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European Technical Assessment

ETA-13/0453 of 28/06/2018

General part

Technical Assessment Body issuing the European Technical Assessment	Instytut Techniki Budowlanej
Trade name of the construction product	OC 5,5/6,3xL, ON 5,5/6,3xL, OCS 5,5/6,3xL, ONS 5,5/6,3xL
Product family to which the construction product belongs	Fastening screws for sandwich panels
Manufacturer	RAWLPLUG S.A. Kwidzyńska 6 51-416 Wrocław, Poland
Manufacturing plant(s)	Manufacturing Plant no. 2
This European Technical Assessment contains	12 pages including 8 Annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of	European Assessment Document (EAD) EAD 330047-01-0602 "Fastening screws for sandwich panels"
This version replaces	ETA-13/0453 issued on 21/06/2013

This European Technical Assessment is issued by the Technical Assessment Body in its official language. Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and shall be identified as such.

Specific part

1. Technical description of the product

The fastening screws for sandwich panels OC 5,5/6,3xL, ON 5,5/6,3xL, OCS 5,5/6,3xL and ONS 5,5/6,3xL are a self-drilling and self-tapping screws listed in Table 1. Screws are completed with aluminum washer and an EPDM sealing ring. For details see the Annexes 2 to 7.

The fastening screw for sandwich panels and the corresponding connections are subject to tension and shear forces.

Table 1

No.	Screw	Material	Annex
1	OC 5,5/6,3xL	galvanized carbon steel	2
2	OC 5,5/6,3xL		3
3	ON 5,5/6,3xL		4
4	ON 5,5/6,3xL		5
5	OCS 5,5/6,3xL	stainless steel	6
6	ONS 5,5/6,3xL		7

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

The fastening screws for sandwich panels are intended to be used for fastening sandwich panels to steel or timber substructures. For details see the Annexes 2 to 7. The component to be fastened is component I and the supporting structure is component II. 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 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).

Example of execution of a connections are given in Annex 1.

The provisions made in this European Technical Assessment are based on an assumed working life of the fasteners of 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer or Technical Assessment Body, 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. Performances of the product and references to the methods used for their assessment

3.1. Performance of the product

3.1.1. Mechanical resistance and stability (BWR 1)

The characteristic values of the shear resistance of connections and tension resistance of connections with the fasteners as well as the maximum head displacement are given in Annex 2 to 7.

The design values shall be determined according to Annex 8 and EAD 330047-01-0602.

For the corrosion protection the rules given in EN 1993-1-3 and EN 1993-1-4shall be taken into account.

3.1.2. Safety in case of fire (BWR 2)

The fastening screws are considered to satisfy the requirements of performance class A1 of reaction to fire, in accordance with the provisions of the EC Decision 96/603/EC (as amended) without the need for testing on the basis of its listing in that decision.

3.1.3. Hygiene, health and the environment (BWR 3)

Regarding the dangerous substances there may be requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Regulation, these requirements need also to be complied with, when and where they apply.

3.2. Methods used for the assessment

The assessment of fitness of the fasteners for the declared intended use has been made in accordance with EAD 330047-01-0602.

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

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

5. Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document (EAD)

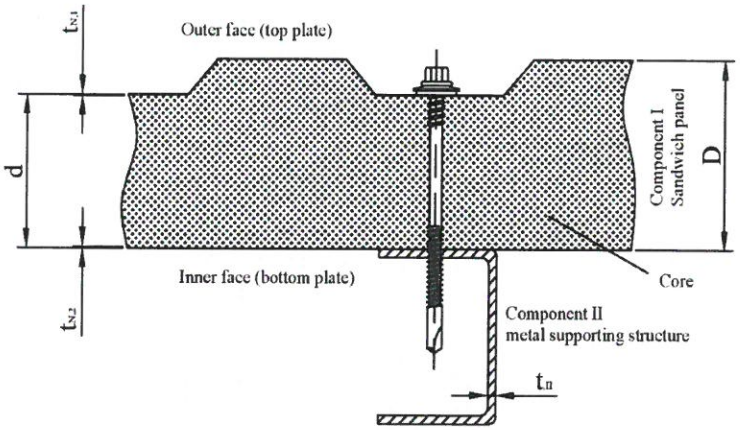
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at the Instytut Techniki Budowlanej.

