

	Fastener: stainless steel – EN 10088 steel grade 1.4301, 1.4401, 1.4567, 1.4578 Washer: stainless steel – EN 10088 steel grade 1.4301 or 1.4401 Component I: S280GD to S550GD – EN 10346 Component II: S235 to S275 – EN 10025-1 S280GD to S350GD – EN 10346 S450GD ≤ 3.0 mm – EN 10346
	Drilling performance: $\Sigma t \leq 6.0$ mm
	Timber substructure: Performance not assessed

t_{II} [mm]		1.50	2.00	2.50	3.00	4.00	5.00	-	-	-	-	-
$V_{R,k}$ [kN] t_{N2} [mm]	0.40	0.86 ^{b)}	0.86 ^{b)}	0.86 ^{b)}	0.86 ^{b)}	0.86 ^{b)}	0.86 ^{b)}	-	-	-	-	-
	0.50	1.35	1.35	1.35	1.35	1.35	1.35	-	-	-	-	-
	0.55	1.60	1.60	1.60	1.60	1.60	1.60	-	-	-	-	-
	0.63	2.00	2.00	2.00	2.00	2.00	2.00	-	-	-	-	-
	0.75	2.60	2.60	2.60	2.60	2.60	2.60	-	-	-	-	-
	0.88	3.20	3.50	3.50	3.50	3.50	3.50	-	-	-	-	-
	1.00	3.20	3.50	3.50	3.50	3.50	3.50	-	-	-	-	-
$N_{R,k}$ [kN] t_{N1} [mm]	0.40	1.59 ^{a)}	1.59 ^{a)}	1.59 ^{a)}	1.59 ^{a)}	1.59 ^{a)}	1.59 ^{a)}	-	-	-	-	-
	0.45	1.70	1.74 ^{a)}	1.74 ^{a)}	1.74 ^{a)}	1.74 ^{a)}	1.74 ^{a)}	-	-	-	-	-
	0.50	1.70	1.88 ^{a)}	1.88 ^{a)}	1.88 ^{a)}	1.88 ^{a)}	1.88 ^{a)}	-	-	-	-	-
	0.55	1.70	2.00	2.00	2.00	2.00	2.00	-	-	-	-	-
	0.60	1.70	2.10	2.97	2.97	2.97	2.97	-	-	-	-	-
	0.63	1.70	2.10	3.30	3.30	3.30	3.30	-	-	-	-	-
	0.70	1.70	2.10	3.35	3.59	3.59	3.59	-	-	-	-	-
	0.75	1.70	2.10	3.35	3.80	3.80	3.80	-	-	-	-	-
	0.88	1.70	2.10	3.35	4.40	4.40	4.40	-	-	-	-	-
1.00	1.70	2.10	3.35	4.60	4.90	4.90	-	-	-	-	-	
$N_{R,k,II}$ [kN]		1.70	2.10	3.35	4.60	6.60	6.60	-	-	-	-	-
max. U [mm] d, D [mm]	30	12.0	8.0	8.0	8.0	5.0	5.0	-	-	-	-	-
	40	13.5	11.0	11.0	11.0	7.0	7.0	-	-	-	-	-
	50	15.0	15.0	15.0	15.0	11.0	9.0	-	-	-	-	-
	60	17.5	17.5	17.5	17.5	13.0	10.0	-	-	-	-	-
	70	20.0	20.0	20.0	20.0	15.0	10.5	-	-	-	-	-
	80	23.0	23.0	23.0	23.0	17.0	12.0	-	-	-	-	-
	≥100	23.0	23.0	23.0	23.0	17.0	13.5	-	-	-	-	-

Index ^{a)}: For t_{N1} of least S320GD the indicated values of $N_{R,k}$ can be increased by 8,3%
Index ^{b)}: For t_{N2} of least S320GD the indicated values of $V_{R,k}$ can be increased by 8,3%

Thread-forming screws for connecting sandwich panels with steel or timber supporting structures RP-K-(FK)-(P)-6,3xL with sealing washer $\geq \varnothing 16$ mm	Annex 18
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	Fastener: stainless steel – EN 10088 steel grade 1.4301, 1.4401, 1.4567, 1.4578 Washer: stainless steel – EN 10088 steel grade 1.4301 or 1.4401 Component I: S280GD to S550GD – EN 10346 Component II: S235 to S275 – EN 10025-1 S280GD to S350GD – EN 10346 S450GD ≤ 3.0 mm – EN 10346
	Drilling performance: $\Sigma t_i \leq 6.0$ mm
	Timber substructure: Performance not assessed

