanical resistance and stability (BWR 1)

Annex 2 contains essential characteristics for RAWLPLUG fastening screws for metal members and sheeting. The design and construction shall be carried out according to national provisions that apply at the installation site in line with the partial safety factor format.

3.1.1 Shear Resistance of the Connection

The test of shear resistance of the connection was performed according to provisions in EAD 330046-02-0602, clause 2.2.1.1 static test. The test results are documented in tables under Annex 2.

3.1.2 Tension Resistance of the Connection

The test of tension resistance of the connection was performed according to provisions in EAD 330046-02-0602, clause 2.2.2.1 static test. The test results are documented in tables under Annex 2.

3.2 Safety in case of fire (BWR 2)

3.2.1 Reaction to fire

The fastening screws are considered to satisfy the requirements for performance Class A1 of the characteristic reaction to fire, in accordance with the EC Decision 96/603/EC (as amended) without the need for further testing on the basis of is conformity with the

specification of the product detailed in that Decision and its intended end use application being covered by that Decision.

Therefore, the performance of the product is class A1 according to EN 13501-1.

3.3 Aspects of durability (BWR 3)

3.3.1 Corrosion protection

No performance assessed.
For the corrosion resistance of the fastening screws the rules given in EN 1993-1-4 shall be taken into account.

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

According to the European Commission Decision 1998/214/EC[1] amended by European Commission Decision 2001/596/EC[2], of the European Commission the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011 and Commission delegated Regulation (EU) No 568/2014) given in the following table applies:

Product(s)	Intended use(s)	Level(s) or class(es)	Attestation of conformity system(s)
Structural connectors metallic rivets, bolts (nuts and washers) and H. R. bolts (high strength friction grip bolts), studs, screws, railway fasteners	for uses in structural metallic works		2+

[1] 1998/214/EC – European Commission Decision of 09/03/1998, published in the Official Journal of the European Communities No L 80/46

[2] 2001/596/EC – European Commission Decision of 08/01/2001, published in the Official Journal of the European Communities No L 209/33

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 the Technický a zkušební ústav stavební Praha, s.p.

Issued in Prague on 02/09/2026

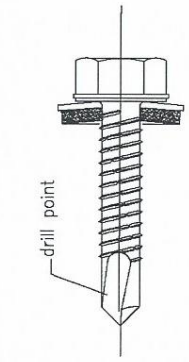
By

Jiří Studnička, Ph.D.
Head of the TAB

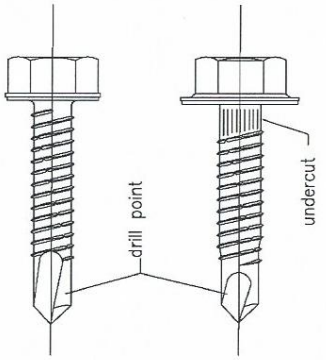
Annexes:

Annex 1 Examples for screws, types of connection
Annex 2 Tension and shear resistances of the connections
Annex 3 Reference documents

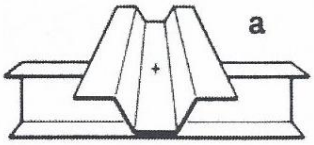
Annex 1 Examples for screws, types of connection



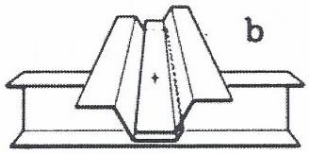
self–drilling screw
with sealing washer



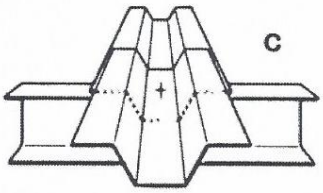
self–drilling screw
with integrated washer



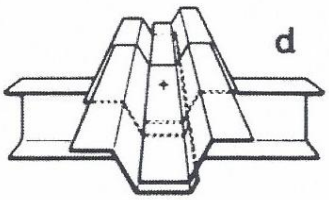
Single connection



Side lap connection



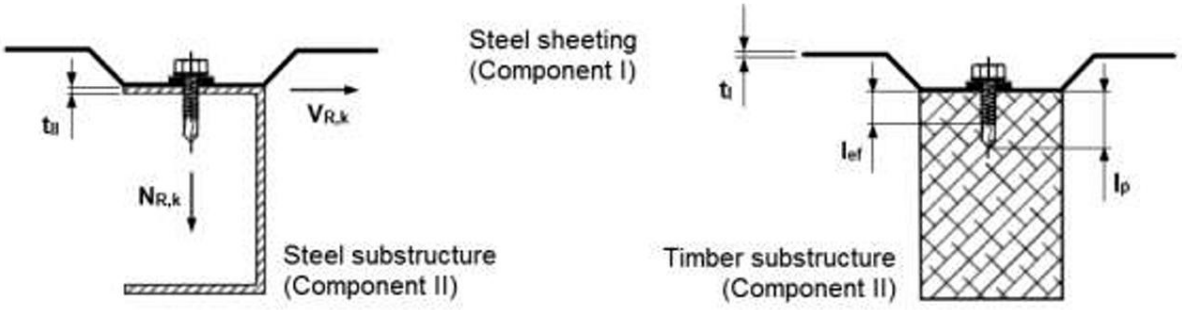
End overlap connection



Side lap + end overlap connection

Fastening screws for metal members and sheeting	Annex 1
Basic	of European Technical Assessment ETA

Examples of connections with fastening screws



Description of the components

Component I Metal member or sheeting made of steel

Component II Substructure made of steel or timber

Dimensions of the components

t_I Thickness of metal member or sheeting

t_{II} Thickness of steel substructure

l_{ef} Effective screw-in length in timber substructure (without drill or thread point)

l_p Screw-in length in timber substructure (including thread point)

d_{dp} Pre-drill diameter for component I and II

Performance characteristics

$N_{R,k}$ Characteristic value of tension resistance of the connection

$V_{R,k}$ Characteristic value of shear resistance of the connection

$N_{R,I,k}$ Characteristic value of pull-through resistance through the metal member or sheeting

$N_{R,II,k}$ Characteristic value of pull-out resistance out of the substructure (component II)

$M_{y,Rk}$ Characteristic value of yield moment of the fastening screw (timber structure)

$f_{ax,k}$ Characteristic value of withdrawal strength (timber structure)

Fastening screws for metal members and sheeting	**Annex 1** of European Technical Assessment ETA
Basic	

Assessment basics

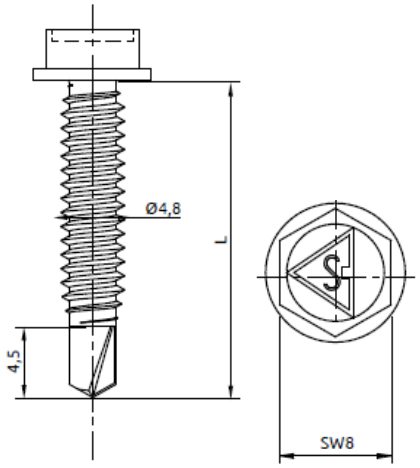
The characteristic value of tension resistance of a connection ($N_{R,k}$) corresponds to the maximum load of the fastening screw concerning tension stress and to the minimum value between pull-through resistance through the metal member or sheeting ($N_{R,I,k}$) and pull-out resistance out of the substructure ($N_{R,II,k}$). A reduction factor 2/3 has been applied at pull-through resistance ($N_{R,I,k}$) to take into account the influence of repeated wind loads.
The characteristic value of shear resistance of a connection ($V_{R,k}$) corresponds to the maximum shear load of the fastening screw in connection between metal member or sheeting and substructure.
The characteristic values ($N_{R,k}$, $N_{R,I,k}$, $N_{R,II,k}$, $V_{R,k}$) have been statistically evaluated to 5% fractile values and determined for minimum thickness (t_I, t_{II}) and minimum tensile strength of steel material resp. screw-in length (l_{ef}, l_p) and characteristic density of timber material. In case of failure of the fastening screw, the minimum tension or shear load capacity of the fastening screw has been taken into account.

Use of performance characteristics

The characteristic values of tension and shear resistance of a connection ($N_{R,k}$, $V_{R,k}$) are intended to be used for the design of a connection. The characteristic values have to be divided by a partial safety factor (γ_M). Recommended is γ_M = 1.33 unless otherwise stated in national regulations.
In case of a timber substructure, a modification factor (k_{mod}) according to EN 1995-1-1 table 3.1 has to be applied at pull-out resistance ($N_{R,II,k}$). According to EAD 330046-02-0602 a modification factor 1.0 is recommended unless otherwise stated in national regulations.
In case of combined tension and shear load of a connection the condition according to EN 1993-1-3 equation 8.2 has to be fulfilled.
Reduction of the pull-through resistance ($N_{R,I,k}$) due to the position of the fastener shall be taken into account according to EN 1993-1-3, section 8.3 (7) and Figure 8.2 or EN 1999-1-4, Table 8.3.
The installation has to be carried out according to the manufacturer's instructions.

Fastening screws for metal members and sheeting	**Annex 1**
Basic	of European Technical Assessment ETA

Annex 2 Tension and shear resistances of the connections



Materials

Fastener:	Stainless steel (1.4301) – EN10088 Bi-metal
Washer:	-
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346
Drilling capacity:	$\Sigma(t_I + t_{II}) \leq 2.50$ mm

		t_{II} [mm]								$N_{R,I,k}$ [kN] Pull-through	
		0.40	0.50	0.63	0.75	0.88	1.00	1.25	1.50		
$V_{R,k}$ [kN] / t_I [mm]	0.40	0,67	0,67	0,67	0,67	0,67	0,67	0,67	0,67		
	0.50	0,67	1,01	1,01	1,01	1,01	1,01	1,01	1,01		
	0.63	0,67	1,01	1,36	1,36	1,36	1,36	1,36	1,36		
	0.75	0,67	1,01	1,36	1,83	1,83	1,83	1,83	1,83		
	0.88	0,67	1,01	1,36	1,83	1,83	1,83	1,83	1,83		
	1.00	0,67	1,01	1,36	1,83	1,83	2.00	2.00	2.00		
	1.25	0,67	1,01	1,36	1,83	1,83	2.00	2.00	-		
	1.50	0,67	1,01	1,36	1,83	1,83	2.00	-	-		
$N_{R,k}$ [kN] / t_I [mm]	0.40	0,21	0,21	0,21	0,21	0,21	0,21	0,21	0,21	0,21	0,31[1]
	0.50	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,36[1]
	0.63	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,43[1]
	0.75	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,68[1]
	0.88	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,68[1]
	1.00	0,50	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,86[1]
	1.25	0,50	0,57	0,57	0,57	0,57	0,57	0,57	-	0,57	0,86[1]
	1.50	0,50	0,57	0,57	0,57	0,57	0,57	-	-	0,57	0,86[1]
$N_{R,II,k}$ [kN] Pull-out		0,50	0,61	0,80	1,30	1.31	1,62	2,24	2,27		

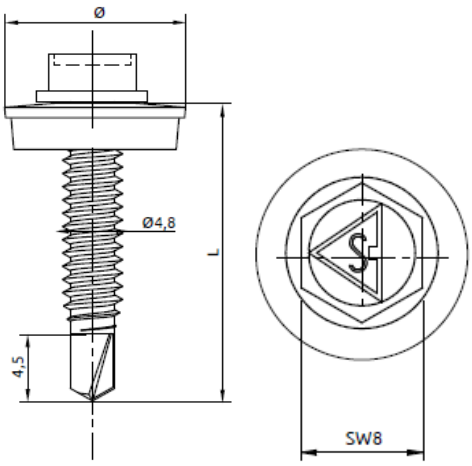
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for thin metal sheets	**Annex 2**
screw OCWS 4,8xL without washer	of European Technical Assessment ETA



Materials

Fastener:	Stainless steel (1.4301) – EN10088 Bi-metal
Washer:	Stainless steel (1.4301) – EN10088 and with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346
Drilling capacity:	$\Sigma(t_I + t_{II}) \leq 2.50$ mm

		t_{II} [mm]								$N_{R,I,k}$ [kN] Pull-through	
		0.40	0.50	0.63	0.75	0.88	1.00	1.25	1.50		
$V_{R,k}$ [kN] t_I [mm]	0.40	0,67	0,67	0,67	0,67	0,67	0,67	0,67	0,67		
	0.50	0,67	1,01	1,01	1,01	1,01	1,01	1,01	1,01		
	0.63	0,67	1,01	1,36	1,36	1,36	1,36	1,36	1,36		
	0.75	0,67	1,01	1,36	1,83	1,83	1,83	1,83	1,83		
	0.88	0,67	1,01	1,36	1,83	1,83	1,83	1,83	1,83		
	1.00	0,67	1,01	1,36	1,83	1,83	2.00	2.00	2.00		
	1.25	0,67	1,01	1,36	1,83	1,83	2.00	2.00	-		
	1.50	0,67	1,01	1,36	1,83	1,83	2.00	-	-		
$N_{R,k}$ [kN] t_I [mm]	0.40	0,50	0,61	0,80	0,98	0,98	0,98	0,98	0,98	0,98	1,48[1]
	0.50	0,50	0,61	0,80	1,30	1,31	1,62	1,66	1,66	1,66	2,49[1]
	0.63	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	2,31	3,47[1]
	0.75	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	2,87	4,31[1]
	0.88	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	2,87	4,31[1]
	1.00	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	3,26	4,89[1]
	1.25	0,50	0,61	0,80	1,30	1,31	1,62	2,24	-	3,26	4,89[1]
	1.50	0,50	0,61	0,80	1,30	1,31	1,62	-	-	3,26	4,89[1]
$N_{R,II,k}$ [kN] Pull-out		0,50	0,61	0,80	1,30	1.31	1,62	2,24	2,27		

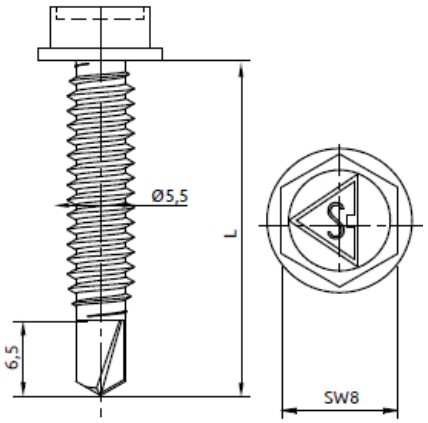
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for thin metal sheets	**Annex 2**
screw OCWS 4,8xL with washer ≥ ø 14 mm	of European Technical Assessment ETA



Materials

Fastener:	Stainless steel (1.4301) – EN10088 Bi-metal
Washer:	-
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346
Drilling capacity:	$\Sigma(t_I + t_{II}) \leq 6.00$ mm

		t_{II} [mm]								$N_{R,I,k}$ [kN] Pull-through	
		0.40	0.50	0.63	0.75	0.88	1.00	1.25	1.50		
$V_{R,k}$ [kN]	0.40	0,87	0,87	0,87	0,87	0,87	0,87	0,87	0,87		
	0.50	1,51	1,51	1,51	1,51	1,51	1,51	1,51	1,51		
	0.63	1,69	1,69	1,69	1,69	1,69	1,69	1,69	1,69		
	0.75	2,17	2,17	2,17	2,17	2,17	2,17	2,17	2,17		
	0.88	2,17	2,17	2,17	2,17	2,17	2,17	2,17	2,17		
t_I [mm]	1.00	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30		
	1.25	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30		
	1.50	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30		
$N_{R,k}$ [kN]	0.40	0,21	0,21	0,21	0,21	0,21	0,21	0,21	0,21	0,21	0,31[1]
	0.50	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,36[1]
	0.63	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,43[1]
	0.75	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,68[1]
	0.88	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,68[1]
t_I [mm]	1.00	0,50	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,86[1]
	1.25	0,50	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,86[1]
	1.50	0,50	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,86[1]
$N_{R,II,k}$ [kN] Pull-out		0,50	0,61	0,80	1,30	1.31	1,62	2,24	2,27		