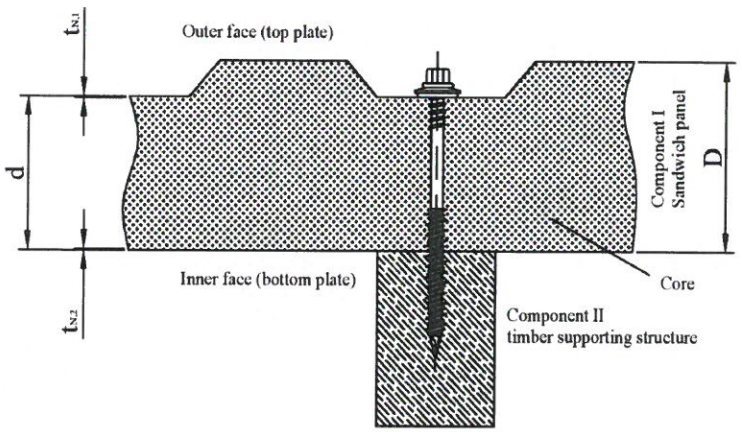
For type testing the results of the tests performed as part of the assessment for the European Technical Assessment shall be used unless there are changes in the production line or plant. In such cases the necessary type testing has to be agreed between Instytut Techniki Budowlanej and the notified body.

Issued in Warsaw on 28/06/2018 by Instytut Techniki Budowlanej

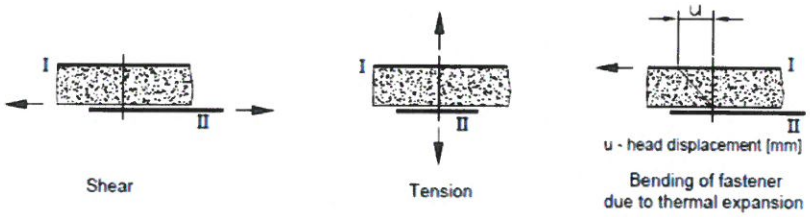
Anna Panek, MSc
Deputy Director of ITB

Examples of execution of a connections





Loading conditions



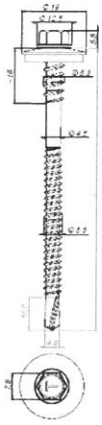
Fastening screws for sandwich panels	Annex 1 of European Technical Assessment ETA-13/0453
Example of execution of a connections. Loading conditions	

Materials

Fastener:	carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 12 µm)
Washer:	metallic washer made of carbon steel with EPDM sealing ring
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1 S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 6$ mm

Timber substructures
no performance assessed



Component II: t_{II} in [mm]			1,50	2,00	2,50	3,00	4,00	5,00	6,00	8,00	≥ 10,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ in [kN]	0,40	0,98	0,98	0,98	0,98	0,98	0,98	—	—	—
		0,50	1,63	1,63	1,63	1,63	1,63	1,63	—	—	—
		0,55	1,63	1,63	1,63	1,63	1,63	1,63	—	—	—
		0,63	1,91	1,91	1,91	1,91	1,91	1,91	—	—	—
		0,75	1,91	1,91	1,91	1,91	1,91	1,91	—	—	—
		0,88	1,91	1,91	1,91	1,91	1,91	1,91	—	—	—
		1,00	1,91	1,91	1,91	1,91	1,91	1,91	—	—	—
	$N_{R,k}$ in [kN]	0,40	1,18	1,18	1,18	1,93	1,93	1,93	—	—	—
		0,50	1,18	1,18	1,18	3,45	3,45	3,45	—	—	—
		0,55	1,18	1,18	1,18	3,45	3,45	3,45	—	—	—
		0,63	1,18	1,18	1,18	4,58	4,58	4,58	—	—	—
		0,75	1,18	1,18	1,18	5,38	5,38	5,38	—	—	—
		0,88	1,18	1,18	1,18	5,38	5,38	5,38	—	—	—
		1,00	1,18	1,18	1,18	5,38	5,38	5,38	—	—	—
max. head displacement u depending on the sandwich panel thickness in [mm]		30	10	10	10	0,7	0,7	0,7	—	—	—
		40	10	10	10	0,7	0,7	0,7	—	—	—
		50	10	10	10	0,7	0,7	0,7	—	—	—
		60	10	10	10	2	2	2	—	—	—
		70	10	10	10	2	2	2	—	—	—
		80	10	10	10	2	2	2	—	—	—
		90	10	10	10	10	3	3	—	—	—
		100	10	10	10	10	3	3	—	—	—
		120	10	10	10	10	3	3	—	—	—
		≥ 140	10	10	10	10	3	3	—	—	—