t_{II} [mm]		1.50	2.00	2.50	3.00	4.00	5.00	-	-	-	-	-
$V_{R,k}$ [kN] t_{N2} [mm]	0.40	0.86 ^{b)}	0.86 ^{b)}	0.86 ^{b)}	0.86 ^{b)}	0.86 ^{b)}	0.86 ^{b)}	-	-	-	-	-
	0.50	1.35	1.35	1.35	1.35	1.35	1.35	-	-	-	-	-
	0.55	1.60	1.60	1.60	1.60	1.60	1.60	-	-	-	-	-
	0.63	2.00	2.00	2.00	2.00	2.00	2.00	-	-	-	-	-
	0.75	2.60	2.60	2.60	2.60	2.60	2.60	-	-	-	-	-
	0.88	3.20	3.50	3.50	3.50	3.50	3.50	-	-	-	-	-
	1.00	3.20	3.50	3.50	3.50	3.50	3.50	-	-	-	-	-
$N_{R,k}$ [kN] t_{N1} [mm]	0.40	1.70	1.83	1.83	1.83	1.83	1.83	-	-	-	-	-
	0.45	1.70	1.91	1.91	1.91	1.91	1.91	-	-	-	-	-
	0.50	1.70	1.99 ^{a)}	1.99 ^{a)}	1.99 ^{a)}	1.99 ^{a)}	1.99 ^{a)}	-	-	-	-	-
	0.55	1.70	2.10	2.31 ^{a)}	2.31 ^{a)}	2.31 ^{a)}	2.31 ^{a)}	-	-	-	-	-
	0.60	1.70	2.10	3.06 ^{a)}	3.06 ^{a)}	3.06 ^{a)}	3.06 ^{a)}	-	-	-	-	-
	0.63	1.70	2.10	3.35	3.38 ^{a)}	3.38 ^{a)}	3.38 ^{a)}	-	-	-	-	-
	0.70	1.70	2.10	3.35	3.89 ^{a)}	3.89 ^{a)}	3.89 ^{a)}	-	-	-	-	-
	0.75	1.70	2.10	3.35	4.26 ^{a)}	4.26 ^{a)}	4.26 ^{a)}	-	-	-	-	-
	0.88	1.70	2.10	3.35	4.60	4.79 ^{a)}	4.79 ^{a)}	-	-	-	-	-
1.00	1.70	2.10	3.35	4.60	5.25 ^{a)}	5.25 ^{a)}	-	-	-	-	-	
$N_{R,k,II}$ [kN]		1.70	2.10	3.35	4.60	6.60	6.60					
max. U [mm] d, D [mm]	30	12.0	8.0	8.0	8.0	5.0	5.0	-	-	-	-	-
	40	13.5	11.0	11.0	11.0	7.0	7.0	-	-	-	-	-
	50	15.0	15.0	15.0	15.0	11.0	9.0	-	-	-	-	-
	60	17.5	17.5	17.5	17.5	13.0	10.0	-	-	-	-	-
	70	20.0	20.0	20.0	20.0	15.0	10.5	-	-	-	-	-
	80	23.0	23.0	23.0	23.0	17.0	12.0	-	-	-	-	-
	≥100	23.0	23.0	23.0	23.0	17.0	13.5	-	-	-	-	-

Index ^{a)}: For t_{N1} of least S320GD the indicated values of $N_{R,k}$ can be increased by 8,3%
Index ^{b)}: For t_{N2} of least S320GD the indicated values of $V_{R,k}$ can be increased by 8,3%

Thread-forming screws for connecting sandwich panels with steel or timber supporting structures	Annex 19
RP-K-(FK-)(P-)6,3xL with sealing washer $\geq \varnothing 19$ mm	

<p>Dimensions in mm</p>	<p>Fastener: stainless steel – EN 10088 steel grade 1.4301, 1.4401, 1.4567, 1.4578</p> <p>Washer: stainless steel – EN 10088 steel grade 1.4301 or 1.4401</p> <p>Component I: S280GD to S550GD – EN 10346</p> <p>Component II: S235 to S275 – EN 10025-1 S280GD to S350GD – EN 10346 S450GD ≤ 3.0 mm – EN 10346</p>
	<p>Drilling performance: $\Sigma t_i \leq 6.0$ mm</p> <p>Timber substructure: Performance not assessed</p>