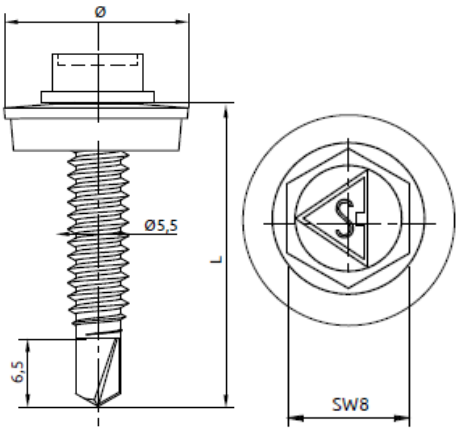
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for thin metal sheets	**Annex 2**
screw OCWS 5,5xL without washer	of European Technical Assessment ETA



Materials

Fastener:	Stainless steel (1.4301) – EN10088 Bi-metal
Washer:	Stainless steel (1.4301) – EN10088 and with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346
Drilling capacity:	$\Sigma(t_I + t_{II}) \leq 6.00$ mm

		t_{II} [mm]								$N_{R,I,k}$ [kN] Pull-through	
		0.40	0.50	0.63	0.75	0.88	1.00	1.25	1.50		
$V_{R,k}$ [kN] t_I [mm]	0.40	0,87	0,87	0,87	0,87	0,87	0,87	0,87	0,87		
	0.50	1,51	1,51	1,51	1,51	1,51	1,51	1,51	1,51		
	0.63	1,69	1,69	1,69	1,69	1,69	1,69	1,69	1,69		
	0.75	2,17	2,17	2,17	2,17	2,17	2,17	2,17	2,17		
	0.88	2,17	2,17	2,17	2,17	2,17	2,17	2,17	2,17		
	1.00	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30		
	1.25	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30		
	1.50	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30		
$N_{R,k}$ [kN] t_I [mm]	0.40	0,50	0,61	0,80	0,98	0,98	0,98	0,98	0,98	0,98	1,48[1]
	0.50	0,50	0,61	0,80	1,30	1,31	1,62	1,66	1,66	1,66	2,49[1]
	0.63	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	2,31	3,47[1]
	0.75	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	2,87	4,31[1]
	0.88	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	2,87	4,31[1]
	1.00	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	3,26	4,89[1]
	1.25	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	3,26	4,89[1]
	1.50	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	3,26	4,89[1]
$N_{R,II,k}$ [kN] Pull-out		0,50	0,61	0,80	1,30	1.31	1,62	2,24	2,27		

$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

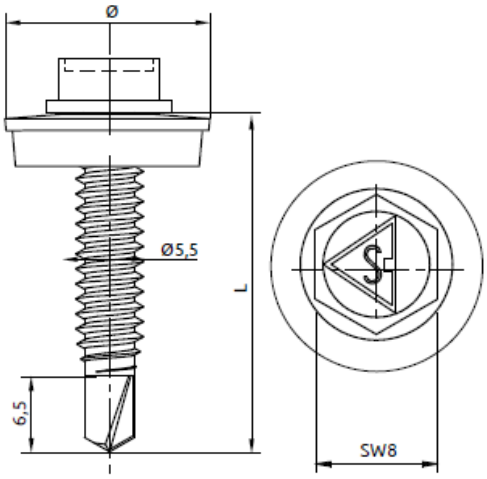
Fastening screws for thin metal sheets

screw OCWS 5,5xL

with washer ≥ ø 14 mm

Annex 2

of European Technical Assessment ETA



Materials	
Fastener:	Stainless steel (1.4301) – EN10088 Bi-metal
Washer:	Stainless steel (1.4301) – EN10088 and with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346
Drilling capacity:	$\Sigma(t_I + t_{II}) \leq 6.00$ mm

		t_{II} [mm]								$N_{R,I,k}$ [kN] Pull-through	
		0.40	0.50	0.63	0.75	0.88	1.00	1.25	1.50		
$V_{R,k}$ [kN] / t_I [mm]	0.40	0,87	0,87	0,87	0,87	0,87	0,87	0,87	0,87		
	0.50	1,51	1,51	1,51	1,51	1,51	1,51	1,51	1,51		
	0.63	1,69	1,69	1,69	1,69	1,69	1,69	1,69	1,69		
	0.75	2,17	2,17	2,17	2,17	2,17	2,17	2,17	2,17		
	0.88	2,17	2,17	2,17	2,17	2,17	2,17	2,17	2,17		
	1.00	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30		
	1.25	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30		
	1.50	2,30	2,30	2,30	2,30	2,30	2,30	2,30	2,30		
$N_{R,k}$ [kN] / t_I [mm]	0.40	0,50	0,61	0,80	0,98	0,98	0,98	0,98	0,98	1,20	1,80[1]
	0.50	0,50	0,61	0,80	1,30	1,31	1,62	1,66	1,66	1,83	2,74[1]
	0.63	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	2,51	3,77[1]
	0.75	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	3,20	4,79[1]
	0.88	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	3,20	4,79[1]
	1.00	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	3,64	5,47[1]
	1.25	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	3,64	5,47[1]
	1.50	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	3,64	5,47[1]
$N_{R,II,k}$ [kN] Pull-out		0,50	0,61	0,80	1,30	1.31	1,62	2,24	2,27		

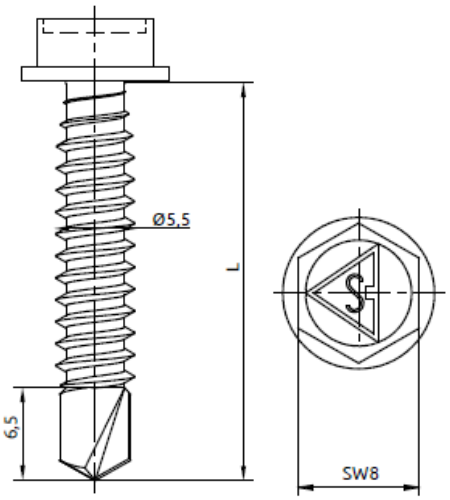
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for thin metal sheets	**Annex 2**
screw OCWS 5,5xL with washer ≥ ø 16 mm	of European Technical Assessment ETA



Materials

Fastener:	Stainless steel (1.4301) – EN10088 Bi-metal
Washer:	-
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346
Drilling capacity:	$\Sigma(t_I + t_{II}) \leq 6{,}0$ mm

		t_{II} [mm]						$N_{R,I,k}$ [kN] Pull-through	
		1.00	1.25	1.50	2.00	3.00	4.00		
$V_{R,k}$ [kN] t_I [mm]	0.40	0,87	0,87	0,87	0,87	0,87	0,87		
	0.50	1,51	1,51	1,51	1,51	1,51	1,51		
	0.63	1,69	1,69	1,69	1,69	1,69	1,69		
	0.75	2,17	2,17	2,17	2,17	2,17	2,17		
	0.88	2,17	2,17	2,17	2,17	2,17	2,17		
	1.00	2,30	2,30	2,30	2,30	2,30	2,30		
	1.25	2,30	2,30	2,30	2,30	2,30	2,30		
	1.50	2,30	2,30	2,30	2,30	2,30	2,30		
$N_{R,k}$ [kN] t_I [mm]	0.40	0,21	0,21	0,21	0,21	0,21	0,21	0,21	0,31[1]
	0.50	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,36[1]
	0.63	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,43[1]
	0.75	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,68[1]
	0.88	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,68[1]
	1.00	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,86[1]
	1.25	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,86[1]
	1.50	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,86[1]
$N_{R,II,k}$ [kN] Pull-out		1,15	1,36	1,90	2,25	4,94	7,04		

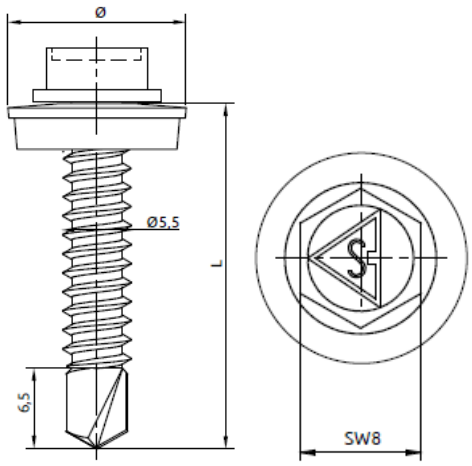
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw OCS 5,5xL without washer	of European Technical Assessment ETA



Materials	
Fastener:	Stainless steel (1.4301) – EN10088 Bi-metal
Washer:	Stainless steel (1.4301) – EN10088 and with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346
Drilling capacity:	$\Sigma(t_I + t_{II}) \leq 6{,}0$ mm

		t_{II} [mm]						$N_{R,I,k}$ [kN] Pull-through	
		1.00	1.25	1.50	2.00	3.00	4.00		
$V_{R,k}$ [kN] t_I [mm]	0.40	0,87	0,87	0,87	0,87	0,87	0,87		
	0.50	1,51	1,51	1,51	1,51	1,51	1,51		
	0.63	1,69	1,69	1,69	1,69	1,69	1,69		
	0.75	2,17	2,17	2,17	2,17	2,17	2,17		
	0.88	2,17	2,17	2,17	2,17	2,17	2,17		
	1.00	2,30	2,30	2,30	2,30	2,30	2,30		
	1.25	2,30	2,30	2,30	2,30	2,30	2,30		
	1.50	2,30	2,30	2,30	2,30	2,30	2,30		
$N_{R,k}$ [kN] t_I [mm]	0.40	0,98	0,98	0,98	0,98	0,98	0,98	0,98	1,48[1]
	0.50	1,15	1,36	1,66	1,66	1,66	1,66	1,66	2,49[1]
	0.63	1,15	1,36	1,90	2,25	2,31	2,31	2,31	3,47[1]
	0.75	1,15	1,36	1,90	2,25	2,87	2,87	2,87	4,31[1]
	0.88	1,15	1,36	1,90	2,25	2,87	2,87	2,87	4,31[1]
	1.00	1,15	1,36	1,90	2,25	3,26	3,26	3,26	4,89[1]
	1.25	1,15	1,36	1,90	2,25	3,26	3,26	3,26	4,89[1]
	1.50	1,15	1,36	1,90	2,25	3,26	3,26	3,26	4,89[1]
$N_{R,II,k}$ [kN] Pull-out		1,15	1,36	1,90	2,25	4,94	7,04		

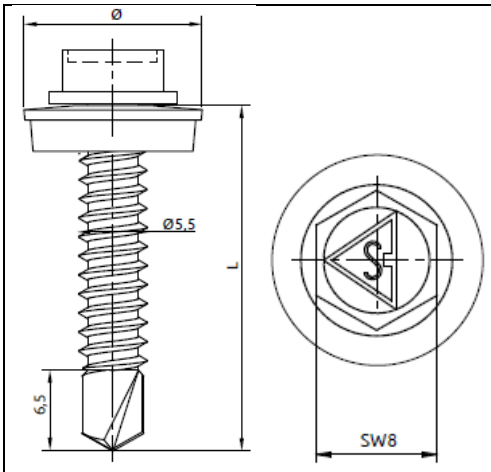
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw OCS 5,5xL with washer ≥ ø 14 mm	of European Technical Assessment ETA



Materials

Fastener:	Stainless steel (1.4301) – EN10088 Bi-metal
Washer:	Stainless steel (1.4301) – EN10088 and with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346
Drilling capacity:	$\Sigma(t_I + t_{II}) \leq 6{,}0$ mm

		t_{II} [mm]						$N_{R,I,k}$ [kN] Pull-through	
		1.00	1.25	1.50	2.00	3.00	4.00		
$V_{R,k}$ [kN] t_I [mm]	0.40	0,87	0,87	0,87	0,87	0,87	0,87		
	0.50	1,51	1,51	1,51	1,51	1,51	1,51		
	0.63	1,69	1,69	1,69	1,69	1,69	1,69		
	0.75	2,17	2,17	2,17	2,17	2,17	2,17		
	0.88	2,17	2,17	2,17	2,17	2,17	2,17		
	1.00	2,30	2,30	2,30	2,30	2,30	2,30		
	1.25	2,30	2,30	2,30	2,30	2,30	2,30		
	1.50	2,30	2,30	2,30	2,30	2,30	2,30		
$N_{R,k}$ [kN] t_I [mm]	0.40	1,15	1,20	1,20	1,20	1,20	1,20	1,20	1,80[1]
	0.50	1,15	1,36	1,83	1,83	1,83	1,83	1,83	2,74[1]
	0.63	1,15	1,36	1,90	2,25	2,51	2,51	2,51	3,77[1]
	0.75	1,15	1,36	1,90	2,25	3,20	3,20	3,20	4,79[1]
	0.88	1,15	1,36	1,90	2,25	3,20	3,20	3,20	4,79[1]
	1.00	1,15	1,36	1,90	2,25	3,64	3,64	3,64	5,47[1]
	1.25	1,15	1,36	1,90	2,25	3,64	3,64	3,64	5,47[1]
	1.50	1,15	1,36	1,90	2,25	3,64	3,64	3,64	5,47[1]
$N_{R,II,k}$ [kN] Pull-out		1,15	1,36	1,90	2,25	4,94	7,04		

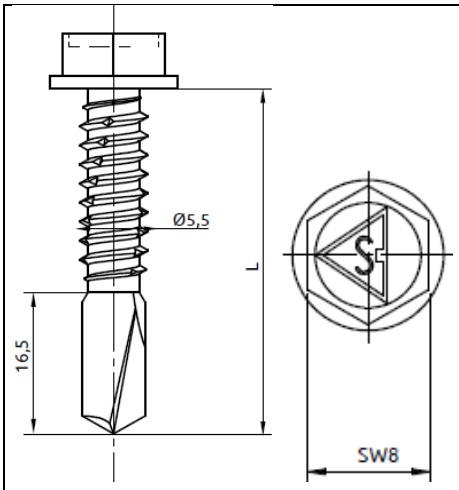
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw OCS 5,5xL with washer ≥ ø 16 mm	of European Technical Assessment ETA



Materials

Fastener:	Stainless steel (1.4301) – EN10088 Bi-metal
Washer:	-
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346
Drilling capacity:	$\Sigma(t_I + t_{II}) \leq 14{,}0$ mm

		t_{II} [mm]		$N_{R,I,k}$ [kN] Pull-through	
		3.00	4.00		
$V_{R,k}$ [kN]	0.40	0,87	0,87		
	0.50	1,51	1,51		
	0.63	1,69	1,69		
	0.75	2,17	2,17		
	0.88	2,17	2,17		
t_I [mm]	1.00	2,30	2,30		
	1.25	2,30	2,30		
	1.50	2,30	2,30		
$N_{R,k}$ [kN]	0.40	0,21	0,21	0,21	0,31[1]
	0.50	0,24	0,24	0,24	0,36[1]
	0.63	0,28	0,28	0,28	0,43[1]
	0.75	0,46	0,46	0,46	0,68[1]
	0.88	0,46	0,46	0,46	0,68[1]
t_I [mm]	1.00	0,57	0,57	0,57	0,86[1]
	1.25	0,57	0,57	0,57	0,86[1]
	1.50	0,57	0,57	0,57	0,86[1]
$N_{R,II,k}$ [kN]	Pull-out	4,61	7,31		

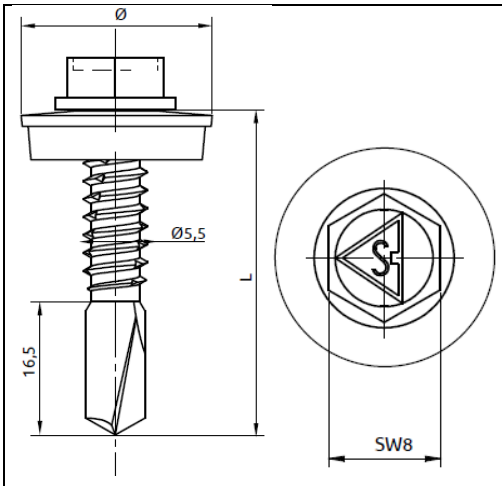
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw ONS 5,5xL without washer	of European Technical Assessment ETA