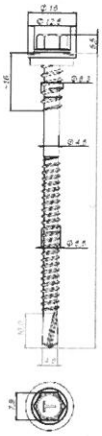
Fastening screws for sandwich panels
OC 5,5/6,3xL, ON 5,5/6,3xL, OCS 5,5/6,3xL and ONS 5,5/6,3xL

Self-drilling screw OC 5,5/6,3 x L
with hexagon head and sealing washer EPDM T19

Annex 2

of European Technical Assessment ETA-13/0453

Materials	
Fastener:	carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 12 µm)
Washer:	metallic washer made of carbon steel with EPDM sealing ring
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1 S280GD, S320GD or S350GD – EN 10346
Drilling capacity:	$\Sigma(t_{N2} + t_{II}) \leq 6$ mm
Timber substructures no performance assessed	



Component II: t_{II} in [mm]			1,50	2,00	2,50	3,00	4,00	5,00	6,00	8,00	≥ 10,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ in [kN]	0,40	0,98	0,98	0,98	0,98	0,98	0,98	—	—	—
		0,50	1,63	1,63	1,63	1,63	1,63	1,63	—	—	—
		0,55	1,63	1,63	1,63	1,63	1,63	1,63	—	—	—
		0,63	1,91	1,91	1,91	1,91	1,91	1,91	—	—	—
		0,75	1,91	1,91	1,91	1,91	1,91	1,91	—	—	—
		0,88	1,91	1,91	1,91	1,91	1,91	1,91	—	—	—
		1,00	1,91	1,91	1,91	1,91	1,91	1,91	—	—	—
	$N_{R,k}$ in [kN]	0,40	1,18	1,18	1,18	1,65	1,65	1,65	—	—	—
		0,50	1,18	1,18	1,18	2,91	2,91	2,91	—	—	—
		0,55	1,18	1,18	1,18	2,91	2,91	2,91	—	—	—
		0,63	1,18	1,18	1,18	3,87	3,87	3,87	—	—	—
		0,75	1,18	1,18	1,18	4,55	4,55	4,55	—	—	—
		0,88	1,18	1,18	1,18	4,55	4,55	4,55	—	—	—
		1,00	1,18	1,18	1,18	4,55	4,55	4,55	—	—	—
max. head displacement u depending on the sandwich panel thickness in [mm]		30	10	10	10	0,7	0,7	0,7	—	—	—
		40	10	10	10	0,7	0,7	0,7	—	—	—
		50	10	10	10	0,7	0,7	0,7	—	—	—
		60	10	10	10	2	2	2	—	—	—
		70	10	10	10	2	2	2	—	—	—
		80	10	10	10	2	2	2	—	—	—
		90	10	10	10	10	3	3	—	—	—
		100	10	10	10	10	3	3	—	—	—
		120	10	10	10	10	3	3	—	—	—
		≥ 140	10	10	10	10	3	3	—	—	—

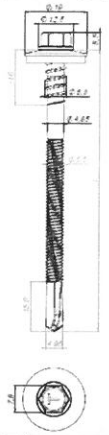
Fastening screws for sandwich panels
OC 5,5/6,3xL, ON 5,5/6,3xL, OCS 5,5/6,3xL and ONS 5,5/6,3xL

Self-drilling screw OC 5,5/6,3 x L
with hexagon head and sealing washer EPDM T16

Annex 3

of European Technical Assessment ETA-13/0453

Materials	
Fastener:	carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 12 µm)
Washer:	metallic washer made of carbon steel with EPDM sealing ring
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1 S280GD, S320GD or S350GD – EN 10346
Drilling capacity:	$\Sigma(t_{N2} + t_{II}) \leq 12$ mm
Timber substructures no performance assessed	



