

PMJ-tec European Technical Assessment ETA-13/0182 25 March 2019 Fastening screws for sandwich panels













PMJ-tec is a Swiss roofing and facade fastener manufacturer specialising in A2, A4 and other high grade corrosion resistant stainless steel products, which can be supplied with a colour powder coated or nyco moulded head.

People are at the heart of our 'service and innovation' culture, along with a commitment to provide the ever-changing European and world markets with high quality product for both on and off site production, fully supported by experienced and honest technical expertise.

As a European manufacturer, we offer technical and application assistance worldwide.

The PMJ range of stainless steel fasteners is fully warranted and CE marked (supported by European Technical Assessments) and a suite of CAD and BIM models are available.





Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments



European Technical Assessment

ETA-13/0182 of 25 March 2019

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the Deutsches Institut für Bautechnik **European Technical Assessment:** Trade name of the construction product Sandwich screws of PMJ-tec AG Product family Fastening screws for sandwich panels to which the construction product belongs PMJ-tec AG Manufacturer Industriestrasse 34 1791 COURTAMAN **SCHWEIZ** Manufacturing plant Plant 1 This European Technical Assessment 31 pages including 26 annexes which form an integral contains part of this assessment EAD 330047-01-0602 This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of This version replaces ETA-13/0182 issued on 25 April 2013



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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

Annex	Screw	Description
4	PMJ-tec TOPEX 7171	with flat head, DS drive and sealing washer $\geq \emptyset$ 16,0 mm
5	PMJ-tec TOPEX 7520-S16	with hexagon head and sealing washer $\ge \emptyset$ 16,0 mm
6	PMJ-tec TOPEX PIASTA 7530-S16	with hexagon head and sealing washer ≥ Ø 16,0 mm
7	PMJ-tec TOPPEX 7565-S16	with hexagon head and sealing washer ≥ Ø 16,0 mm
8	PMJ-tec TOPEX 7565-S19	with hexagon head and sealing washer ≥ Ø 19,0 mm
9	PMJ-tec TOPEX 7570-S16	with hexagon head and sealing washer ≥ Ø 16,0 mm
10	PMJ-tec TOPEX 7570-S19	with hexagon head and sealing washer ≥ Ø 19,0 mm
11	PMJ-tec TOPEX 7571-S16	with hexagon head and sealing washer ≥ Ø 16,0 mm
12	PMJ-tec TOPEX 7571-S19	with hexagon head and sealing washer ≥ Ø 19,0 mm
13	PMJ-tec TOPEX 7575-S16	with hexagon head and sealing washer ≥ Ø 16,0 mm
14	PMJ-tec TOPEX 7575-S19	with hexagon head and sealing washer ≥ Ø 19,0 mm
15	PMJ-tec TOPEX-PIASTA 7580-S16	with hexagon head and sealing washer $\ge \emptyset$ 16,0 mm
16	PMJ-tec TOPEX-PIASTA 7580-S19	with hexagon head and sealing washer ≥ Ø 19,0 mm
17	PMJ-tec TOPEX 7653-S16	with hexagon head and sealing washer $\ge \emptyset$ 16,0 mm
18	PMJ-tec TOPEX 7653-S19	with hexagon head and sealing washer ≥ Ø 19,0 mm
19	PMJ-tec TOPEX 7673-S16	with hexagon head and sealing washer ≥ Ø 16,0 mm
20	PMJ-tec TOPEX 7673-S19	with hexagon head and sealing washer ≥ Ø 19,0 mm
21	PMJ-tec TOPEX 7680-S16	with hexagon head and sealing washer $\ge \emptyset$ 16,0 mm
22	PMJ-tec TOPEX 7680-S19	with hexagon head and sealing washer $\ge \emptyset$ 19,0 mm
23	PMJ-tec TOPEX 7360-S16	with hexagon head and sealing washer $\ge \emptyset$ 16,0 mm
24	PMJ-tec TOPEX 7360-S19	with hexagon head and sealing washer $\ge \emptyset$ 19,0 mm
25	PMJ-tec TOPEX 7362-S16	with hexagon head and sealing washer $\ge \emptyset$ 16,0 mm
26	PMJ-tec TOPEX 7362-S19	with hexagon head and sealing washer $\ge \emptyset$ 19,0 mm



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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 Annexes (1-26).

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

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

3.1 Mechanical resistance and stability (BWR 1)

3.2 Safety in case of fire (BWR 2)

ſ	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+



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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 25 March 2019 by Deutsches Institut für Bautechnik

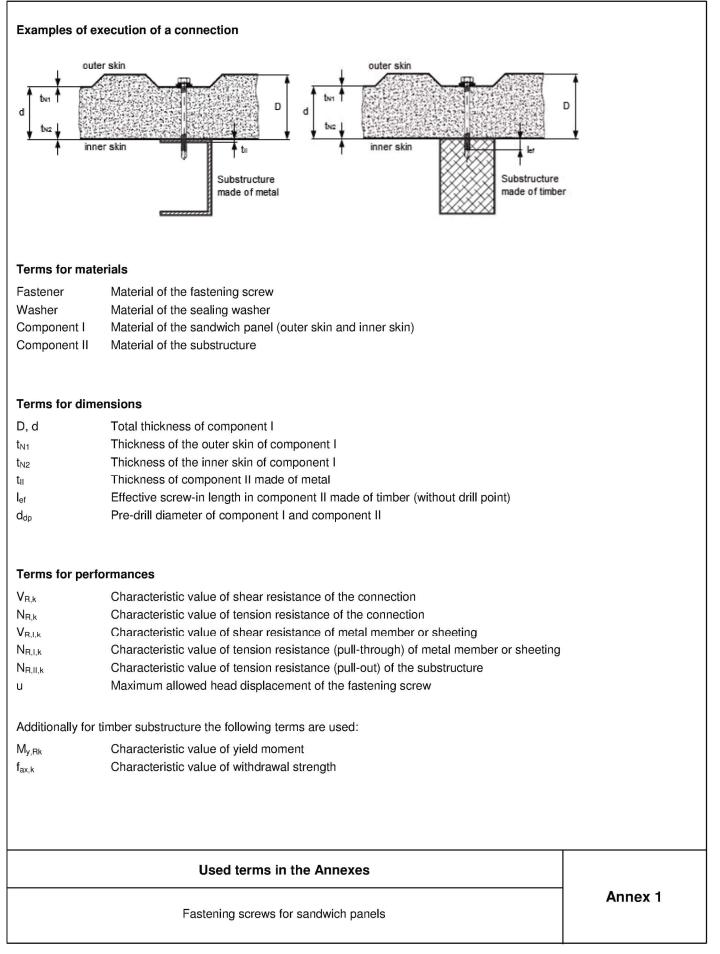
BD Dipl.-Ing. Andreas Kummerow Head of Department

beglaubigt: Hahn

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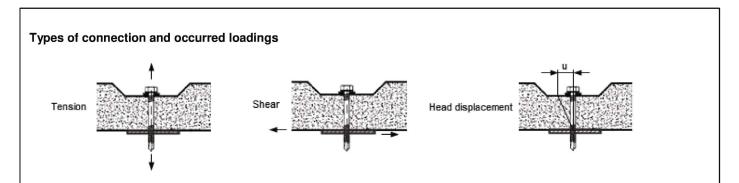




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Determination of Design Values

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

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

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

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

For asymmetric metal substructures with thickness $t_{II} < 5 \text{ mm}$ (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 $V_{S,d}$ indicate the design values of applied tension and 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.

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 metal member or sheeting.

The metal member or sheeting 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.

Basics for the design

Fastening screws for sandwich panels

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Timber substructures

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

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

The characteristic values $N_{R,l,k}$ and $V_{R,l,k}$ 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 $M_{y,Rk}$ given in the corresponding Annex of the fastening screw.

