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Authorised and notified according to Article 29 of the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011

European Technical Assessment ETA-25/0194 of 2025/03/28

I General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S

Trade name of the construction product:	ROSETER Fasteners for Sandwich Panels type: NES DAA2; NES KDHT1; NES KDHT3; NES KDHT5; NES KDHTMU3; NES KDHTMU5; NES KDHTQ6
Product family to which the above construction product belongs:	Fastening screws for sandwich panels
Manufacturer:	ROSETER INFO TRADE CO.LTD 13F., No 213, Fu-Nong Road, Gu-Shan District Kaohsiung City 80454 Taiwan R.O.C Tel.: +886 7 5549166 Internet: www.roseter.com
Manufacturing plant:	ROSETER Plant 1-5
This European Technical Assessment contains:	EAD 330047-01-0602, Fastening Screws for Sandwich Panels
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:	23 pages including 18 annexes which form an integral part of the document
This version replaces:	-

II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product

The products are fastening screws for sandwich panels (self-drilling and self-tapping screws) made of steel, type NES DAA2; NES KDHT1; NES KDHT3; NES KDHT5; NES KDHTMU3; NES KDHTMU5; NES KDHTQ6 (more information in table 1). The fastening screws for sandwich panels are completed with a washer consisting of a metal washer and EPDM seal. The fastening screws are made of austenitic stainless steel or a bimetal combination with drill bits made from galvanized/painted carbon steel.

The fastening screws and the corresponding connections are subject to tension and/or shear forces.

Examples of the fastening screws are shown in figure 1.

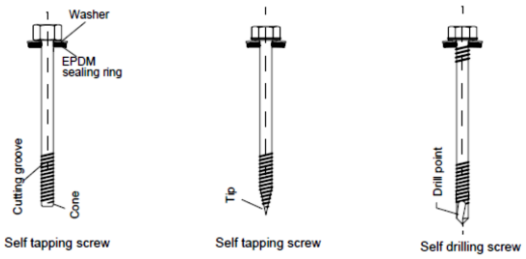


Figure 1: Fastening screws for sandwich panels.

Screw	Material (EN 10088)	Components		Washer [mm]
NES DAA2	Stainless steel (1.4301)	Steel	Timber	16,0
		Steel	Timber	19,0
		Steel	Timber	≥ 22,0
NES KDHT1	Stainless steel (1.4301)	Steel	Steel	≥ 16,0
NES KDHT3	Stainless steel (1.4301)	Steel	Steel	16,0
		Steel	Steel	19,0
		Steel	Steel	≥ 22,0
NES KDHT5	Stainless steel (1.4301)	Steel	Steel	16,0
		Steel	Steel	19,0
		Steel	Steel	≥ 22,0
NES KDHTMU3	Stainless steel (1.4567)	Steel	Steel	≥ 14,0
NES KDHTMU5	Stainless steel (1.4567)	Steel	Steel	≥ 14,0
NES KDHTQ6	Stainless steel (1.4301)	Steel	Steel	16,0
		Steel	Steel	19,0
		Steel	Steel	≥ 22,0

Table 1. Fastening screws covered by this ETA

The components identified in Table 1 have the geometrical characteristics and the corresponding sheet thicknesses as defined in the Annexes.

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

The ROSETER fasteners for Sandwich Panels are intended to be used for fastening sandwich panels to metal or timber substructures. The sandwich panel can either be used as a wall- or roof cladding or as a load bearing wall and roof element. The intended use comprises fastenings screws for sandwich panels and connections for indoor and outdoor applications.
Fastening screws which are intended to be used in external environments with ≥ C2 corrosion according to the standard EN ISO 12944-2 are made of stainless steel. Furthermore, the intended use comprises connections with predominantly static loads (e.g. wind loads, dead loads).

The fastening screws for sandwich panels are not intended for re-use.

The field of application of the screws is shown in Table 1.

The verification and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of at least 25 years provided that the fastening screws for sandwich panels are subject to appropriate installation.

The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer but are to be regarded only as a means for choosing the right product in relation to the expected economically reasonable working life of the works.

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

Characteristic	Assessment of characteristic
3.1 Mechanical resistance and stability (BWR 1)	
Shear resistance of the connection	See information in annex 4-18
Tension resistance of the connection	See information in annex 4-18
Design resistance in case of combined tension and shear forces (interaction)	Calculated according to equation in annex 2-3 with the combined tension and shear forces from annex 4-18.
Check of deformation capacity in case of constraining forces due to temperature	**No performance assessed**
Durability	See information in annex 4-18. The fastening screws are made of stainless steel intended to be used in external environments with ≥ C2 corrosion. **Sealing Washer: No performance assessed**
3.2 Safety in case of fire (BWR 2)	
Reaction to fire	ROSETER Fasteners for Sandwich Panels are classified as **Euroclass A1** in accordance with EN 13501-1 and Commission Delegated Regulation 2016/364 on the basis of EC Decision 96/603/EC (as amended) without the need for further testing.

3.8 Methods of verification

The assessment of the performance of ROSETER Fasteners for Sandwich Panels in relation to the applicable BWR's has been made in accordance with the European Assessment Document (EAD) no. EAD 330047-01-0602, Fastening Screws for Sandwich Panels.

3.9 General aspects related to the fitness for use of the product.

The European Technical Assessment is issued for the product based on agreed data/information, deposited with ETA-Danmark, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to ETA-Danmark before the changes are introduced. ETA-Danmark will decide if such changes affect the ETA and consequently the validity of the CE marking based on the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

The ROSETER Fasteners for Sandwich Panels are manufactured in accordance with the provisions of this European Technical Assessment using the manufacturing processes as identified in the inspection of the plant by the notified inspection body and laid down in the technical documentation.

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

4.1 AVCP system

According to the Decision 1998/214/EC of the European Commission, as amended by 2001/596/EC, the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) is **2+**.

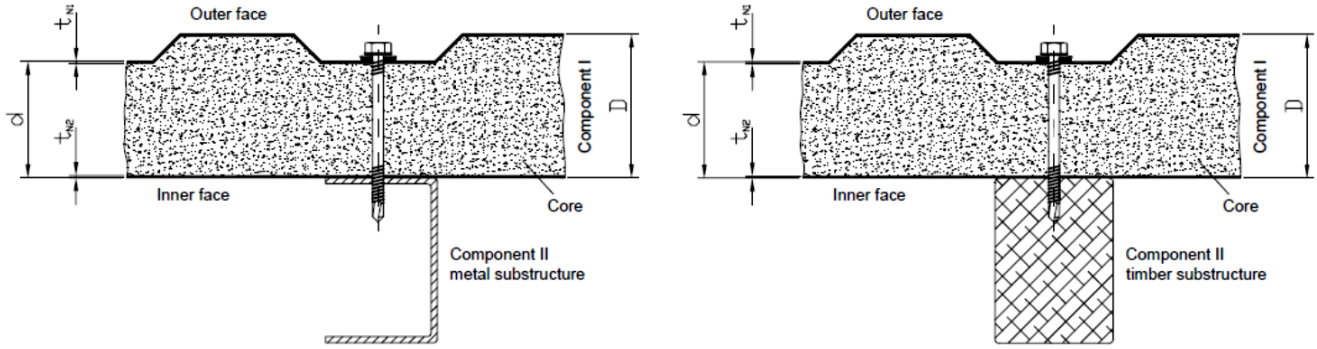
5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD.

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking.