Component II: t_{II} in [mm]			3,00	4,00	5,00	6,00	8,00	10,00	11,00	12,00	14,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ in [kN]	0,40	1,07	1,07	1,07	1,07	1,07	1,07	1,07	—	—
		0,50	1,73	1,73	1,73	1,73	1,73	1,73	1,73	—	—
		0,55	1,73	1,73	1,73	1,73	1,73	1,73	1,73	—	—
		0,63	1,96	1,96	1,96	1,96	1,96	1,96	1,96	—	—
		0,75	1,96	1,96	1,96	1,96	1,96	1,96	1,96	—	—
		0,88	1,96	1,96	1,96	1,96	1,96	1,96	1,96	—	—
		1,00	1,96	1,96	1,96	1,96	1,96	1,96	1,96	—	—
	$N_{R,k}$ in [kN]	0,40	1,93	1,93	1,93	1,93	1,93	1,93	1,93	—	—
		0,50	3,45	3,45	3,45	3,45	3,45	3,45	3,45	—	—
		0,55	3,45	3,45	3,45	3,45	3,45	3,45	3,45	—	—
		0,63	4,58	4,58	4,58	4,58	4,58	4,58	4,58	—	—
		0,75	5,38	5,38	5,38	5,38	5,38	5,38	5,38	—	—
		0,88	5,38	5,38	5,38	5,38	5,38	5,38	5,38	—	—
		1,00	5,38	5,38	5,38	5,38	5,38	5,38	5,38	—	—
max. head displacement u depending on the sandwich panel thickness in [mm]		30	0,7	0,7	0,7	0,7	0,7	0,7	0,7	—	—
		40	0,7	0,7	0,7	0,7	0,7	0,7	0,7	—	—
		50	0,7	0,7	0,7	0,7	0,7	0,7	0,7	—	—
		60	2	2	2	2	2	2	2	—	—
		70	2	2	2	2	2	2	2	—	—
		80	2	2	2	2	2	2	2	—	—
		90	3	3	3	3	3	3	3	—	—
		100	3	3	3	3	3	3	3	—	—
		120	3	3	3	3	3	3	3	—	—
		≥ 140	3	3	3	3	3	3	3	—	—

Fastening screws for sandwich panels
OC 5,5/6,3xL, ON 5,5/6,3xL, OCS 5,5/6,3xL and ONS 5,5/6,3xL

Self-drilling screw ON 5,5/6,3 x L
with hexagon head and sealing washer EPDM T19

Annex 4

of European Technical Assessment ETA-13/0453

Materials

Fastener:	carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 12 µm)
Washer:	metallic washer made of carbon steel with EPDM sealing ring
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1 S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 12$ mm

Timber substructures
no performance assessed

Component II: t_{II} in [mm]			3,00	4,00	5,00	6,00	8,00	10,00	11,00	12,00	14,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ in [kN]	0,40	1,07	1,07	1,07	1,07	1,07	1,07	1,07	—	—
		0,50	1,73	1,73	1,73	1,73	1,73	1,73	1,73	—	—
		0,55	1,73	1,73	1,73	1,73	1,73	1,73	1,73	—	—
		0,63	1,96	1,96	1,96	1,96	1,96	1,96	1,96	—	—
		0,75	1,96	1,96	1,96	1,96	1,96	1,96	1,96	—	—
		0,88	1,96	1,96	1,96	1,96	1,96	1,96	1,96	—	—
		1,00	1,96	1,96	1,96	1,96	1,96	1,96	1,96	—	—
	$N_{R,k}$ in [kN]	0,40	1,65	1,65	1,65	1,65	1,65	1,65	1,65	—	—
		0,50	2,91	2,91	2,91	2,91	2,91	2,91	2,91	—	—
		0,55	2,91	2,91	2,91	2,91	2,91	2,91	2,91	—	—
		0,63	3,87	3,87	3,87	3,87	3,87	3,87	3,87	—	—
		0,75	4,55	4,55	4,55	4,55	4,55	4,55	4,55	—	—
		0,88	4,55	4,55	4,55	4,55	4,55	4,55	4,55	—	—
		1,00	4,55	4,55	4,55	4,55	4,55	4,55	4,55	—	—
max. head displacement u depending on the sandwich panel thickness in [mm]		30	0,7	0,7	0,7	0,7	0,7	0,7	0,7	—	—
		40	0,7	0,7	0,7	0,7	0,7	0,7	0,7	—	—
		50	0,7	0,7	0,7	0,7	0,7	0,7	0,7	—	—
		60	2	2	2	2	2	2	2	—	—
		70	2	2	2	2	2	2	2	—	—
		80	2	2	2	2	2	2	2	—	—
		90	3	3	3	3	3	3	3	—	—
		100	3	3	3	3	3	3	3	—	—
		120	3	3	3	3	3	3	3	—	—
		≥ 140	3	3	3	3	3	3	3	—	—