Specific notes to the Annexes

Fastening screws for sandwich panels

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0 14.4	60 · · · · ·			<u>Materials</u> Fastener Washer:	: St			45 – EN ISC 45 – EN ISC	
		-	• 16	Compone	ent II: S2	280GD to S 235 - EN 10 280GD to S	025-1		
				Drilling-c	apacity Σ	(t _i) ≤ 5.00 m	ım		
F					substructure rmance det				
					C				
				1,50	2,00	2,50	3,00	4,00	
			0,50	1,10	1,10	1,10	1,10	1,10	
		E R	0,55	1,40	1,40	1,40	1,40	1,40	
		t _{N2} [mm]	0,63 0,63	1,70 1,70	1,70 1,70	1,70 1,70	1,70 1,70	1,70 1,70	
			0,75	1,70	1,70	1,70	1,70	1,70	
	Component I		1,00	1,70	1,70	1,70	1,70	1,70	
	000	_	0,50	1,60	1,70	1,70	1,70	1,70	
	1 m		0,55	2,00 ^a	2,30	2,30	2,30	2,30	
	Ō	Ē I	0,63	2,00 ^a	2,50	2,50	2,50	2,50	
		t _{N1} [mm]	0,63 0,75 0,88	2,00 ^a	2,90 ^a	3,20	3,20	3,20	
		t _{N1}		2,00 ^a	2,90 ^a	3,80	3,80	3,80	
			1,00	2,00 ^a	2,90 ^a	3,90 ^a	4,40	4,40	
			N _{R,k,II}	2,00 ^a	2,90 ^a	3,90 ^a	4,40	4,40	
		Ē	<u>40</u> 50	20,0 21,0	15,0 17,0	9,0 10,0	7,0	4,0 5,0	
		max. head displacement u [mm]	60	21,0	20,0	11,0	8,0 9,0	5,0 7,0	
	D, d [mm]	max. head acement u	70	23,0	20,0	13,0	11,0	8,0	
	- р	ax. † ∍me	80	25,0	20,0	16,0	14,0	10,0	
	Ľ,	lace	100	25,0	20,0	16,0	14,0	10,0	
		disp	120	25,0	20,0	16,0	14,0	10,0	
		-	≥ 140	25,0	20,0	16,0	14,0	10,0	
Index a: If Component I For sealing washers ≥ ¢) %.	
			Sand	wich screv	w				
									Annex 4

PMJ-tec TOPEX 7171 with flat head, DS drive and sealing washer $\ge \emptyset$ 16,0 mm

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		Materials					
		2 S.					
SW 8	ø 10.5	Fastener:	Stainless steel A2, A4, A5 – EN ISO 3506				
		Washer:	Stainless steel A2, A4, A5 – EN ISO 3506				
Ø 16	· · · · · · · · · · · · · · · · · · ·	Component I: Component II:	S280GD to S320GD - EN 10346 S235 - EN 10025-1 S280GD to S350GD - EN 10346				
ø 18	25		02000D 10 03300D = E11 10340				
A G		Drilling-capacity	$\Sigma(t_i) \le 6.00 \text{ mm}$				
4400		Timber substructures					
	00	no performance	determined				
SW 11	ø4.8						
		•					
			Component II t II [mm]				

						Compo t II [r			
				1,50	2,00	2,50	3,00	4,00	5,00
	_{N2} [mm] V _{R.k} [kN]		D < 40 mm t _{N2} ≥ 0,50	0,70	0,70	0,80	0,80	0,80	0,80
nt I	t _{N2} [mm]	$V_{\rm R,k}$	D ≥ 40 mm t _{N2} ≥ 0,50	1,00	1,00	1,10	1,10	1,10	1,10
Component			0,50	1,10	1,57	1,57	1,57	1,57	1,57
) du			0,55	1,10	1,98	1,98	1,98	1,98	1,98
Ö	Ē	Z	0,63	1,10	2,00	2,00	2,90	2,90	2,90
	t _{N1} [mm]	N _{R,k} [kN]	0,75	1,10	2,00	2,00	3,40	3,40	3,40
	tn1	R	0,88	1,10	2,00	2,00	4,00	4,00	4,00
			1,00	1,10	2,00	2,00	4,30	4,50	4,50
			N _{R,k,II}	1,10	2,00	2,00	4,30	4,50	4,50
	·		40	16,0	3,5	3,5	3,5	2,5	2,0
	ш.		50	20,0	5,0	5,0	5,0	3,5	3,0
Ē	n ^a d		60	25,0	6,0	6,0	6,0	4,5	3,5
<u>l</u>	hei		70	29,0	7,5	7,5	7,5	5,5	4,5
σ	D, d [mm] D, d [mm] displacement u [mm] 001 100 120		80	33,0	9,0	9,0	9,0	6,5	5,0
	n m		100	40,0	12,0	12,0	12,0	9,0	7,0
	disp		120	40,0	12,0	12,0	12,0	9,0	7,0
	0		≥ 140	40,0	12,0	12,0	12,0	9,0	7,0

Sandwich screw

PMJ-tec TOPEX 7520-S16 with hexagon head and sealing washer $\ge \emptyset$ 16,0 mm

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Component I: S280GD to S320GD - EN 10346 c = 5.5 e = 5.5 c = 5.5	SW 8	¢ 10.5	<u>Materials</u> Fastener: Washer:	Stainless steel A2, A4, A5 – EN ISO 3506 Stainless steel A2, A4, A5 – EN ISO 3506
	018	90°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°	Component II: Drilling-capacity Timber substruct	S235 - EN 10025-1 S280GD to S350GD - EN 10346 $\Sigma(t_i) \le 12.50 \text{ mm}$ tures

						Compo t II [r					
				3,00	4,00	5,00	6,00	8,00	≥ 10,0		
	[mm]	V _{R,k} [kN]	D < 40 mm t _{N2} ≥ 0,50	0,80	0,80	0,80	0,80	0,80	0,80		
ut I	t _{N2} [$V_{\rm R,k}$	D ≥ 40 mm t _{N2} ≥ 0,50	1,10	1,10	1,10	1,10	1,10	1,10		
one	Componen: m] N]		0,50	1,35	1,35	1,35	1,35	1,35	1,35		
d u			0,55	1,71	1,71	1,71	1,71	1,71	1,71		
Ö	Ē	N _{R,k} [kN]	0,63	2,20	2,20	2,20	2,20	2,20	2,20		
	t _{N1} [mm]		N _{R,k} [k	0,75	2,20	2,20	2,20	2,20	2,20	2,20	
	t _{N1}			R _B	R	R	0,88	2,20	2,20	2,20	2,20
			1,00	2,20	2,20	2,20	2,20	2,20	2,20		
			N _{R,k,II}	2,20	2,20	2,20	2,20	2,20	2,20		
	_		40	3,5	3,5	3,5	3,5	3,5	3,5		
	, mr		50	5,0	5,0	5,0	5,0	5,0	5,0		
E	n [[]		60	6,0	6,0	6,0	6,0	6,0	6,0		
[mm]	he ent		70	7,5	7,5	7,5	7,5	7,5	7,5		
	D, d [mm] max. head displacement u [mm]		80	9,0	9,0	9,0	9,0	9,0	9,0		
D			100	12,0	12,0	12,0	12,0	12,0	12,0		
	disp		120	12,0	12,0	12,0	12,0	12,0	12,0		
	0		≥ 140	12,0	12,0	12,0	12,0	12,0	12,0		

Sandwich screw

PMJ-tec TOPEX PIASTA 7530-S16 with hexagon head and sealing washer $\ge \emptyset$ 16,0 mm

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SW 8 (PM) 0 16 0 18 0 19 0 19	\$ 10.9	ø 6.5	L ₹ 45 3 0.9	Fasi Was Con Con <u>Drill</u> <u>Tim</u> M _{y,F}	erials tener: sher: nponent I: nponent II: <u>ling-capacit</u> ber substru ak = 9,742 N = 8,575 N/	Stainle S280G S235 - S280G Timber $\underline{\chi} \Sigma(t_i) \leq 2$ <u>ictures</u>	ss steel A2, D to S320G EN 10025- D to S350G - EN 1408 2.50 mm	D - EN 10346	ISO 3506 5
						Comp	onent II		
					Steel, t	-		≥ C24,	
					1,50	2,00	l _{ef} ≥ 45		
				0,40	0,82	0,82	0,82		
				0,50	1,74	1,74	1,74		
		t _{N2} [mm]	V _{R,k} [kN]	0,55	1,74	- 1	1,74	Failure of component	
		<u>ت</u>	۳.	0,63	1,74	-	1,74		
		tna	>	0,75	1,74	-1	1,74	ent of	
	1 II			0,88	1,74	-	1,74		
	Component I			1,00	1,74	-	1,74		
	odu		,	0,40	1,34	1,34	1,34	-	
	C		3	0,50	1,34	1,34	1,34	8	
		Ē	Σ	0,55	1,57	-	1,57	Failure of component I	
		t _{N1} [mm]	N _{R,k} [kN]	0,63 0,75	2,30 2,80	-	2,30 2,80	ure o	
		t _{N1}	N R	0,75	3,45	-	2,80 3,45		
				1,00	3,45	-	3,45		
			,	N _{R,k,II}	3,45	-	5,10	<u> </u>	
		_		<u>з</u> 0	15,0	-	3,5		
		int L	,	40	20,0	-	5,0	1	
		eme		50	25,0	-	6,5	1	
	<u>ш</u>	max. head displacement u [mm]	, ,	60	30,0	-	8,0	1	
	D, d [mm]	disp mm		70	30,0	-	11,0] -	
	Ď,	ad 6		80	30,0	-	12,5		
		he		100	30,0	-	14,0		
		nax	,	120	30,0	-	14,0		
		C		≥ 140	30,0	- 2	14,0		
For t_{N1} or t_{N2} made of S320GI The values listed above in de combinations of k_{mod} and time	pende	ence o	n the	screw i	n length lef	oe increas are valid f	ed by 8.3 % or $k_{mod} = 0$,	5. 90 and ρ _k = 3	50 kg/m ³ . For other
		:	Sand	lwich s	screw				
with hexa		⊃MJ-t	tec 1	TOPE>	(7565-S ⁻		5,0 mm		Annex 7