Issued in Copenhagen on 2025-03-28 by

Thomas Bruun
Managing Director, ETA-Danmark

Examples of execution of a connection



Terms for materials

Fastener	Fastening screw
Washer	Sealing washer
Component I	Outer face and inner face of the sandwich panel
Component II	Substructure

Terms for dimensions

D or d	Thickness of sandwich panel
t_{N1}	Thickness of the outer face of sandwich panel
t_{N2}	Thickness of the inner face of sandwich panel
t_{II}	Thickness of metal substructure
l_{ef}	Effective screw-in length in timber substructure (without drill point)
d_{dp}	Pre-drill diameter of sandwich panel and substructure

Terms for performances

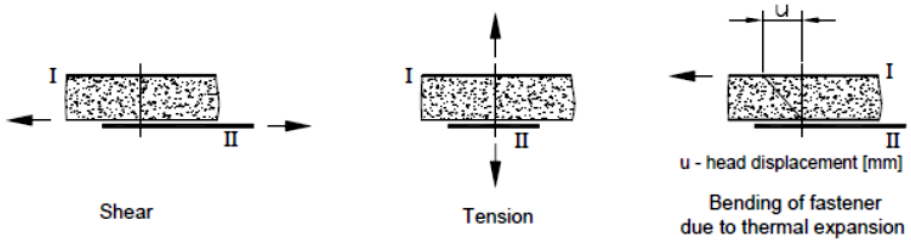
$V_{R,k}$	Characteristic value of shear resistance of the connection
$N_{R,k}$	Characteristic value of tension resistance of the connection
$V_{R,I,k}$	Characteristic value of shear resistance of the sandwich panel
$N_{R,I,k}$	Characteristic value of tension resistance (pull-through) of the sandwich panel
$N_{R,II,k}$	Characteristic value of tension resistance (pull-out) of the substructure
u	Maximum allowed displacement of the fastening screw head

Additionally for timber substructure the following terms are used:

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

Used terms in the Annexes	**Annex 1**
Fastening screws for sandwich panels	

Occurred loadings of a connection



Determination of Design Values

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

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

The characteristic values $N_{R,k}$ and $V_{R,k}$ are given in the Annexes. For intermediate dimension of sandwich panel or substructure the characteristic value of the thinner dimension is used.

The recommended partial safety factor γ_M = 1,33 is used, provided no partial safety factor is given in national regulations or national Annexes to Eurocode 3.

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

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

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

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

The design value of bending capacity of the fastening screw in case of thermal expansion of the outer face of sandwich panels corresponds to the maximum allowed displacement of the fastening screw head given in the Annexes.

Installation conditions

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

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

The fastening screws are fixed rectangular to the surface of the sandwich panel.

The sandwich panel and substructure are in contact to each other. The use of compression resistant thermal insulation strips up to a thickness of 3 mm is allowed.

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

Basics for the design	**Annex 2**
Fastening screws for sandwich panels	

Timber substructures

Characteristic values of tension and shear resistance of the connection for other k_{mod} or ρ_k as indicated in the Annexes can be determined as follows:

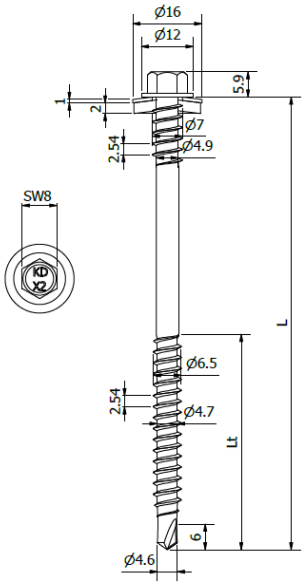
$$N_{R,k} = \min \left\{ \begin{matrix} N_{R,I,k} \\ F_{ax,Rk} * k_{mod} \end{matrix} \right. \qquad V_{R,k} = \min \left\{ \begin{matrix} V_{R,I,k} \\ F_{v,Rk} * k_{mod} \end{matrix} \right.$$

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

$F_{ax,Rk}$ indicates the characteristic value of tension resistance of timber substructure. The value has to be determined according to EN 1995-1-1:2004 + A1:2008, equation (8.40a) with $f_{ax,k}$ given in the corresponding Annex of the fastening screw.

$F_{v,Rk}$ indicates the characteristic shear resistance of timber substructure. The value has to be determined according to EN 1995-1-1:2004 + A1:2008, equation (8.9) with $M_{y,Rk}$ and $f_{h,k}$ given in the corresponding Annex of the fastening screw.

Specific notes to the Annexes	**Annex 3**
Fastening screws for sandwich panels	



Materials

Fastener:	Stainless steel 1.4301- EN 10088
Washer:	Stainless steel 1.4301- EN 10088 with vulcanized EPDM-seal
Component I:	S280GD to S350GD - EN 10346
Component II:	Timber – EN 14081

Drilling-capacity $\Sigma(t_I) \leq 2.00$ mm

Characteristics

$M_{y,Rk}$ = 14.20 Nm

$f_{ax,k}$ = 11.80 N/mm² (l_g = 39 mm, ρ_a = 350 kg/m³)

$f_{h,0,k}$ = 24.3 N/mm² (ρ_a = 350 kg/m³)

$f_{h,90,k}$ = 19.2 N/mm² (ρ_a = 350 kg/m³)

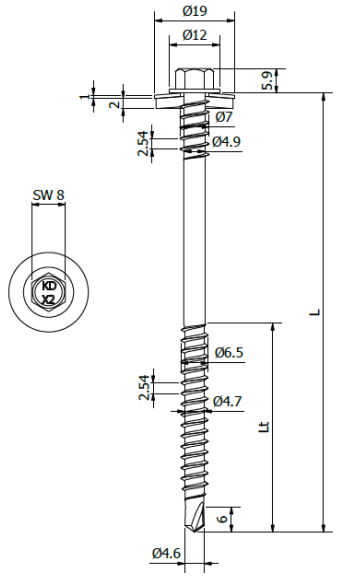
			Component II				
			Timber ≥ C24. $\rho_a \geq 350$ kg/m³				
			$L_g \geq 39$ mm	$L_g \geq 44$ mm	$L_g \geq 54$ mm	$L_g \geq 71$ mm	$L_g \geq 80$ mm
Component I S280 GD to S350 GD - 10346 t I [mm]	$V_{R,k}$ [kN]	0.40	0.81	0.81	0.81	0.81	0.81
		0.50	1.07[1)]	1.07[1)]	1.07[1)]	1.07[1)]	1.07[1)]
		0.55	1.25	1.25	1.25	1.25	1.25
		0.63	1.53	1.53	1.53	1.53	1.53
		0.75	1.96	1.96	1.96	1.96	1.96
		0.88	2.08	2.08	2.08	2.08	2.08
		1.00	2.19[1)]	2.19[1)]	2.19[1)]	2.19[1)]	2.19[1)]
	$N_{R,k,I}$ [kN]	0.40	1.60	1.60	1.60	1.60	1.60
		0.50	1.85[1)]	1.85[1)]	1.85[1)]	1.85[1)]	1.85[1)]
		0.55	2.12	2.12	2.12	2.12	2.12
		0.63	2.53	2.55	2.55	2.55	2.55
		0.75	2.53	2.91	3.19	3.19	3.19
		0.88	2.53	2.91	3.19	3.19	3.19
		1.00	2.53	2.91	3.19	3.19	3.19
	$N_{R,k,II}$		2.53	2.91	3.68	4.99	5.68
max. head displacement u [mm]		30	3.0				
		40	4.0				
		50	5.0				
		60	6.0				
		80	8.0				
		100	10.0				
		120	12.0				
		≥ 140	14.0				

[1)] If component I is made of S320GD to S350GD the values may be increased by 8.3%.

sandwich screw

NES DAA2 x L
with EPDM sealing washer Ø16.0 mm

Annex 4



Materials

Fastener:	Stainless steel 1.4301- EN 10088
Washer:	Stainless steel 1.4301- EN 10088 with vulcanized EPDM-seal
Component I:	S280GD to S350GD - EN 10346
Component II:	Timber – EN 14081

Drilling-capacity $\Sigma(t_I) \leq 2.00$ mm

Characteristics

$M_{y,Rk}$	=	14.20 Nm
$f_{ax,k}$	=	11.80 N/mm² (l_g = 39 mm, ρ_a = 350 kg/m³)
$f_{h,0,k}$	=	24.3 N/mm² (ρ_a = 350 kg/m³)
$f_{h,90,k}$	=	19.2 N/mm² (ρ_a = 350 kg/m³)