Materials

Fastener:	Stainless steel (1.4301) – EN10088 Bi-metal
Washer:	Stainless steel (1.4301) – EN10088 and with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 14{,}0$ mm

		t_{II} [mm]		$N_{R,I,k}$ [kN] Pull-through	
		3.00	4.00		
$V_{R,k}$ [kN]	0.40	0,87	0,87		
	0.50	1,51	1,51		
	0.63	1,69	1,69		
	0.75	2,17	2,17		
	0.88	2,17	2,17		
t_I [mm]	1.00	2,30	2,30		
	1.25	2,30	2,30		
	1.50	2,30	2,30		
$N_{R,k}$ [kN]	0.40	0,98	0,98	0,98	1,48[1]
	0.50	1,66	1,66	1,66	2,49[1]
	0.63	2,31	2,31	2,31	3,47[1]
	0.75	2,87	2,87	2,87	4,31[1]
	0.88	2,87	2,87	2,87	4,31[1]
t_I [mm]	1.00	3,26	3,26	3,26	4,89[1]
	1.25	3,26	3,26	3,26	4,89[1]
	1.50	3,26	3,26	3,26	4,89[1]
$N_{R,II,k}$ [kN]	Pull-out	4,61	7,31		

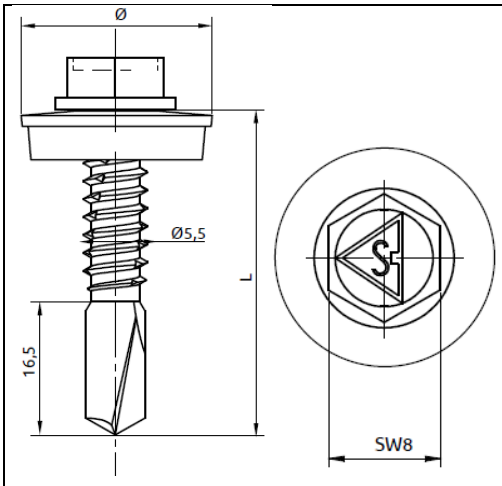
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw ONS 5,5xL with washer ≥ ø 14 mm	of European Technical Assessment ETA



Materials

Fastener:	Stainless steel (1.4301) – EN10088 Bi-metal
Washer:	Stainless steel (1.4301) – EN10088 and with EPDM-seal
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346
Drilling capacity:	$\Sigma(t_I + t_{II}) \leq 14{,}0$ mm

		t_{II} [mm]		**$N_{R,I,k}$ [kN]** Pull-through	
		3.00	4.00		
$V_{R,k}$ [kN]	0.40	0,87	0,87		
	0.50	1,51	1,51		
	0.63	1,69	1,69		
	0.75	2,17	2,17		
	0.88	2,17	2,17		
t_I [mm]	1.00	2,30	2,30		
	1.25	2,30	2,30		
	1.50	2,30	2,30		
$N_{R,k}$ [kN]	0.40	1,20	1,20	1,20	1,80[1]
	0.50	1,83	1,83	1,83	2,74[1]
	0.63	2,51	2,51	2,51	3,77[1]
	0.75	3,20	3,20	3,20	4,79[1]
	0.88	3,20	3,20	3,20	4,79[1]
t_I [mm]	1.00	3,64	3,64	3,64	5,47[1]
	1.25	3,64	3,64	3,64	5,47[1]
	1.50	3,64	3,64	3,64	5,47[1]
$N_{R,II,k}$ [kN]	Pull-out	4,61	7,31		

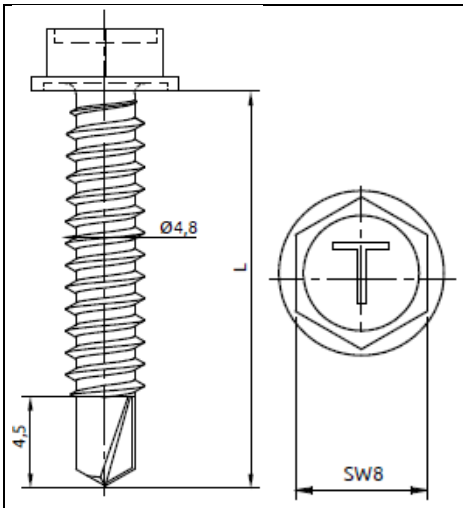
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw ONS 5,5xL with washer ≥ ø 16 mm	of European Technical Assessment ETA



Materials

Fastener: (galvanized) Carbon steel with anticorrosion coating

Washer: -

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

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

		t_{II} [mm]								$N_{R,I,k}$ [kN] Pull-through	
		0.40	0.50	0.63	0.75	0.88	1.00	1.25	1.50		
$V_{R,k}$ [kN]	0.40	0,67	0,67	0,67	0,67	0,67	0,67	0,67	0,67		
	0.50	0,67	1,01	1,01	1,01	1,01	1,01	1,01	1,01		
	0.63	0,67	1,01	1,36	1,36	1,36	1,36	1,36	1,36		
	0.75	0,67	1,01	1,36	1,83	1,83	1,83	1,83	1,83		
	0.88	0,67	1,01	1,36	1,83	1,83	1,83	1,83	1,83		
t_I [mm]	1.00	0,67	1,01	1,36	1,83	1,83	2.00	2.00	2.00		
	1.25	0,67	1,01	1,36	1,83	1,83	2.00	2.00	-		
	1.50	0,67	1,01	1,36	1,83	1,83	2.00	-	-		
$N_{R,k}$ [kN]	0.40	0,21	0,21	0,21	0,21	0,21	0,21	0,21	0,21	0,21	0,31[1]
	0.50	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,36[1]
	0.63	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,43[1]
	0.75	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,68[1]
	0.88	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,68[1]
t_I [mm]	1.00	0,50	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,86[1]
	1.25	0,50	0,57	0,57	0,57	0,57	0,57	0,57	-	0,57	0,86[1]
	1.50	0,50	0,57	0,57	0,57	0,57	0,57	-	-	0,57	0,86[1]
$N_{R,II,k}$ [kN] Pull-out		0,50	0,61	0,80	1,30	1.31	1,62	2,24	2,27		

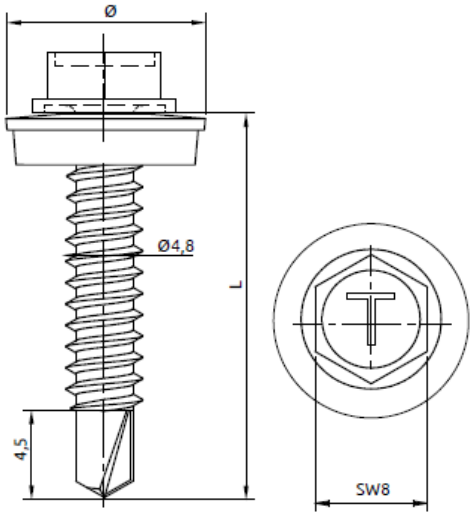
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for thin metal sheets	**Annex 2**
screw OCW 4,8xL without washer	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: Carbon steel with anticorrosion coating (galvanized) and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

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

		t_{II} [mm]								$N_{R,I,k}$ [kN] Pull-through	
		0.40	0.50	0.63	0.75	0.88	1.00	1.25	1.50		
$V_{R,k}$ [kN]	0.40	0,67	0,67	0,67	0,67	0,67	0,67	0,67	0,67		
	0.50	0,67	1,01	1,01	1,01	1,01	1,01	1,01	1,01		
	0.63	0,67	1,01	1,36	1,36	1,36	1,36	1,36	1,36		
	0.75	0,67	1,01	1,36	1,83	1,83	1,83	1,83	1,83		
	0.88	0,67	1,01	1,36	1,83	1,83	1,83	1,83	1,83		
t_I [mm]	1.00	0,67	1,01	1,36	1,83	1,83	2.00	2.00	2.00		
	1.25	0,67	1,01	1,36	1,83	1,83	2.00	2.00	-		
	1.50	0,67	1,01	1,36	1,83	1,83	2.00	-	-		
$N_{R,k}$ [kN]	0.40	0,50	0,61	0,80	0,98	0,98	0,98	0,98	0,98	0,98	1,48[1]
	0.50	0,50	0,61	0,80	1,30	1,31	1,62	1,66	1,66	1,66	2,49[1]
	0.63	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	2,31	3,47[1]
	0.75	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	2,87	4,31[1]
	0.88	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	2,87	4,31[1]
t_I [mm]	1.00	0,50	0,61	0,80	1,30	1,31	1,62	2,24	2,27	3,26	4,89[1]
	1.25	0,50	0,61	0,80	1,30	1,31	1,62	2,24	-	3,26	4,89[1]
	1.50	0,50	0,61	0,80	1,30	1,31	1,62	-	-	3,26	4,89[1]
$N_{R,II,k}$ [kN] Pull-out		0,50	0,61	0,80	1,30	1.31	1,62	2,24	2,27		

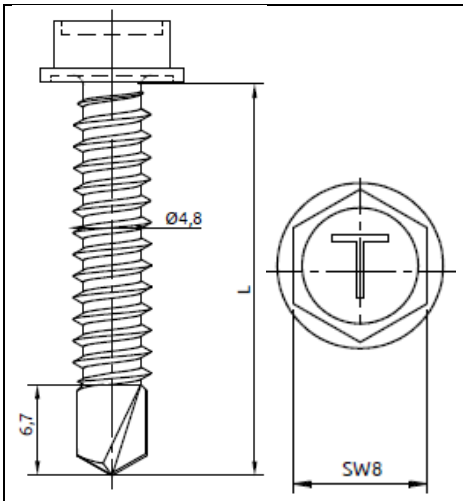
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for thin metal sheets	**Annex 2**
screw OCW 4,8xL with washer ≥ ø 14 mm	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: -

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 3{,}0$ mm

		t_{II} [mm]						$N_{R,I,k}$ [kN] Pull-through	
		0.75	0.88	1.00	1.25	1.50	2.00		
$V_{R,k}$ [kN]	0.40	0,74	0,74	0,74	0,74	0,74	0,74		
	0.50	1,16	1,16	1,16	1,16	1,16	1,16		
	0.63	1,61	1,61	1,61	1,61	1,61	1,61		
	0.75	1,89	1,89	1,89	1,89	1,89	1,89		
	0.88	1,89	1,89	1,89	1,89	1,89	1,89		
t_I [mm]	1.00	1,89	1,89	2.01	2.01	2.01	2.01		
	1.25	1,89	1,89	2.01	2.01	2.01	2.01		
	1.50	1,89	1,89	2.01	2.01	2.01	2.01		
$N_{R,k}$ [kN]	0.40	0,21	0,21	0,21	0,21	0,21	0,21	0,21	0,31[1]
	0.50	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,36[1]
	0.63	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,43[1]
	0.75	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,68[1]
	0.88	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,68[1]
t_I [mm]	1.00	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,86[1]
	1.25	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,86[1]
	1.50	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,86[1]
$N_{R,II,k}$ [kN] Pull-out		0,92	0,95	1,22	1,69	2,02	3,19		

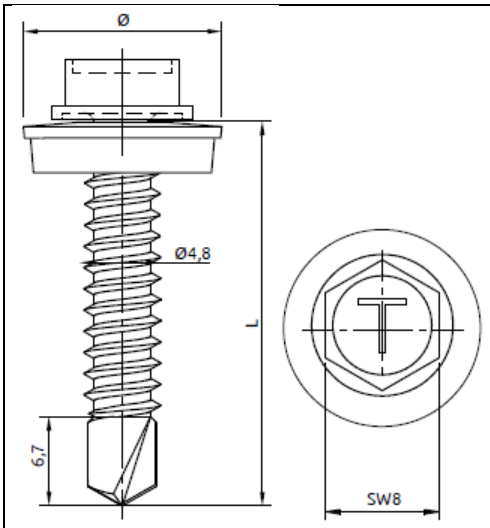
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw OC 4,8xL without washer	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: Carbon steel with anticorrosion coating (galvanized) and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 3{,}0$ mm

		t_{II} [mm]						**$N_{R,I,k}$ [kN]** Pull-through	
		0.75	0.88	1.00	1.25	1.50	2.00		
$V_{R,k}$ [kN] t_I [mm]	0.40	0,74	0,74	0,74	0,74	0,74	0,74		
	0.50	1,16	1,16	1,16	1,16	1,16	1,16		
	0.63	1,61	1,61	1,61	1,61	1,61	1,61		
	0.75	1,89	1,89	1,89	1,89	1,89	1,89		
	0.88	1,89	1,89	1,89	1,89	1,89	1,89		
	1.00	1,89	1,89	2.01	2.01	2.01	2.01		
	1.25	1,89	1,89	2.01	2.01	2.01	2.01		
	1.50	1,89	1,89	2.01	2.01	2.01	2.01		
$N_{R,k}$ [kN] t_I [mm]	0.40	0,92	0,95	0,98	0,98	0,98	0,98	0,98	1,48[1]
	0.50	0,92	0,95	1,22	1,66	1,66	1,66	1,66	2,49[1]
	0.63	0,92	0,95	1,22	1,69	2,02	2,31	2,31	3,47[1]
	0.75	0,92	0,95	1,22	1,69	2,02	2,87	2,87	4,31[1]
	0.88	0,92	0,95	1,22	1,69	2,02	2,87	2,87	4,31[1]
	1.00	0,92	0,95	1,22	1,69	2,02	3,19	3,26	4,89[1]
	1.25	0,92	0,95	1,22	1,69	2,02	3,19	3,26	4,89[1]
	1.50	0,92	0,95	1,22	1,69	2,02	3,19	3,26	4,89[1]
$N_{R,II,k}$ [kN] Pull-out		0,92	0,95	1,22	1,69	2,02	3,19		

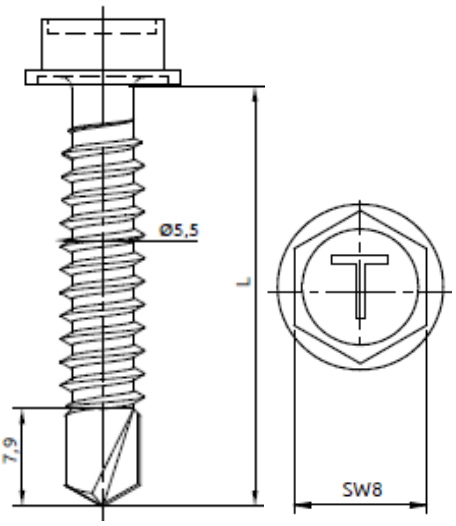
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw OC 4,8xL with washer ≥ ø 14 mm	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: -

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 6{,}0$ mm

		t_{II} [mm]						$N_{R,I,k}$ [kN] Pull-through	
		1.00	1.25	1.50	2.00	3.00	4.00		
$V_{R,k}$ [kN] / t_I [mm]	0.40	0,87	0,87	0,87	0,87	0,87	0,87		
	0.50	1,51	1,51	1,51	1,51	1,51	1,51		
	0.63	1,69	1,69	1,69	1,69	1,69	1,69		
	0.75	2,17	2,17	2,17	2,17	2,17	2,17		
	0.88	2,17	2,17	2,17	2,17	2,17	2,17		
	1.00	2,30	2,30	2,30	2,30	2,30	2,30		
	1.25	2,30	2,30	2,30	2,30	2,30	2,30		
	1.50	2,30	2,30	2,30	2,30	2,30	2,30		
$N_{R,k}$ [kN] / t_I [mm]	0.40	0,21	0,21	0,21	0,21	0,21	0,21	0,21	0,31[1]
	0.50	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,36[1]
	0.63	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,43[1]
	0.75	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,68[1]
	0.88	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,68[1]
	1.00	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,86[1]
	1.25	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,86[1]
	1.50	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,86[1]
$N_{R,II,k}$ [kN] Pull-out		1,15	1,36	1,90	2,25	4,94	7,04		