t_{II} [mm]		1.50	2.00	2.50	3.00	4.00	5.00	-	-	-	-	-
$V_{R,k}$ [kN] t_{N2} [mm]	0.40	0.86 ^{b)}	0.86 ^{b)}	0.86 ^{b)}	0.86 ^{b)}	0.86 ^{b)}	0.86 ^{b)}	-	-	-	-	-
	0.50	1.35	1.35	1.35	1.35	1.35	1.35	-	-	-	-	-
	0.55	1.60	1.60	1.60	1.60	1.60	1.60	-	-	-	-	-
	0.63	2.00	2.00	2.00	2.00	2.00	2.00	-	-	-	-	-
	0.75	2.60	2.60	2.60	2.60	2.60	2.60	-	-	-	-	-
	0.88	3.20	3.50	3.50	3.50	3.50	3.50	-	-	-	-	-
	1.00	3.20	3.50	3.50	3.50	3.50	3.50	-	-	-	-	-
$N_{R,k}$ [kN] t_{N1} [mm]	0.40	1.70	2.07	2.07	2.07	2.07	2.07	-	-	-	-	-
	0.45	1.70	2.09	2.09	2.09	2.09	2.09	-	-	-	-	-
	0.50	1.70	2.10	2.11 ^{a)}	2.11 ^{a)}	2.11 ^{a)}	2.11 ^{a)}	-	-	-	-	-
	0.55	1.70	2.10	2.63 ^{a)}	2.63 ^{a)}	2.63 ^{a)}	2.63 ^{a)}	-	-	-	-	-
	0.60	1.70	2.10	3.15	3.15 ^{a)}	3.15 ^{a)}	3.15 ^{a)}	-	-	-	-	-
	0.63	1.70	2.10	3.35	3.46 ^{a)}	3.46 ^{a)}	3.46 ^{a)}	-	-	-	-	-
	0.70	1.70	2.10	3.35	4.20 ^{a)}	4.20 ^{a)}	4.20 ^{a)}	-	-	-	-	-
	0.75	1.70	2.10	3.35	4.60	4.72 ^{a)}	4.72 ^{a)}	-	-	-	-	-
	0.88	1.70	2.10	3.35	4.60	5.18 ^{a)}	5.18 ^{a)}	-	-	-	-	-
1.00	1.70	2.10	3.35	4.60	5.60 ^{a)}	5.60 ^{a)}	-	-	-	-	-	
$N_{R,k,II}$ [kN]		1.70	2.10	3.35	4.60	6.60	6.60					
max. U [mm] d, D [mm]	30	12.0	8.0	8.0	8.0	5.0	5.0	-	-	-	-	-
	40	13.5	11.0	11.0	11.0	7.0	7.0	-	-	-	-	-
	50	15.0	15.0	15.0	15.0	11.0	9.0	-	-	-	-	-
	60	17.5	17.5	17.5	17.5	13.0	10.0	-	-	-	-	-
	70	20.0	20.0	20.0	20.0	15.0	10.5	-	-	-	-	-
	80	23.0	23.0	23.0	23.0	17.0	12.0	-	-	-	-	-
	≥100	23.0	23.0	23.0	23.0	17.0	13.5	-	-	-	-	-

Index ^{a)}: For t_{N1} of least S320GD the indicated values of $N_{R,k}$ can be increased by 8,3%

Index ^{b)}: For t_{N2} of least S320GD the indicated values of $V_{R,k}$ can be increased by 8,3%

Thread-forming screws for connecting sandwich panels with steel or timber supporting structures

RP-K-(FK-)(P-)6,3xL
with sealing washer $\geq \varnothing 22$ mm

Annex 20

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-18/1136
of 13 November 2023

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

RP, FABA

Product family
to which the construction product belongs

Fastening screws for sandwich panels

Manufacturer

REISSER-Schraubentechnik GmbH
Fritz-Müller-Straße 10
74653 Ingelfingen-Criesbach
DEUTSCHLAND

Manufacturing plant

plant 1
plant 2
plant 3

This European Technical Assessment
contains

47 pages including 41 annexes which form an integral
part of this assessment

This European Technical Assessment is
issued in accordance with Regulation (EU)
No 305/2011, on the basis of