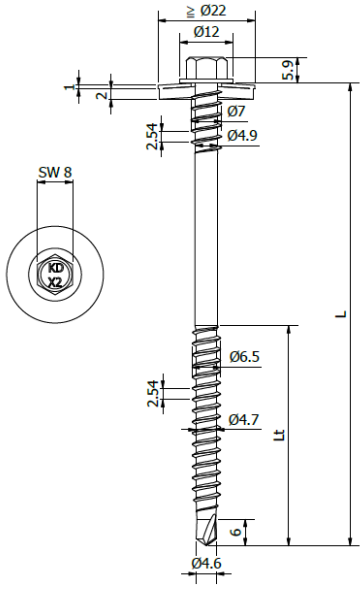
		Component II				
		Timber ≥ C24. $\rho_a \geq 350$ kg/m³				
		$L_g \geq 39$ mm	$L_g \geq 44$ mm	$L_g \geq 54$ mm	$L_g \geq 71$ mm	$L_g \geq 80$ mm
Component I S280 GD to S350 GD - 10346 t I [mm]	$V_{R,k}$ [kN]					
	0.40	0.81	0.81	0.81	0.81	0.81
	0.50	1.07[1)]	1.07[1)]	1.07[1)]	1.07[1)]	1.07[1)]
	0.55	1.25	1.25	1.25	1.25	1.25
	0.63	1.53	1.53	1.53	1.53	1.53
	0.75	1.96	1.96	1.96	1.96	1.96
	0.88	2.08	2.08	2.08	2.08	2.08
	1.00	2.19[1)]	2.19[1)]	2.19[1)]	2.19[1)]	2.19[1)]
	$N_{R,k,I}$ [kN]					
	0.40	1.68	1.68	1.68	1.68	1.68
	0.50	2.04[1)]	2.04[1)]	2.04[1)]	2.04[1)]	2.04[1)]
	0.55	2.42	2.42	2.42	2.42	2.42
	0.63	2.53	2.91	3.03	3.03	3.03
	0.75	2.53	2.91	3.68	3.94	3.94
	0.88	2.53	2.91	3.68	3.94	3.94
	1.00	2.53	2.91	3.68	3.94	3.94
	$N_{R,k,II}$	2.53	2.91	3.68	4.99	5.68
max. head displacement u [mm]	30	3.0				
	40	4.0				
	50	5.0				
	60	6.0				
	80	8.0				
	100	10.0				
	120	12.0				
	≥ 140	14.0				

[1)] If component I is made of S320GD to S350GD the values may be increased by 8.3%.

sandwich screw

NES DAA2 x L
with EPDM sealing washer Ø19.0 mm

Annex 5



Materials

Fastener:	Stainless steel 1.4301- EN 10088
Washer:	Stainless steel 1.4301- EN 10088 with vulcanized EPDM-seal
Component I:	S280GD to S350GD - EN 10346
Component II:	Timber – EN 14081

Drilling-capacity $\Sigma(t_I) \leq 2.00$ mm

Characteristics

$M_{y,Rk}$	=	14.20 Nm
$f_{ax,k}$	=	11.80 N/mm² (l_g = 39 mm, ρ_a = 350 kg/m³)
$f_{h,0,k}$	=	24.3 N/mm² (ρ_a = 350 kg/m³)
$f_{h,90,k}$	=	19.2 N/mm² (ρ_a = 350 kg/m³)

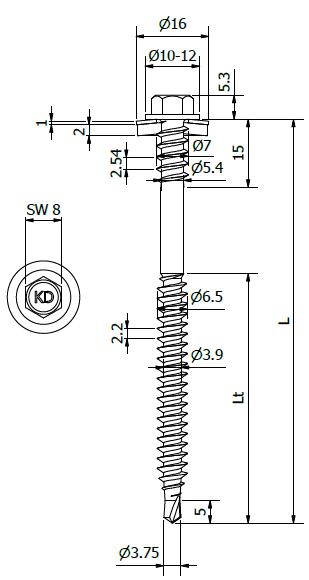
		Component II				
		Timber ≥ C24. $\rho_a \geq 350$ kg/m³				
		$L_g \geq 39$ mm	$L_g \geq 44$ mm	$L_g \geq 54$ mm	$L_g \geq 71$ mm	$L_g \geq 80$ mm
Component I S280 GD to S350 GD - 10346 t I [mm]	$V_{R,k}$ [kN]					
	0.40	0.81	0.81	0.81	0.81	0.81
	0.50	1.07[1)]	1.07[1)]	1.07[1)]	1.07[1)]	1.07[1)]
	0.55	1.25	1.25	1.25	1.25	1.25
	0.63	1.53	1.53	1.53	1.53	1.53
	0.75	1.96	1.96	1.96	1.96	1.96
	0.88	2.08	2.08	2.08	2.08	2.08
	1.00	2.19[1)]	2.19[1)]	2.19[1)]	2.19[1)]	2.19[1)]
	$N_{R,k,I}$ [kN]					
	0.40	1.84	1.84	1.84	1.84	1.84
	0.50	2.28[1)]	2.28[1)]	2.28[1)]	2.28[1)]	2.28[1)]
	0.55	2.53	2.62	2.62	2.62	2.62
	0.63	2.53	2.91	3.15	3.15	3.15
	0.75	2.53	2.91	3.68	3.96	3.96
	0.88	2.53	2.91	3.68	3.96	3.96
	1.00	2.53	2.91	3.68	3.96	3.96
	$N_{R,k,II}$	2.53	2.91	3.68	4.99	5.68
max. head displacement u [mm]	30	3.0				
	40	4.0				
	50	5.0				
	60	6.0				
	80	8.0				
	100	10.0				
	120	12.0				
	≥ 140	14.0				

[1)] If component I is made of S320GD to S350GD the values may be increased by 8.3%.

sandwich screw

NES DAA2 x L
with EPDM sealing washer ≥ Ø22.0 mm

Annex 6



Materials

Fastener:	Stainless steel 1.4301- EN 10088
Washer:	Stainless steel 1.4301- EN 10088 with vulcanized EPDM-seal
Component I:	S280GD to S350GD - EN 10346
Component II:	S280GD to S350GD - EN 10346 S235 to S355 – EN 10025-2

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

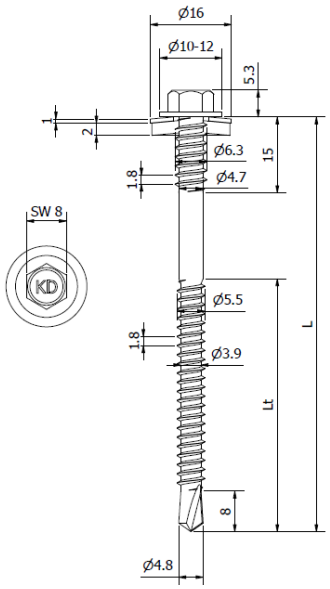
			Component II S280 GD to S350 GD S235 to S355 t II [mm]			
			1.50		2.00	
Component I S280 GD to S350 GD - 10346 t I [mm]	$V_{R,k}$ [kN]	0.40	0.90	-	0.90	-
		0.50	1.72[1)]	-	1.72[1)]	-
		0.55	1.94[1)]	-	1.94[1)]	-
		0.63	2.29[1)]	-	2.29[1)]	-
		0.75	2.81[1)]	-	2.81[1)]	-
		0.88	3.47[1)]	-	3.47[1)]	-
		1.00	4.08[1)]	-	4.08[1)]	-
	$N_{R,k}$ [kN]	0.40	1.81	-	1.81	-
		0.50	2.28[1)]	-	2.28[1)]	-
		0.55	2.70[1)]	-	2.70[1)]	-
		0.63	3.38[1)]	-	3.38[1)]	-
		0.75	4.40[1)]	-	4.40[1)]	-
		0.88	4.40[1)]	-	4.40[1)]	-
		1.00	4.40[1)]	-	4.40[1)]	-
	$N_{R,k,II}$		5.03	-	5.03	-
max. head displacement u [mm]		40	6.0		6.0	
		50	7.5		7.5	
		60	9.0		9.0	
		80	12.0		12.0	
		100	15.0		15.0	
		120	18.0		18.0	
		≥ 140	18.0		18.0	

[1)] if component I and component II are made of S320GD to S350GD the values may be increased by 8.3%.