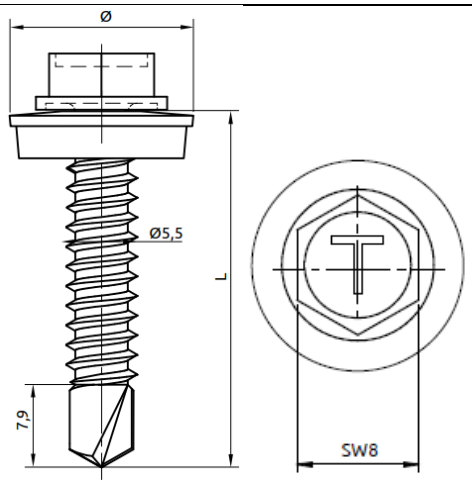
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw OC 5,5xL without washer	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: Carbon steel with anticorrosion coating (galvanized) and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 6{,}0$ mm

		t_{II} [mm]						$N_{R,I,k}$ [kN] Pull-through	
		1.00	1.25	1.50	2.00	3.00	4.00		
$V_{R,k}$ [kN]	0.40	0,87	0,87	0,87	0,87	0,87	0,87		
	0.50	1,51	1,51	1,51	1,51	1,51	1,51		
	0.63	1,69	1,69	1,69	1,69	1,69	1,69		
	0.75	2,17	2,17	2,17	2,17	2,17	2,17		
	0.88	2,17	2,17	2,17	2,17	2,17	2,17		
t_I [mm]	1.00	2,30	2,30	2,30	2,30	2,30	2,30		
	1.25	2,30	2,30	2,30	2,30	2,30	2,30		
	1.50	2,30	2,30	2,30	2,30	2,30	2,30		
$N_{R,k}$ [kN]	0.40	0,98	0,98	0,98	0,98	0,98	0,98	0,98	1,48[1]
	0.50	1,15	1,36	1,66	1,66	1,66	1,66	1,66	2,49[1]
	0.63	1,15	1,36	1,90	2,25	2,31	2,31	2,31	3,47[1]
	0.75	1,15	1,36	1,90	2,25	2,87	2,87	2,87	4,31[1]
	0.88	1,15	1,36	1,90	2,25	2,87	2,87	2,87	4,31[1]
t_I [mm]	1.00	1,15	1,36	1,90	2,25	3,26	3,26	3,26	4,89[1]
	1.25	1,15	1,36	1,90	2,25	3,26	3,26	3,26	4,89[1]
	1.50	1,15	1,36	1,90	2,25	3,26	3,26	3,26	4,89[1]
$N_{R,II,k}$ [kN] Pull-out		1,15	1,36	1,90	2,25	4,94	7,04		

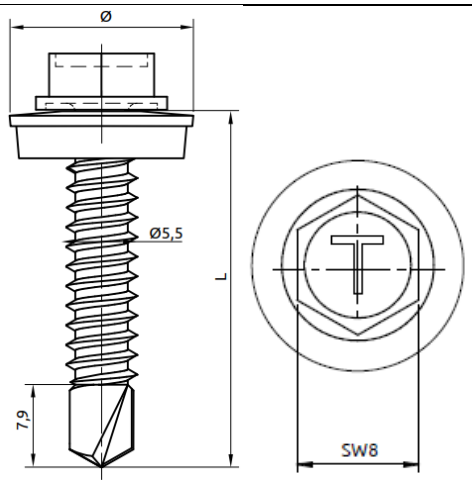
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw OC 5,5xL with washer ≥ ø 14 mm	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: Carbon steel with anticorrosion coating (galvanized) and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 6{,}0$ mm

		t_{II} [mm]						$N_{R,I,k}$ [kN] Pull-through	
		1.00	1.25	1.50	2.00	3.00	4.00		
$V_{R,k}$ [kN]	0.40	0,87	0,87	0,87	0,87	0,87	0,87		
	0.50	1,51	1,51	1,51	1,51	1,51	1,51		
	0.63	1,69	1,69	1,69	1,69	1,69	1,69		
	0.75	2,17	2,17	2,17	2,17	2,17	2,17		
	0.88	2,17	2,17	2,17	2,17	2,17	2,17		
t_I [mm]	1.00	2,30	2,30	2,30	2,30	2,30	2,30		
	1.25	2,30	2,30	2,30	2,30	2,30	2,30		
	1.50	2,30	2,30	2,30	2,30	2,30	2,30		
$N_{R,k}$ [kN]	0.40	1,15	1,20	1,20	1,20	1,20	1,20	1,20	1,80[1]
	0.50	1,15	1,36	1,83	1,83	1,83	1,83	1,83	2,74[1]
	0.63	1,15	1,36	1,90	2,25	2,51	2,51	2,51	3,77[1]
	0.75	1,15	1,36	1,90	2,25	3,20	3,20	3,20	4,79[1]
	0.88	1,15	1,36	1,90	2,25	3,20	3,20	3,20	4,79[1]
t_I [mm]	1.00	1,15	1,36	1,90	2,25	3,64	3,64	3,64	5,47[1]
	1.25	1,15	1,36	1,90	2,25	3,64	3,64	3,64	5,47[1]
	1.50	1,15	1,36	1,90	2,25	3,64	3,64	3,64	5,47[1]
$N_{R,II,k}$ [kN] Pull-out		1,15	1,36	1,90	2,25	4,94	7,04		

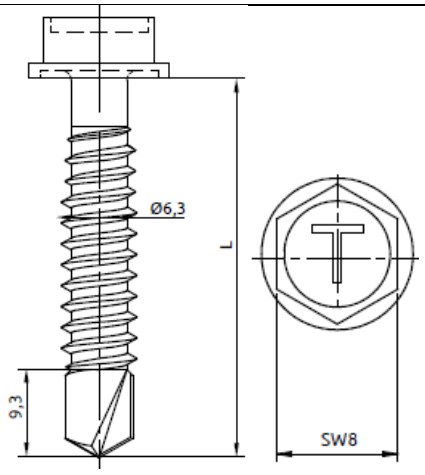
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw OC 5,5xL with washer ≥ ø 16 mm	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: -

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 6{,}0$ mm

		t_{II} [mm]						$N_{R,I,k}$ [kN] Pull-through	
		1.00	1.25	1.50	2.00	3.00	4.00		
$V_{R,k}$ [kN]	0.40	0,87	0,87	0,87	0,87	0,87	0,87		
	0.50	1,51	1,51	1,51	1,51	1,51	1,51		
	0.63	1,69	1,69	1,69	1,69	1,69	1,69		
	0.75	2,17	2,17	2,17	2,17	2,17	2,17		
	0.88	2,17	2,17	2,17	2,17	2,17	2,17		
t_I [mm]	1.00	2,30	2,30	2,30	2,30	2,30	2,30		
	1.25	2,30	2,30	2,30	2,30	2,30	2,30		
	1.50	2,30	2,30	2,30	2,30	2,30	2,30		
$N_{R,k}$ [kN]	0.40	0,21	0,21	0,21	0,21	0,21	0,21	0,21	0,31[1]
	0.50	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,36[1]
	0.63	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,43[1]
	0.75	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,68[1]
	0.88	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,68[1]
t_I [mm]	1.00	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,86[1]
	1.25	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,86[1]
	1.50	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,86[1]
$N_{R,II,k}$ [kN] Pull-out		1,21	1,55	1,91	2,83	5,29	7,15		

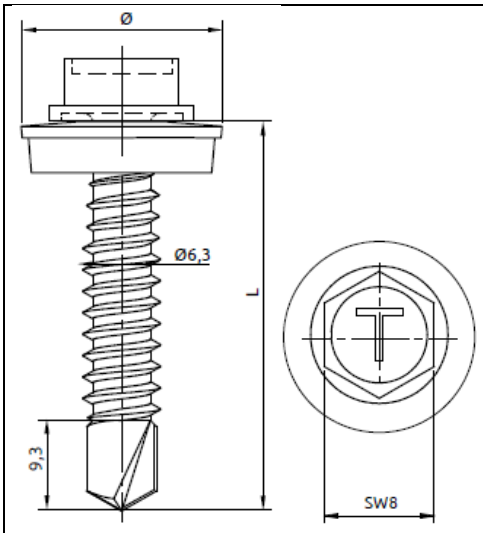
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw OC 6,3xL without washer	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: Carbon steel with anticorrosion coating (galvanized) and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 6{,}0$ mm

		t_{II} [mm]						$N_{R,I,k}$ [kN] Pull-through	
		1.00	1.25	1.50	2.00	3.00	4.00		
$V_{R,k}$ [kN]	0.40	0,87	0,87	0,87	0,87	0,87	0,87		
	0.50	1,51	1,51	1,51	1,51	1,51	1,51		
	0.63	1,69	1,69	1,69	1,69	1,69	1,69		
	0.75	2,17	2,17	2,17	2,17	2,17	2,17		
	0.88	2,17	2,17	2,17	2,17	2,17	2,17		
t_I [mm]	1.00	2,30	2,30	2,30	2,30	2,30	2,30		
	1.25	2,30	2,30	2,30	2,30	2,30	2,30		
	1.50	2,30	2,30	2,30	2,30	2,30	2,30		
$N_{R,k}$ [kN]	0.40	0,98	0,98	0,98	0,98	0,98	0,98	0,98	1,48[1]
	0.50	1,21	1,55	1,66	1,66	1,66	1,66	1,66	2,49[1]
	0.63	1,21	1,55	1,91	2,31	2,31	2,31	2,31	3,47[1]
	0.75	1,21	1,55	1,91	2,83	2,87	2,87	2,87	4,31[1]
	0.88	1,21	1,55	1,91	2,83	2,87	2,87	2,87	4,31[1]
t_I [mm]	1.00	1,21	1,55	1,91	2,83	3,26	3,26	3,26	4,89[1]
	1.25	1,21	1,55	1,91	2,83	3,26	3,26	3,26	4,89[1]
	1.50	1,21	1,55	1,91	2,83	3,26	3,26	3,26	4,89[1]
$N_{R,II,k}$ [kN] Pull-out		1,21	1,55	1,91	2,83	5,29	7,15		

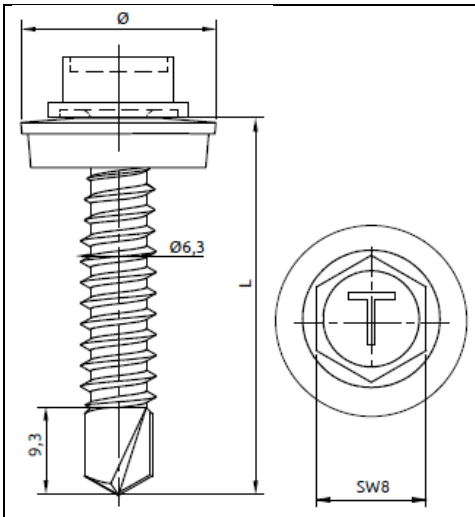
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw OC 6,3xL with washer ≥ ø 14 mm	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: Carbon steel with anticorrosion coating (galvanized) and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 6{,}0$ mm

		t_{II} [mm]						$N_{R,I,k}$ [kN] Pull-through	
		1.00	1.25	1.50	2.00	3.00	4.00		
$V_{R,k}$ [kN]	0.40	0,87	0,87	0,87	0,87	0,87	0,87		
	0.50	1,51	1,51	1,51	1,51	1,51	1,51		
	0.63	1,69	1,69	1,69	1,69	1,69	1,69		
	0.75	2,17	2,17	2,17	2,17	2,17	2,17		
	0.88	2,17	2,17	2,17	2,17	2,17	2,17		
t_I [mm]	1.00	2,30	2,30	2,30	2,30	2,30	2,30		
	1.25	2,30	2,30	2,30	2,30	2,30	2,30		
	1.50	2,30	2,30	2,30	2,30	2,30	2,30		
$N_{R,k}$ [kN]	0.40	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,80[1]
	0.50	1,21	1,55	1,83	1,83	1,83	1,83	1,83	2,74[1]
	0.63	1,21	1,55	1,91	2,51	2,51	2,51	2,51	3,77[1]
	0.75	1,21	1,55	1,91	2,83	3,20	3,20	3,20	4,79[1]
	0.88	1,21	1,55	1,91	2,83	3,20	3,20	3,20	4,79[1]
t_I [mm]	1.00	1,21	1,55	1,91	2,83	3,64	3,64	3,64	5,47[1]
	1.25	1,21	1,55	1,91	2,83	3,64	3,64	3,64	5,47[1]
	1.50	1,21	1,55	1,91	2,83	3,64	3,64	3,64	5,47[1]
$N_{R,II,k}$ [kN] Pull-out		1,21	1,55	1,91	2,83	5,29	7,15		

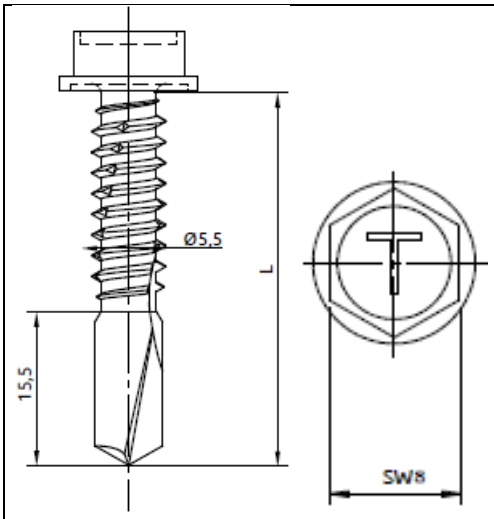
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw OC 6,3xL with washer ≥ ø 16 mm	of European Technical Assessment ETA



Materials

Fastener: (galvanized) Carbon steel with anticorrosion coating

Washer: -

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 14{,}0$ mm

		t_{II} [mm]		$N_{R,I,k}$ [kN] Pull-through	
		3.00	4.00		
$V_{R,k}$ [kN]	0.40	0,87	0,87		
	0.50	1,51	1,51		
	0.63	1,69	1,69		
	0.75	2,17	2,17		
	0.88	2,17	2,17		
t_I [mm]	1.00	2,30	2,30		
	1.25	2,30	2,30		
	1.50	2,30	2,30		
$N_{R,k}$ [kN]	0.40	0,21	0,21	0,21	0,31[1]
	0.50	0,24	0,24	0,24	0,36[1]
	0.63	0,28	0,28	0,28	0,43[1]
	0.75	0,46	0,46	0,46	0,68[1]
	0.88	0,46	0,46	0,46	0,68[1]
t_I [mm]	1.00	0,57	0,57	0,57	0,86[1]
	1.25	0,57	0,57	0,57	0,86[1]
	1.50	0,57	0,57	0,57	0,86[1]
$N_{R,II,k}$ [kN]	Pull-out	4,61	7,31		

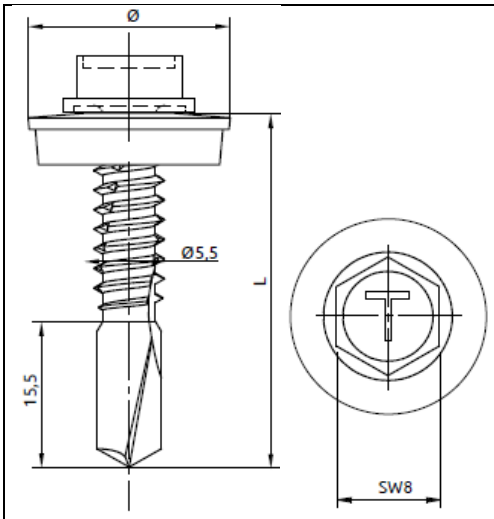
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw ON 5,5xL without washer	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: Carbon steel with anticorrosion coating (galvanized) and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 14{,}0$ mm

		t_{II} [mm]		$N_{R,I,k}$ [kN] Pull-through	
		3.00	4.00		
$V_{R,k}$ [kN]	0.40	0,87	0,87		
	0.50	1,51	1,51		
	0.63	1,69	1,69		
	0.75	2,17	2,17		
	0.88	2,17	2,17		
t_I [mm]	1.00	2,30	2,30		
	1.25	2,30	2,30		
	1.50	2,30	2,30		
$N_{R,k}$ [kN]	0.40	0,98	0,98	0,98	1,48[1]
	0.50	1,66	1,66	1,66	2,49[1]
	0.63	2,31	2,31	2,31	3,47[1]
	0.75	2,87	2,87	2,87	4,31[1]
	0.88	2,87	2,87	2,87	4,31[1]
t_I [mm]	1.00	3,26	3,26	3,26	4,89[1]
	1.25	3,26	3,26	3,26	4,89[1]
	1.50	3,26	3,26	3,26	4,89[1]
$N_{R,II,k}$ [kN]	Pull-out	4,61	7,31		