330047-01-0602

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Specific part

1 Technical description of the product

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

Table 1 - Fastening screws for sandwich panels

Typ of supporting structures	Drilling performance	Component I	Fastening screw	Description	Sealing washer Ø	Annex
Steel	$\Sigma t_i \leq 3 \text{ mm}$	$\geq \text{S280GD}$ $\leq \text{S550GD}$	RP-r-(FK-)(P-) 6,0xL	Bi-metal Self-drilling screw	E14	4
					E16	5
					E19	6
					E22	7
Steel	$\Sigma t_i \leq 4 \text{ mm}$	$\geq \text{S280GD}$ $\leq \text{S550GD}$	RP-C3-(FK-) 6,3xL	Bi-metal Self-drilling screw	E16	8
Steel	$\Sigma t_i \leq 5 \text{ mm}$	$\geq \text{S280GD}$ $\leq \text{S350GD}$	RP-WS-(FK-)(P-) 6,5xL	Bi-metal Self-drilling screw	E16	12
					E19	13
					E22	14
Steel	$\Sigma t_i \leq 5,25 \text{ mm}$	$\geq \text{S280GD}$ $\leq \text{S550GD}$	RP-(7)K-(FK-)(P-) 5,5xL	Bi-metal Self-drilling screw	E16	15
					E19	16
					E22	17
Steel	$\Sigma t_i \leq 6 \text{ mm}$	$\geq \text{S280GD}$ $\leq \text{S550GD}$	RP-K-(FK-)(P-) 6,3xL	Bi-metal Self-drilling screw	E16	18
					E19	19
					E22	20
Steel	$\Sigma t_i \leq 11,25 \text{ mm}$	$\geq \text{S280GD}$ $\leq \text{S550GD}$	RP-K12-(FK-)(P-) 5,5xL	Bi-metal Self-drilling screw	E16	21
					E19	22
					E22	23

Table 1 - continue

Typ of supporting structures	Drilling performance	Component I	Fastening screw	Description	Sealing washer Ø	Annex
Steel	$\Sigma t_i \leq 15 \text{ mm}$	$\geq S280GD$ $\leq S350GD$	RP-K15-(FK-)(P-) 5,8xL	Bi-metal Self-drilling screw	E16	24
					E19	25
					E22	26
Steel	.	$\geq S280GD$ $\leq S550GD$	FABA-BZ-(FK-) 6,3xL	Thread- forming screw	E16	27
Steel	.	$\geq S280GD$ $\leq S550GD$	FABA-BZ-(FK-) 8,0xL		E22	28
Timber	$\Sigma t_i \leq 2 \text{ mm}$ $l_{ef} \geq 30 \text{ mm}$	$\geq S280GD$ $\leq S350GD$	RP-TD-(FK-)(P-) 6,0xL	Bi-metal Self-drilling Screw	E14	29
				Admitted for construction beech	E16	30
					E19	31
					E22	32
Timber	$\Sigma t_i \leq 2 \text{ mm}$ $l_{ef} \geq 30 \text{ mm}$	$\geq S280GD$ $\leq S550GD$	RP-TD-(FK-)(P-) 6,5xL	Bi-metal Self-drilling screw	E16	33
					E19	34
					E22	35
Timber	$\Sigma t_i \leq 3 \text{ mm}$ $l_{ef} \geq 30 \text{ mm}$	$\geq S280GD$ $\leq S350GD$	RP-r-(FK-)(P-) 6,0xL	Bi-metal Self-drilling Screw	E14	36
				Admitted for construction beech	E16	37
					E19	38
					E22	39
Timber	$\Sigma t_i \leq 3 \text{ mm}$ $l_{ef} \geq 30 \text{ mm}$	$\geq S280GD$ $\leq S350GD$	RP-WS-(FK-)(P-) 6,5xL	Bi-metal Self-drilling screw	E16	43
					E19	44
					E22	45
Timber	$\Sigma t_i \leq 26 \text{ mm}$	$\geq S280GD$ $\leq S550GD$	FABA-A-(FK-) 6,5xL	Thread- forming screw	E16	46
Timber	$\Sigma t_i \leq 34 \text{ mm}$	$\geq S280GD$ $\leq S550GD$	FABA-A-(FK-) 8,0xL		E22	47

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

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

The performances given in Section 3 are only valid if the fastening screws are used in compliance with the specifications and conditions given in Annex (1-47).

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

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

3.1 Mechanical resistance and stability (BWR 1)

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

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1

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

In accordance with EAD 330047-01-0602, the applicable European legal act is: Commission Decision 98/214/EC, amended by 2001/596/EC.