sandwich screw

NES KDHT1 x L
with EPDM sealing washer ≥ Ø16.0 mm

Annex 7



Materials

Fastener:	Stainless steel 1.4301- EN 10088
Washer:	Stainless steel 1.4301- EN 10088 with vulcanized EPDM-seal
Component I:	S280GD to S350GD - EN 10346
Component II:	S280GD to S350GD - EN 10346 S235 to S355 – EN 10025-2

Drilling-capacity $\Sigma(t_I + t_{II}) \leq 6.50$ mm

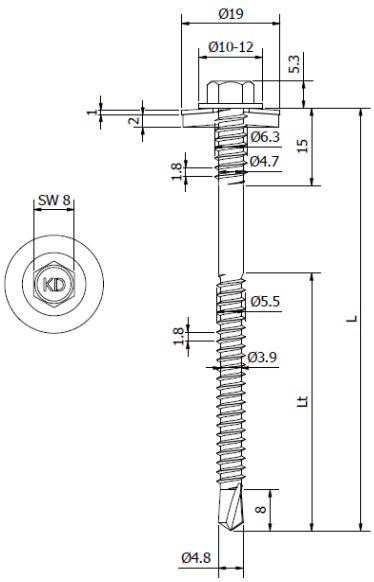
			Component II					
			S280 GD to S350 GD – 10346 S235 to S355 – EN 10025-2 t II [mm]					
			1.50	2.00	2.50	3.00	4.00	5.00
Component I S280 GD to S350 GD - 10346 t I [mm]	$V_{R,k}$ [kN]	0.40	1.01 -	1.01 -	1.01 -	1.01 -	1.01 -	1.01 -
		0.50	1.28[1] -	1.28[1] -	1.28[1] -	1.28[1] -	1.28[1] -	1.28[1] -
		0.55	1.48 -	1.48 -	1.48 -	1.48 -	1.48 -	1.48 -
		0.63	1.79 -	1.79 -	1.79 -	1.79 -	1.79 -	1.79 -
		0.75	2.26 -	2.26 -	2.26 -	2.26 -	2.26 -	2.26 -
		0.88	2.75 -	2.75 -	2.75 -	2.75 -	2.75 -	2.75 -
		1.00	3.21[1] -	3.21[1] -	3.21[1] -	3.21[1] -	3.21[1] -	3.21[1] -
	$N_{R,k}$ [kN]	0.40	1.11 -	1.11 -	1.11 -	1.11 -	1.11 -	1.11 -
		0.50	1.67[1] -	1.67 -	1.67 -	1.67 -	1.67 -	1.67 -
		0.55	1.82 -	2.14 -	2.14 -	2.14 -	2.14 -	2.14 -
		0.63	1.82 -	2.77 -	2.89 -	2.89 -	2.89 -	2.89 -
		0.75	1.82 -	2.77 -	3.88 -	4.02 -	4.02 -	4.02 -
		0.88	1.82 -	2.77 -	3.88 -	4.02 -	4.02 -	4.02 -
		1.00	1.82 -	2.77 -	3.88 -	4.02 -	4.02 -	4.02 -
	$N_{R,k,II}$		1.82 -	2.77 -	3.88 -	4.98[1] -	5.30[1] -	5.62[1] -
max. head displacement u [mm]		30	4.0	2.0	2.0	2.0	2.0	2.0
		40	5.3	2.7	2.7	2.7	2.7	2.7
		50	6.7	3.3	3.3	3.3	3.3	3.3
		60	8.0	4.0	4.0	4.0	4.0	4.0
		80	9.3	4.7	4.7	4.7	4.7	4.7
		100	10.7	5.3	5.3	5.3	5.3	5.3
		120	13.3	6.7	6.7	6.7	6.7	6.7
		≥ 140	16.0	8.0	8.0	8.0	8.0	8.0

[1] if component I and component II are made of S320GD to S350GD the values may be increased by 8.3%.

sandwich screw

NES KDHT3 x L
with EPDM sealing washer Ø16.0 mm

Annex 8



Materials

Fastener:	Stainless steel 1.4301- EN 10088
Washer:	Stainless steel 1.4301- EN 10088 with vulcanized EPDM-seal
Component I:	S280GD to S350GD - EN 10346
Component II:	S280GD to S350GD - EN 10346 S235 to S355 – EN 10025-2

Drilling-capacity $\Sigma(t_I + t_{II}) \leq 6.50$ mm

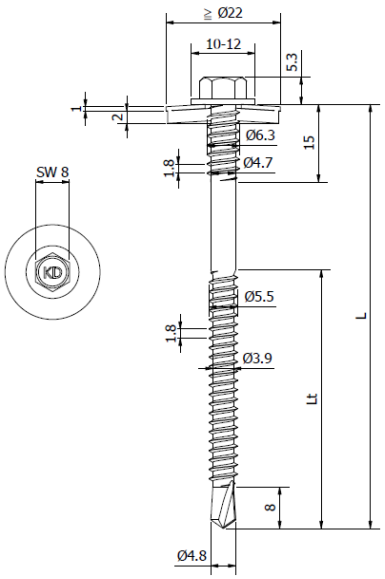
			Component II					
			S280 GD to S350 GD – 10346 S235 to S355 – EN 10025-2 t II [mm]					
			1.50	2.00	2.50	3.00	4.00	5.00
Component I S280 GD to S350 GD - 10346 t I [mm]	$V_{R,k}$ [kN]	0.40	1.01 -	1.01 -	1.01 -	1.01 -	1.01 -	1.01 -
		0.50	1.28[1] -	1.28[1] -	1.28[1] -	1.28[1] -	1.28[1] -	1.28[1] -
		0.55	1.48 -	1.48 -	1.48 -	1.48 -	1.48 -	1.48 -
		0.63	1.79 -	1.79 -	1.79 -	1.79 -	1.79 -	1.79 -
		0.75	2.26 -	2.26 -	2.26 -	2.26 -	2.26 -	2.26 -
		0.88	2.75 -	2.75 -	2.75 -	2.75 -	2.75 -	2.75 -
		1.00	3.21[1] -	3.21[1] -	3.21[1] -	3.21[1] -	3.21[1] -	3.21[1] -
	$N_{R,k}$ [kN]	0.40	1.57	1.57	1.57	1.57	1.57	1.57
		0.50	1.57[1]	1.57[1]	1.57[1]	1.57[1]	1.57[1]	1.57[1]
		0.55	1.82	2.11	2.11	2.11	2.11	2.11
		0.63	1.82	2.77	2.96	2.96	2.96	2.96
		0.75	1.82	2.77	3.88	4.25	4.25	4.25
		0.88	1.82	2.77	3.88	4.25	4.25	4.25
		1.00	1.82	2.77	3.88	4.25	4.25	4.25
	$N_{R,k,II}$		1.82	2.77	3.88	4.98[1]	5.30[1]	5.62[1]
max. head displacement u [mm]		30	4.0	2.0	2.0	2.0	2.0	2.0
		40	5.3	2.7	2.7	2.7	2.7	2.7
		50	6.7	3.3	3.3	3.3	3.3	3.3
		60	8.0	4.0	4.0	4.0	4.0	4.0
		80	9.3	4.7	4.7	4.7	4.7	4.7
		100	10.7	5.3	5.3	5.3	5.3	5.3
		120	13.3	6.7	6.7	6.7	6.7	6.7
		≥ 140	16.0	8.0	8.0	8.0	8.0	8.0

[1] if component I and component II are made of S320GD to S350GD the values may be increased by 8.3%.

sandwich screw

NES KDHT3 x L
with EPDM sealing washer Ø19.0 mm

Annex 9



Materials

Fastener:	Stainless steel 1.4301- EN 10088
Washer:	Stainless steel 1.4301- EN 10088 with vulcanized EPDM-seal
Component I:	S280GD to S350GD - EN 10346
Component II:	S280GD to S350GD - EN 10346 S235 to S355 – EN 10025-2