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SW 8 e 16 e 18 f 1 g 2 g 2 g 2 g 2 g 2 g 2 g 2 g 2	\$ 10.5 \$ 0 \$ 0 \$ 0 \$ 0 \$ 0 \$ 0 \$ 0 \$ 0	Fas Was Cor Cor <u>Dril</u> <u>Tim</u> M _{y,I}	erials tener: sher: nponent I: nponent II: <u>ling-capacit</u> ber substru sk = 9,742 N = 8,575 N/	Stainles S280G S235 - S280G Timber $\underline{\chi} \Sigma(t_i) \leq 2$ <u>ictures</u>	ss steel A2, D to S320G EN 10025- D to S350G – EN 1408 2.50 mm	iD - EN 10346	
		•		Comp	onent II		
			Steel, t		Timber	≥ C24.	
			1,50	2,00	l _{ef} ≥ 45		
		0,40	0,82	0,82	0,82		
	_	0,50	1,74	1,74	1,74	8_	
	t _{N2} [mm] V _{R,k} [kN]	0,55	1,74	-	1,74	Failure of component	
	2 [n ' _{R,k} [0,63	1,74	-	1,74		
	< t ^z >	0,75	1,74	-	1,74	nt of	
	JT	0,88	1,74	-1	1,74		
	Component	1,00	1,74	-	1,74		
		0,40 0,50	1,56 1,96	1,56 1,96	1,56 1,96	-	
	Ö	0,55	2,25	-	2,25	9	
	Ē Ž	0,63	2,23	-	2,23	Failure of component I	
	t _{N1} [mm] N _{R,k} [kN]	0,75	3,40	-	3,40	nen	
	Z t ^z	0,88	3,45	-	3,45	1 = -	
		1,00	3,45	-	3,45		
		N _{R,k,II}	3,45	-		<u> </u>	
	5	30	15,0	-	3,5		
	ent	40	20,0	-	5,0]	
	eme	50	25,0	-	6,5		
	D, d [mm] max. head displacement u [mm]	60	30,0	-	8,0		
	d [i dist [mr	70	30,0	-	11,0	-	
	D, Bad	80	30,0	-	12,5		
	c he	100	30,0	-	14,0		
	max	120	30,0	-	14,0		
		≥ 140	30,0	-	14,0		
For t _{N1} or t _{N2} made of S320GD The values listed above in dep combinations of k _{mod} and timb	endence on the	screw	in length lef	oe increaso are valid f	ed by 8.3 % or k _{mod} = 0,	90 and ρ _k = 35	0 kg/m ³ . For other
	San	dwich	screw				
with hexa	PMJ-tec ⁻ gon head an				9,0 mm		Annex 8

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	Washer: Component I: Component II: Drilling-capacity <u>Timber substru</u> -	S280GD S235 to S280GD $\chi \Sigma(t_i) \le 6.$ ctures	to S320GI S420 - EN to S350GI 00 mm	D - EN 103 10025-1	
1	50 200	Compo t II [r	nm]	4.00	5.00
	,50 2,00 ,75 0,82	2,50 0,82	3,00 0,82	4,00 0,82	5,00 0,82
	,00 1,00	1,10	1,10	1,10	1,10
	,00 1,00	1,10	1,10	1,10	1,10
	,00 1,00	1,10	1,10	1,10	1,10
	,00 1,00	1,10	1,10	1,10	1,10
	,00 1,00	1,10	1,10	1,10	1,10
	,00 1,00	1,10	1,10	1,10	1,10
0 0,40 1 E 0,50 1	,10 1,33 ,10 1,40	1,33 1,40	1,33 1,40	1,33 1,40	1,33 1,40
	,10 1,40	1,40	1,40	1,40	1,40
	,10 2,00	2,20	2,20	2,20	2,20
	,10 2,00	2,20	2,20	2,20	2,20
0,00 1	,10 2,00	2,20	2,20	2,20	2,20
	,10 2,00	2,20	2,20	2,20	2,20
	,10 2,00	2,20	2,20	2,20	2,20
	6,0 3,5	3,5	3,5	3,5	3,5
	0,0 5,0 5,0 6,0	5,0 6,0	5,0 6,0	5,0 6,0	5,0 6,0
2 00 2 2 07 read 3 00 2 3 0 2 0 0 2 0 0 2 0 0 2 0 0 0 0 0 0 0 0 0	9,0 7,5	0,0 7,5	7,5	7,5	7,5
<u>ן ר א א א א ג א ג א ג א ג א ג א ג א ג</u>	3,0 9,0	9,0	9,0	9,0	9,0
	0,0 12,0	12,0	12,0	12,0	12,0
	0,0 12,0	12,0	12,0	12,0	12,0
≥ 140 4	0,0 12,0	12,0	12,0	12,0	12,0

Sandwich screw

PMJ-tec TOPEX 7570-S16 with hexagon head and sealing washer $\ge \emptyset$ 16,0 mm

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Ø 10,5 0 10,5	5.4	0.0		PM SW8 Ø 19		Fas ⁱ Was Con Con	erials ener: ponent I: ponent II: <u>ing-capacit</u> ber substru	Stainles S280GE S235 to S280GE $\underline{Y} \Sigma(t_i) \leq 6$	s steel A2, 0 to S320G S420 - EN 0 to S350G	A4, A5 – E D - EN 103 10025-1		
								Compo				
						50	0.00	t II [-	1.00	E 00	
			0,40			50 75	2,00 0,82	2,50 0,82	3,00 0,82	4,00 0,82	5,00 0,82	
				0,40		10	1,10	1,20	1,20	1,20	1,20	
		Ē	Ī	0,55		10	1,10	1,20	1,20	1,20	1,20	
		Ē	V _{R,k} [kN]	0,63		10	1,10	1,20	1,20	1,20	1,20	
		t _{N2} [mm]	< R,	0,75		10	1,10	1,20	1,20	1,20	1,20	
	_			0,88		10	1,10	1,20	1,20	1,20	1,20	
	Component I		_	1,00	1,	10	1,10	1,20	1,20	1,20	1,20	
	lod			0,40	1,	10	1,33	1,33	1,33	1,33	1,33	
	L m			0,50	1,	10	1,40	1,40	1,40	1,40	1,40	
	0			0,55	1,	10	2,00	2,10	2,10	2,10	2,10	
		лш [[k]	0,63	1,	10	2,00	2,40	2,40	2,40	2,40	
		t _{N1} [mm]	N _{R,k} [kN]	0,75		10	2,00	2,40	2,40	2,40	2,40	
		ц.		0,88		10	2,00	2,40	2,40	2,40	2,40	
				1,00		10	2,00	2,40	2,40	2,40	2,40	
				N _{R,k,II}		10	2,00	2,40	2,40	2,40	2,40	
			7	40		5,0	3,5	3,5	3,5	3,5	3,5	
			_	50		0,0	5,0	5,0	5,0	5,0	5,0	
	um]	ead tt u		 70		5,0	6,0	6,0	6,0 7.5	6,0 7.5	6,0	
	D, d [mm]	x. h ner		80		9,0 3,0	7,5 9,0	7,5 9,0	7,5 9,0	7,5 9,0	7,5 9,0	
	Ď,	ma		100		5,0),0	9,0 12,0	9,0 12,0	9,0 12,0	9,0 12,0	9,0 12,0	
		max. head displacement u [mm]	Ī	120),0),0	12,0	12,0	12,0	12,0	12,0	
		<u>i</u>		≥ 140),0),0	12,0	12,0	12,0	12,0	12,0	
For Component II m	nade	of S3	20GE	D, the gro	ey hiç	ghlight						

Sandwich screw

PMJ-tec TOPEX 7570-S19 with hexagon head and sealing washer $\ge \emptyset$ 19,0 mm

