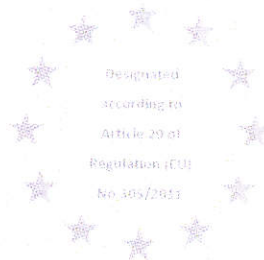




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European Technical Assessment

ETA 19/0354
of 27/01/2020

General Part

Technical Assessment Body issuing the European Technical Assessment
Technický a zkušební ústav stavební Praha, s.p.

Trade name of the construction product	MPZ6 SP, MPZ12 SP, MPZ16 SP, MPZ25 SP, MPT6 SP, MPT12 SP, MPT16 SP, MPT25 SP, MPX6 SP, MPX12 SP, MPTC SP, MPXC SP
Product family to which the construction product belongs	Product area code: 33 Fastening screws for sandwich panels
Manufacturer	Marcopol sp.zoo Producent Śrub Ul. Oliwska 100 80-209 Chwaszczyno Republic of Poland
Manufacturing plant	1. Plant 1 2. Plant 2 3. Plant 3 4. Plant 4
This European Technical Assessment Contains	34 pages including 3 Annexes, which form an integral part of this European Technical Assessment
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	EAD 330047-01-0602 Fastening screws for sandwich panels

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

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Specific Parts

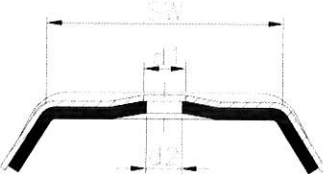
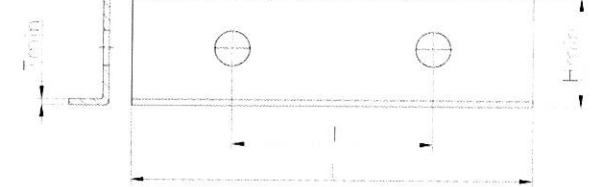
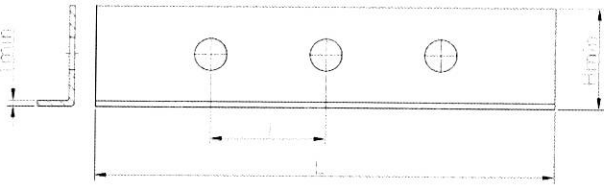
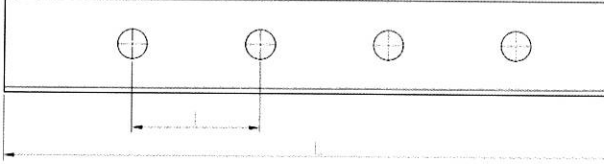
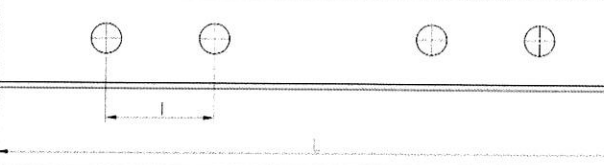
1 Technical description of the product

The self-drilling sandwich panel screws are intended to be used for fastening sandwich panels to metal or timber substructures. The screws are made of carbon steel grade SAE 1022 covered by zinc plate min. 12 microns or ceramic coating Ruspert Silver 1000h or are made of stainless steel connected with carbon steel (Bimetal) with ceramic coating Ruspert Silver 500h. Screws are normally completed with EPDM washer (pregalvanized carbon steel, aluminum or stainless steel A2), saddle washers SW types and tension diffusers type RN. Screws have two threads made in different dimension. Thread under head is responsible for proper sealing of connection sandwich panel under screw head. Screws completed with saddle washers SW types are used for fixing roof sandwich panels to metal substructure. For details see table below. Examples of screws and the corresponding connections are shown in Annex 1.

Specification of screws

Element	Drawing	Material
Screw MPZ6 SP		

Element	Drawing	Material
Screw MPZ16 SP		Carbon steel SAE 1022, zinc plate
Screw MPT16 SP		Carbon steel SAE 1022, Ruspert Silver 1000h
Screw MPZ25 SP		Carbon steel SAE 1022, zinc plate
Screw MPT25 SP		Carbon steel SAE 1022, Ruspert Silver 1000h
Screw MPXC SP		Carbon steel SAE 1022, Ruspert Silver 1000h
Screw MPXC SP		Bimetal, stainless steel A2, Ruspert Silver 500h
Washer A ø (19, 22, 29)		Aluminum
Washer S ø (19, 22, 29)		Pregalvanized carbon steel
Washer (A2) I ø (19, 22, 29)		Stainless steel A2

Element	Drawing	Material
Washer SW 26-49		Aluminium sheet with elastomer "Polymer36"
MRN 80/22/30		Pregalvanized carbon steel or stainless steel
MRN 100/22/25		Pregalvanized carbon steel or stainless steel
MRN 150/22/30		Pregalvanized carbon steel or stainless steel
MRN 150/22/25		Pregalvanized carbon steel or stainless steel

1.1 Characteristics of the product

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

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

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

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

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

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

The assessment of the fitness for use of the fastening screws for sandwich panels according to the basic work requirements (BWR) were carried out in compliance with EAD 330047-01-0602.

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

Table 1 Essential characteristics of the product

	Essential characteristic	Performance
3.1 BWR 1: Mechanical resistance and stability		
3.1.1	Shear Resistance of the Connection	See Annex 2
3.1.2	Tension Resistance of the Connection	See Annex 2
3.1.3	Durability	See point 3.1.3
3.2 BWR 2: Safety in case of fire		
3.2.1	Reaction to fire	The performance of the product is class A1 according to EN 13501-1

3.1 Mechanical resistance and stability (BWR 1)

Annex 2 contains essential characteristics for self-drilling sandwich panel screws. The design and construction shall be carried out according to national provisions that apply at the installation site in line with the partial safety factor format.

3.1.1 Shear Resistance of the Connection

The test of shear resistance of the connection was performed according to provisions in EAD 330047-01-0602, clause 2.2.1.1 and evaluated according to clause 2.2.1.2. The test results are documented in tables under Annex 2.

3.1.2 Tension Resistance of the Connection

The test of tension resistance of the connection was performed according to provisions in EAD 330047-01-0602, clause 2.2.2.1 and clause 2.2.2.3 and evaluated according to clause 2.2.2.4. The test results are documented in tables under Annex 2.

3.1.3 Durability against corrosion

The screws are made from steel grade SAE1022 covered by zinc plate min. 12 microns, or coating Ruspert Silver 1000h or are made from stainless steel connecting with carbon steel (Bimetal) coated by Ruspert Silver 500h. Screws are normally completed with EPDM washer (pregalvanized carbon steel, aluminum or stainless steel A2), saddle washers SW types and tension diffusers type RN.

For the corrosion protection the rules given in EN 1993-1-3, EN 1993-1-4 and EN 1999-1-4 shall be taken into account. Fastening screws for sandwich panels which are made of stainless steel are intended to be used in external environments with \geq C2 corrosion according to the standard EN ISO 12944-2.

When the screws are painted and when the paint or coating combination is not given in EN ISO 12944-5, then, testing in accordance with EN ISO 12944-6:1998 shall be carried out.

Due to the fact that only the rim of the EPDM sealing washer might be exposed to ageing media, the EPDM sealing washer ensures adequate durability for the intended working life.

If required, the durability of the EPDM sealing washer shall be evaluated with 1000h ageing in accordance with EN ISO 4892-2 or EN ISO 4892-3 followed by the evaluation of water tightening ability after the test.

3.2 Safety in case of fire (BWR 2)

3.2.1 Reaction to fire

The fastening screws for sandwich panels are considered to satisfy the requirements for performance Class A1 of the characteristic reaction to fire, in accordance with the EC Decision 1996/603/EC (as amended) without the need for further testing on the basis of its conformity with the specification of the product detailed in that Decision and its intended end use application being covered by that Decision.