Drilling-capacity $\Sigma(t_I + t_{II}) \leq 6.50$ mm

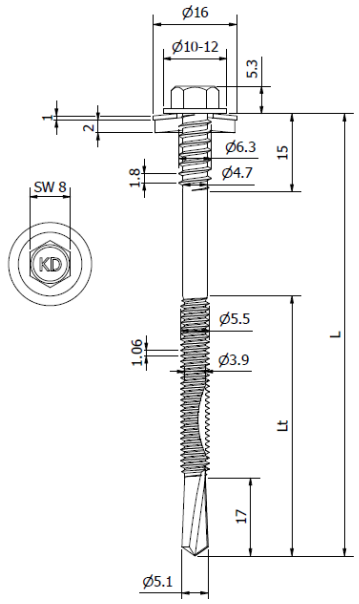
			Component II					
			S280 GD to S350 GD – 10346 S235 to S355 – EN 10025-2 t II [mm]					
			1.50	2.00	2.50	3.00	4.00	5.00
Component I S280 GD to S350 GD - 10346 t I [mm]	$V_{R,k}$ [kN]	0.40	1.01 -	1.01 -	1.01 -	1.01 -	1.01 -	1.01 -
		0.50	1.28[1] -	1.28[1] -	1.28[1] -	1.28[1] -	1.28[1] -	1.28[1] -
		0.55	1.48 -	1.48 -	1.48 -	1.48 -	1.48 -	1.48 -
		0.63	1.79 -	1.79 -	1.79 -	1.79 -	1.79 -	1.79 -
		0.75	2.26 -	2.26 -	2.26 -	2.26 -	2.26 -	2.26 -
		0.88	2.75 -	2.75 -	2.75 -	2.75 -	2.75 -	2.75 -
		1.00	3.21[1] -	3.21[1] -	3.21[1] -	3.21[1] -	3.21[1] -	3.21[1] -
	$N_{R,k}$ [kN]	0.40	1.82	1.89	1.89	1.89	1.89	1.89
		0.50	1.82[1]	2.16[1]	2.16[1]	2.16[1]	2.16[1]	2.16[1]
		0.55	1.82	2.68	2.68	2.68	2.68	2.68
		0.63	1.82	2.77	3.51	3.51	3.51	3.51
		0.75	1.82	2.77	3.88	4.76	4.76	4.76
		0.88	1.82	2.77	3.88	4.76	4.76	4.76
		1.00	1.82	2.77	3.88	4.76	4.76	4.76
	$N_{R,k,II}$		1.82	2.77	3.88	4.98[1]	5.30[1]	5.62[1]
max. head displacement u [mm]		30	4.0	2.0	2.0	2.0	2.0	2.0
		40	5.3	2.7	2.7	2.7	2.7	2.7
		50	6.7	3.3	3.3	3.3	3.3	3.3
		60	8.0	4.0	4.0	4.0	4.0	4.0
		80	9.3	4.7	4.7	4.7	4.7	4.7
		100	10.7	5.3	5.3	5.3	5.3	5.3
		120	13.3	6.7	6.7	6.7	6.7	6.7
		≥ 140	16.0	8.0	8.0	8.0	8.0	8.0

[1] if component I and component II are made of S320GD to S350GD the values may be increased by 8.3%.

sandwich screw

NES KDHT3 x L
with EPDM sealing washer Ø22.0 mm

Annex 10



Materials

Fastener:	Stainless steel 1.4301- EN 10088
Washer:	Stainless steel 1.4301- EN 10088 with vulcanized EPDM-seal
Component I:	S280GD to S350GD - EN 10346
Component II:	S280GD to S350GD - EN 10346 S235 to S355 – EN 10025-2

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

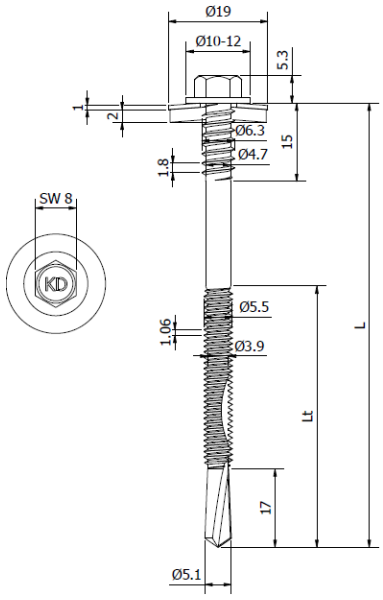
			Component II						
			S280 GD to S350 GD – 10346 S235 to S355 – EN 10025-2 t II [mm]						
			3.00	4.00	5.00	6.00	8.00	10.00	12.00
Component I S280 GD to S350 GD - 10346 t I [mm]	$V_{R,k}$ [kN]	0.40	1.02 -	1.02 -	1.02 -	1.02 -	1.02 -	1.02 -	1.02 -
		0.50	1.38[1] -	1.38[1] -	1.38[1] -	1.38[1] -	1.38[1] -	1.38[1] -	1.38[1] -
		0.55	1.69 -	1.69 -	1.69 -	1.69 -	1.69 -	1.69 -	1.69 -
		0.63	2.18 -	2.18 -	2.18 -	2.18 -	2.18 -	2.18 -	2.18 -
		0.75	2.92 -	2.92 -	2.92 -	2.92 -	2.92 -	2.92 -	2.92 -
		0.88	3.37 -	3.37 -	3.37 -	3.37 -	3.37 -	3.37 -	3.37 -
		1.00	3.79[1] -	3.79[1] -	3.79[1] -	3.79[1] -	3.79[1] -	3.79[1] -	3.79[1] -
	$N_{R,k}$ [kN]	0.40	1.52 -	1.52 -	1.52 -	1.52 -	1.52 -	1.52 -	1.52 -
		0.50	1.68[1] -	1.68[1] -	1.68[1] -	1.68[1] -	1.68[1] -	1.68[1] -	1.68[1] -
		0.55	2.04 -	2.04 -	2.04 -	2.04 -	2.04 -	2.04 -	2.04 -
		0.63	2.62 -	2.62 -	2.62 -	2.62 -	2.62 -	2.62 -	2.62 -
		0.75	3.48 -	3.48 -	3.48 -	3.48 -	3.48 -	3.48 -	3.48 -
		0.88	3.48 -	3.48 -	3.48 -	3.48 -	3.48 -	3.48 -	3.48 -
		1.00	3.48 -	3.48 -	3.48 -	3.48 -	3.48 -	3.48 -	3.48 -
		$N_{R,k,II}$	4.56[1] -	5.88[1] -	6.71[1] -	7.61[1] -	7.61[1] -	7.61[1] -	7.61[1] -
max. head displacement u [mm]		30	2.0	2.0	2.0	2.0	2.0	2.0	2.0
		40	2.7	2.7	2.7	2.7	2.7	2.7	2.7
		50	3.3	3.3	3.3	3.3	3.3	3.3	3.3
		60	4.0	4.0	4.0	4.0	4.0	4.0	4.0
		80	4.7	4.7	4.7	4.7	4.7	4.7	4.7
		100	5.3	5.3	5.3	5.3	5.3	5.3	5.3
		120	6.7	6.7	6.7	6.7	6.7	6.7	6.7
		≥ 140	8.0	8.0	8.0	8.0	8.0	8.0	8.0

[1] if component I and component II are made of S320GD to S350GD the values may be increased by 8.3%.

sandwich screw

NES KDHT5 x L
with EPDM sealing washer Ø16.0 mm

Annex 11



Materials

Fastener:	Stainless steel 1.4301- EN 10088
Washer:	Stainless steel 1.4301- EN 10088 with vulcanized EPDM-seal
Component I:	S280GD to S350GD - EN 10346
Component II:	S280GD to S350GD - EN 10346 S235 to S355 – EN 10025-2