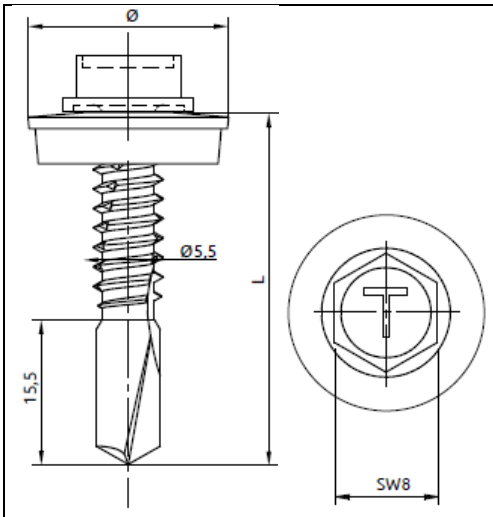
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw ON 5,5xL with washer ≥ ø 14 mm	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: Carbon steel with anticorrosion coating (galvanized) and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 14{,}0$ mm

		t_{II} [mm]		**$N_{R,I,k}$ [kN]** Pull-through	
		3.00	4.00		
$V_{R,k}$ [kN]	0.40	0,87	0,87		
	0.50	1,51	1,51		
	0.63	1,69	1,69		
	0.75	2,17	2,17		
	0.88	2,17	2,17		
t_I [mm]	1.00	2,30	2,30		
	1.25	2,30	2,30		
	1.50	2,30	2,30		
$N_{R,k}$ [kN]	0.40	1,20	1,20	1,20	1,80[1]
	0.50	1,83	1,83	1,83	2,74[1]
	0.63	2,51	2,51	2,51	3,77[1]
	0.75	3,20	3,20	3,20	4,79[1]
	0.88	3,20	3,20	3,20	4,79[1]
t_I [mm]	1.00	3,64	3,64	3,64	5,47[1]
	1.25	3,64	3,64	3,64	5,47[1]
	1.50	3,64	3,64	3,64	5,47[1]
$N_{R,II,k}$ [kN]	Pull-out	4,61	7,31		

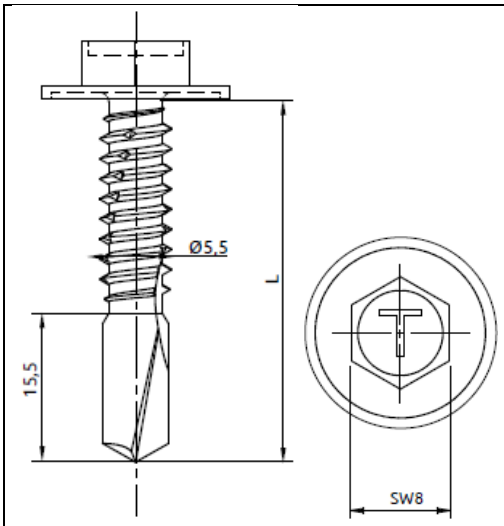
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw ON 5,5xL with washer ≥ ø 16 mm	of European Technical Assessment ETA



Materials

Fastener: (galvanized) Carbon steel with anticorrosion coating

Washer: -

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 14{,}0$ mm

		t_{II} [mm]		$N_{R,I,k}$ [kN] Pull-through	
		3.00	4.00		
$V_{R,k}$ [kN]	0.40	0,87	0,87		
	0.50	1,51	1,51		
	0.63	1,69	1,69		
	0.75	2,17	2,17		
	0.88	2,17	2,17		
t_I [mm]	1.00	2,30	2,30		
	1.25	2,30	2,30		
	1.50	2,30	2,30		
$N_{R,k}$ [kN]	0.40	0,98	0,98	0,98	1,48[1]
	0.50	1,66	1,66	1,66	2,49[1]
	0.63	2,31	2,31	2,31	3,47[1]
	0.75	2,87	2,87	2,87	4,31[1]
	0.88	2,87	2,87	2,87	4,31[1]
t_I [mm]	1.00	3,26	3,26	3,26	4,89[1]
	1.25	3,26	3,26	3,26	4,89[1]
	1.50	3,26	3,26	3,26	4,89[1]
$N_{R,II,k}$ [kN]	Pull-out	4,61	7,31		

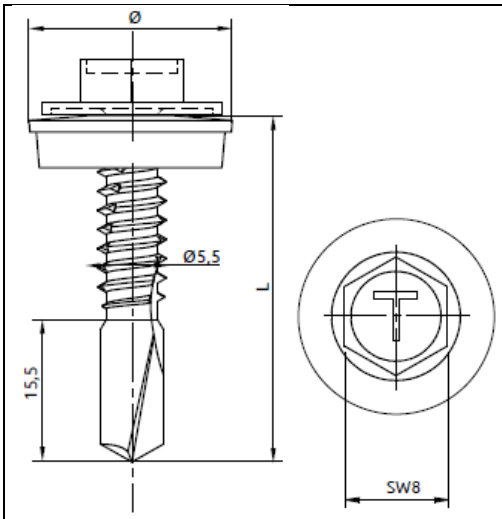
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw ONP 5,5xL without washer	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: Carbon steel with anticorrosion coating (galvanized) and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 14{,}0$ mm

		t_{II} [mm]		$N_{R,I,k}$ [kN] Pull-through	
		3.00	4.00		
$V_{R,k}$ [kN]	0.40	0,87	0,87		
	0.50	1,51	1,51		
	0.63	1,69	1,69		
	0.75	2,17	2,17		
	0.88	2,17	2,17		
t_I [mm]	1.00	2,30	2,30		
	1.25	2,30	2,30		
	1.50	2,30	2,30		
$N_{R,k}$ [kN]	0.40	0,98	0,98	0,98	1,48[1]
	0.50	1,66	1,66	1,66	2,49[1]
	0.63	2,31	2,31	2,31	3,47[1]
	0.75	2,87	2,87	2,87	4,31[1]
	0.88	2,87	2,87	2,87	4,31[1]
t_I [mm]	1.00	3,26	3,26	3,26	4,89[1]
	1.25	3,26	3,26	3,26	4,89[1]
	1.50	3,26	3,26	3,26	4,89[1]
$N_{R,II,k}$ [kN]	Pull-out	4,61	7,31		

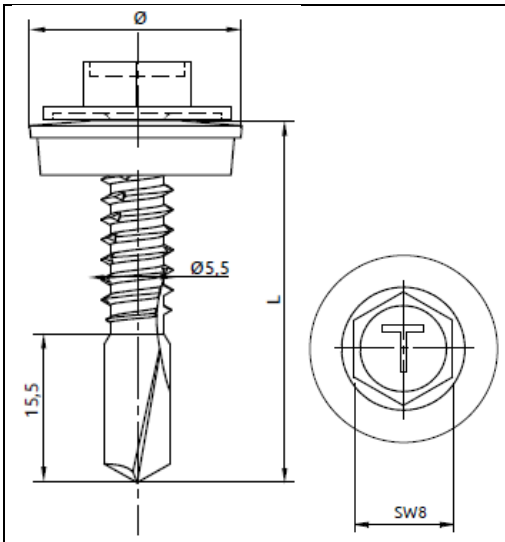
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw ONP 5,5xL with washer ≥ ø 14 mm	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: Carbon steel with anticorrosion coating (galvanized) and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 14{,}0$ mm

		t_{II} [mm]		$N_{R,I,k}$ [kN] Pull-through	
		3.00	4.00		
$V_{R,k}$ [kN]	0.40	0,87	0,87		
	0.50	1,51	1,51		
	0.63	1,69	1,69		
	0.75	2,17	2,17		
	0.88	2,17	2,17		
t_I [mm]	1.00	2,30	2,30		
	1.25	2,30	2,30		
	1.50	2,30	2,30		
$N_{R,k}$ [kN]	0.40	1,20	1,20	1,20	1,80[1]
	0.50	1,83	1,83	1,83	2,74[1]
	0.63	2,51	2,51	2,51	3,77[1]
	0.75	3,20	3,20	3,20	4,79[1]
	0.88	3,20	3,20	3,20	4,79[1]
t_I [mm]	1.00	3,64	3,64	3,64	5,47[1]
	1.25	3,64	3,64	3,64	5,47[1]
	1.50	3,64	3,64	3,64	5,47[1]
$N_{R,II,k}$ [kN]	Pull-out	4,61	7,31		

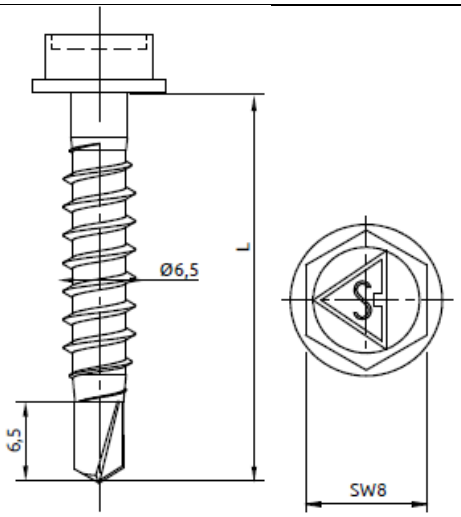
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw ONP 5,5xL with washer ≥ ø 16 mm	of European Technical Assessment ETA



Materials

Fastener: Stainless steel (1.4301) – EN10088
Bi-metal

Washer: -

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: Σ(tI + tII) ≤ 6,0 mm

		t_{II} [mm] 1.50	t_{II} [mm] 2.00	**$N_{R,I,k}$ [kN]** Pull-through	
$V_{R,k}$ [kN]	0.40	0,53	0,53		
	0.50	0,55	0,55		
	0.63	0,88	0,88		
	0.75	1,19	1,19		
	0.88	1,19	1,19		
t_I [mm]	1.00	1,70	1,70		
	1.25	1,70	1,70		
	1.50	1,70	1,70		
$N_{R,k}$ [kN]	0.40	0,21	0,21	0,21	0,31[1]
	0.50	0,24	0,24	0,24	0,36[1]
	0.63	0,28	-	0,28	0,43[1]
	0.75	0,46	-	0,46	0,68[1]
	0.88	0,46	-	0,46	0,68[1]
t_I [mm]	1.00	0,57	-	0,57	0,86[1]
	1.25	-	-	0,57	0,86[1]
	1.50	-	-	0,57	0,86[1]
$N_{R,II,k}$ [kN] Pull-out		2.67	4,54		

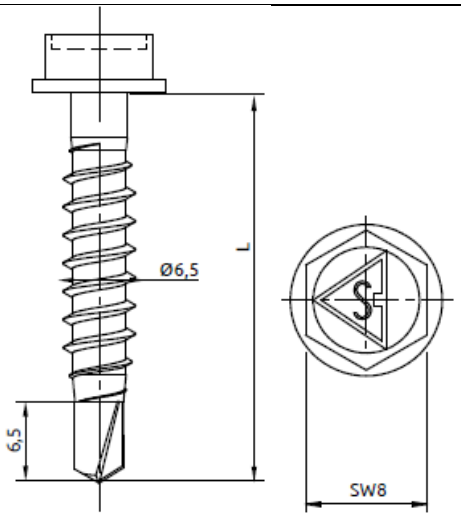
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw ODWS 6,5xL without washer	of European Technical Assessment ETA



Materials

Fastener: Stainless steel (1.4301) – EN10088
Bi-metal

Washer: -

Component I: S280GD to S450GD - EN 10346

Component II: Coniferous timber ≥ C24 - EN 14081

Drilling capacity: $\Sigma(t_I) \leq 2{,}5$ mm

Timber substructure
$M_{y,Rk} = 9.66$ Nm
$f_{ax,k} = 13.26$ N/mm² for lef ≥ 20 mm, ρa = 350 kg/m³

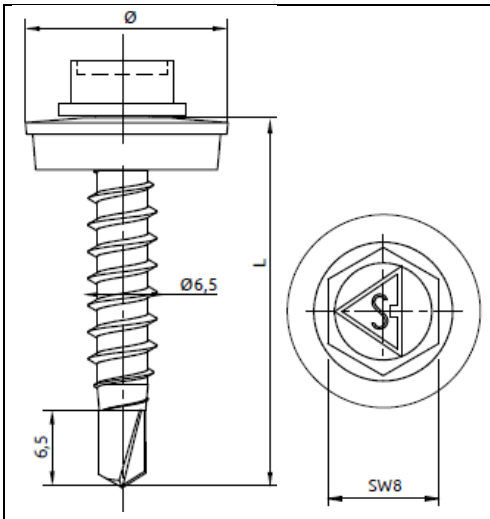
		t_{II} [mm] 20	$N_{R,I,k}$ [kN] Pull-through	
$V_{R,k}$ [kN]	0.40	0,53		
	0.50	0,55		
	0.63	0,88		
	0.75	1,19		
	0.88	1,19		
t_I [mm]	1.00	1,70		
	1.25	1,70		
	1.50	1,70		
$N_{R,k}$ [kN]	0.40	0,21	0,21	0,31[1]
	0.50	0,24	0,24	0,36[1]
	0.63	0,28	0,28	0,43[1]
	0.75	0,46	0,46	0,68[1]
	0.88	0,46	0,46	0,68[1]
t_I [mm]	1.00	0,57	0,57	0,86[1]
	1.25	0,57	0,57	0,86[1]
	1.50	0,57	0,57	0,86[1]
$N_{R,II,k}$ [kN] Pull-out		1,72		

$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.
Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw ODWS 6,5xL without washer	of European Technical Assessment ETA



Materials

Fastener: Stainless steel (1.4301) – EN10088
Bi-metal

Washer: Stainless steel (1.4301) – EN10088
and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 6{,}0$ mm

		t_{II} [mm] 1.50	2.00	$N_{R,I,k}$ [kN] Pull-through	
$V_{R,k}$ [kN]	0.40	0,53	0,53		
	0.50	0,55	0,55		
	0.63	0,88	0,88		
	0.75	1,19	1,19		
	0.88	1,19	1,19		
t_I [mm]	1.00	1,70	1,70		
	1.25	1,70	1,70		
	1.50	1,70	1,70		
$N_{R,k}$ [kN]	0.40	0,98	0,98	0,98	1,48[1]
	0.50	1,66	1,66	1,66	2,49[1]
	0.63	2,31	2,31	2,31	3,47[1]
	0.75	2.67	2,87	2,87	4,31[1]
	0.88	2.67	2,87	2,87	4,31[1]
t_I [mm]	1.00	2.67	3,26	3,26	4,89[1]
	1.25	2.67	3,26	3,26	4,89[1]
	1.50	2.67	3,26	3,26	4,89[1]
$N_{R,II,k}$ [kN] Pull-out		2.67	4,54		

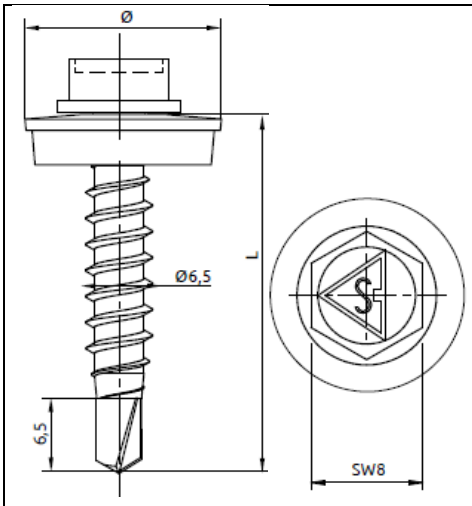
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw ODWS 6,5xL with washer ≥ ø 14 mm	of European Technical Assessment ETA