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0 10.5 0 0 0.50 0 0.50 0 0.40 0 0.40 0 0 0 0 0 0 0 0 0			PN SW Ø 10	8		: St St ent I: S2 ent II: S2 S2	ainless stee ainless stee 280GD to S 235 - EN 10 280GD to S $(t_i) \le 5.00 \text{ m}$ $(t_i) \le 5.00 \text{ m}$	el A2, A4, A 320GD - E 025-1 320GD - E	45 – EN ISC N 10346	
						(Component	11		
					1.50	0.00	t II [mm]	0.00	1.00	
				0,50	1,50 1,10	2,00 1,10	2,50 1,10	3,00 1,10	4,00 1,10	
				0,55	1,40	1,10	1,10	1,10	1,10	
		լաս	V _{R,k} [kN]	0,63	1,70	1,70	1,70	1,70	1,70	
		t _{N2} [mm]	R,k	0,75	1,70	1,70	1,70	1,70	1,70	
		t	>	0,88	1,70	1,70	1,70	1,70	1,70	
	Component I			1,00	1,70	1,70	1,70	1,70	1,70	
	loo			0,50	1,60	1,70	1,70	1,70	1,70	
	l uo			0,55	2,00 ^a	2,30	2,30	2,30	2,30	
	0	Ē	Z	0,63	2,00 ^a	2,50	2,50	2,50	2,50	
		t _{N1} [mm]	N _{R,k} [kN]	0,75	2,00 ^a	2,90 ^a	3,20	3,20	3,20	
		tn1	Ž	0,88	2,00 ^a	2,90 ^a	3,80	3,80	3,80	
			1	1,00	2,00 ^a	2,90 ^a	3,90 ^a	4,40	4,40	
				N _{R,k,II}	2,00 ^a	2,90 ^a	3,90 ^a	4,40	4,40	
				40	20,0	15,0	9,0	7,0	4,0	
		max. head displacement u [mm]	, ×	50	21,0	17,0	10,0	8,0	5,0	
	[mu	ead it u		60	22,0	20,0	11,0	9,0	7,0	
	D, d [mm]	ren		70 80	23,0 25,0	20,0 20,0	13,0 16,0	11,0 14,0	8,0 10,0	
	D, C	ma) acer		100	25,0 25,0	20,0	16,0	14,0	10,0	
		spl		120	25,0	20,0	16,0	14,0	10,0	
		ō		≥ 140	25,0	20,0	16,0	14,0	10,0	
Index a: For Componen	t II mao	de of	S320)GD, the	e values ma	ay be incre	ased by 8.2	%.		
				Sandw	ich screv	N				

PMJ-tec TOPEX 7571-S16 with hexagon head and sealing washer $\ge \emptyset$ 16,0 mm

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2 10.5 1 10 1 10	0.0		PM 5000 8019			: St St ent I: S2 ent II: S2 S2	ainless stee 280GD to S 235 - EN 10 280GD to S $(t_i) \le 5.00 \text{ m}$	el A2, A4, A 320GD - El 025-1 320GD - El		
						(Component t II [mm]			
					1,50	2,00	2,50	3,00	4,00	
				0,50	1,30	1,20	1,20	1,20	1,20	
		_	_	0,55	1,50	1,50	1,50	1,50	1,50	
		t _{N2} [mm]	V _{R,k} [kN]	0,63	1,90	1,90	1,90	1,90	1,90	
		12 [1	/ _{R,k}	0,75	1,90	1,90	1,90	1,90	1,90	
	-		-	0,88	1,90	1,90	1,90	1,90	1,90	
	lent			1,00	1,90	1,90	1,90	1,90	1,90	
	Component I			0,50	1,60	1,70	1,70	1,70	1,70	
	100			0,55	2,00	2,50	2,50	2,50	2,50	
		լող	kN]	0,63	2,00	2,80	2,80	2,80	2,80	
		t _{N1} [mm]	N _{R,k} [kN]	0,75	2,00	2,90	3,50	3,50	3,50	
		t	Z	0,88	2,00	2,90	3,90	4,20	4,20	
				1,00	2,00	2,90	3,90	4,90	4,90	
				N _{R,k,II}	2,00	2,90	3,90	4,90	4,90	
		Ē		<u>40</u> 50	20,0 21,0	15,0 17,0	9,0 10,0	7,0 8,0	4,0 5,0	
		max. head displacement u [mm]		60	21,0	20,0	11,0	9,0	7,0	
	mm	hear int u		70	23,0	20,0	13,0	11,0	8,0	
	D, d [mm]	ax. I ∋me		80	25,0	20,0	16,0	14,0	10,0	
	Ľ,	lace Nace		100	25,0	20,0	16,0	14,0	10,0	
		disp		120	25,0	20,0	16,0	14,0	10,0	
				≥ 140	25,0	20,0	16,0	14,0	10,0	
				Sandw	vich screv					
	hove			-tec TC	DPEX 75	71-S19	71 19 0 m	m		Annex 12

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					Materia	als				
Ø 10,5		-		\frown	Faster		Stainless	steel A2, A4		ISO 3506
4,2	5.3	0.9							-	
					Washe			steel A2, A4		
6 8.		en į			Compo	onent I:	S280GD to	5320GD -	- EN 10346	6
(X)				Ø 16	Compo	onent II:	S235 - EN S280GD to	10025-1 5 S320GD -	- EN 10346	5
(^L)	ø 5.5						$\Sigma(t_i) \leq 12.5$	50 mm		
4 ¹ 05.1					-	r substruct	ures			
							Compo t II [I			
					3,00	4,00	5,00	6,00	8,00	≥ 10,0
		[mu	[kN]	D < 40 mm t _{N2} ≥ 0,50	0,80	0,80	0,80	0,80	0,80	0,80
	rt I	t _{N2} [mm]	V _{R.k} [kN]	D ≥ 40 mm t _{N2} ≥ 0,50	1,10	1,10	1,10	1,10	1,10	1,10
	Component I			0,50	1,40	1,40	1,40	1,40	1,40	1,40
	du			0,55	1,90	1,90	1,90	1,90	1,90	1,90
	0 C	Ē	Z	0,63	2,20	2,20	2,20	2,20	2,20	2,20
		t _{N1} [mm]	N _{R,k} [kN]	0,75	2,20	2,20	2,20	2,20	2,20	2,20
		t _{N1}	R	0,88	2,20	2,20	2,20	2,20	2,20	2,20
				1,00	2,20	2,20	2,20	2,20	2,20	2,20
				N _{R,k,II}	2,20	2,20	2,20	2,20	2,20	2,20
		6.3		40	3,5	3,5	3,5	3,5	3,5	3,5
		[mm		50	5,0	5,0	5,0	5,0	5,0	5,0
	Ē	max. head displacement u [mm]	·	60	6,0	6,0	6,0	6,0	6,0	6,0
	[mm]	max. head acement u		70	7,5	7,5	7,5	7,5	7,5	7,5
	D, d	ax. eme		80	9,0	9,0	9,0	9,0	9,0	9,0
	Ľ,			100	12,0	12,0	12,0	12,0	12,0	12,0
		disp		120	12,0	12,0	12,0	12,0	12,0	12,0
				≥ 140	12,0	12,0	12,0	12,0	12,0	12,0
				Sandy	wich sci	rew				

PMJ-tec TOPEX 7575-S16 with hexagon head and sealing washer $\ge \emptyset$ 16,0 mm

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14 (Lg) (X) (9) 42	0.5.5	3		PM SW8 Ø 19	Compo Drilling	ier: er: onent I: onent II:	Stainless s S280GD to S235 - EN S280GD to $\Sigma(t_i) \le 12.5$	5320GD	4, A5 – EN - EN 10346	ISO 3506 5	
							Compo t II [I				
					3,00	4,00	5,00	6,00	8,00	≥ 10,0	
		[mu]	V _{R,k} [kN]	D < 40 mm t _{N2} ≥ 0,50	0,90	0,90	0,90	0,90	0,90	0,90	
	- ut	t _{N2} [mm]	$V_{R,k}$	D ≥ 40 mm t _{N2} ≥ 0,50	1,20	1,20	1,20	1,20	1,20	1,20	
	Component I			0,50	1,40	1,40	1,40	1,40	1,40	1,40	
	dmg			0,55	2,10	2,10	2,10	2,10	2,10	2,10	
	ပိ	[m	Σ	0,63	2,40	2,40	2,40	2,40	2,40	2,40	
		t _{N1} [mm]	N _{R,k} [kN]	0,75	2,40	2,40	2,40	2,40	2,40	2,40	
		tr	Ž	0,88	2,40	2,40	2,40	2,40	2,40	2,40	
				1,00	2,40	2,40	2,40	2,40	2,40	2,40	
				N _{R,k,II}	2,40	2,40	2,40	2,40	2,40	2,40	
		Ē		40 50	3,5	3,5	3,5	3,5	3,5	3,5	
		max. head displacement u [mm]		60	5,0 6,0	5,0 6,0	5,0 6,0	5,0 6,0	5,0 6,0	5,0 6,0	
	D, d [mm]	nt u		70	7,5	7,5	7,5	7,5	7,5	7,5	
	ц Г	h.h mei		80	9,0	9,0	9,0	9,0	9,0	9,0	
	Ľ,	ma ace		100	12,0	12,0	12,0	12,0	12,0	12,0	
		lispl	•	120	12,0	12,0	12,0	12,0	12,0	12,0	
				≥ 140	12,0	12,0	12,0	12,0	12,0	12,0	
				Sand	wich sc	rew					