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

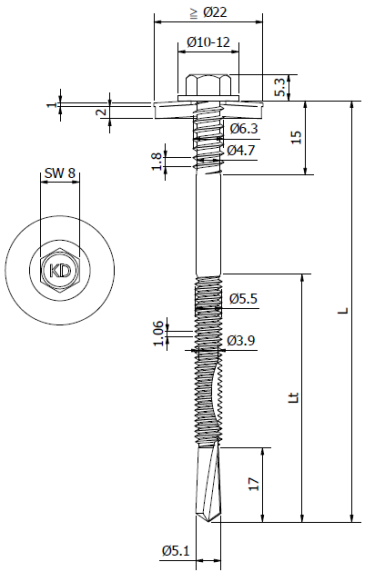
			Component II						
			S280 GD to S350 GD – 10346 S235 to S355 – EN 10025-2 t II [mm]						
			3.00	4.00	5.00	6.00	8.00	10.00	12.00
Component I S280 GD to S350 GD - 10346 t I [mm]	$V_{R,k}$ [kN]	0.40	1.02 -	1.02 -	1.02 -	1.02 -	1.02 -	1.02 -	1.02 -
		0.50	1.38[1] -	1.38[1] -	1.38[1] -	1.38[1] -	1.38[1] -	1.38[1] -	1.38[1] -
		0.55	1.69 -	1.69 -	1.69 -	1.69 -	1.69 -	1.69 -	1.69 -
		0.63	2.18 -	2.18 -	2.18 -	2.18 -	2.18 -	2.18 -	2.18 -
		0.75	2.92 -	2.92 -	2.92 -	2.92 -	2.92 -	2.92 -	2.92 -
		0.88	3.37 -	3.37 -	3.37 -	3.37 -	3.37 -	3.37 -	3.37 -
		1.00	3.79[1] -	3.79[1] -	3.79[1] -	3.79[1] -	3.79[1] -	3.79[1] -	3.79[1] -
	$N_{R,k}$ [kN]	0.40	1.79	1.79	1.79	1.79	1.79	1.79	1.79
		0.50	1.96[1]	1.96[1]	1.96[1]	1.96[1]	1.96[1]	1.96[1]	1.96[1]
		0.55	2.38	2.38	2.38	2.38	2.38	2.38	2.38
		0.63	3.05	3.05	3.05	3.05	3.05	3.05	3.05
		0.75	4.06	4.06	4.06	4.06	4.06	4.06	4.06
		0.88	4.06	4.06	4.06	4.06	4.06	4.06	4.06
		1.00	4.06	4.06	4.06	4.06	4.06	4.06	4.06
	$N_{R,k,II}$		4.56[1] -	5.88[1] -	6.71[1] -	7.61[1] -	7.61[1] -	7.61[1] -	7.61[1] -
max. head displacement u [mm]		30	2.0	2.0	2.0	2.0	2.0	2.0	2.0
		40	2.7	2.7	2.7	2.7	2.7	2.7	2.7
		50	3.3	3.3	3.3	3.3	3.3	3.3	3.3
		60	4.0	4.0	4.0	4.0	4.0	4.0	4.0
		80	4.7	4.7	4.7	4.7	4.7	4.7	4.7
		100	5.3	5.3	5.3	5.3	5.3	5.3	5.3
		120	6.7	6.7	6.7	6.7	6.7	6.7	6.7
		≥ 140	8.0	8.0	8.0	8.0	8.0	8.0	8.0

[1] if component I and component II are made of S320GD to S350GD the values may be increased by 8.3%.

sandwich screw

NES KDHT5 x L
with EPDM sealing washer Ø19.0 mm

Annex 12



Materials

Fastener:	Stainless steel 1.4301- EN 10088
Washer:	Stainless steel 1.4301- EN 10088 with vulcanized EPDM-seal
Component I:	S280GD to S350GD - EN 10346
Component II:	S280GD to S350GD - EN 10346 S235 to S355 – EN 10025-2

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

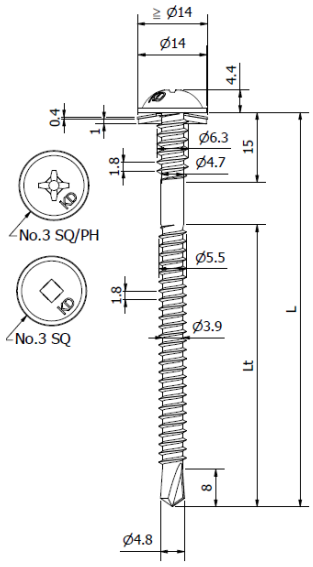
			Component II						
			S280 GD to S350 GD – 10346 S235 to S355 – EN 10025-2 t II [mm]						
			3.00	4.00	5.00	6.00	8.00	10.00	12.00
Component I S280 GD to S350 GD - 10346 t I [mm]	$V_{R,k}$ [kN]	0.40	1.02 -	1.02 -	1.02 -	1.02 -	1.02 -	1.02 -	1.02 -
		0.50	1.38[1] -	1.38[1] -	1.38[1] -	1.38[1] -	1.38[1] -	1.38[1] -	1.38[1] -
		0.55	1.69 -	1.69 -	1.69 -	1.69 -	1.69 -	1.69 -	1.69 -
		0.63	2.18 -	2.18 -	2.18 -	2.18 -	2.18 -	2.18 -	2.18 -
		0.75	2.92 -	2.92 -	2.92 -	2.92 -	2.92 -	2.92 -	2.92 -
		0.88	3.37 -	3.37 -	3.37 -	3.37 -	3.37 -	3.37 -	3.37 -
		1.00	3.79[1] -	3.79[1] -	3.79[1] -	3.79[1] -	3.79[1] -	3.79[1] -	3.79[1] -
	$N_{R,k}$ [kN]	0.40	2.07	2.07	2.07	2.07	2.07	2.07	2.07
		0.50	2.26[1]	2.26[1]	2.26[1]	2.26[1]	2.26[1]	2.26[1]	2.26[1]
		0.55	2.72	2.72	2.72	2.72	2.72	2.72	2.72
		0.63	3.46	3.46	3.46	3.46	3.46	3.46	3.46
		0.75	4.56	4.57	4.57	4.57	4.57	4.57	4.56
		0.88	4.56	4.57	4.57	4.57	4.57	4.57	4.56
		1.00	4.56	4.57	4.57	4.57	4.57	4.57	4.56
	$N_{R,k,II}$		4.56[1] -	5.88[1] -	6.71[1] -	7.61[1] -	7.61[1] -	7.61[1] -	7.61[1] -
max. head displacement u [mm]		30	2.0	2.0	2.0	2.0	2.0	2.0	2.0
		40	2.7	2.7	2.7	2.7	2.7	2.7	2.7
		50	3.3	3.3	3.3	3.3	3.3	3.3	3.3
		60	4.0	4.0	4.0	4.0	4.0	4.0	4.0
		80	4.7	4.7	4.7	4.7	4.7	4.7	4.7
		100	5.3	5.3	5.3	5.3	5.3	5.3	5.3
		120	6.7	6.7	6.7	6.7	6.7	6.7	6.7
		≥ 140	8.0	8.0	8.0	8.0	8.0	8.0	8.0

[1] if component I and component II are made of S320GD to S350GD the values may be increased by 8.3%.

sandwich screw

NES KDHT5 x L
with EPDM sealing washer Ø22.0 mm

Annex 13



Materials

Fastener:	Stainless steel 1.4567- EN 10088
Washer:	Stainless steel 1.4301- EN 10088 with vulcanized EPDM-seal
Component I:	S280GD to S350GD - EN 10346
Component II:	S280GD to S350GD - EN 10346 S235 to S355 – EN 10025-2