Materials

Fastener: Stainless steel (1.4301) – EN10088
Bi-metal

Washer: Stainless steel (1.4301) – EN10088
and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: Coniferous timber ≥ C24 - EN 14081

Drilling capacity: $\Sigma(t_I) \leq 2{,}5$ mm

Timber substructure
$M_{y,Rk} = 9.66$ Nm
$f_{ax,k} = 13.26$ N/mm² for lef ≥ 20 mm, ρa = 350 kg/m³

		t_{II} [mm] 20	$N_{R,I,k}$ [kN] Pull-through	
$V_{R,k}$ [kN]	0.40	0,53		
	0.50	0,55		
	0.63	0,88		
	0.75	1,19		
	0.88	1,19		
t_I [mm]	1.00	1,70		
	1.25	1,70		
	1.50	1,70		
$N_{R,k}$ [kN]	0.40	0,98	0,98	1,48[1]
	0.50	1,66	1,66	2,49[1]
	0.63	1,72	2,31	3,47[1]
	0.75	1,72	2,87	4,31[1]
	0.88	1,72	2,87	4,31[1]
t_I [mm]	1.00	1,72	3,26	4,89[1]
	1.25	1,72	3,26	4,89[1]
	1.50	1,72	3,26	4,89[1]
$N_{R,II,k}$ [kN] Pull-out		1,72		

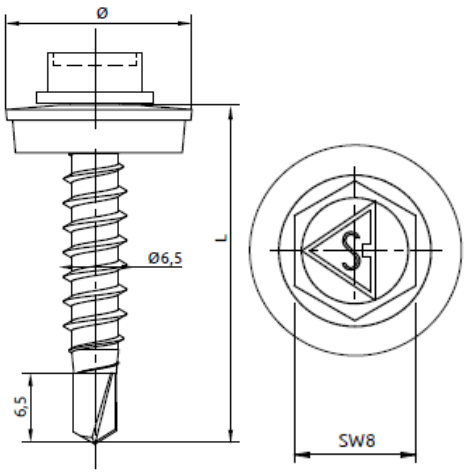
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw ODWS 6,5xL with washer ≥ ø 14 mm	of European Technical Assessment ETA



Materials

Fastener: Stainless steel (1.4301) – EN10088
Bi-metal

Washer: Stainless steel (1.4301) – EN10088
and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 6{,}0$ mm

		t_{II} [mm] 1.50	2.00	**$N_{R,I,k}$ [kN]** Pull-through	
$V_{R,k}$ [kN]	0.40	0,53	0,53		
	0.50	0,55	0,55		
	0.63	0,88	0,88		
	0.75	1,19	1,19		
	0.88	1,19	1,19		
t_I [mm]	1.00	1,70	1,70		
	1.25	1,70	1,70		
	1.50	1,70	1,70		
$N_{R,k}$ [kN]	0.40	1,20	1,20	1,20	1,80[1]
	0.50	1,83	1,83	1,83	2,74[1]
	0.63	2,51	2,51	2,51	3,77[1]
	0.75	2.67	2,87	3,20	4,79[1]
	0.88	2.67	2,87	3,20	4,79[1]
t_I [mm]	1.00	2.67	3,26	3,64	5,47[1]
	1.25	2.67	3,26	3,64	5,47[1]
	1.50	2.67	3,26	3,64	5,47[1]
$N_{R,II,k}$ [kN] Pull-out		2.67	4,54		

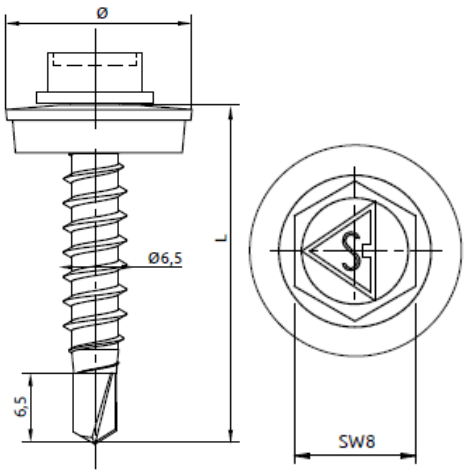
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw ODWS 6,5xL with washer ≥ ø 16 mm	of European Technical Assessment ETA



Materials

Fastener: Stainless steel (1.4301) – EN10088
Bi-metal

Washer: Stainless steel (1.4301) – EN10088
and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: Coniferous timber ≥ C24 - EN 14081

Drilling capacity: Σ(tI) ≤ 2,5 mm

Timber substructure
$M_{y,Rk}$ = 9.66 Nm
$f_{ax,k}$ = 13.26 N/mm² for lef ≥ 20 mm, ρa = 350 kg/m³

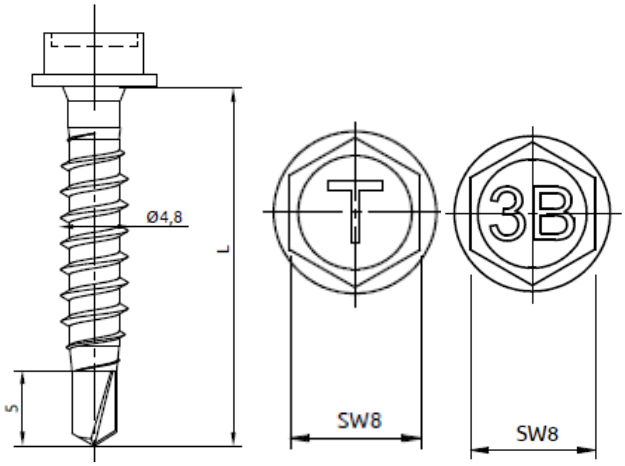
		t_{II} [mm] 20	**$N_{R,I,k}$ [kN]** Pull-through	
$V_{R,k}$ [kN]	0.40	0,53		
	0.50	0,55		
	0.63	0,88		
	0.75	1,19		
	0.88	1,19		
t_I [mm]	1.00	1,70		
	1.25	1,70		
	1.50	1,70		
$N_{R,k}$ [kN]	0.40	1,20	1,20	1,80[1]
	0.50	1,72	1,83	2,74[1]
	0.63	1,72	2,51	3,77[1]
	0.75	1,72	3,20	4,79[1]
	0.88	1,72	3,20	4,79[1]
t_I [mm]	1.00	1,72	3,64	5,47[1]
	1.25	1,72	3,64	5,47[1]
	1.50	1,72	3,64	5,47[1]
$N_{R,II,k}$ [kN] Pull-out		1,72		

$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.
Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw ODWS 6,5xL with washer ≥ ø 16 mm	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: -

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 2{,}5$ mm

		t_{II} [mm] 1.50	2.00	**$N_{R,I,k}$ [kN]** Pull-through	
$V_{R,k}$ [kN] t_I [mm]	0.40	0,53	0,53		
	0.50	0,55	0,55		
	0.63	0,88	-		
	0.75	1,19	-		
	0.88	1,19	-		
	1.00	1,70	-		
	1.25	-	-		
	1.50	-	-		
$N_{R,k}$ [kN] t_I [mm]	0.40	0,21	0,21	0,21	0,31[1]
	0.50	0,24	0,24	0,24	0,36[1]
	0.63	0,28	-	0,28	0,43[1]
	0.75	0,46	-	0,46	0,68[1]
	0.88	0,46	-	0,46	0,68[1]
	1.00	0,57	-	0,57	0,86[1]
	1.25	-	-	0,57	0,86[1]
	1.50	-	-	0,57	0,86[1]
$N_{R,II,k}$ [kN] Pull-out		2.56	3,87		

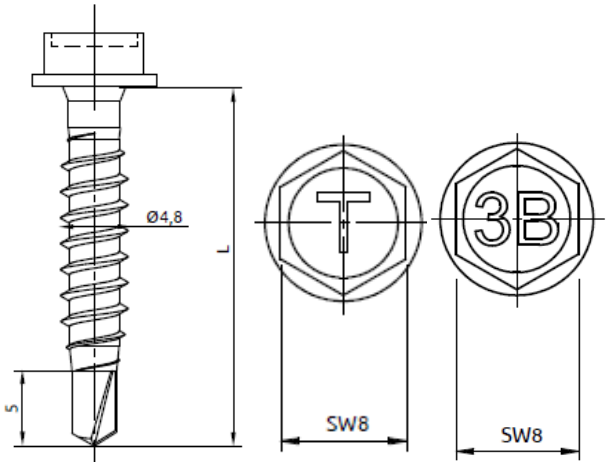
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw OD 4,8xL without washer	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: -

Component I: S280GD to S450GD - EN 10346

Component II: Coniferous timber ≥ C24 - EN 14081

Drilling capacity: $\Sigma(t_I) \leq 2{,}5$ mm

Timber substructure

$M_{y,Rk} = 4.39$ Nm

$f_{ax,k} = 13.47$ N/mm² for lef ≥ 20 mm, ρa = 350 kg/m³

		t_{II} [mm] 20	**$N_{R,I,k}$ [kN]** Pull-through	
$V_{R,k}$ [kN]	0.40	0,53		
	0.50	0,55		
	0.63	0,88		
	0.75	1,19		
t_I [mm]	0.88	1,19		
	1.00	1,70		
	1.25	1,70		
	1.50	1,70		
$N_{R,k}$ [kN]	0.40	0,21	0,21	0,31[1]
	0.50	0,24	0,24	0,36[1]
	0.63	0,28	0,28	0,43[1]
	0.75	0,46	0,46	0,68[1]
t_I [mm]	0.88	0,46	0,46	0,68[1]
	1.00	0,57	0,57	0,86[1]
	1.25	0,57	0,57	0,86[1]
	1.50	0,57	0,57	0,86[1]
$N_{R,II,k}$ [kN] Pull-out		1,29		

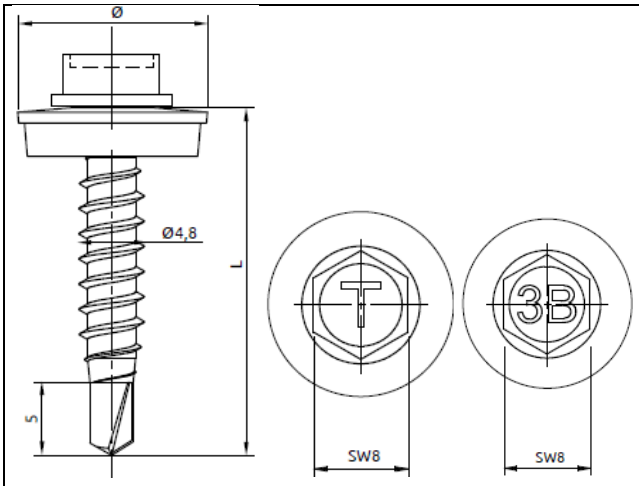
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw OD 4,8xL without washer	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: Carbon steel with anticorrosion coating (galvanized) or aluminum and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 2{,}5$ mm

		t_{II} [mm] 1.50	2.00	**$N_{R,I,k}$ [kN]** Pull-through	
$V_{R,k}$ [kN]	0.40	0,53	0,53		
	0.50	0,55	0,55		
	0.63	0,88	-		
	0.75	1,19	-		
	0.88	1,19	-		
t_I [mm]	1.00	1,70	-		
	1.25	-	-		
	1.50	-	-		
$N_{R,k}$ [kN]	0.40	0,98	0,98	0,98	1,48[1]
	0.50	1,66	1,66	1,66	2,49[1]
	0.63	2,31	-	2,31	3,47[1]
	0.75	2.56	-	2,87	4,31[1]
	0.88	2.56	-	2,87	4,31[1]
t_I [mm]	1.00	2.56	-	3,26	4,89[1]
	1.25	-	-	3,26	4,89[1]
	1.50	-	-	3,26	4,89[1]
$N_{R,II,k}$ [kN] Pull-out		2.56	3,87		

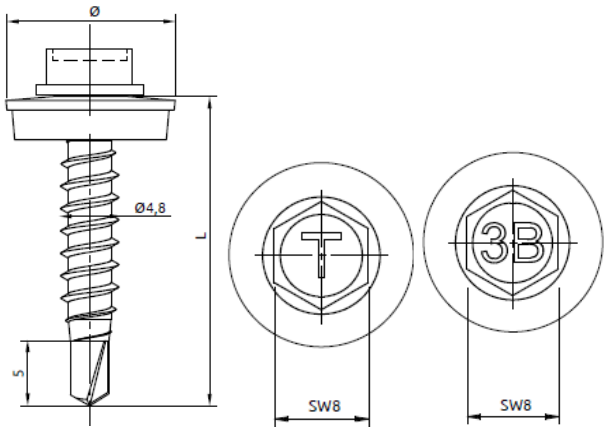
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw OD 4,8xL with washer ≥ ø 14 mm	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: Carbon steel with anticorrosion coating (galvanized) or aluminum and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: Coniferous timber ≥ C24 - EN 14081

Drilling capacity: $\Sigma(t_I) \leq 2{,}5$ mm

Timber substructure

$M_{y,Rk} = 4.39$ Nm

$f_{ax,k} = 13.47$ N/mm² for lef ≥ 20 mm, ρa = 350 kg/m³

		t_{II} [mm] 20	**$N_{R,I,k}$ [kN]** Pull-through	
$V_{R,k}$ [kN]	0.40	0,53		
	0.50	0,55		
	0.63	0,88		
	0.75	1,19		
	0.88	1,19		
t_I [mm]	1.00	1,70		
	1.25	1,70		
	1.50	1,70		
$N_{R,k}$ [kN]	0.40	0,98	0,98	1,48[1]
	0.50	1,29	1,66	2,49[1]
	0.63	1,29	2,31	3,47[1]
	0.75	1,29	2,87	4,31[1]
	0.88	1,29	2,87	4,31[1]
t_I [mm]	1.00	1,29	3,26	4,89[1]
	1.25	1,29	3,26	4,89[1]
	1.50	1,29	3,26	4,89[1]
$N_{R,II,k}$ [kN] Pull-out		1,29		

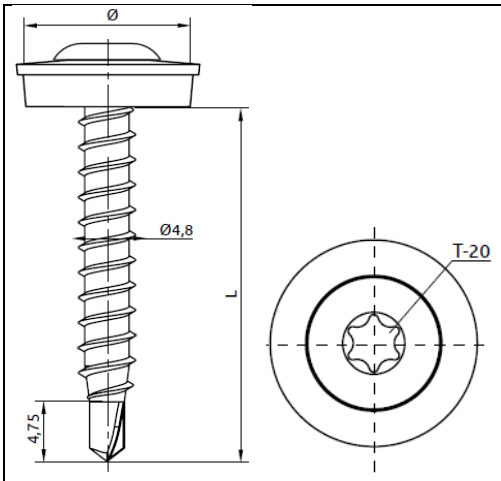
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw OD 4,8xL with washer ≥ ø 14 mm	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: Carbon steel with anticorrosion coating (galvanized) or aluminum and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 2{,}5$ mm

		t_{II} [mm] 1.50	2.00	**$N_{R,I,k}$ [kN]** Pull-through	
$V_{R,k}$ [kN]	0.40	0,53	0,53		
	0.50	0,55	0,55		
	0.63	0,88	-		
	0.75	1,19	-		
	0.88	1,19	-		
t_I [mm]	1.00	1,70	-		
	1.25	-	-		
	1.50	-	-		
$N_{R,k}$ [kN]	0.40	0,98	0,98	0,98	1,48[1]
	0.50	1,66	1,66	1,66	2,49[1]
	0.63	2,31	-	2,31	3,47[1]
	0.75	2.56	-	2,87	4,31[1]
	0.88	2.56	-	2,87	4,31[1]
t_I [mm]	1.00	2.56	-	3,26	4,89[1]
	1.25	-	-	3,26	4,89[1]
	1.50	-	-	3,26	4,89[1]
$N_{R,II,k}$ [kN] Pull-out		2.56	3,87		