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

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

According to the Decision 1998/0214/EC¹, of the European Commission the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011 and Commission delegated Regulation (EU) No 568/2014) given in the following table applies:

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

The system 2+ referred above is described in Construction Products Regulation (EU) No. 305/2011, Annex V, clauses 1.3.

¹ 1998/0214/EC - European Commission Decision of 18/3/1998, published in the Official Journal of the European Communities No L 80/46

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at the Technický a zkušební ústav stavební Praha, s.p.

Issued in Prague on 27/01/2020

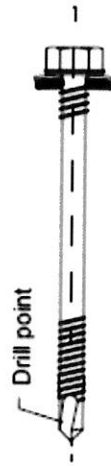


By
Mária Schaan
Head of the TAB

Annexes:

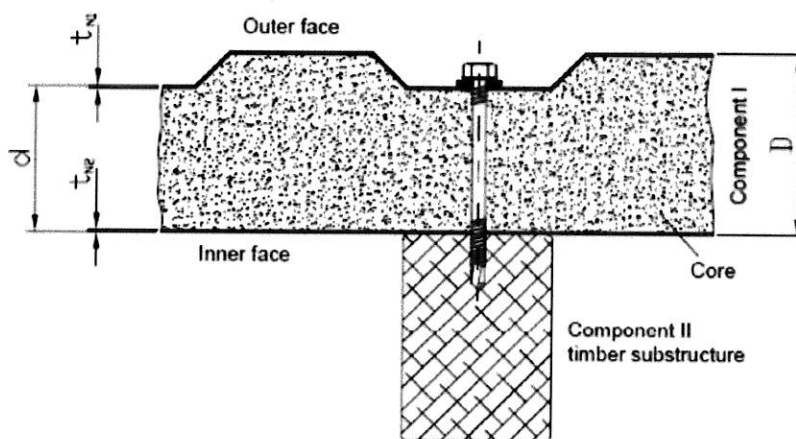
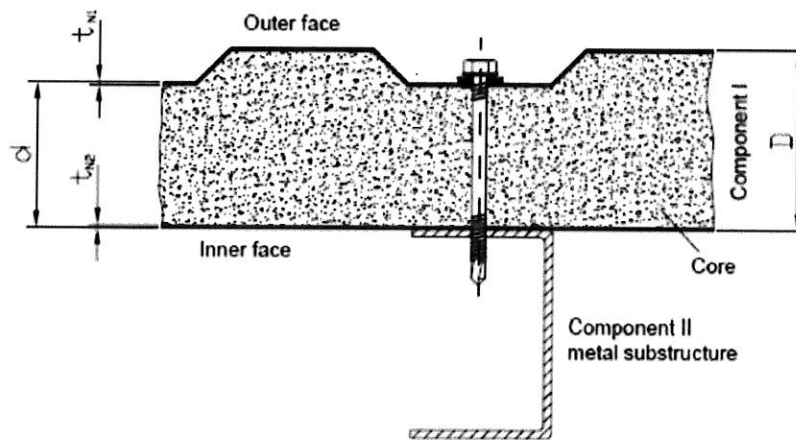
- Annex 1 Examples for screws, types of connection
- Annex 2 Tension and shear resistances of the connections
- Annex 3 Reference documents

Annex 1 Examples for screws, types of connection

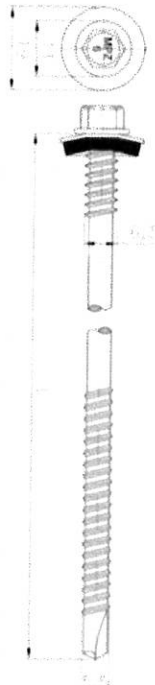


Self drilling screw

Samples of connections



Annex 2 Tension and shear resistances of the connections

<p>Materials</p> <p>Fastener: carbon steel – SAE1022 quenched, tempered and galvanized</p> <p>Washer: EPDM sealing ring with metal top made of coated carbon</p> <p>Component I: S280GD, S320GD or S350GD – EN 10346</p> <p>Component II: $t_{II} < 2$ mm: S235 – EN 10025-1 $t_{II} \geq 2$ mm: S280GD, S320GD or S350GD – EN 10346</p>	
<p>Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 6$ mm</p>	
<p>Timber substructures no performance determined</p>	

		Component II: t_{II} in [mm]	2.00	2.50	3.00	4.00	5.00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0.40	0.75	0.75	0.75	0.75	0,75
		0.50	1.33	1.33	1.33	1.33	1,33
		0.55	1.33	1.33	1.33	1.33	1,33
		0.63	1.66	1.66	1.66	1.66	1,66
		0.75	1.97	1.97	1.97	1.97	1,97
		0.88	1.97	1.97	1.97	1.97	1,97
		1.00	1.97	1.97	1.97	1.97	1,97
	$N_{R,k}$ [kN]	0.40	2.23	2.23	2.23	2.23	2,23
		0.50	2.26	2.26	2.26	3.23	3,23
		0.55	2.26	2.26	2.26	3.23	3,23
		0.63	2.26	2.26	2.26	4.12	4,12
		0.75	2.26	2.26	2.26	4.73	4,73
		0.88	2.26	2.26	2.26	4.73	4,73
		1.00	2.26	2.26	2.26	4.73	4,73
max. head displacement u depending on the sandwich panel thickness in [mm]	30	0.7	0.7	0.7	0.7	0.7	
	40	0.9	0.9	0.9	0.9	0.9	
	50	1.2	1.2	1.2	1.2	1.2	
	60	1.4	1.4	1.4	1.4	1.4	
	70	1.6	1.6	1.6	1.6	1.6	
	80	1.8	1.8	1.8	1.8	1.8	
	90	2.1	2.1	2.1	2.1	2.1	
	100	2.3	2.3	2.3	2.3	2.3	
	120	2.8	2.8	2.8	2.8	2.8	
>140	3.2	3.2	3.2	3.2	3.2		

MPZ6 SP Fastening screws for sandwich panels

MPZ6 SP 5,5/6,3 x L
with hexagon head and EPDM washer type S \varnothing (19,22,29)
made of coated carbon steel

Annex 2

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Materials

Fastener: carbon steel – SAE1022
quenched, tempered and galvanized and additionally protected by ceramic coating Ruspert Silver 1000h

Washer: EPDM sealing ring with metal top made of aluminum

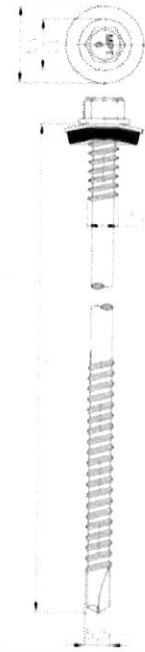
Component I: S280GD, S320GD or S350GD – EN 10346

Component II: $t_{II} < 2$ mm: S235 – EN 10025-1
 $t_{II} \geq 2$ mm: S280GD, S320GD or S350GD – EN 10346