The system to be applied is: 2+

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

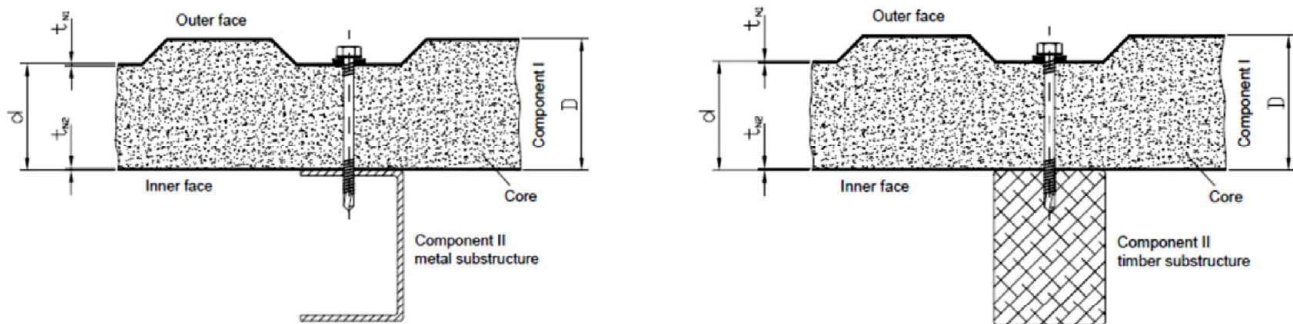
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Deutsches Institut für Bautechnik.

Issued in Berlin on 13 November 2023 by the Deutsches Institut für Bautechnik

BD Dr.-Ing. Ronald Schwuchow
Head of Section

beglaubigt:
Ortmann

Examples of execution and connection



Dimensions and Materials

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

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

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

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

Performance characteristics

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

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

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

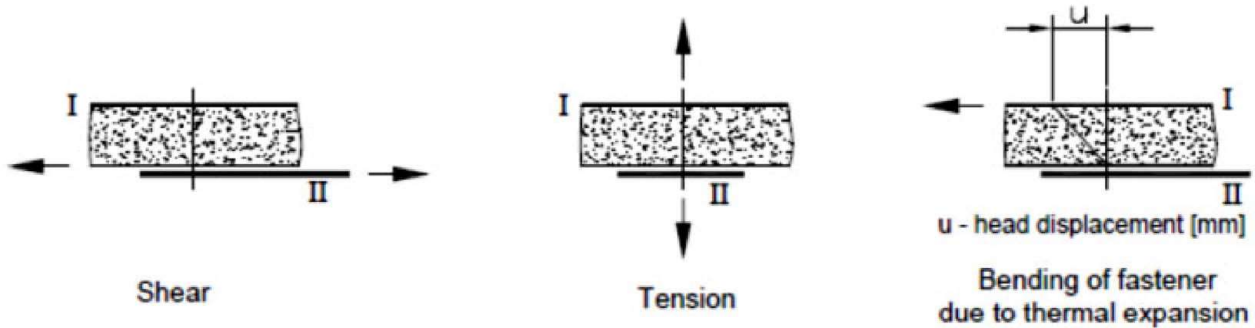
N_{R,k,II}	Characteristic value of pull-out resistance for component II
M_{y,Rk}	Characteristic value of yield moment of the fastening screw for component II made of timber
f_{ax,k}	Characteristic value of withdrawal strength for component II made of timber
V_{R,II,k}	Characteristic value of hole bearing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

Thread-forming screws for connecting sandwich panels with steel or timber supporting structures

Terms and explanations

Annex 1

Occurred loadings of a connection



Design values

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

$N_{R,d}$	Design value of tension resistance
$V_{R,d}$	Design value of shear resistance
Y_M	Partial safety factor

The recommended partial safety factor Y_M is 1.33, provided no partial safety factor is given in national regulations or national Annexes to Eurocode 3

Special conditions

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

For asymmetric **components II** made of metal (e.g. Z- or C-shaped profiles) with component thickness $t_{II} < 3$ mm, the characteristic value $N_{R,k}$ has to be reduced to 70%.

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

$N_{S,d}$	Design value of the applied tension forces	$\frac{N_{S,d}}{N_{R,d}} + \frac{V_{S,d}}{V_{R,d}} \leq 1,0$
$V_{S,d}$	Design value of the applied shear forces	

Head displacement

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

Thread-forming screws for connecting sandwich panels with steel or timber supporting structures

Design

Annex 2

Component II made of timber

$N_{R,II,k}$ is determined according to EN 1995-1-1:2014 + A1:2008, equation (8.40a), with $f_{ax,k}$ given in the Annex of the fastening screw.

$V_{R,II,k}$ is determined according to EN 1995-1-1:2004 + A1:2008, equation (8.9), with $M_{y,Rk}$ given in the Annex of the fastening screw and $f_{h,k}$ according to EN 1995-1-1:2014 + A1:2008, equation (8.15) and equation (8.16).

Installation conditions

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

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

The fastening screws have to be processed with suitable drill driver (e.g. cordless drill driver with depth control).

The use of impact wrench is not allowed.

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

Component I and **component II** have to be in direct contact to each other.

The use of compression resistant thermal insulation strips up to a thickness of 3 mm is allowed

Thread-forming screws for connecting sandwich panels with steel or timber supporting structures

Design and installation

Annex 3