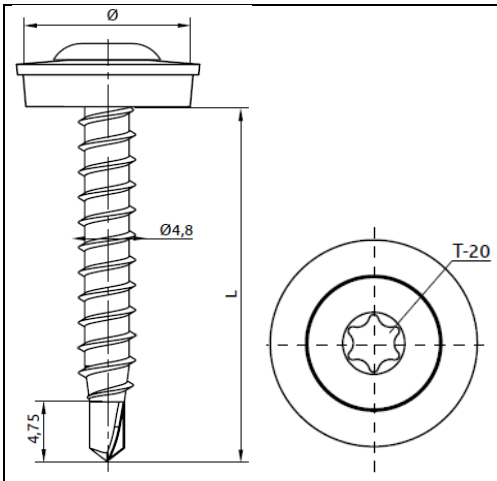
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw ODX 4,8xL with washer ≥ ø 14 mm	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: Carbon steel with anticorrosion coating (galvanized) or aluminum and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: Coniferous timber ≥ C24 - EN 14081

Drilling capacity: $\Sigma(t_I) \leq 2{,}5$ mm

Timber substructure

$M_{y,Rk} = 4.39$ Nm

$f_{ax,k} = 13.47$ N/mm² for lef ≥ 20 mm, ρa = 350 kg/m³

		t_{II} [mm] 20	**$N_{R,I,k}$ [kN]** Pull-through	
$V_{R,k}$ [kN]	0.40	0,53		
	0.50	0,55		
	0.63	0,88		
	0.75	1,19		
	0.88	1,19		
t_I [mm]	1.00	1,70		
	1.25	1,70		
	1.50	1,70		
$N_{R,k}$ [kN]	0.40	0,98	0,98	1,48[1]
	0.50	1,29	1,66	2,49[1]
	0.63	1,29	2,31	3,47[1]
	0.75	1,29	2,87	4,31[1]
	0.88	1,29	2,87	4,31[1]
t_I [mm]	1.00	1,29	3,26	4,89[1]
	1.25	1,29	3,26	4,89[1]
	1.50	1,29	3,26	4,89[1]
$N_{R,II,k}$ [kN] Pull-out		1,29		

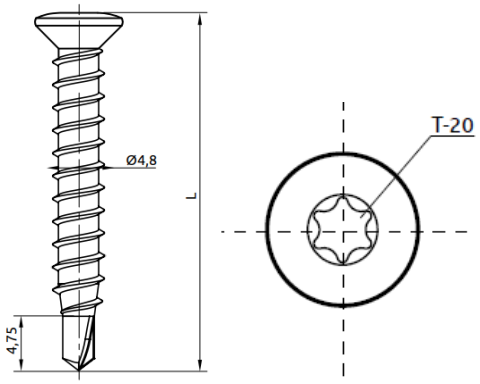
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw ODX 4,8xL with washer ≥ ø 14 mm	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: -

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 2{,}5$ mm

	t_I [mm]	t_{II} [mm] 1.50	2.00	$N_{R,I,k}$ [kN] Pull-through	
$V_{R,k}$ [kN]	0.40	0,53	0,53		
	0.50	0,55	0,55		
	0.63	0,88	-		
	0.75	1,19	-		
	0.88	1,19	-		
	1.00	1,70	-		
	1.25	-	-		
	1.50	-	-		
$N_{R,k}$ [kN]	0.40	0,21	0,21	0,21	0,31[1]
	0.50	0,24	0,24	0,24	0,36[1]
	0.63	0,28	-	0,28	0,43[1]
	0.75	0,46	-	0,46	0,68[1]
	0.88	0,46	-	0,46	0,68[1]
	1.00	0,57	-	0,57	0,86[1]
	1.25	-	-	0,57	0,86[1]
	1.50	-	-	0,57	0,86[1]
$N_{R,II,k}$ [kN] Pull-out		2.56	3,87		

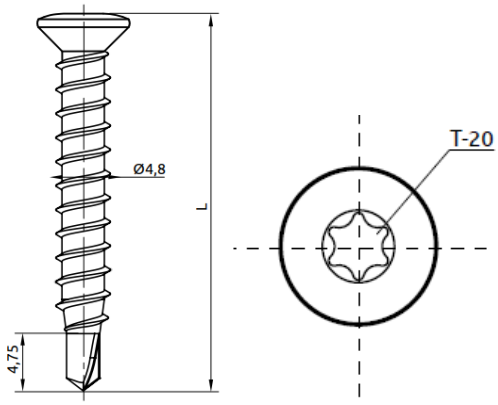
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw ODX 4,8xL without washer	of European Technical Assessment ETA



Materials

Fastener: (galvanized) Carbon steel with anticorrosion coating

Washer: -

Component I: S280GD to S450GD - EN 10346

Component II: Coniferous timber ≥ C24 - EN 14081

Drilling capacity: Σ(tI) ≤ 2,5 mm

Timber substructure

$M_{y,Rk}$ = 4.39 Nm

$f_{ax,k}$ = 13.47 N/mm² for lef ≥ 20 mm, ρa = 350 kg/m³

		t_{II} [mm] 20	**$N_{R,I,k}$ [kN]** Pull-through	
$V_{R,k}$ [kN]	0.40	0,53		
	0.50	0,55		
	0.63	0,88		
	0.75	1,19		
	0.88	1,19		
t_I [mm]	1.00	1,70		
	1.25	1,70		
	1.50	1,70		
$N_{R,k}$ [kN]	0.40	0,21	0,21	0,31[1]
	0.50	0,24	0,24	0,36[1]
	0.63	0,28	0,28	0,43[1]
	0.75	0,46	0,46	0,68[1]
	0.88	0,46	0,46	0,68[1]
t_I [mm]	1.00	0,57	0,57	0,86[1]
	1.25	0,57	0,57	0,86[1]
	1.50	0,57	0,57	0,86[1]
$N_{R,II,k}$ [kN] Pull-out		1,29		

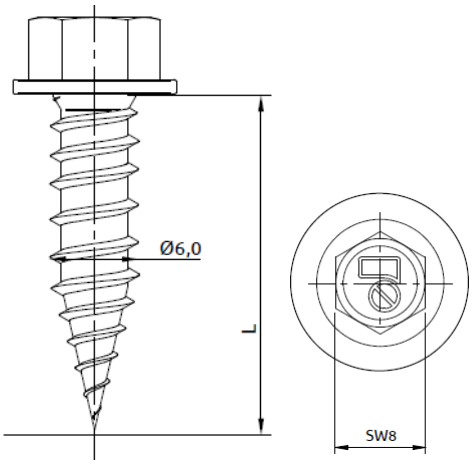
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for metal members and sheeting	**Annex 2**
screw ODX 4,8xL without washer	of European Technical Assessment ETA



Materials

Fastener:	Stainless steel (1.4301) – EN10088 Bi-metal
Washer:	-
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346
Drilling capacity:	$\Sigma(t_I + t_{II}) \leq 2.00$ mm

		t_{II} [mm]						**$N_{R,I,k}$ [kN]** Pull-through	
		0.40	0.50	0.63	0.75	0.88	1.00		
$V_{R,k}$ [kN] t_I [mm]	0.40	0,87	0,87	0,87	0,87	0,87	0,87		
	0.50	0,87	1,51	1,51	1,51	1,51	1,51		
	0.63	0,87	1,51	1,69	1,69	1,69	1,69		
	0.75	0,87	1,51	1,69	2,17	2,17	2,17		
	0.88	0,87	1,51	1,69	2,17	2,17	2,17		
	1.00	0,87	1,51	1,69	2,17	2,17	2,30		
$N_{R,k}$ [kN]	0.40	0,21	0,21	0,21	0,21	0,21	0,21	0,21	0,31[1]
	0.50	0,24	0,24	0,24	0,24	0,24	0,24	0,24	0,36[1]
	0.63	0,28	0,28	0,28	0,28	0,28	0,28	0,28	0,43[1]
	0.75	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,68[1]
	0.88	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,68[1]
	1.00	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,86[1]
$N_{R,II,k}$ [kN] Pull-out		0,70	0,82	1,12	1,53	1.55	2,05		

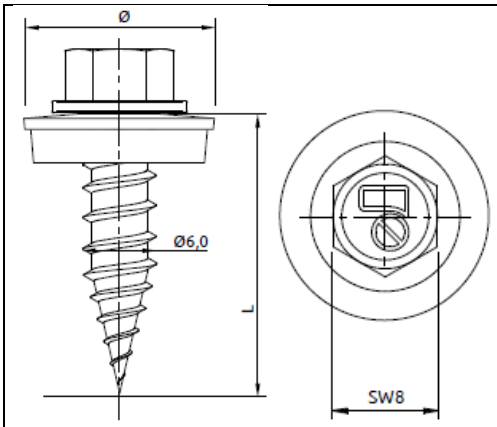
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for thin metal sheets	**Annex 2**
screw OCF 6,0xL without washer	of European Technical Assessment ETA



Materials

Fastener: Stainless steel (1.4301) – EN10088
Bi-metal

Washer: Stainless steel (1.4301) – EN10088
and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

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

		t_{II} [mm]						$N_{R,I,k}$ [kN] Pull-through	
		0.40	0.50	0.63	0.75	0.88	1.00		
$V_{R,k}$ [kN]	0.40	0,87	0,87	0,87	0,87	0,87	0,87		
	0.50	0,87	1,51	1,51	1,51	1,51	1,51		
	0.63	0,87	1,51	1,69	1,69	1,69	1,69		
	0.75	0,87	1,51	1,69	2,17	2,17	2,17		
t_I [mm]	0.88	0,87	1,51	1,69	2,17	2,17	2,17		
	1.00	0,87	1,51	1,69	2,17	2,17	2,30		
$N_{R,k}$ [kN]	0.40	0,70	0,82	0,98	0,98	0,98	0,98	0,98	1,48[1]
	0.50	0,70	0,82	1,12	1,53	1.55	1,66	1,66	2,49[1]
	0.63	0,70	0,82	1,12	1,53	1.55	2,05	2,31	3,47[1]
	0.75	0,70	0,82	1,12	1,53	1.55	2,05	2,87	4,31[1]
	0.88	0,70	0,82	1,12	1,53	1.55	2,05	2,87	4,31[1]
	1.00	0,70	0,82	1,12	1,53	1.55	2,05	3,26	4,89[1]
$N_{R,II,k}$ [kN] Pull-out		0,70	0,82	1,12	1,53	1.55	2,05		

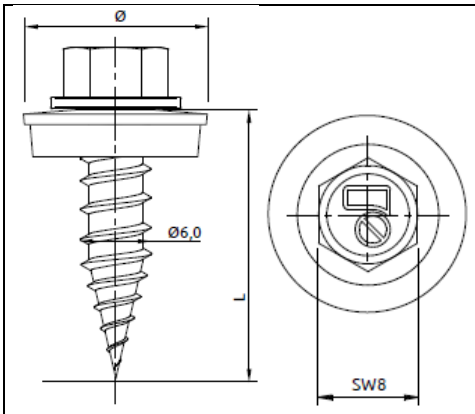
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for thin metal sheets	**Annex 2**
screw OCF 6,0xL with washer ≥ ø 14 mm	of European Technical Assessment ETA



Materials

Fastener: Stainless steel (1.4301) – EN10088
Bi-metal

Washer: Stainless steel (1.4301) – EN10088
and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

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

		t_{II} [mm]						**$N_{R,I,k}$ [kN]** Pull-through	
		0.40	0.50	0.63	0.75	0.88	1.00		
$V_{R,k}$ [kN]	0.40	0,87	0,87	0,87	0,87	0,87	0,87		
	0.50	0,87	1,51	1,51	1,51	1,51	1,51		
	0.63	0,87	1,51	1,69	1,69	1,69	1,69		
	0.75	0,87	1,51	1,69	2,17	2,17	2,17		
t_I [mm]	0.88	0,87	1,51	1,69	2,17	2,17	2,17		
	1.00	0,87	1,51	1,69	2,17	2,17	2,30		
$N_{R,k}$ [kN]	0.40	0,70	0,82	1,12	1,20	1,20	1,20	1,20	1,80[1]
	0.50	0,70	0,82	1,12	1,53	1.55	1,83	1,83	2,74[1]
	0.63	0,70	0,82	1,12	1,53	1.55	2,05	2,51	3,77[1]
	0.75	0,70	0,82	1,12	1,53	1.55	2,05	3,20	4,79[1]
	0.88	0,70	0,82	1,12	1,53	1.55	2,05	3,20	4,79[1]
	1.00	0,70	0,82	1,12	1,53	1.55	2,05	3,64	5,47[1]
$N_{R,II,k}$ [kN] Pull-out		0,70	0,82	1,12	1,53	1.55	2,05		

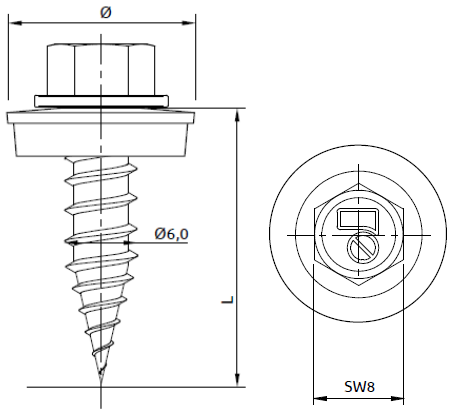
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for thin metal sheets	**Annex 2**
screw OCF 6,0xL with washer ≥ ø 16 mm	of European Technical Assessment ETA



Materials

Fastener: Stainless steel (1.4301) – EN10088
Bi-metal

Washer: Stainless steel (1.4301) – EN10088
and with EPDM-seal

Component I: aluminum alloy $R_m \geq 215$ N/mm^2 – EN 573

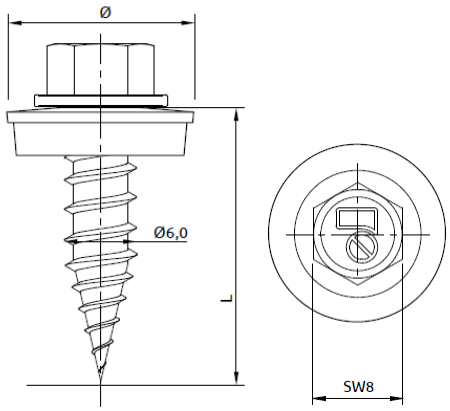
Component II: S280GD to S450GD - EN 10346

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 2 \times 1.50$ mm

		t_{II} [mm]					
		0.40	0.50	0.63	0.75	0.88	1.00
$V_{R,k}$ [kN]	0.40	0,34	0,34	0,34	0,34	0,34	0,34
	0.50	0,34	0,51	0,51	0,51	0,51	0,51
	0.60	0,34	0,51	0,53	0,53	0,53	0,53
	0.70	0,34	0,51	0,53	0,66	0,66	0,66
t_I [mm]	1.00	0,34	0,51	0,53	1,82	1,82	1,82
	1.20	0,34	0,51	0,53	1,82	1,86	1,86
	1.50	0,34	0,51	0,53	1,82	1,86	2,12
$N_{R,k}$ [kN]		0,71	0,88	1,19	1,69	1.70	2,10
Pull-through resistance of component I acc. To EN 1999-1-4, chapter 8.3.3.1							

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

Fastening screws for thin metal sheets	**Annex 2**
screw OCF 6,0xL with washer ≥ ø 16 mm	of European Technical Assessment ETA