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

Timber substructures

no performance determined



		Component II: t_{II} in [mm]					
		2.00	2.50	3.00	4.00	5.00	
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0.40	0.75	0.75	0.75	0.75	0,75
		0.50	1.33	1.33	1.33	1.33	1,33
		0.55	1.33	1.33	1.33	1.33	1,33
		0.63	1.66	1.66	1.66	1.66	1,66
		0.75	1.97	1.97	1.97	1.97	1,97
		0.88	1.97	1.97	1.97	1.97	1,97
		1.00	1.97	1.97	1.97	1.97	1,97
	$N_{R,k}$ [kN]	0.40	2.23	2.23	2.23	2.23	2,23
		0.50	2.26	2.26	2.26	3.23	3,23
		0.55	2.26	2.26	2.26	3.23	3,23
		0.63	2.26	2.26	2.26	4.12	4,12
		0.75	2.26	2.26	2.26	4.73	4,73
		0.88	2.26	2.26	2.26	4.73	4,73
		1.00	2.26	2.26	2.26	4.73	4,73
max. head displacement u depending on the sandwich panel thickness in [mm]	30	0.7	0.7	0.7	0.7	0.7	
	40	0.9	0.9	0.9	0.9	0.9	
	50	1.2	1.2	1.2	1.2	1.2	
	60	1.4	1.4	1.4	1.4	1.4	
	70	1.6	1.6	1.6	1.6	1.6	
	80	1.8	1.8	1.8	1.8	1.8	
	90	2.1	2.1	2.1	2.1	2.1	
	100	2.3	2.3	2.3	2.3	2.3	
	120	2.8	2.8	2.8	2.8	2.8	
	>140	3.2	3.2	3.2	3.2	3.2	

MPT6 SP Fastening screws for sandwich panels

MPT6 SP 5,5/6,3 x L
with hexagon head and EPDM washer type A \emptyset (19,22,29)
made of aluminum

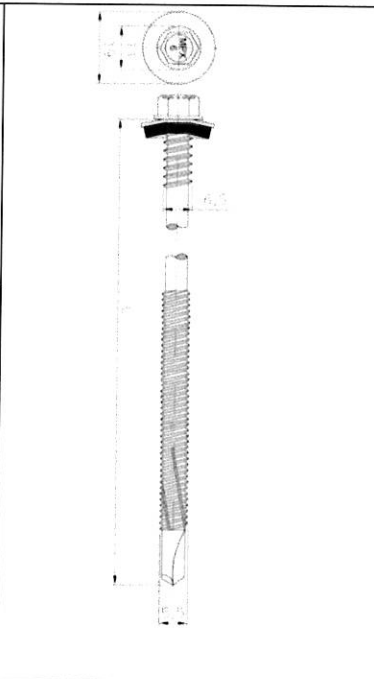
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Materials
Fastener: stainless steel – SAE304, bi-metal
 additionally protected by ceramic coating Ruspert Silver 500h
Washer: EPDM sealing ring with metal top made stainless steel
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: $t_{II} < 2$ mm: S235 – EN 10025-1
 $t_{II} \geq 2$ mm: S280GD, S320GD or S350GD – EN 10346

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

Timber substructures
 no performance determined



		Component II: t_{II} in [mm]	2.00	2.50	3.00	4.00	5.00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0.40	0.75	0.75	0.75	0.75	0.75
		0.50	1.33	1.33	1.33	1.33	1.33
		0.55	1.33	1.33	1.33	1.33	1.33
		0.63	1.66	1.66	1.66	1.66	1.66
		0.75	1.97	1.97	1.97	1.97	1.97
		0.88	1.97	1.97	1.97	1.97	1.97
		1.00	1.97	1.97	1.97	1.97	1.97
	$N_{R,k}$ [kN]	0.40	2.23	2.23	2.23	2.23	2.23
		0.50	2.26	2.26	2.26	3.23	3.23
		0.55	2.26	2.26	2.26	3.23	3.23
		0.63	2.26	2.26	2.26	4.12	4.12
		0.75	2.26	2.26	2.26	4.73	4.73
		0.88	2.26	2.26	2.26	4.73	4.73
		1.00	2.26	2.26	2.26	4.73	4.73
max. head displacement u depending on the sandwich panel thickness in [mm]	30	0.7	0.7	0.7	0.7	0.7	
	40	0.9	0.9	0.9	0.9	0.9	
	50	1.2	1.2	1.2	1.2	1.2	
	60	1.4	1.4	1.4	1.4	1.4	
	70	1.6	1.6	1.6	1.6	1.6	
	80	1.8	1.8	1.8	1.8	1.8	
	90	2.1	2.1	2.1	2.1	2.1	
	100	2.3	2.3	2.3	2.3	2.3	
	120	2.8	2.8	2.8	2.8	2.8	
>140	3.2	3.2	3.2	3.2	3.2		

MPX6 SP Fastening screws for sandwich panels

MPX6 SP 5,5/6,3 x L
 with hexagon head and EPDM washer type I \varnothing (19,22, 29)
 made of stainless steel

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Materials
Fastener: carbon steel – SAE1022
 quenched, tempered and galvanized
Washer: EPDM sealing ring with metal top made of coated carbon
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S235 – EN 10025-1



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

Timber substructures
 no performance determined

		Component II: t_{II} in [mm]	3.00	4.00	5.00	6.00	8.00	10.00	11.00
Component I: t_{N1} or t_{N2} in [mm]	$V_{R,k}$ [kN]	0.40	0.75	0.75	0.75	0.75	0.75	0.75	0,75
		0.50	1.33	1.33	1.33	1.33	1.33	1.33	1,33
		0.55	1.33	1.33	1.33	1.33	1.33	1.33	1,33
		0.63	1.66	1.66	1.66	1.66	1.66	1.66	1,66
		0.75	1.97	1.97	1.97	1.97	1.97	1.97	1,97
		0.88	1.97	1.97	1.97	1.97	1.97	1.97	1,97
		1.00	1.97	1.97	1.97	1.97	1.97	1.97	1,97
	$N_{R,k}$ [kN]	0.40	2.23	2.23	2.23	2.23	2.23	2.23	2,23
		0.50	3.11	3.23	3.23	3.23	3.23	3.23	3,23
		0.55	3.11	3.23	3.23	3.23	3.23	3.23	3,23
		0.63	3.11	4.12	4.12	4.12	4.12	4.12	4,12
		0.75	3.11	4.73	4.73	4.73	4.73	4.73	4,73
		0.88	3.11	4.73	4.73	4.73	4.73	4.73	4,73
		1.00	3.11	4.73	4.73	4.73	4.73	4.73	4,73
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	0.9	0.9	0.9	0.9	0.9	0.9	0.9	
	50	1.2	1.2	1.2	1.2	1.2	1.2	1.2	
	60	1.4	1.4	1.4	1.4	1.4	1.4	1.4	
	70	1.6	1.6	1.6	1.6	1.6	1.6	1.6	
	80	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
	90	2.1	2.1	2.1	2.1	2.1	2.1	2.1	
	100	2.3	2.3	2.3	2.3	2.3	2.3	2.3	
	120	2.8	2.8	2.8	2.8	2.8	2.8	2.8	
>140	3.2	3.2	3.2	3.2	3.2	3.2	3.2		

MPZ12 SP Fastening screws for sandwich panels

MPZ12 SP 5,5/6,3 x L
 with hexagon head and EPDM washer type S $\varnothing(19,22,29)$
 made of coated carbon steel

Annex 2

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Materials

Fastener: carbon steel – SAE1022
quenched, tempered and galvanized and additionally protected by ceramic coating Ruspert Silver 1000h