PMJ-tec TOPEX 7575-S19 with hexagon head and sealing washer $\ge \emptyset$ 19,0 mm

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English translation prepared by DIBt



4.2		Ø 10,5	60 80 87	SW8 016		<u>Materials</u> Fastener: Washer: Compone Compone	Stant I: S2	ainless stee ainless stee 280GD to S mber – EN	el A2, A4, A 320GD - El	5 – EN ISC		
	(5) (Lg)		ø 6,2 3,7			<u>Timber su</u> M _{y,Rk} = 8,	ubstructure	t _i) ≤ 1.00 m <u>ss</u> for),0 mm		
							C	Component t II [mm]	11			
				30	40	50	60	70	80	100	120	≥ 140
			0,50	1,00	1,10	1,10	1,10	1,10	1,10	1,10	1,10	1,10
	F	7	0,55	1,00	1,10	1,10	1,10	1,10	1,10	1,10	1,10	1,10
	mm	[k]	0,63	1,00	1,10	1,10	1,10	1,10	1,10	1,10	1,10	1,10
	t _{N2} [mm]	V _{R,k} [kN]	0,75	1,00	1,10	1,10	1,10	1,10	1,10	1,10	1,10	1,10
	Ē		0,88	1,00	1,10	1,10	1,10	1,10	1,10	1,10	1,10	1,10
Jen			1,00	1,00	1,10	1,10	1,10	1,10	1,10	1,10	1,10	1,10
ŏ			0,50	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,40
1 8			0,55	1,90	1,90	1,90	1,90	1,90	1,90	1,90	1,90	1,90
Comp			0,63	2,20	2,20	2,20	2,20	2,20	2,20	2,20	2,20	2,20
Component I	[աս	kΝ		time printers	1 mm -				0 00			
Comp	[mm]	_{R,k} [kN]	0,75	2,20	2,20	2,20	2,20	2,20	2,20	2,20	2,20	2,20
Comp	t _{N1} [mm]	N _{R,k} [kN]	0,75 0,88	2,20	2,20	2,20	2,20	2,20	2,20	2,20	2,20	2,20
Comp	-	N _{R,k} [kN]	0,75 0,88 1,00	2,20 2,20	2,20 2,20	2,20 2,20	2,20 2,20	2,20 2,20	2,20 2,20	2,20 2,20	2,20 2,20	2,20 2,20
Comp	-	N _{R,k} [kN]	0,75 0,88	2,20	2,20	2,20	2,20	2,20	2,20	2,20	2,20	2,20

The values listed above in dependence on the screw in length I_{ef} are valid for $k_{mod} = 0.90$ and $\rho_k = 350 \text{ kg/m}^3$. For other combinations of k_{mod} and timber densities see Annex 3.

Sandwich screw

PMJ-tec TOPEX-PIASTA 7580-S16 with hexagon head and sealing washer $\ge \emptyset$ 16,0 mm

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(9)	18		Ø7	s	W8 19	Washer: Compone Compone	Fastener: Stainless steel A2, A4, A5 – EN ISO 3506								
(61) (16)			93,7			$M_{y,Rk} = 8$	<u>ubstructur</u> 981 Nm 75 N/mm ²		l _{ef} ≥ 50),0 mm					
								Component t II [mm]	II						
				30	40	50	60	70	80	100	120	≥ 140			
			0,50	1,10	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20			
	Ē	5	0,55	1,10	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20			
	mm	[k]	0,63	1,10	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20			
	t _{N2} [mm]	V _{R,k} [kN]	0,75	1,10	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20			
	ţ	-	0,88	1,10	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20			
Component			1,00	1,10	1,20	1,20	1,20	1,20	1,20	1,20	1,20	1,20			
bor			0,50	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,40			
l mo			0,55	2,10	2,10	2,10	2,10	2,10	2,10	2,10	2,10	2,10			
0	Ē	7	0,63	2,40	2,40	2,40	2,40	2,40	2,40	2,40	2,40	2,40			

The values listed above in dependence on the screw in length I _{ef} are valid for $k_{mod} = 0,90$ and $\rho_k = 350$ kg/m ³ . For other	
combinations of k _{mod} and timber densities see Annex 3.	

Sandwich screw

2,40

2,40

2,40

2,40

2,40

5,5

2,40

2,40

2,40

2,40

2,40

7,0

2,40

2,40

2,40

2,40

2,40

11,0

2,40

2,40

2,40

2,40

2,40

15,0

2,40

2,40

2,40

2,40

2,40

15,0

2,40

2,40

2,40

2,40

2,40

15,0

2,40

2,40

2,40

2,40

2,40

15,0

PMJ-tec TOPEX-PIASTA 7580-S19 with hexagon head and sealing washer $\geq \emptyset$ 19,0 mm Annex 16

t_{N1} [mm] N_{R,k} [kN]

0,63

0,75

0,88

1,00

 $N_{R,k,II}$

max. head displacement u [mm]

2,40

2,40

2,40

2,40

2,40

2,40

2,40

2,40

2,40

2,40

5,0

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L = 75	0 18 A 0 0 0 5 0 5 0 5 0 5 0 5 0 5 0 5	n				$M_{y,Rk} = 14$	sta Sta ent I: S2 ent II: Tir		el A2, A4, A 320GD - El	.5 – EN ISC N 10346		
							C	component t II [mm]	11			
				30	40	50	60	70	80	100	120	≥ 140
			0,40	0,76	0,76	0,76	0,76	0,76	0,76	0,76	0,76	0,76
			0,50	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19
	Ē	Z	0,55	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30
	t _{N2} [mm]	V _{R,k} [kN]	0,63	1,47	1,47	1,47	1,47	1,47	1,47	1,47	1,47	1,47
	t _{N2}	$<_{\rm R}$	0,75	1,74	1,74	1,74	1,74	1,74	1,74	1,74	1,74	1,74
_			0,88	1,74	1,74	1,74	1,74	1,74	1,74	1,74	1,74	1,74
Component	_		1,00	1,74	1,74	1,74	1,74	1,74	1,74	1,74	1,74	1,74
	-		0,50	1,57	1,57	1,57	1,57	1,57	1,57	1,57	1,57	1,57
Co			0,55	1,78	1,78	1,78	1,78	1,78	1,78	1,78	1,78	1,78
	[mm	[k]	0,63	2,20	2,20	2,20	2,20	2,20	2,20	2,20	2,20	2,20
		, k K	0,75	2,80	2,80	2,80	2,80	2,80	2,80	2,80	2,80	2,80
	tn1	N _{R,k}	0,88	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50
			1,00	3,60	3,60	3,60	3,60	3,60	3,60	3,60	3,60	3,60
			N _{R,k,II}	3,60	3,60	3,60	3,60	3,60	3,60	3,60	3,60	3,60
	max, head	displacement u	[mm]	4,0	6,0	8,0	10,0	10,0	10,0	10,0	10,0	10,0
The valu	es list	ted a of k _m	bove in _{od} and ti	dependend mber dens	e on the so ities see An Sandw /J-tec TC	vich screv	v 53-S16	values may alid for k _{moo} ð 16,0 mi	= 0,90 and	ed by 8%. d ρ _k = 350 l		other

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254	■ 18 (A**) SW 11 #0,5 #6.5	E.		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	PMS 5	$M_{y,Rk} = 14$	Sta ent I: S2 ent II: Tir		el A2, A4, A 320GD - El 14081 8 mm	5 – EN ISC		
							C	component t II [mm]	11			
				30	40	50	60	70	80	100	120	≥ 140
			0,40	0,76	0,76	0,76	0,76	0,76	0,76	0,76	0,76	0,76
			0,50	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19
	Ē	z.	0,55	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30
	t _{N2} [mm]	V _{R,k} [kN]	0,63	1,47	1,47	1,47	1,47	1,47	1,47	1,47	1,47	1,47
	t _{N2}	> .	0,75	1,74	1,74	1,74	1,74	1,74	1,74	1,74	1,74	1,74
ut			0,88	1,74	1,74	1,74	1,74	1,74	1,74	1,74	1,74	1,74
Component I	_		1,00	1,74	1,74	1,74	1,74	1,74	1,74	1,74	1,74	1,74
d m			0,50	1,64	1,64	1,64	1,64	1,64	1,64	1,64	1,64	1,64
ပိ			0,55	1,87	1,87	1,87	1,87	1,87	1,87	1,87	1,87	1,87
	[mm]	[KN	0,63	2,20	2,20	2,20	2,20	2,20	2,20	2,20	2,20	2,20
		N _{R,k} [0,75	2,80	2,80	2,80	2,80	2,80	2,80	2,80	2,80	2,80
	tn1	z.	0,88	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50	3,50
			1,00	3,60	3,60	3,60	3,60	3,60	3,60	3,60	3,60	3,60
			N _{R,k,II}	3,60	3,60	3,60	3,60	3,60	3,60	3,60	3,60	3,60
	max. head	displacement u		4,0	6,0	8,0	10,0	10,0	10,0	10,0	10,0	10,0
he valu	es list	ed al of k _m	bove in _{od} and ti	dependenc mber dens	e on the so ities see An Sandw /J-tec TC	vich screv	yth l _{ef} are v v 53-S19	values may alid for k _{moo} Ø 19,0 mi	= 0,90 and	sed by 8%. d ρ _k = 350 l	kg/m ³ . For	other