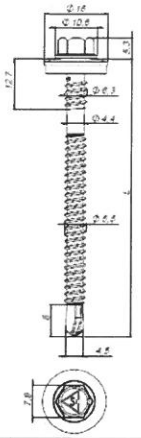
Fastening screws for sandwich panels
OC 5,5/6,3xL, ON 5,5/6,3xL, OCS 5,5/6,3xL and ONS 5,5/6,3xL

Self-drilling screw ON 5,5/6,3 x L
with hexagon head and sealing washer EPDM T16

Annex 5

of European Technical Assessment ETA-13/0453

Materials	
Fastener:	stainless steel – SAE 304
Washer:	metallic washer made of stainless steel with EPDM sealing ring
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1 S280GD, S320GD or S350GD – EN 10346
Drilling capacity:	$\Sigma(t_{N2} + t_{II}) \leq 6$ mm
Timber substructures no performance assessed	



Component II: t_{II} in [mm]			1,50	2,00	2,50	3,00	4,00	5,00	6,00	8,00	≥ 10,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ in [kN]	0,40	0,85	0,85	0,85	0,85	0,85	0,85	—	—	—
		0,50	1,15	1,15	1,15	1,15	1,15	1,15	—	—	—
		0,55	1,15	1,15	1,15	1,15	1,15	1,15	—	—	—
		0,63	1,59	1,59	1,59	1,59	1,59	1,59	—	—	—
		0,75	1,59	1,59	1,59	1,59	1,59	1,59	—	—	—
		0,88	1,59	1,59	1,59	1,59	1,59	1,59	—	—	—
		1,00	1,59	1,59	1,59	1,59	1,59	1,59	—	—	—
	$N_{R,k}$ in [kN]	0,40	1,06	1,06	1,42	1,42	1,42	1,42	—	—	—
		0,50	1,06	1,06	2,60	2,60	2,60	2,60	—	—	—
		0,55	1,06	1,06	2,60	2,60	2,60	2,60	—	—	—
		0,63	1,06	1,06	2,99	2,99	3,61	3,61	—	—	—
		0,75	1,06	1,06	2,99	2,99	3,99	3,99	—	—	—
		0,88	1,06	1,06	2,99	2,99	3,99	3,99	—	—	—
		1,00	1,06	1,06	2,99	2,99	3,99	3,99	—	—	—
max. head displacement u depending on the sandwich panel thickness in [mm]		30	7	7	7	1,5	1,5	1,5	—	—	—
		40	7	7	7	1,5	1,5	1,5	—	—	—
		50	7	7	7	1,5	1,5	1,5	—	—	—
		60	25	15	15	7	7	7	—	—	—
		70	25	15	15	7	7	7	—	—	—
		80	25	15	15	7	7	7	—	—	—
		90	25	21	21	12	12	12	—	—	—
		100	25	21	21	12	12	12	—	—	—
		120	25	21	21	12	12	12	—	—	—
		≥ 140	25	21	21	12	12	12	—	—	—

Fastening screws for sandwich panels
OC 5,5/6,3xL, ON 5,5/6,3xL, OCS 5,5/6,3xL and ONS 5,5/6,3xL

Self-drilling screw OCS 5,5/6,3 x L
with hexagon head and sealing washer EPDM S16

Annex 6

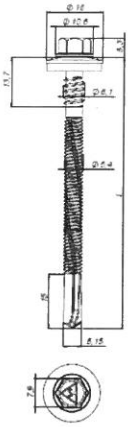
of European Technical Assessment ETA-13/0453

Materials

Fastener:	stainless steel – SAE 304
Washer:	metallic washer made of stainless steel with EPDM sealing ring
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1 S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 12$ mm