Washer: EPDM sealing ring with metal top made of aluminum

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S235 – EN 10025-1

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

Timber substructures

no performance determined



Component II: t_{ij} in [mm]		3.00	4.00	5.00	6.00	8.00	10.00	11.00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0.40	0.75	0.75	0.75	0.75	0.75	0.75
		0.50	1.33	1.33	1.33	1.33	1.33	1.33
		0.55	1.33	1.33	1.33	1.33	1.33	1.33
		0.63	1.66	1.66	1.66	1.66	1.66	1.66
		0.75	1.97	1.97	1.97	1.97	1.97	1.97
		0.88	1.97	1.97	1.97	1.97	1.97	1.97
		1.00	1.97	1.97	1.97	1.97	1.97	1.97
	$N_{R,k}$ [kN]	0.40	2.23	2.23	2.23	2.23	2.23	2.23
		0.50	3.11	3.23	3.23	3.23	3.23	3.23
		0.55	3.11	3.23	3.23	3.23	3.23	3.23
		0.63	3.11	4.12	4.12	4.12	4.12	4.12
		0.75	3.11	4.73	4.73	4.73	4.73	4.73
		0.88	3.11	4.73	4.73	4.73	4.73	4.73
		1.00	3.11	4.73	4.73	4.73	4.73	4.73
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	
	40	0.9	0.9	0.9	0.9	0.9	0.9	
	50	1.2	1.2	1.2	1.2	1.2	1.2	
	60	1.4	1.4	1.4	1.4	1.4	1.4	
	70	1.6	1.6	1.6	1.6	1.6	1.6	
	80	1.8	1.8	1.8	1.8	1.8	1.8	
	90	2.1	2.1	2.1	2.1	2.1	2.1	
	100	2.3	2.3	2.3	2.3	2.3	2.3	
	120	2.8	2.8	2.8	2.8	2.8	2.8	
	>140	3.2	3.2	3.2	3.2	3.2	3.2	

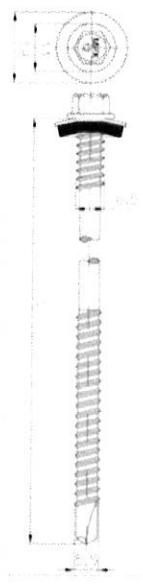
MPT12 SP Fastening screws for sandwich panels

MPT12 SP 5,5/6,3 x L
with hexagon head and EPDM washer type A $\varnothing(19,22,29)$
made of aluminum

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Materials
Fastener: stainless steel – SAE304, bi-metal
 additionally protected by ceramic coating Ruspert Silver 500h
Washer: EPDM sealing ring with metal top made stainless steel
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S235 – EN 10025-1



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

Timber substructures
 no performance determined

Component II: t_{II} in [mm]		3.00	4.00	5.00	6.00	8.00	10.00	11.00
Component I: t_{N1} or t_{N2} in [mm]	$V_{R,k}$ [kN]	0.40	0.75	0.75	0.75	0.75	0.75	0,75
		0.50	1.33	1.33	1.33	1.33	1.33	1,33
		0.55	1.33	1.33	1.33	1.33	1.33	1,33
		0.63	1.66	1.66	1.66	1.66	1.66	1,66
		0.75	1.97	1.97	1.97	1.97	1.97	1,97
		0.88	1.97	1.97	1.97	1.97	1.97	1,97
		1.00	1.97	1.97	1.97	1.97	1.97	1,97
	$N_{R,k}$ [kN]	0.40	2.23	2.23	2.23	2.23	2.23	2,23
		0.50	3.18	3.23	3.23	3.23	3.23	3,23
		0.55	3.18	3.23	3.23	3.23	3.23	3,23
		0.63	3.18	4.12	4.12	4.12	4.12	4,12
		0.75	3.18	4.73	4.73	4.73	4.73	4,73
		0.88	3.18	4.73	4.73	4.73	4.73	4,73
		1.00	3.18	4.73	4.73	4.73	4.73	4,73
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	
	40	0.9	0.9	0.9	0.9	0.9	0.9	
	50	1.2	1.2	1.2	1.2	1.2	1.2	
	60	1.4	1.4	1.4	1.4	1.4	1.4	
	70	1.6	1.6	1.6	1.6	1.6	1.6	
	80	1.8	1.8	1.8	1.8	1.8	1.8	
	90	2.1	2.1	2.1	2.1	2.1	2.1	
	100	2.3	2.3	2.3	2.3	2.3	2.3	
	120	2.8	2.8	2.8	2.8	2.8	2.8	
>140	3.2	3.2	3.2	3.2	3.2	3.2		

MPX12 SP Fastening screws for sandwich panels	Annex 2 of European Technical Assessment ETA 19/0354
MPX12 SP 5,5/6,3 x L with hexagon head and EPDM washer type I $\varnothing(19,22,29)$ made of stainless steel	

Materials

Fastener: carbon steel – SAE1022
 quenched, tempered and galvanized

Washer: EPDM sealing ring with metal top made of coated carbon

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S235 – EN 10025-1



Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 16$ mm

Timber substructures
 no performance determined

Component II: t_{II} in [mm]		8.00	10.00	11.00	12.00	13.00	14.00	15.00
Component I: t_{N1} or t_{N2} in [mm]	$V_{R,k}$ [kN]	0.40	0.82	0.82	0.82	0.82	0.82	0.82
		0.50	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
		0.63	1.69	1.69	1.69	1.69	1.69	1.69
		0.75	2.01	2.01	2.01	2.01	2.01	2.01
		0.88	2.01	2.01	2.01	2.01	2.01	2.01
	$N_{R,k}$ [kN]	0.40	2.23	2.23	2.23	2.23	2.23	2.23
		0.50	3.23	3.23	3.23	3.23	3.23	3.23
		0.55	3.23	3.23	3.23	3.23	3.23	3.23
		0.63	4.12	4.12	4.12	4.12	4.12	4.12
		0.75	4.73	4.73	4.73	4.73	4.73	4.73
		0.88	4.73	4.73	4.73	4.73	4.73	4.73
	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
		40	0.9	0.9	0.9	0.9	0.9	0.9
50		1.2	1.2	1.2	1.2	1.2	1.2	
60		1.4	1.4	1.4	1.4	1.4	1.4	
70		1.6	1.6	1.6	1.6	1.6	1.6	
80		1.8	1.8	1.8	1.8	1.8	1.8	
90		2.1	2.1	2.1	2.1	2.1	2.1	
100		2.3	2.3	2.3	2.3	2.3	2.3	
120		2.8	2.8	2.8	2.8	2.8	2.8	
>140	3.2	3.2	3.2	3.2	3.2	3.2		

MPZ16 SP Fastening screws for sandwich panels

MPZ16 SP 6,3/7,0 x L
 with hexagon head and EPDM washer type S $\varnothing(19,22,29)$
 made of coated carbon

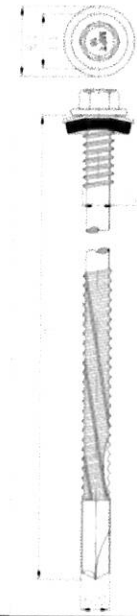
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Materials
Fastener: carbon steel – SAE1022
quenched, tempered and galvanized and additionally protected by ceramic coating Ruspert Silver 1000h
Washer: EPDM sealing ring with metal top made of aluminum
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S235 – EN 10025-1

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 16$ mm

Timber substructures
no performance determined



Component II: t_{II} in [mm]		8.00	10.00	11.00	12.00	13.00	14.00	15.00	
Component I: t_{N1} or t_{N2} in [mm]	$V_{R,k}$ [kN]	0.40	0.82	0.82	0.82	0.82	0.82	0.82	0,82
		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	1.69	1.69	1.69	1.69	1.69	1.69	1,69
		0.75	2.01	2.01	2.01	2.01	2.01	2.01	2,01
		0.88	2.01	2.01	2.01	2.01	2.01	2.01	2,01
		1.00	2.01	2.01	2.01	2.01	2.01	2.01	2,01
	$N_{R,k}$ [kN]	0.40	2.23	2.23	2.23	2.23	2.23	2.23	2,23
		0.50	3.23	3.23	3.23	3.23	3.23	3.23	3,23
		0.55	3.23	3.23	3.23	3.23	3.23	3.23	3,23
		0.63	4.12	4.12	4.12	4.12	4.12	4.12	4,12
		0.75	4.73	4.73	4.73	4.73	4.73	4.73	4,73
		0.88	4.73	4.73	4.73	4.73	4.73	4.73	4,73
		1.00	4.73	4.73	4.73	4.73	4.73	4.73	4,73
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	0.9	0.9	0.9	0.9	0.9	0.9	0.9	
	50	1.2	1.2	1.2	1.2	1.2	1.2	1.2	
	60	1.4	1.4	1.4	1.4	1.4	1.4	1.4	
	70	1.6	1.6	1.6	1.6	1.6	1.6	1.6	
	80	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
	90	2.1	2.1	2.1	2.1	2.1	2.1	2.1	
	100	2.3	2.3	2.3	2.3	2.3	2.3	2.3	
	120	2.8	2.8	2.8	2.8	2.8	2.8	2.8	
	>140	3.2	3.2	3.2	3.2	3.2	3.2	3.2	