Drilling-capacity $\Sigma(t_I + t_{II}) \leq 6.50$ mm

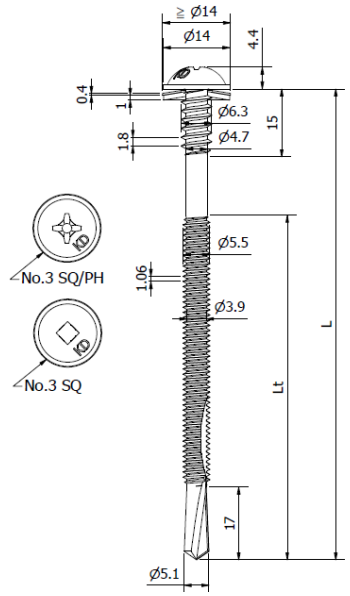
			Component II					
			S280 GD to S350 GD – 10346 S235 to S355 – EN 10025-2 t II [mm]					
			1.50	2.00	2.50	3.00	4.00	5.00
Component I S280 GD to S350 GD - 10346 t I [mm]	$V_{R,k}$ [kN]	0.40	1.01 -	1.01 -	1.01 -	1.01 -	1.01 -	1.01 -
		0.50	1.28[1] -	1.28[1] -	1.28[1] -	1.28[1] -	1.28[1] -	1.28[1] -
		0.55	1.48 -	1.48 -	1.48 -	1.48 -	1.48 -	1.48 -
		0.63	1.79 -	1.79 -	1.79 -	1.79 -	1.79 -	1.79 -
		0.75	2.26 -	2.26 -	2.26 -	2.26 -	2.26 -	2.26 -
		0.88	2.75 -	2.75 -	2.75 -	2.75 -	2.75 -	2.75 -
		1.00	3.21[1] -	3.21[1] -	3.21[1] -	3.21[1] -	3.21[1] -	3.21[1] -
	$N_{R,k}$ [kN]	0.40	0.96 -	0.96 -	0.96 -	0.96 -	0.96 -	0.96 -
		0.50	1.27[1] -	1.27[1] -	1.27[1] -	1.27[1] -	1.27[1] -	1.27[1] -
		0.55	1.58 -	1.58 -	1.58 -	1.58 -	1.58 -	1.58 -
		0.63	1.82 -	2.08 -	2.08 -	2.08 -	2.08 -	2.08 -
		0.75	1.82 -	2.77 -	2.83 -	2.83 -	2.83 -	2.83 -
		0.88	1.82 -	2.77 -	2.83 -	2.83 -	2.83 -	2.83 -
		1.00	1.82 -	2.77 -	2.83 -	2.83 -	2.83 -	2.83 -
		$N_{R,k,II}$	1.82 -	2.77[1] -	3.88[1] -	4.98[1] -	5.30[1] -	5.62[1] -
max. head displacement u [mm]		30	4.0	2.0	2.0	2.0	2.0	2.0
		40	5.3	2.7	2.7	2.7	2.7	2.7
		50	6.7	3.3	3.3	3.3	3.3	3.3
		60	8.0	4.0	4.0	4.0	4.0	4.0
		80	9.3	4.7	4.7	4.7	4.7	4.7
		100	10.7	5.3	5.3	5.3	5.3	5.3
		120	13.3	6.7	6.7	6.7	6.7	6.7
		≥ 140	16.0	8.0	8.0	8.0	8.0	8.0

[1] if component I and component II are made of S320GD to S350GD the values may be increased by 8.3%.

sandwich screw

NES KDHTMU3 x L
with EPDM sealing washer ≥ Ø14.0 mm

Annex 14



Materials

Fastener:	Stainless steel 1.4567- EN 10088
Washer:	Stainless steel 1.4301- EN 10088 with vulcanized EPDM-seal
Component I:	S280GD to S350GD - EN 10346
Component II:	S280GD to S350GD - EN 10346 S235 to S355 – EN 10025-2

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

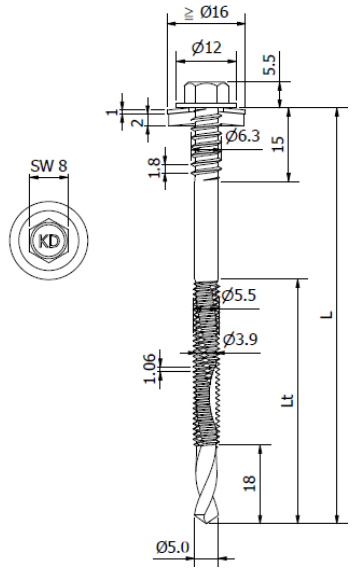
			Component II						
			S280 GD to S350 GD – 10346 S235 to S355 – EN 10025-2 t II [mm]						
			3.00	4.00	5.00	6.00	8.00	10.00	12.00
Component I S280 GD to S350 GD - 10346 t I [mm]	$V_{R,k}$ [kN]	0.40	1.02 -	1.02 -	1.02 -	1.02 -	1.02 -	1.02 -	1.02 -
		0.50	1.38[1] -	1.38[1] -	1.38[1] -	1.38[1] -	1.38[1] -	1.38[1] -	1.38[1] -
		0.55	1.69 -	1.69 -	1.69 -	1.69 -	1.69 -	1.69 -	1.69 -
		0.63	2.18 -	2.18 -	2.18 -	2.18 -	2.18 -	2.18 -	2.18 -
		0.75	2.92 -	2.92 -	2.92 -	2.92 -	2.92 -	2.92 -	2.92 -
		0.88	3.37 -	3.37 -	3.37 -	3.37 -	3.37 -	3.37 -	3.37 -
		1.00	3.79[1] -	3.79[1] -	3.79[1] -	3.79[1] -	3.79[1] -	3.79[1] -	3.79[1] -
	$N_{R,k}$ [kN]	0.40	1.01 -	1.01 -	1.01 -	1.01 -	1.01 -	1.01 -	1.01 -
		0.50	1.20[1] -	1.20[1] -	1.20[1] -	1.20[1] -	1.20[1] -	1.20[1] -	1.20[1] -
		0.55	1.49 -	1.49 -	1.49 -	1.49 -	1.49 -	1.49 -	1.49 -
		0.63	1.96 -	1.96 -	1.96 -	1.96 -	1.96 -	1.96 -	1.96 -
		0.75	2.66 -	2.66 -	2.66 -	2.66 -	2.66 -	2.66 -	2.66 -
		0.88	2.66 -	2.66 -	2.66 -	2.66 -	2.66 -	2.66 -	2.66 -
		1.00	2.66 -	2.66 -	2.66 -	2.66 -	2.66 -	2.66 -	2.66 -
		$N_{R,k,II}$	4.56[1] -	5.88[1] -	6.71[1] -	7.61[1] -	7.61[1] -	7.61[1] -	7.61[1] -
max. head displacement u [mm]		30	2.0	2.0	2.0	2.0	2.0	2.0	2.0
		40	2.7	2.7	2.7	2.7	2.7	2.7	2.7
		50	3.3	3.3	3.3	3.3	3.3	3.3	3.3
		60	4.0	4.0	4.0	4.0	4.0	4.0	4.0
		80	4.7	4.7	4.7	4.7	4.7	4.7	4.7
		100	5.3	5.3	5.3	5.3	5.3	5.3	5.3
		120	6.7	6.7	6.7	6.7	6.7	6.7	6.7
		≥ 140	8.0	8.0	8.0	8.0	8.0	8.0	8.0

[1] if component I and component II are made of S320GD to S350GD the values may be increased by 8.3%.

sandwich screw

NES KDHTMU5 x L
with EPDM sealing washer ≥ Ø14.0 mm

Annex 15



Materials

Fastener:	Stainless steel 1.4301- EN 10088
Washer:	Stainless steel 1.4301- EN 10088 with vulcanized EPDM-seal
Component I:	S280GD to S350GD - EN 10346
Component II:	S280GD to S350GD - EN 10346 S235 to S355 – EN 10025-2