Timber substructures
no performance assessed



Component II: t_{II} in [mm]			3,00	4,00	5,00	6,00	8,00	10,00	11,00	12,00	14,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ in [kN]	0,40	0,78	0,78	0,78	0,78	0,78	0,78	0,78	—	—
		0,50	1,29	1,29	1,29	1,29	1,29	1,29	1,29	—	—
		0,55	1,29	1,29	1,29	1,29	1,29	1,29	1,29	—	—
		0,63	1,94	1,94	1,94	1,94	1,94	1,94	1,94	—	—
		0,75	1,94	1,94	1,94	1,94	1,94	1,94	1,94	—	—
		0,88	1,94	1,94	1,94	1,94	1,94	1,94	1,94	—	—
		1,00	1,94	1,94	1,94	1,94	1,94	1,94	1,94	—	—
	$N_{R,k}$ in [kN]	0,40	1,42	1,42	1,42	1,42	1,42	1,42	1,42	—	—
		0,50	2,60	2,60	2,60	2,60	2,60	2,60	2,60	—	—
		0,55	2,60	2,60	2,60	2,60	2,60	2,60	2,60	—	—
		0,63	2,92	2,92	3,61	3,61	3,61	3,61	3,61	—	—
		0,75	2,92	2,92	3,99	3,99	3,99	3,99	3,99	—	—
		0,88	2,92	2,92	3,99	3,99	3,99	3,99	3,99	—	—
		1,00	2,92	2,92	3,99	3,99	3,99	3,99	3,99	—	—
max. head displacement u depending on the sandwich panel thickness in [mm]		30	2	2	2	2	2	2	2	—	—
		40	2	2	2	2	2	2	2	—	—
		50	2	2	2	2	2	2	2	—	—
		60	5	5	5	5	5	5	5	—	—
		70	5	5	5	5	5	5	5	—	—
		80	5	5	5	5	5	5	5	—	—
		90	7	7	7	7	7	7	7	—	—
		100	7	7	7	7	7	7	7	—	—
		120	7	7	7	7	7	7	7	—	—
		≥ 140	7	7	7	7	7	7	7	—	—

Fastening screws for sandwich panels
OC 5,5/6,3xL, ON 5,5/6,3xL, OCS 5,5/6,3xL and ONS 5,5/6,3xL

Self-drilling screw ONS 5,5/6,3 x L
with hexagon head and sealing washer EPDM S16

Annex 7

of European Technical Assessment ETA-13/0453

Determination of design values

1. **Determination of Design Shear Resistance**

   The determination of the design values of the shear resistance depends on the type of substructure.

   For Metal Supporting Substructures the following applies:

   The design values $V_{R,d}$ of the shear resistance are the characteristic values of the shear resistance divided by the recommended partial safety factor γ_M = 1,33. The recommended partial safety factor γ_M should be used in cases where no value is given in national regulations of the Member State where the fastening screws are used.

   For Timber Supporting Substructures the following applies:

   The design values $V_{R,d}$ of the shear resistance are the characteristic values of the shear resistance multiplied by k_{mod} according to EN 1995-1-1 Section 8.7 (Screwed connections), Table 3.1, and divided by the recommended partial safety factor γ_M = 1,33. If failure of the inner face with the thickness t_{N2} and not failure of the timber substructure is the relevant failure mode then k_{mod} = 1.0.

   The recommended partial safety factor γ_M should be used in cases where no value is given in national regulations of the Member State where the fastening screws are used.

2. **Determination of Design Pull-through, Pull-out and Tension Resistance**

   The design values of the pull-through resistance are the characteristic values of the pull-through resistance divided by the recommended partial safety factor γ_M = 1,33. The recommended partial safety factor γ_M should be used in cases where no value is given in national regulations of the Member State where the fastening screws are used.

   The determination of the design values of the pull-out resistance depends on the type of substructure.

   For Metal Supporting Substructures the following applies:

   The design values of the pull-out resistance are the characteristic values of the pull-out resistance divided by the recommended partial safety factor γ_M = 1,33. The recommended partial safety factor γ_M should be used in cases where no value is given in national regulations of the Member State where the fastening screws are used.

   For Timber Supporting Substructures the following applies:

   The design values of the pull-out resistance are the characteristic values of the pull-out resistance multiplied by k_{mod} according to EN 1995-1-1 Section 8.7 (Screwed connections), Table 3.1, and divided by the recommended partial safety factor γ_M = 1,33. The recommended partial safety factor γ_M should be used in cases where no value is given in national regulations of the Member State where the fastening screws are used.

   The design tension resistance $N_{R,d}$ is the minimum value of the design values of either pull-through resistance or relevant pull-out resistance for the corresponding connection.

3. **Design Resistance in case of combined Tension and Shear Forces (interaction)**

   In case of combined tension and shear forces the linear interaction formula according to EN 1993-1-3, section 8.3 (8) should be taken into account.

Fastening screws for sandwich panels	**Annex 8** of European Technical Assessment ETA-13/0453
Determination of design values	