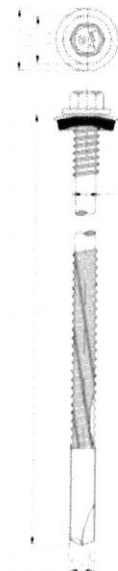
MPT16 SP Fastening screws for sandwich panels

MPT16 SP 6,3/7,0 x L
with hexagon head and EPDM washer type A $\varnothing(19,22,29)$
made of aluminum

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Materials
Fastener: carbon steel – SAE1022
 quenched, tempered and galvanized
Washer: EPDM sealing ring with metal top made of coated carbon
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S235 – EN 10025-1



Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 25 \text{ mm}$

Timber substructures
 no performance determined

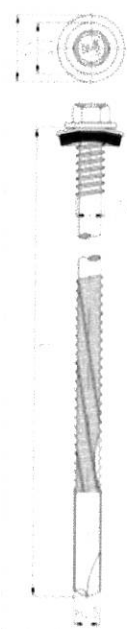
Component II: t_{II} in [mm]		8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00
Component I: t_{N1} or t_{N2} in [mm]	$V_{R,k}$ [kN]	0.40	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0,82
		0.50	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1,29
		0.55	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1,29
		0.63	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1,69
		0.75	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2,01
		0.88	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2,01
		1.00	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2,01
	$N_{R,k}$ [kN]	0.40	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2,23
		0.50	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3,23
		0.55	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3,23
		0.63	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4,12
		0.75	4.73	4.73	4.73	4.73	4.73	4.73	4.73	4,73
		0.88	4.73	4.73	4.73	4.73	4.73	4.73	4.73	4,73
		1.00	4.73	4.73	4.73	4.73	4.73	4.73	4.73	4,73
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	0.7	0.7
	40	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
	50	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
	60	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
	70	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
	80	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
	90	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
	100	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
	120	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
	>140	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2

MPZ25 SP Fastening screws for sandwich panels

MPZ25 SP 6,3/7,0 x L
 with hexagon head and EPDM washer type S $\varnothing(19,22,29)$
 made of coated carbon

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Materials Fastener: carbon steel – SAE1022 quenched, tempered and galvanized and additionally protected by ceramic coating Ruspert Silver 1000h Washer: EPDM sealing ring with metal top made of aluminum Component I: S280GD, S320GD or S350GD – EN 10346 Component II: S235 – EN 10025-1	
Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 25 \text{ mm}$	
Timber substructures no performance determined	

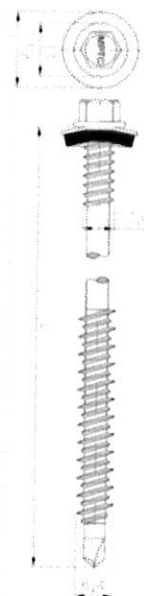
Component II: t_{II} in [mm]		8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00	
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0.40	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0,82	0,82
		0.50	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1,29	1,29
		0.55	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1,29	1,29
		0.63	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1,69	1,69
		0.75	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2,01	2,01
		0.88	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2,01	2,01
		1.00	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2,01	2,01
	$N_{R,k}$ [kN]	0.40	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2,23	2,23
		0.50	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3,23	3,23
		0.55	3.23	3.23	3.23	3.23	3.23	3.23	3.23	3,23	3,23
		0.63	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4,12	4,12
		0.75	4.73	4.73	4.73	4.73	4.73	4.73	4.73	4,73	4,73
		0.88	4.73	4.73	4.73	4.73	4.73	4.73	4.73	4,73	4,73
		1.00	4.73	4.73	4.73	4.73	4.73	4.73	4.73	4,73	4,73
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	0,7	0,7	
	40	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0,9	0,9	
	50	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1,2	1,2	
	60	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1,4	1,4	
	70	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1,6	1,6	
	80	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1,8	1,8	
	90	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2,1	2,1	
	100	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2,3	2,3	
	120	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2,8	2,8	
	>140	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3,2	3,2	

MPT25 SP Fastening screws for sandwich panels

MPT25 SP 6,3/7,0 x L
with hexagon head and EPDM washer type A $\varnothing(19,22,29)$
made of aluminum

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Materials
Fastener: carbon steel – SAE1022
 quenched, tempered and galvanized and additionally protected by ceramic coating Ruspert Silver 1000h
Washer: EPDM sealing ring with metal top made of aluminum
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: timber wood C24



Drilling capacity: -

Timber substructures
 For timber substructures performance determined with
 $M_{y,Rk} = 9,28 \text{ Nm}$
 $f_{ax,k} = 14,369 \text{ N/mm}^2$ for $l_{ef} \geq 20 \text{ mm}$

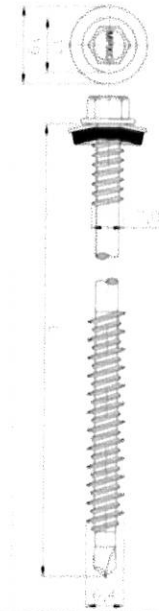
Component II: wood class \geq C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point							
			20.00	30.00	40.00	50.00	60.00	70.00	80.00	≥ 90.00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0.40	0.77	0.77	0.77	0.77	0.77	0.77	0,77	0,77
		0.50	1.19	1.19	1.19	1.19	1.19	1.19	1,19	1,19
		0.55	1.19	1.19	1.19	1.19	1.19	1.19	1,19	1,19
		0.63	1.61	1.61	1.61	1.61	1.61	1.61	1,61	1,61
		0.75	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		0.88	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		1.00	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
	$N_{R,k}$ [kN]	0.40	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		0.50	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		0.55	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		0.63	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		0.75	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		0.88	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		1.00	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
max. head displacement u depending on the sandwich panel thickness in [mm]			0.7	0.9	1.2	1.4	1.6	1.8	2.1	2.3

MPTC SP Fastening screws for sandwich panels

MPTC SP 6,4/7,0 x L
 with hexagon head and EPDM washer type A $\varnothing(19,22,29)$
 made of aluminum

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Materials
Fastener: stainless steel – SAE304, bi-metal
 additionally protected by ceramic coating Ruspert Silver 500h
Washer: EPDM sealing ring with metal top made stainless steel
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: timber wood C24



Drilling capacity: -

Timber substructures
 For timber substructures performance determined with
 $M_{y,Rk} = 7,11 \text{ Nm}$
 $f_{ax,k} = 14,369 \text{ N/mm}^2$ for $l_{ef} \geq 20 \text{ mm}$