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English translation prepared by DIBt



L ≦ 75	0 18					Materials Fastener: Washer: Compone Compone <u>Pre drill c</u> <u>Timber su</u> -	Sta ent I: S2 ent II: S2 S2	ainless stee 80GD to S 35 – EN 10 80GD to S see	el A2, A4, A 350GD - El)025-1	N 10346		
							С	omponent t II [mm]	II			
				1,50	2,00	2,50	3,00	4,00	5,00	6,00	7,00	≥ 10,0
		0	,40	1,09	1,09	1,09	1,09	1,09	1,09	1,09	1,09	1,09
			,50	1,17	1,17	1,17	1,17	1,17	1,17	1,17	1,17	1,17
	[u]	Ź _ 0	,55	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24
	· ۲	<u> </u>	,63	1,35	1,35	1,35	1,35	1,35	1,35	1,35	1,35	1,35
	Ē <u>ž</u> 0,		,75	1,53	1,53	1,53	1,53	1,70	1,86	2,03	2,03	2,03
			,88	1,53	1,53	1,53	1,53	1,70	1,86	2,03	2,03	2,03
Jent		1	,00	1,53	1,53	1,53	1,53	1,70	1,86	2,03	2,03	2,03
Component			,40	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38	1,38
Lou Lou			,50	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00	2,00
	Ē	<u> </u>	,55	2,31	2,31	2,31	2,31	2,31	2,31	2,31	2,31	2,31
	t _{N1} [mm]		,63	2,33	2,71	2,80	2,80	2,80	2,80	2,80	2,80	2,80
	t _{N1}	<u>د</u> _	,75	2,33	2,71	3,60	3,60	3,60	3,60	3,60	3,60	3,60
		0	,88 ,00	2,33 2,33	2,71 2,71	3,80 4,00	3,80 4,00	3,80 4,00	3,80 4,00	3,80 4,00	3,80 4,00	3,80
				2,33	2,71	4,00	4,00	4,00			4,00	
			R,k,ll 30	2,33	2,71	4,00 9,0	4,00 8,0		4,00 2,0	4,00		4,00
	nt u		40	12,0	11,6	9,0 10,6	9,6	2,0 3,2	3,2	2,0 3,2	2,0 3,1	2,0 3,1
	ame		40 50	15,2	13,2	12,2	11,2	4,4	4,4	4,4	4,2	4,2
Ē	lace		60	16,8	14,8	13,8	12,8	5,6	5,6	5,6	5,3	5,3
트	lispl nm]		70	18,4	16,4	15,4	14,4	6,8	6,8	6,8	6,4	6,4
D, d [mm]	max. head displacement u [mm]		80	20,0	18,0	17,0	16,0	8,0	8,0	8,0	7,5	7,5
	he	1	00	20,0	18,0	17,0	16,0	8,0	8,0	8,0	7,5	7,5
	lax.	1	20	20,0	18,0	17,0	16,0	8,0	8,0	8,0	7,5	7,5
	E	≥	140	20,0	18,0	17,0	16,0	8,0	8,0	8,0	7,5	7,5
d _{pd} [mm] Ø 5,0							Ø 5,3			Ø 5,5	Ø	5,7

For component t_{N1} or t_{N2} made of S320GD or S350GD, the grey highlighted values may be increased by 8.3%.

Sandwich screw

PMJ-tec TOPEX 7673-S16 with hexagon head and sealing washer $\ge \emptyset$ 16,0 mm

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English translation prepared by DIBt



	Ø 10 81 81 0 6,	e.o e	NA SW Ø	2	<u>Materials</u> Fastener: Washer: Compone Compone <u>Pre drill c</u> <u>Timber s</u>	stant I: S2 Stant I: S2 S2	ainless stee 80GD to S 35 – EN 10 80GD to S see	el A2, A4, A 350GD - E)025-1	N 10346		
						C	omponent	11			
			1.50	2.00	2.50	2.00	t II [mm] 4,00	5,00	6,00	7.00	
-		0,40	1,50 1,09	2,00 1,09	2,50 1,09	3,00 1,09	1,09	1,09	1,09	7,00 1,09	≥ 10,0 1,09
		0,40	1,09	1,09	1,03	1,09	1,09	1,09	1,09	1,09	1,17
	<u>ک</u> کے		1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24
	t _{N2} [mm]	0,55 0,63 0,75	1,35	1,35	1,35	1,35	1,35	1,35	1,35	1,35	1,35
	t nz	² 0,75	1,53	1,53	1,53	1,53	1,70	1,86	2,03	2,03	2,03
_		0,88	1,53	1,53	1,53	1,53	1,70	1,86	2,03	2,03	2,03
Component I	2	1,00	1,53	1,53	1,53	1,53	1,70	1,86	2,03	2,03	2,03
Lod		0,40	1,62	1,62	1,62	1,62	1,62	1,62	1,62	1,62	1,62
L M		0,50	2,13	2,13	2,13	2,13	2,13	2,13	2,13	2,13	2,13
0	~ =	0,55	2,33	2,39	2,39	2,39	2,39	2,39	2,39	2,39	2,39
	t _{N1} [mm]	vy 0,63 × 0,75	2,33	2,71	2,80	2,80	2,80	2,80	2,80	2,80	2,80
	,z	ž <u>0,75</u>	2,33	2,71	3,60	3,60	3,60	3,60	3,60	3,60	3,60
	z	0,88	2,33	2,71	3,80	3,80	3,80	3,80	3,80	3,80	3,80
		1,00	2,33	2,71	4,00	4,00	4,00	4,00	4,00	4,00	4,00
		N _{R,k,II}	2,33	2,71	4,00	4,00	4,00	4,00	4,00	4,00	4,00
	tц	30	12,0	10,0	9,0	8,0	2,0	2,0	2,0	2,0	2,0
	nen	40	13,6	11,6	10,6	9,6	3,2	3,2	3,2	3,1	3,1
Ē	Icer	50	15,2	13,2	12,2	11,2	4,4	4,4	4,4	4,2	4,2
D, d [mm]	max. head displacement u [mm]	60	16,8	14,8	13,8	12,8	5,6	5,6	5,6	5,3	5,3
, o	d displa [mm]		18,4 20,0	16,4 18,0	15,4 17,0	14,4 16,0	6,8 8,0	6,8 8,0	6,8 8,0	6,4 7,5	6,4 7,5
	lea	100	20,0	18,0	17,0	16,0	8,0	8,0 8,0	8,0 8,0	7,5	7,5
	۲. ۲	120	20,0	18,0	17,0	16,0	8,0	8,0 8,0	8,0	7,5	7,5
	шa	≥ 140	20,0	18,0	17,0	16,0	8,0	8,0 8,0	8,0 8,0	7,5	7,5
	d _{pd} [n		Ø 5,0	10,0	1,0	Ø 5,3	0,0	0,0	Ø 5,5		5,7
				I							- ,.

For component t_{N1} or t_{N2} made of S320GD or S350GD, the grey highlighted values may be increased by 8.3%.