Drilling-capacity $\Sigma(t_I + t_{II}) \leq 16.00$ mm

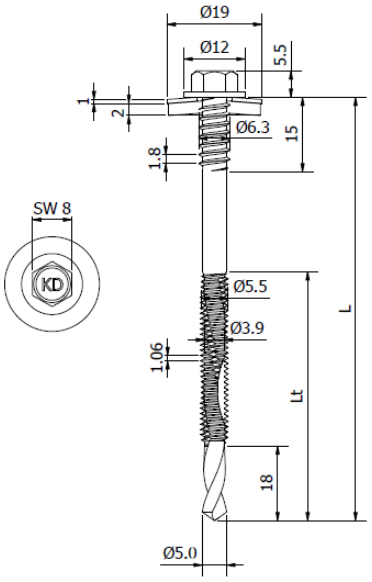
		Component II S280 GD to S350 GD – 10346 S235 to S355 – EN 10025-2 t II [mm]							
		3.00	4.00	5.00	6.00	8.00	10.00	12.00	15.00
Component I S280 GD to S350 GD - 10346 t I [mm]	$V_{R,k}$ [kN]								
	0.40	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
	0.50	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
	0.55	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
	0.63	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
	0.75	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94
	0.88	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
	1.00	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
	$N_{R,k}$ [kN]								
	0.40	1.71	1.71	1.71	1.71	1.71	1.71	1.71	1.71
	0.50	2.30[1)]	2.30[1)]	2.30[1)]	2.30[1)]	2.30[1)]	2.30[1)]	2.30[1)]	2.30[1)]
	0.55	2.91[1)]	2.91[1)]	2.91[1)]	2.91[1)]	2.91[1)]	2.91[1)]	2.91[1)]	2.91[1)]
	0.63	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13
	0.75	3.77[1)]	3.89	3.89	3.89	3.89	3.89	3.89	3.89
	0.88	3.77[1)]	4.11	4.11	4.11	4.11	4.11	4.11	4.11
	1.00	3.77[1)]	4.31	4.31	4.31	4.31	4.31	4.31	4.31
	$N_{R.k.II}$	3.77[1)]	4.73[1)]	5.68[1)]	6.09[1)]	6.89[1)]	7.97[1)]	7.97[1)]	7.97[1)]
max. head displacement u [mm]									
	40	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	7.5	7.5	6.0	6.0	6.0	6.0	6.0	6.0
	60	9.0	9.0	7.5	7.5	7.5	7.5	7.5	7.5
	80	12.0	12.0	10.0	10.0	10.0	10.0	10.0	10.0
	100	15.0	15.0	12.5	12.5	12.5	12.5	12.5	12.5
	120	18.0	18.0	15.0	15.0	15.0	15.0	15.0	15.0
	≥ 140	21.0	21.0	17.5	17.5	17.5	17.5	17.5	17.5

[1)] if component I and component II are made of S320GD to S350GD the values may be increased by 8.3%.

sandwich screw

NES KDHTQ6 x L
with EPDM sealing washer Ø16.0 mm

Annex 16



Materials

Fastener:	Stainless steel 1.4301- EN 10088
Washer:	Stainless steel 1.4301- EN 10088 with vulcanized EPDM-seal
Component I:	S280GD to S350GD - EN 10346
Component II:	S280GD to S350GD - EN 10346 S235 to S355 – EN 10025-2

Drilling-capacity $\Sigma(t_I + t_{II}) \leq 16.00$ mm

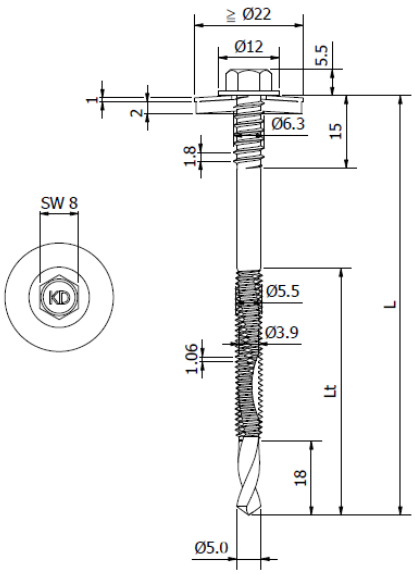
		Component II S280 GD to S350 GD – 10346 S235 to S355 – EN 10025-2 t II [mm]							
		3.00	4.00	5.00	6.00	8.00	10.00	12.00	15.00
Component I S280 GD to S350 GD - 10346 t I [mm]	$V_{R,k}$ [kN]								
	0.40	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
	0.50	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
	0.55	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
	0.63	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
	0.75	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94
	0.88	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
	1.00	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
	$N_{R,k}$ [kN]								
	0.40	1.79	1.79	1.79	1.79	1.79	1.79	1.79	1.79
	0.50	2.30[1)]	2.30[1)]	2.30[1)]	2.30[1)]	2.30[1)]	2.30[1)]	2.30[1)]	2.30[1)]
	0.55	2.91[1)]	2.91[1)]	2.91[1)]	2.91[1)]	2.91[1)]	2.91[1)]	2.91[1)]	2.91[1)]
	0.63	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13
	0.75	3.77	4.06	4.06	4.06	4.06	4.06	4.06	4.06
	0.88	3.77	4.06	4.06	4.06	4.06	4.06	4.06	4.06
	1.00	3.77	4.06	4.06	4.06	4.06	4.06	4.06	4.06
	$N_{R,k,II}$	3.77[1)]	4.73[1)]	5.68[1)]	6.09[1)]	6.89[1)]	7.97[1)]	7.97[1)]	7.97[1)]
max. head displacement u [mm]									
	40	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	7.5	7.5	6.0	6.0	6.0	6.0	6.0	6.0
	60	9.0	9.0	7.5	7.5	7.5	7.5	7.5	7.5
	80	12.0	12.0	10.0	10.0	10.0	10.0	10.0	10.0
	100	15.0	15.0	12.5	12.5	12.5	12.5	12.5	12.5
	120	18.0	18.0	15.0	15.0	15.0	15.0	15.0	15.0
	≥ 140	21.0	21.0	17.5	17.5	17.5	17.5	17.5	17.5

[1)] if component I and component II are made of S320GD to S350GD the values may be increased by 8.3%.

sandwich screw

NES KDHTQ6 x L
with EPDM sealing washer Ø19.0 mm

Annex 17



Materials

Fastener:	Stainless steel 1.4301- EN 10088
Washer:	Stainless steel 1.4301- EN 10088 with vulcanized EPDM-seal
Component I:	S280GD to S350GD - EN 10346
Component II:	S280GD to S350GD - EN 10346 S235 to S355 – EN 10025-2

Drilling-capacity $\Sigma(t_I + t_{II}) \leq 16.00$ mm

		Component II S280 GD to S350 GD – 10346 S235 to S355 – EN 10025-2 t II [mm]							
		3.00	4.00	5.00	6.00	8.00	10.00	12.00	15.00
Component I S280 GD to S350 GD - 10346 t I [mm]	$V_{R,k}$ [kN]								
	0.40	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
	0.50	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
	0.55	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
	0.63	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
	0.75	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94
	0.88	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
	1.00	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40
	$N_{R,k}$ [kN]								
	0.40	2.07	2.07	2.07	2.07	2.07	2.07	2.07	2.07
	0.50	2.30[1)]	2.30[1]	2.30[1]	2.30[1]	2.30[1]	2.30[1]	2.30[1]	2.30[1]
	0.55	2.91[1)]	2.91[1)]	2.91[1)]	2.91[1)]	2.91[1)]	2.91[1)]	2.91[1)]	2.91[1)]
	0.63	3.46	3.46	3.46	3.46	3.46	3.46	3.46	3.46
	0.75	3.77	4.57	4.57	4.57	4.57	4.57	4.57	4.57
	0.88	3.77	4.57	4.57	4.57	4.57	4.57	4.57	4.57
	1.00	3.77	4.57	4.57	4.57	4.57	4.57	4.57	4.57
	$N_{R,k,II}$	3.77[1)]	4.73[1)]	5.68[1)]	6.09[1)]	6.89[1)]	7.97[1)]	7.97[1)]	7.97[1)]
max. head displacement u [mm]									
	40	6.0	6.0	5.0	5.0	5.0	5.0	5.0	5.0
	50	7.5	7.5	6.0	6.0	6.0	6.0	6.0	6.0
	60	9.0	9.0	7.5	7.5	7.5	7.5	7.5	7.5
	80	12.0	12.0	10.0	10.0	10.0	10.0	10.0	10.0
	100	15.0	15.0	12.5	12.5	12.5	12.5	12.5	12.5
	120	18.0	18.0	15.0	15.0	15.0	15.0	15.0	15.0
	≥ 140	21.0	21.0	17.5	17.5	17.5	17.5	17.5	17.5

[1)] if component I and component II are made of S320GD to S350GD the values may be increased by 8.3%.

sandwich screw

NES KDHTQ6 x L
with EPDM sealing washer Ø22.0 mm

Annex 18