Component II: wood class \geq C24 l_{ef} in [mm]		Thickness of sandwich panel d or D in the fixing point								
		20.00	30.00	40.00	50.00	60.00	70.00	80.00	≥ 90.00	
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0.40	0.77	0.77	0.77	0.77	0.77	0,77	0,77	0,77
		0.50	1.19	1.19	1.19	1.19	1.19	1,19	1,19	1,19
		0.55	1.19	1.19	1.19	1.19	1.19	1,19	1,19	1,19
		0.63	1.61	1.61	1.61	1.61	1.61	1,61	1,61	1,61
		0.75	1.84	1.84	1.84	1.84	1.84	1,84	1,84	1,84
		0.88	1.84	1.84	1.84	1.84	1.84	1,84	1,84	1,84
	$N_{R,k}$ [kN]	1.00	1.84	1.84	1.84	1.84	1.84	1,84	1,84	1,84
		0.40	1.84	1.84	1.84	1.84	1.84	1,84	1,84	1,84
		0.50	1.84	1.84	1.84	1.84	1.84	1,84	1,84	1,84
		0.55	1.84	1.84	1.84	1.84	1.84	1,84	1,84	1,84
		0.63	1.84	1.84	1.84	1.84	1.84	1,84	1,84	1,84
		0.75	1.84	1.84	1.84	1.84	1.84	1,84	1,84	1,84
		0.88	1.84	1.84	1.84	1.84	1.84	1,84	1,84	1,84
		1.00	1.84	1.84	1.84	1.84	1.84	1,84	1,84	1,84
max. head displacement u depending on the sandwich panel thickness in [mm]		0.7	0.9	1.2	1.4	1.6	1.8	2.1	2.3	

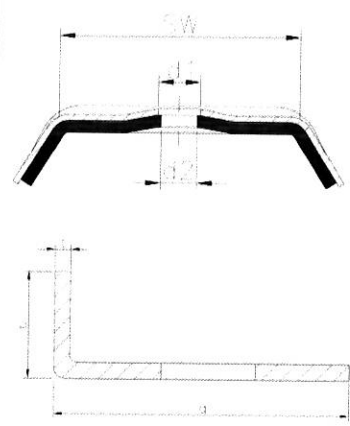
MPXC SP Fastening screws for sandwich panels

MPXC SP 6,4/7,0 x L
 with hexagon head and EPDM washer type I \emptyset (19, 22,29)
 made of stainless steel

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Materials
Fastener: carbon steel – SAE1022
quenched, tempered and galvanized
Washer: EPDM sealing ring with metal top made of coated carbon and washer
SW painted aluminum sheet with elastomer or tension diffuser MRN
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: $t_{II} < 2$ mm: S235 – EN 10025-1
 $t_{II} \geq 2$ mm: S280GD, S320GD or S350GD – EN 10346



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

Timber substructures
no performance determined

		Component II: t_{II} in [mm]	2.00	2.50	3.00	4.00	5.00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0.40	0.75	0.75	0.75	0.75	0,75
		0.50	1.33	1.33	1.33	1.33	1,33
		0.55	1.33	1.33	1.33	1.33	1,33
		0.63	1.66	1.66	1.66	1.66	1,66
		0.75	1.97	1.97	1.97	1.97	1,97
		0.88	1.97	1.97	1.97	1.97	1,97
		1.00	1.97	1.97	1.97	1.97	1,97
	$N_{R,k}$ [kN]	0.40	2.26	2.26	2.26	5.62	5,62
		0.50	2.26	2.26	2.26	5.62	5,62
		0.55	2.26	2.26	2.26	5.62	5,62
		0.63	2.26	2.26	2.26	5.62	5,62
		0.75	2.26	2.26	2.26	5.62	5,62
		0.88	2.26	2.26	2.26	5.62	5,62
		1.00	2.26	2.26	2.26	5.26	5,26
max. head displacement u depending on the sandwich panel thickness in [mm]	30	0.7	0.7	0.7	0.7	0,7	
	40	0.9	0.9	0.9	0.9	0,9	
	50	1.2	1.2	1.2	1.2	1,2	
	60	1.4	1.4	1.4	1.4	1,4	
	70	1.6	1.6	1.6	1.6	1,6	
	80	1.8	1.8	1.8	1.8	1,8	
	90	2.1	2.1	2.1	2.1	2,1	
	100	2.3	2.3	2.3	2.3	2,3	
	120	2.8	2.8	2.8	2.8	2,8	
>140	3.2	3.2	3.2	3.2	3,2		

MPZ6 SP Fastening screws for sandwich panels

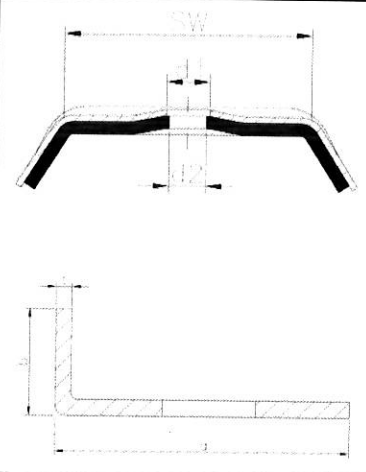
MPZ6 SP 5,5/6,3 x L
with hexagon head and EPDM washer type S \varnothing (19,22,29)
made of coated carbon steel and SW washer aluminum sheet with
elastomer or tension diffuser MRN

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Materials
Fastener: carbon steel – SAE1022
quenched, tempered and galvanized and additionally protected by ceramic coating Ruspert Silver 1000h
Washer: EPDM sealing ring with metal top made of coated carbon and washer SW painted aluminum sheet with elastomer or tension diffuser MRN
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: $t_{II} < 2$ mm: S235 – EN 10025-1
 $t_{II} \geq 2$ mm: S280GD, S320GD or S350GD – EN 10346

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

Timber substructures
no performance determined



Component II: t_{II} in [mm]		2.00	2.50	3.00	4.00	5.00	
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0.40	0.75	0.75	0.75	0.75	0,75
		0.50	1.33	1.33	1.33	1.33	1,33
		0.55	1.33	1.33	1.33	1.33	1,33
		0.63	1.66	1.66	1.66	1.66	1,66
		0.75	1.97	1.97	1.97	1.97	1,97
		0.88	1.97	1.97	1.97	1.97	1,97
		1.00	1.97	1.97	1.97	1.97	1,97
	$N_{R,k}$ [kN]	0.40	2.26	2.26	2.26	5.62	5,62
		0.50	2.26	2.26	2.26	5.62	5,62
		0.55	2.26	2.26	2.26	5.62	5,62
		0.63	2.26	2.26	2.26	5.62	5,62
		0.75	2.26	2.26	2.26	5.62	5,62
		0.88	2.26	2.26	2.26	5.62	5,62
		1.00	2.26	2.26	2.26	5.26	5,26
max. head displacement u depending on the sandwich panel thickness in [mm]	30	0.7	0.7	0.7	0.7	0,7	
	40	0.9	0.9	0.9	0.9	0,9	
	50	1.2	1.2	1.2	1.2	1,2	
	60	1.4	1.4	1.4	1.4	1,4	
	70	1.6	1.6	1.6	1.6	1,6	
	80	1.8	1.8	1.8	1.8	1,8	
	90	2.1	2.1	2.1	2.1	2,1	
	100	2.3	2.3	2.3	2.3	2,3	
	120	2.8	2.8	2.8	2.8	2,8	
>140	3.2	3.2	3.2	3.2	3,2		

MPT6 SP Fastening screws for sandwich panels

MPT6 SP 5,5/6,3 x L
with hexagon head and EPDM washer type A $\varnothing(19,22,29)$
made of aluminum and SW washer aluminum sheet with elastomer or tension diffuser MRN