Sandwich screw

PMJ-tec TOPEX 7673-S19 with hexagon head and sealing washer $\geq \emptyset$ 19,0 mm

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English translation prepared by DIBt



x 13	07 [°]	((SW 8 	<u>Materials</u> Fastener: Washer: Compone Compone	: S Sent I: S	Stainless stee Stainless stee S280GD to St Fimber – EN	el A2, A4, A 320GD - E	5 – EN ISC		
2.6	o 6.4			$\frac{\text{Drilling-ca}}{\text{Timber su}}$ $M_{y,Rk} = 14$ $f_{ax,k} = 8,5$	ubstructu 4,830 Nm	1		5,0 mm		
						Component t II [mm]				
		30	40	50	60	70	80	100	120	≥ 140
.	0,40	0,76	0,76	0,76	0,76	0,76	0,76	0,76	0,76	0,76
	0,50	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19
E Z	0,55	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30

			0,40	0,76	0,76	0,76	0,76	0,76	0,76	0,76	0,76	0,76				
							0,50	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19	1,19
	[mm]		0,55	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30	1,30				
			V _{R,k} [ŀ	V _{R,k} []	0,63	1,47	1,47	1,47	1,47	1,47	1,47	1,47	1,47	1,47		
	t _{N2}				0,75	1,74	1,74	1,74	1,74	1,74	1,74	1,74	1,74	1,74		
⊐t			0,88	1,74	1,74	1,74	1,74	1,74	1,74	1,74	1,74	1,74				
Ieu	_		1,00	1,74	1,74	1,74	1,74	1,74	1,74	1,74	1,74	1,74				
Component	-		0,50	1,64	1,64	1,64	1,64	1,64	1,64	1,64	1,64	1,64				
õ		N _{R,k} [kN]		0,55	1,87	1,87	1,87	1,87	1,87	1,87	1,87	1,87	1,87			
	[mm]		0,63	2,23	2,23	2,23	2,23	2,23	2,23	2,23	2,23	2,23				
	<u></u>		0,75	2,81	2,81	2,81	2,81	2,81	2,81	2,81	2,81	2,81				
	t _{N1}		0,88	3,25	3,25	3,25	3,25	3,25	3,25	3,25	3,25	3,25				
			1,00	3,69	3,69	3,69	3,69	3,69	3,69	3,69	3,69	3,69				
			N _{R,k,II}	3,69	3,69	3,69	3,69	3,69	3,69	3,69	3,69	3,69				
	max. head	displacement u	[11111]	4,0	6,0	8,0	10,0	10,0	10,0	10,0	10,0	10,0				

The values listed above in dependence on the screw in length I_{ef} are valid for $k_{mod} = 0.90$ and $\rho_k = 350 \text{ kg/m}^3$. For other combinations of k_{mod} and timber densities see Annex 3.

Sandwich screw

PMJ-tec TOPEX 7680-S16 with hexagon head and sealing washer $\geq \emptyset$ 16,0 mm

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English translation prepared by DIBt



X 15 1	0.9 2.6		13 			<u>Materials</u> Fastener: Washer: Compone Compone	Sta ent I: S2		el A2, A4, A 320GD - El	∿5 – EN ISC ∿5 – EN ISC N 10346		
	1	-0-0	T			Drilling-ca	apacity Σ(t _i) ≤ 1.00 m	m			
-	52		3			~			98093350			
		14	1.0 6.4	4		Timber s	ubstructure	<u>s</u>				
3		1	III II			$M_{y,Rk} = 14$	4,830 Nm					
		24	-			f _{ax,k} = 8,5	75 N/mm ²	for	l _{ef} ≥ 35	5,0 mm		
		1 and	The			and taken when the						
		E.	1									
				00	10	50		omponent t II [mm]		100	100	
<u> </u>			0.50	30	40	50	60	70	80	100	120	≥ 140
		_	0,50	0,90	0,90 1,20	0,90 1,20	0,90 1,20	0,90	0,90	0,90	0,90	0,90
			0.55	1 20				1 20	1 20	1 20	1 20	
	Ē	Ž-	0,55	1,20				1,20	1,20	1,20	1,20	1,20
	[mm]	_{R,k} [kN]	0,63	1,60	1,60	1,60	1,60	1,60	1,60	1,60	1,60	1,20 1,60
	t _{N2} [mm]	V _{R,k} [kN]	0,63 0,75	1,60 2,10	1,60 2,10	1,60 2,10	1,60 2,10	1,60 2,10	1,60 2,10	1,60 2,10	1,60 2,10	1,20 1,60 2,10
ent l	t _{n2} [mm]	V _{R,k} [kN]	0,63	1,60	1,60 2,10 2,10	1,60	1,60	1,60	1,60	1,60	1,60	1,20 1,60
sonent l	t _{h2} [mm] I	V _{R,k} [kN]	0,63 0,75 0,88	1,60 2,10 2,10	1,60 2,10	1,60 2,10 2,10	1,60 2,10 2,10	1,60 2,10 2,10	1,60 2,10 2,10	1,60 2,10 2,10	1,60 2,10 2,10	1,20 1,60 2,10 2,10
omponent l	t _{h2} [mm] I	- V _{R,k} [kN]	0,63 0,75 0,88 1,00	1,60 2,10 2,10 2,10	1,60 2,10 2,10 2,10 2,10	1,60 2,10 2,10 2,10 2,10	1,60 2,10 2,10 2,10 2,10	1,60 2,10 2,10 2,10 2,10	1,60 2,10 2,10 2,10 2,10	1,60 2,10 2,10 2,10 2,10	1,60 2,10 2,10 2,10 2,10	1,20 1,60 2,10 2,10 2,10 2,10
Component I	=	-	0,63 0,75 0,88 1,00 0,50	1,60 2,10 2,10 2,10 1,72	1,60 2,10 2,10 2,10 1,72	1,60 2,10 2,10 2,10 1,72	1,60 2,10 2,10 2,10 1,72	1,60 2,10 2,10 2,10 1,72	1,60 2,10 2,10 2,10 1,72	1,60 2,10 2,10 2,10 1,72	1,60 2,10 2,10 2,10 1,72	1,20 1,60 2,10 2,10 2,10 1,72
Component I	=	-	0,63 0,75 0,88 1,00 0,50 0,55	1,60 2,10 2,10 2,10 1,72 1,96	1,60 2,10 2,10 2,10 1,72 1,96	1,60 2,10 2,10 2,10 1,72 1,96	1,60 2,10 2,10 2,10 1,72 1,96	1,60 2,10 2,10 2,10 1,72 1,96	1,60 2,10 2,10 2,10 1,72 1,96	1,60 2,10 2,10 2,10 1,72 1,96	1,60 2,10 2,10 2,10 1,72 1,96	1,20 1,60 2,10 2,10 2,10 1,72 1,96
Component I	1 [mm]	N _{R,k} [kN] V _{R,k} [kN]	0,63 0,75 0,88 1,00 0,50 0,55 0,63	1,60 2,10 2,10 2,10 1,72 1,96 2,21	1,60 2,10 2,10 2,10 1,72 1,96 2,21	1,60 2,10 2,10 2,10 1,72 1,96 2,21	1,60 2,10 2,10 2,10 1,72 1,96 2,21	1,60 2,10 2,10 2,10 1,72 1,96 2,21	1,60 2,10 2,10 2,10 1,72 1,96 2,21	1,60 2,10 2,10 2,10 1,72 1,96 2,21	1,60 2,10 2,10 2,10 1,72 1,96 2,21	1,20 1,60 2,10 2,10 2,10 1,72 1,96 2,21
Component I	1 [mm]	R,k [kN]	0,63 0,75 0,88 1,00 0,50 0,55 0,63 0,75	1,60 2,10 2,10 1,72 1,96 2,21 2,73	1,60 2,10 2,10 1,72 1,96 2,21 2,73	1,60 2,10 2,10 2,10 1,72 1,96 2,21 2,73	1,60 2,10 2,10 2,10 1,72 1,96 2,21 2,73	1,60 2,10 2,10 1,72 1,96 2,21 2,73	1,60 2,10 2,10 2,10 1,72 1,96 2,21 2,73	1,60 2,10 2,10 1,72 1,96 2,21 2,73	1,60 2,10 2,10 2,10 1,72 1,96 2,21 2,73	1,20 1,60 2,10 2,10 1,72 1,96 2,21 2,73
Component I	1 [mm]	N _{R,k} [kN]	0,63 0,75 0,88 1,00 0,50 0,55 0,63 0,75 0,88	1,60 2,10 2,10 1,72 1,96 2,21 2,73 3,32	1,60 2,10 2,10 1,72 1,96 2,21 2,73 3,32	1,60 2,10 2,10 1,72 1,96 2,21 2,73 3,32	1,60 2,10 2,10 1,72 1,96 2,21 2,73 3,32	1,60 2,10 2,10 1,72 1,96 2,21 2,73 3,32	1,60 2,10 2,10 1,72 1,96 2,21 2,73 3,32	1,60 2,10 2,10 1,72 1,96 2,21 2,73 3,32	1,60 2,10 2,10 1,72 1,96 2,21 2,73 3,32	1,20 1,60 2,10 2,10 1,72 1,96 2,21 2,73 3,32

The values listed above in dependence on the screw in length I_{ef} are valid for $k_{mod} = 0.90$ and $p_k = 350 \text{ kg/m}^3$. For other combinations of k_{mod} and timber densities see Annex 3.