Materials

Fastener: Stainless steel (1.4301) – EN10088
Bi-metal

Washer: Stainless steel (1.4301) – EN10088
and with EPDM-seal

Component I: aluminum alloy $R_m \geq 215$ N/mm² – EN 573

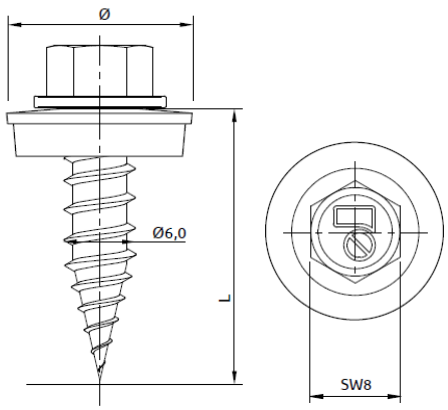
Component II: aluminum alloy $R_m \geq 215$ N/mm² – EN 573

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 2 \times 1.50$ mm

		t_{II} [mm]						
		0.40	0.50	0.60	0.70	1.00	1.20	1.50
$V_{R,k}$ [kN]	0.40	0,34	0,34	0,34	0,34	0,34	0,34	0,34
	0.50	0,34	0,51	0,51	0,51	0,51	0,51	0,51
	0.60	0,34	0,51	0,53	0,53	0,53	0,53	0,53
	0.70	0,34	0,51	0,53	0,66	0,66	0,66	0,66
t_I [mm]	1.00	0,34	0,51	0,53	0,66	1,82	1,82	1,82
	1.20	0,34	0,51	0,53	0,66	1,82	1,86	1,86
	1.50	0,34	0,51	0,53	0,66	1,82	1,86	2,12
$N_{R,k}$ [kN]		0,21	0,32	0,39	0,52	1.50	1,59	2,06

Pull-through resistance of component I acc. To EN 1999-1-4, chapter 8.3.3.1

Fastening screws for thin metal sheets	**Annex 2**
screw OCF 6,0xL with washer ≥ ø 16 mm	of European Technical Assessment ETA



Materials

Fastener: Stainless steel (1.4301) – EN10088
Bi-metal

Washer: Stainless steel (1.4301) – EN10088
and with EPDM-seal

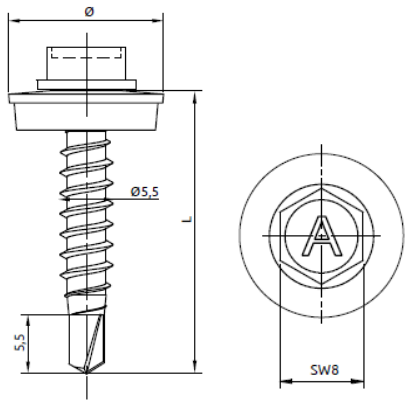
Component I: aluminum alloy $R_m \geq 165$ N/mm² – EN 573

Component II: aluminum alloy $R_m \geq 165$ N/mm² – EN 573

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 2 \times 1.50$ mm

		t_{II} [mm]						
		0.40	0.50	0.60	0.70	1.00	1.20	1.50
$V_{R,k}$ [kN]	0.40	0,28	0,28	0,28	0,28	0,28	0,28	0,28
	0.50	0,28	0,42	0,42	0,42	0,42	0,42	0,42
	0.60	0,28	0,42	0,47	0,47	0,47	0,47	0,47
	0.70	0,28	0,42	0,47	0,49	0,49	0,49	0,49
t_I [mm]	1.00	0,28	0,42	0,47	0,49	1,52	1,52	1,52
	1.20	0,28	0,42	0,47	0,49	1,52	1,52	1,52
	1.50	0,28	0,42	0,47	0,49	1,52	1,52	1,92
$N_{R,k}$ [kN]		0,17	0,26	0,34	0,42	1,28	1,40	1,68
Pull-through resistance of component I acc. To EN 1999-1-4, chapter 8.3.3.1								

Fastening screws for thin metal sheets	**Annex 2**
screw OCF 6,0xL with washer ≥ ø 16 mm	of European Technical Assessment ETA



Materials

Fastener: Aluminum

Washer: Aluminum and with EPDM-seal

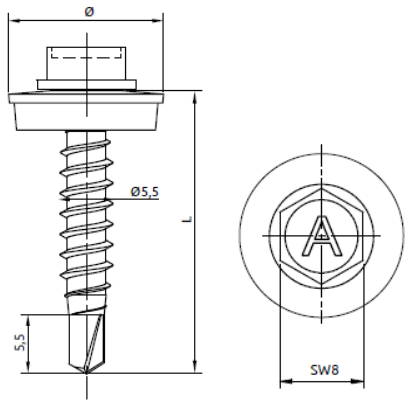
Component I: aluminum alloy $R_m \geq 215$ N/mm^2 – EN 573

Component II: aluminum alloy $R_m \geq 215$ N/mm^2 – EN 573

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 2 \times 1.00$ mm

		t_{II} [mm]				
		0.40	0.50	0.60	0.70	1.00
$V_{R,k}$ [kN]	0.40	0,34	0,34	0,34	0,34	0,34
	0.50	0,34	0,51	0,51	0,51	0,51
	0.60	0,34	0,51	0,53	0,53	0,53
	0.70	0,34	0,51	0,53	0,66	0,66
t_I [mm]	1.00	0,34	0,51	0,53	0,66	1,82
	1.20	0,34	0,51	0,53	0,66	1,82
	1.50	0,34	0,51	0,53	0,66	1,82
$N_{R,k}$ [kN]		0,21	0,32	0,39	0,52	1.50
Pull-through resistance of component I acc. To EN 1999-1-4, chapter						

Fastening screws for thin metal sheets	**Annex 2**
screw ODA 5,5xL with washer ≥ ø 16 mm	of European Technical Assessment ETA



Materials

Fastener: Aluminum

Washer: Aluminum and with EPDM-seal

Component I: aluminum alloy $R_m \geq 165$ N/mm^2 – EN 573

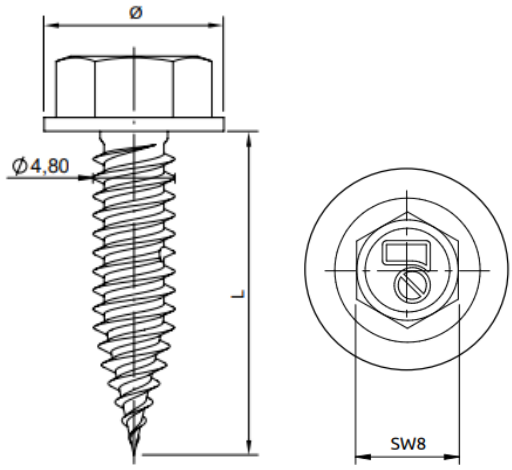
Component II: aluminum alloy $R_m \geq 165$ N/mm^2 – EN 573

Drilling capacity: $\Sigma(t_I + t_{II}) \leq 2 \times 1.0$ mm

		t_{II} [mm]				
		0.40	0.50	0.60	0.70	1.00
$V_{R,k}$ [kN]	0.40	0,28	0,28	0,28	0,28	0,28
	0.50	0,28	0,42	0,42	0,42	0,42
	0.60	0,28	0,42	0,47	0,47	0,47
	0.70	0,28	0,42	0,47	0,49	0,49
t_I [mm]	1.00	0,28	0,42	0,47	0,49	1,52
	1.20	0,28	0,42	0,47	0,49	1,52
	1.50	0,28	0,42	0,47	0,49	1,52
$N_{R,k}$ [kN]		0,17	0,26	0,34	0,42	1,28

Pull-through resistance of component I acc. To EN 1999-1-4, chapter 8.3.3.1

Fastening screws for thin metal sheets	**Annex 2**
screw ODA 5,5xL with washer ≥ ø 16 mm	of European Technical Assessment ETA



Materials

Fastener:	Stainless steel (1.4301) – EN10088 Bi-metal
Washer:	-
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346
Drilling capacity:	$\Sigma(t_I + t_{II}) \leq 2.00$ mm

		t_{II} [mm] 0.40	0.50	0.63	0.75	1.00	**$N_{R,I,k}$ [kN]** Pull-through	
$V_{R,k}$ [kN] t_I [mm]	0.40	0,58	0,58	0,58	0,58	0,58		
	0.50	0,58	0,66	0,66	0,66	0,66		
	0.63	0,58	0,66	1	1	1		
	0.75	0,58	0,66	1	1,55	1,55		
	1.00	0,58	0,66	1	1,55	2,16		
$N_{R,k}$ [kN]	0.40	0,61	0,62	0,81	1,2	1,2	1,20	1,80[1]
	0.50	0,61	0,62	0,81	1,23	1,37	1,37	2,05[1]
	0.63	0,61	0,62	0,81	1,23	1,67	1,67	2,50[1]
	0.75	0,61	0,62	0,81	1,23	1,71	1,95	2,93[1]
	1.00	0,61	0,62	0,81	1,23	1,71	3,18	4,77[1]
$N_{R,II,k}$ [kN] Pull-out		0,61	0,62	0,81	1,23	1,71		

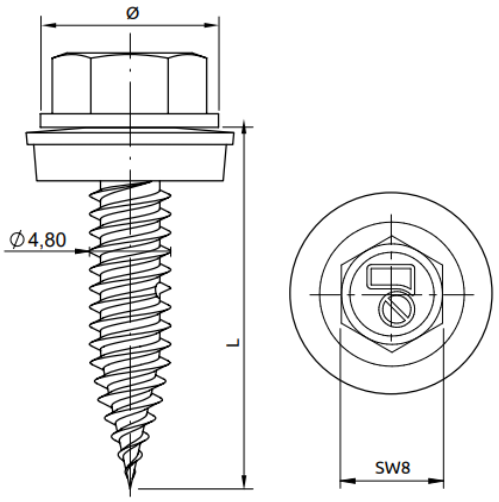
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for thin metal sheets	**Annex 2**
screw OCF 4,8xL without washer	of European Technical Assessment ETA



Materials

Fastener: Stainless steel (1.4301) – EN10088
Bi-metal

Washer: Stainless steel (1.4301) – EN10088
and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

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

		t_{II} [mm] 0.40	0.50	0.63	0.75	1.00
$V_{R,k}$ [kN] t_I [mm]	0.40	0,58	0,58	0,58	0,58	0,58
	0.50	0,58	0,66	0,66	0,66	0,66
	0.63	0,58	0,66	1	1	1
	0.75	0,58	0,66	1	1,55	1,55
	1.00	0,58	0,66	1	1,55	2,16
$N_{R,k}$ [kN]	0.40	0,61	0,62	0,81	1,23	1,57
	0.50	0,61	0,62	0,81	1,23	1,71
	0.63	0,61	0,62	0,81	1,23	1,71
	0.75	0,61	0,62	0,81	1,23	1,71
	1.00	0,61	0,62	0,81	1,23	1,71
$N_{R,II,k}$ [kN] Pull-out		0,61	0,62	0,81	1,23	1,71

$N_{R,I,k}$ [kN] Pull-through	
1,57	2,35[1]
2,08	3,12[1]
2,67	4,00[1]
2,94	4,41[1]
2,94	4,41[1]

$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

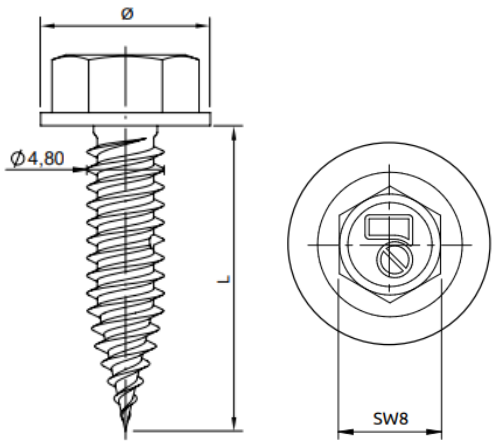
Index [1]: Witt reduction factor 2/3 for repeated wind load

Fastening screws for thin metal sheets

screw OCF 4,8xL
with washer ≥ ø 14 mm

Annex 2

of European
Technical Assessment
ETA



Materials

Fastener:	Carbon steel with anticorrosion coating (galvanized)
Washer:	-
Component I:	S280GD to S450GD - EN 10346
Component II:	S280GD to S450GD - EN 10346

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

		t_{II} [mm] 0.40	0.50	0.63	0.75	1.00	**$N_{R,I,k}$ [kN]** Pull-through	
$V_{R,k}$ [kN] t_I [mm]	0.40	0,71	0,71	0,71	0,71	0,71		
	0.50	0,71	0,81	0,81	0,81	0,81		
	0.63	0,71	0,81	1,26	1,26	1,26		
	0.75	0,71	0,81	1,26	1,51	1,51		
	1.00	0,71	0,81	1,26	1,51	1,72		
$N_{R,k}$ [kN]	0.40	0,64	0,67	0,93	1,18	1,18	1,18	1,77
	0.50	0,64	0,67	0,93	1,43	1,39	1,39	2,09
	0.63	0,64	0,67	0,93	1,43	1,67	1,67	2,51
	0.75	0,64	0,67	0,93	1,43	1,81	2,07	3,11
	1.00	0,64	0,67	0,93	1,43	1,81	3,56	5,34
$N_{R,II,k}$ [kN] Pull-out		0,64	0,67	0,93	1,43	1,81		

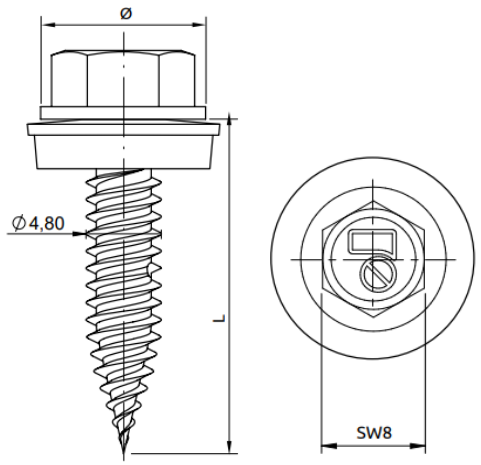
$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for thin metal sheets	**Annex 2**
screw OCFC 4,8xL without washer	of European Technical Assessment ETA



Materials

Fastener: Carbon steel with anticorrosion coating (galvanized)

Washer: Carbon steel with anticorrosion coating (galvanized) and with EPDM-seal

Component I: S280GD to S450GD - EN 10346

Component II: S280GD to S450GD - EN 10346

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

		t_{II} [mm] 0.40	0.50	0.63	0.75	1.00	**$N_{R,I,k}$ [kN]** Pull-through	
$V_{R,k}$ [kN] t_I [mm]	0.40	0,71	0,71	0,71	0,71	0,71		
	0.50	0,71	0,81	0,81	0,81	0,81		
	0.63	0,71	0,81	1,26	1,26	1,26		
	0.75	0,71	0,81	1,26	1,51	1,51		
	1.00	0,71	0,81	1,26	1,51	1,72		
$N_{R,k}$ [kN]	0.40	0,64	0,67	0,93	1,43	1,45	1,45	2,18[1]
	0.50	0,64	0,67	0,93	1,43	1,81	2,04	3,06[1]
	0.63	0,64	0,67	0,93	1,43	1,81	2,52	3,78[1]
	0.75	0,64	0,67	0,93	1,43	1,81	2,65	3,98[1]
	1.00	0,64	0,67	0,93	1,43	1,81	2,65	3,98[1]
$N_{R,II,k}$ [kN] Pull-out		0,64	0,67	0,93	1,43	1,81		

$N_{R,I,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel S350GD.

$N_{R,II,k}$ may be increased by 8.3% for component II made of steel S320GD and by 16.6% for component II made of steel S350GD and S275.

$V_{R,k}$ may be increased by 8.3% for component I made of steel S320GD and by 16.6% for component I made of steel 350GD.

Index [1]: Without reduction factor 2/3 for repeated wind loads.

Fastening screws for thin metal sheets	**Annex 2**
screw OCFC 4,8xL with washer ≥ ø 14 mm	of European Technical Assessment ETA

Annex 3 Reference documents

[1] European Assessment Document EAD 330046-02-0602 Fastening screws for fastening metal members and sheeting to metal or timber structures (edition February 2022)