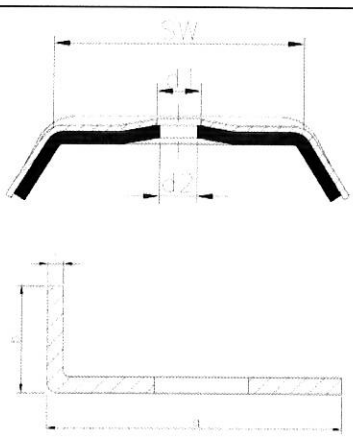
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Materials
Fastener: stainless steel – SAE304, bi-metal
 additionally protected by ceramic coating Ruspert Silver 500h

Washer: EPDM sealing ring with metal top made of coated carbon and washer
 SW painted aluminum sheet with elastomer or tension diffuser MRN

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: $t_{II} < 2$ mm: S235 – EN 10025-1
 $t_{II} \geq 2$ mm: S280GD, S320GD or S350GD – EN 10346



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

Timber substructures
 no performance determined

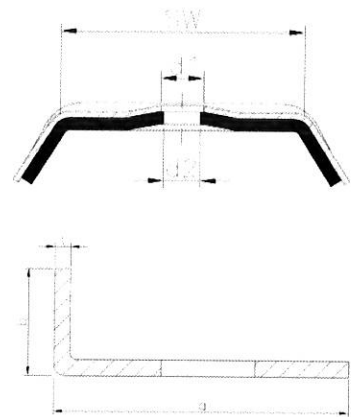
		Component II: t_{II} in [mm]	2.00	2.50	3.00	4.00	5.00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0.40	0.75	0.75	0.75	0.75	0.75
		0.50	1.33	1.33	1.33	1.33	1.33
		0.55	1.33	1.33	1.33	1.33	1.33
		0.63	1.66	1.66	1.66	1.66	1.66
		0.75	1.97	1.97	1.97	1.97	1.97
		0.88	1.97	1.97	1.97	1.97	1.97
		1.00	1.97	1.97	1.97	1.97	1.97
	$N_{R,k}$ [kN]	0.40	2.26	2.26	2.26	5.62	5.62
		0.50	2.26	2.26	2.26	5.62	5.62
		0.55	2.26	2.26	2.26	5.62	5.62
		0.63	2.26	2.26	2.26	5.62	5.62
		0.75	2.26	2.26	2.26	5.62	5.62
		0.88	2.26	2.26	2.26	5.62	5.62
		1.00	2.26	2.26	2.26	5.26	5.26
max. head displacement u depending on the sandwich panel thickness in [mm]	30	0.7	0.7	0.7	0.7	0.7	
	40	0.9	0.9	0.9	0.9	0.9	
	50	1.2	1.2	1.2	1.2	1.2	
	60	1.4	1.4	1.4	1.4	1.4	
	70	1.6	1.6	1.6	1.6	1.6	
	80	1.8	1.8	1.8	1.8	1.8	
	90	2.1	2.1	2.1	2.1	2.1	
	100	2.3	2.3	2.3	2.3	2.3	
	120	2.8	2.8	2.8	2.8	2.8	
>140	3.2	3.2	3.2	3.2	3.2		

MPX6 SP Fastening screws for sandwich panels

MPX6 SP 5,5/6,3 x L
 with hexagon head and EPDM washer type I $\varnothing(19,22,29)$
 made of stainless steel and SW washer aluminum sheet with
 elastomer or tension diffuser MRN

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Materials
Fastener: carbon steel – SAE1022
 quenched, tempered and galvanized
Washer: EPDM sealing ring with metal top made of coated carbon and washer
 SW painted aluminum sheet with elastomer or tension diffuser MRN
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S235 – EN 10025-1



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

Timber substructures
 no performance determined

Component II: t_{II} in [mm]		3.00	4.00	5.00	6.00	8.00	10.00	11.00	
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0.40	0.75	0.75	0.75	0.75	0.75	0.75	
		0.50	1.33	1.33	1.33	1.33	1.33	1.33	
		0.55	1.33	1.33	1.33	1.33	1.33	1.33	
		0.63	1.66	1.66	1.66	1.66	1.66	1.66	
		0.75	1.97	1.97	1.97	1.97	1.97	1.97	
		0.88	1.97	1.97	1.97	1.97	1.97	1.97	
		1.00	1.97	1.97	1.97	1.97	1.97	1.97	
	$N_{R,k}$ [kN]	0.40	3.11	5.81	5.81	5.81	5.81	5.81	5.81
		0.50	3.11	5.81	5.81	5.81	5.81	5.81	5.81
		0.55	3.11	5.81	5.81	5.81	5.81	5.81	5.81
		0.63	3.11	5.81	5.81	5.81	5.81	5.81	5.81
		0.75	3.11	5.81	5.81	5.81	5.81	5.81	5.81
		0.88	3.11	5.81	5.81	5.81	5.81	5.81	5.81
		1.00	3.11	5.81	5.81	5.81	5.81	5.81	5.81
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	0.9	0.9	0.9	0.9	0.9	0.9	0.9	
	50	1.2	1.2	1.2	1.2	1.2	1.2	1.2	
	60	1.4	1.4	1.4	1.4	1.4	1.4	1.4	
	70	1.6	1.6	1.6	1.6	1.6	1.6	1.6	
	80	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
	90	2.1	2.1	2.1	2.1	2.1	2.1	2.1	
	100	2.3	2.3	2.3	2.3	2.3	2.3	2.3	
	120	2.8	2.8	2.8	2.8	2.8	2.8	2.8	
>140	3.2	3.2	3.2	3.2	3.2	3.2	3.2		

MPZ12 SP Fastening screws for sandwich panels

MPZ12 SP 5,5/6,3 x L
 with hexagon head and EPDM washer type S $\varnothing(19,22,29)$
 made of coated carbon steel and SW washer aluminum sheet with
 elastomer or tension diffuser MRN

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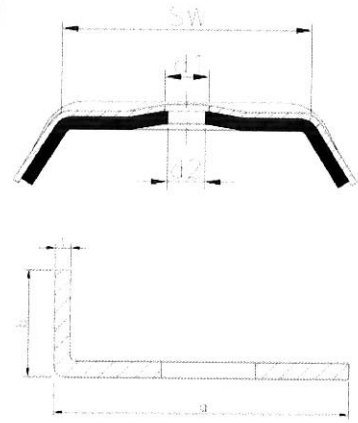
Materials

Fastener: carbon steel – SAE1022
quenched, tempered and galvanized and additionally protected by ceramic coating Ruspert Silver 1000h

Washer: EPDM sealing ring with metal top made of coated carbon and washer SW painted aluminum sheet with elastomer or tension diffuser MRN