Sandwich screw

PMJ-tec TOPEX 7680-S19 with hexagon head and sealing washer $\geq \emptyset$ 19,0 mm

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English translation prepared by DIBt



Ø 10,5		Materials	
		Fastener:	carbon steel; case hardened and galvanized
3		Washer:	steel, zinc coated and with vulcanized EPDM
Ø 6.2	Ø 16	Component I:	S280GD to S350GD - EN 10346
(X)		Component II:	S235 - EN 10025-1 S280GD to S350GD - EN 10346
		Drilling-capacity	Σ(t _i) ≤ 5.00 mm
		Timber substruc	tures
		no performance	determined
00			
Ø 4,7			
		1	

7360 55				t _{II} [r	nm]						
/360 5	5	1.50	2.00	2.50	3.00	4.00	5.00				
	0.40	0,75	0,82	0,82	0,82	0,82	0,82				
	0.50	1,00	1,00	1,10	1,10	1,10	1,10				
V FLAD	0.55	1,00	1,00	1,10	1,10	1,10	1,10				
V _{R,k} [kN] t _{N2} [mm]	0.63	1,00	1,00	1,10	1,10	1,10	1,10				
ung [mm]	0.75	1,00	1,00	1,10	1,10	1,10	1,10				
	0.88	1,00	1,00	1,10	1,10	1,10	1,10				
	1.00	1,00	1,00	1,10	1,10	1,10	1,10				
	0.40	1,33	1,33	1,33	1,33	1,33	1,33				
	0.50	1,40	1,40	1,40	1,40	1,40	1,40				
	0.55	1,90	1,90	1,90	1,90	1,90	1,90				
N _{R,k} [kN] t _{N1} [mm]	0.63	2,20	2,20	2,20	2,20	2,20	2,20				
	0.75	2,20	2,20	2,20	2,20	2,20	2,20				
	0.88	2,20	2,20	2,20	2,20	2,20	2,20				
	1.00	2,20	2,20	2,20	2,20	2,20	2,20				
N _{R,II,k} [I	kN]	2,30	3,53	4,87	6,20	7,81	9,41				
	40	12,0			2,0						
u [mm]	60	18,0			3,0						
D [mm]	80	24,0			4,0						
	≥ 100	30,0		5,0							

Sandwich screw

PMJ-tec TOPEX 7360 with hexagon head and sealing washer $\geq \emptyset$ 16,0 mm

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English translation prepared by DIBt



- Ø 10,5 -	Materials
	Fastener: carbon steel; case hardened and galvanized
	Washer: steel, zinc coated and with vulcanized EPDM
Ø 6,2 SW 8	Component I: S280GD to S350GD - EN 10346
2 Ø 19	Component II: S235 - EN 10025-1
<u>Ø 4.4</u>	S280GD to S350GD - EN 10346
o 5.4	<u>Drilling-capacity</u> $\Sigma(t_i) \le 5.00 \text{ mm}$
(67)	Timber substructures
	no performance determined
00 V	
Ø 4,7	

7200	- r			t _{II} [r	nm]						
7360 5	55	1.50	2.00	2.50	3.00	4.00	5.00				
	0.40	0,75	0,82	0,82	0,82	0,82	0,82				
	0.50	1,10	1,10	1,20	1,20	1,20	1,20				
	0.55	1,10	1,10	1,20	1,20	1,20	1,20				
V _{R,k} [kN] t _{N2} [mm]	0.63	1,10	1,10	1,20	1,20	1,20	1,20				
	0.75	1,10	1,10	1,20	1,20	1,20	1,20				
	0.88	1,10	1,10	1,20	1,20	1,20	1,20				
	1.00	1,10	1,10	1,20	1,20	1,20	1,20				
	0.40	1,33	1,33	1,33	1,33	1,33	1,33				
	0.50	1,40	1,40	1,40	1,40	1,40	1,40				
	0.55	1,90	1,90	1,90	1,90	1,90	1,90				
N _{R,k} [kN] t _{N1} [mm]	0.63	2,20	2,20	2,20	2,20	2,20	2,20				
	0.75	2,20	2,20	2,20	2,20	2,20	2,20				
	0.88	2,20	2,20	2,20	2,20	2,20	2,20				
	1.00	2,20	2,20	2,20	2,20	2,20	2,20				
N _{R,II,k} [I	kN]	2,30	3,53	4,87	6,20	7,81	9,41				
	40	12,0			2,0						
u [mm]	60	18,0			3,0						
D [mm]	80	24,0			4,0						
	≥ 100	30,0		5,0							

Sandwich screw

PMJ-tec TOPEX 7360 with hexagon head and sealing washer $\ge \emptyset$ 19,0 mm

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English translation prepared by DIBt



		<u>Materials</u> Fastener: Washer:	carbon steel; case hardened and galvanized steel, zinc coated and with vulcanized EPDM
6) 81 0 6.2 (X) 0 4.4 0 5.4	<u>SW 8</u> Ø 16	Component I: Component II:	S280GD to S350GD - EN 10346 S235 - EN 10025-1 S280GD to S350GD - EN 10346
		Drilling-capacity Timber substruct	tures
Ø 4,5			

7362 55				t _{II} [r	nm]					
/362 5	/362 55		2.00	2.50	3.00	4.00	5.00			
	0.40	0,75	0,82	0,82	0,82	-	-			
	0.50	1,10	1,10	1,10	1,10	=	-			
	0.55	1,40	1,40	1,40	-	-	-			
V _{R,k} [kN] t _{N2} [mm]	0.63	1,70	1,70	1,70	-		-			
ung [mm]	0.75	1,70	1,70	1,70	-	-	-			
	0.88	1,70	1,70	1,70	-	-	-			
	1.00	1,70	1,70	1,70	-	=	.=.			
	0.40	1,33	1,33	1,33	1,33	-	-			
	0.50	1,70	1,70	1,70	1,70	-				
	0.55	2,30	2,30	2,30	-	-	-			
N _{R,k} [kN] t _{N1} [mm]	0.63	2,30	2,50	2,50	1 	-	-			
	0.75	2,30	3,20	3,20	-	-	-			
	0.88	2,30	3,53	3,80	-	=	(=)			
	1.00	2,30	3,53	4,40	-	-	-			
N _{R,II,k} [I	<n]< td=""><td>2,30</td><td>3,53</td><td>4,87</td><td>-</td><td>-</td><td>-</td></n]<>	2,30	3,53	4,87	-	-	-			
	40	12,0			2,0					
u [mm]	60	18,0			3,0					
D [mm]	80	24,0			4,0					
	≥ 100	30,0		5,0						

Sandwich screw

PMJ-tec TOPEX 7362 with hexagon head and sealing washer $\ge \emptyset$ 16,0 mm

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English translation prepared by DIBt



Ø 10,5		Materials	
		Fastener:	carbon steel; case hardened and galvanized
		Washer:	steel, zinc coated and with vulcanized EPDM
Ø 6.2	SW 8	Component I:	S280GD to S350GD - EN 10346
× Ø 4,4	Ø 19	Component II:	S235 - EN 10025-1
			S280GD to S350GD - EN 10346
05.4		Drilling-capacity	Σ(t _i) ≤ 3.50 mm
(67)		Timber substruct	tures
		no performance	determined
e e			
Ø 4,5			

7362 55				t _{II} [r	nm]		
/362 :	/302 55		2.00	2.50	3.00	4.00	5.00
	0.40	0,75	0,82	0,82	0,82	-	-
	0.50	1,50	1,50	1,50	1,50	-	-
V ELNI	0.55	1,50	1,50	1,50	-	-	-
V _{R,k} [kN] t _{N2} [mm]	0.63	1,90	1,90	1,90	-		-
	0.75	1,90	1,90	1,90	-	-	
	0.88	1,90	1,90	1,90	-	-	-
	1.00	1,90	1,90	1,90	-	-	-
	0.40	1,33	1,33	1,33	1,33	-	-
	0.50	1,70	1,70	1,70	1,70	-	-
	0.55	2,30	2,50	2,50	-	-	
N_{R,k} [kN] t _{N1} [mm]	0.63	2,30	2,80	2,80	Ξ.	-	-
	0.75	2,30	3,50	3,50	-	-	-
	0.88	2,30	3,53	4,20	-	-	-
	1.00	2,30	3,53	4,87	-	-	
N _{R,II,k} [kN]	2,30	3,53	4,87	-	_	1-1
	40	12,0			2,0		
u [mm]	60	18,0			3,0		
D [mm]	80	24,0			4,0		
	≥ 100	30,0			5,0		

Sandwich screw

PMJ-tec TOPEX 7362 with hexagon head and sealing washer $\geq \emptyset$ 19,0 mm





PMJ-tec Technical Information

ETAs - European Technical Assessments - are a cornerstone of our commitment to proven quality and reliability. Available exclusively to European manufacturers, it demonstrates independently assessed standards and differentiates PMJ-tec as a fastener manufacturer from non-manufacturers who supply and distribute generic fasteners.

DIBt - Deutsches Institut für Bautechnik - are the approval body for construction products that controls and issues our ETAs.

The CE mark indicates that a fastener is consistent with the data provided in the relevant Declaration of Performance as issued by PMJ-tec AG.







Quality

Reliability

Verified

Warrantied

Approved







CE

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