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S235 – EN 10025-1



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

Timber substructures
no performance determined

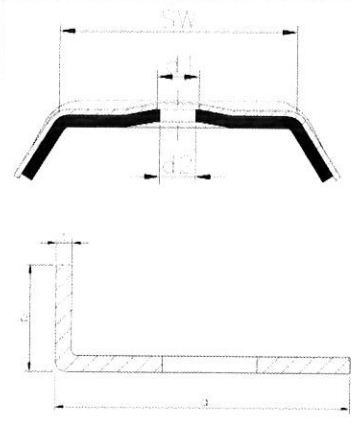
Component II: t_{II} in [mm]		3.00	4.00	5.00	6.00	8.00	10.00	11.00	
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0.40	0.75	0.75	0.75	0.75	0.75	0.75	
		0.50	1.33	1.33	1.33	1.33	1.33	1.33	
		0.55	1.33	1.33	1.33	1.33	1.33	1.33	
		0.63	1.66	1.66	1.66	1.66	1.66	1.66	
		0.75	1.97	1.97	1.97	1.97	1.97	1.97	
		0.88	1.97	1.97	1.97	1.97	1.97	1.97	
		1.00	1.97	1.97	1.97	1.97	1.97	1.97	
	$N_{R,k}$ [kN]	0.40	3.11	5.81	5.81	5.81	5.81	5.81	5.81
		0.50	3.11	5.81	5.81	5.81	5.81	5.81	5.81
		0.55	3.11	5.81	5.81	5.81	5.81	5.81	5.81
		0.63	3.11	5.81	5.81	5.81	5.81	5.81	5.81
		0.75	3.11	5.81	5.81	5.81	5.81	5.81	5.81
		0.88	3.11	5.81	5.81	5.81	5.81	5.81	5.81
		1.00	3.11	5.81	5.81	5.81	5.81	5.81	5.81
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	0.9	0.9	0.9	0.9	0.9	0.9	0.9	
	50	1.2	1.2	1.2	1.2	1.2	1.2	1.2	
	60	1.4	1.4	1.4	1.4	1.4	1.4	1.4	
	70	1.6	1.6	1.6	1.6	1.6	1.6	1.6	
	80	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
	90	2.1	2.1	2.1	2.1	2.1	2.1	2.1	
	100	2.3	2.3	2.3	2.3	2.3	2.3	2.3	
	120	2.8	2.8	2.8	2.8	2.8	2.8	2.8	
>140	3.2	3.2	3.2	3.2	3.2	3.2	3.2		

MPT12 SP Fastening screws for sandwich panels

MPT12 SP 5,5/6,3 x L
with hexagon head and EPDM washer type A $\varnothing(19,22,29)$
made of aluminum and SW washer aluminum sheet with elastomer
or tension diffuser MRN

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Materials
Fastener: stainless steel – SAE304, bi-metal
 additionally protected by ceramic coating Ruspert Silver 500h
Washer: EPDM sealing ring with metal top made of coated carbon and washer
 SW painted aluminum sheet with elastomer or tension diffuser MRN
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S235 – EN 10025-1



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

Timber substructures
 no performance determined

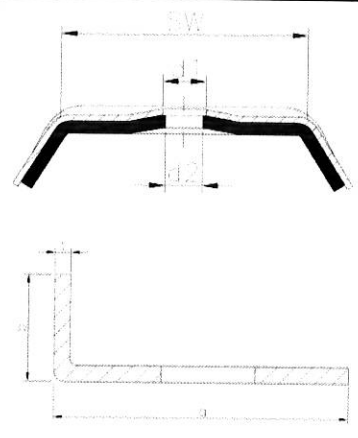
		Component II: t_{II} in [mm]	3.00	4.00	5.00	6.00	8.00	10.00	11.00
Component I: t_{N1} or t_{N2} in [mm]	$V_{R,k}$ [kN]	0.40	0.75	0.75	0.75	0.75	0.75	0.75	0.75
		0.50	1.33	1.33	1.33	1.33	1.33	1.33	1.33
		0.55	1.33	1.33	1.33	1.33	1.33	1.33	1.33
		0.63	1.66	1.66	1.66	1.66	1.66	1.66	1.66
		0.75	1.97	1.97	1.97	1.97	1.97	1.97	1.97
		0.88	1.97	1.97	1.97	1.97	1.97	1.97	1.97
	$N_{R,k}$ [kN]	0.40	3.18	5.71	5.71	5.71	5.71	5.71	5.71
		0.50	3.18	5.71	5.71	5.71	5.71	5.71	5.71
		0.55	3.18	5.71	5.71	5.71	5.71	5.71	5.71
		0.63	3.18	5.71	5.71	5.71	5.71	5.71	5.71
		0.75	3.18	5.71	5.71	5.71	5.71	5.71	5.71
		0.88	3.18	5.71	5.71	5.71	5.71	5.71	5.71
		1.00	3.18	5.71	5.71	5.71	5.71	5.71	5.71
		1.00	3.18	5.71	5.71	5.71	5.71	5.71	5.71
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	0.9	0.9	0.9	0.9	0.9	0.9	0.9	
	50	1.2	1.2	1.2	1.2	1.2	1.2	1.2	
	60	1.4	1.4	1.4	1.4	1.4	1.4	1.4	
	70	1.6	1.6	1.6	1.6	1.6	1.6	1.6	
	80	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
	90	2.1	2.1	2.1	2.1	2.1	2.1	2.1	
	100	2.3	2.3	2.3	2.3	2.3	2.3	2.3	
	120	2.8	2.8	2.8	2.8	2.8	2.8	2.8	
>140	3.2	3.2	3.2	3.2	3.2	3.2	3.2		

MPX12 SP Fastening screws for sandwich panels

MPX12 SP 5,5/6,3 x L
 with hexagon head and EPDM washer type I $\varnothing(19,22,29)$
 made of stainless steel and SW washer aluminum sheet with
 elastomer or tension diffuser MRN

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Materials
Fastener: carbon steel – SAE1022
 quenched, tempered and galvanized
Washer: EPDM sealing ring with metal top made of coated carbon and washer
 SW painted aluminum sheet with elastomer or tension diffuser MRN
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S235 – EN 10025-1



Drilling capacity: $\Sigma(t_{N2} + t_{I1}) \leq 16 \text{ mm}$

Timber substructures
 no performance determined

Component II: t_{II} in [mm]		8.00	10.00	11.00	12.00	13.00	14.00	15.00
Component I: t_{N1} or t_{N2} in [mm]	$V_{R,k}$ [kN]	0.40	0.82	0.82	0.82	0.82	0.82	0.82
		0.50	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
		0.63	1.69	1.69	1.69	1.69	1.69	1.69
		0.75	2.01	2.01	2.01	2.01	2.01	2.01
		0.88	2.01	2.01	2.01	2.01	2.01	2.01
		1.00	2.01	2.01	2.01	2.01	2.01	2.01
	$N_{R,k}$ [kN]	0.40	7.26	7.26	7.26	7.26	7.26	7.26
		0.50	7.26	7.26	7.26	7.26	7.26	7.26
		0.55	7.26	7.26	7.26	7.26	7.26	7.26
		0.63	7.26	7.26	7.26	7.26	7.26	7.26
		0.75	7.26	7.26	7.26	7.26	7.26	7.26
		0.88	7.26	7.26	7.26	7.26	7.26	7.26
		1.00	7.26	7.26	7.26	7.26	7.26	7.26
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	
	40	0.9	0.9	0.9	0.9	0.9	0.9	
	50	1.2	1.2	1.2	1.2	1.2	1.2	
	60	1.4	1.4	1.4	1.4	1.4	1.4	
	70	1.6	1.6	1.6	1.6	1.6	1.6	
	80	1.8	1.8	1.8	1.8	1.8	1.8	
	90	2.1	2.1	2.1	2.1	2.1	2.1	
	100	2.3	2.3	2.3	2.3	2.3	2.3	
	120	2.8	2.8	2.8	2.8	2.8	2.8	
	>140	3.2	3.2	3.2	3.2	3.2	3.2	

MPZ16 SP Fastening screws for sandwich panels

MPZ16 SP 6,3/7,0 x L
 with hexagon head and EPDM washer type S $\varnothing(19,22,29)$
 made of coated carbon and SW washer aluminum sheet with
 elastomer or tension diffuser MRN

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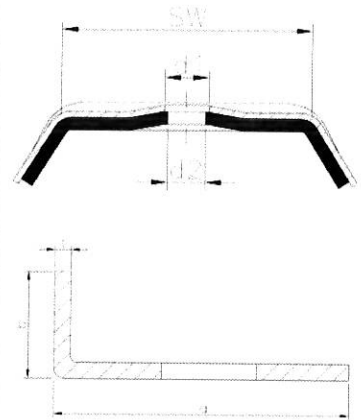
Materials

Fastener: carbon steel – SAE1022
quenched, tempered and galvanized and additionally protected by ceramic coating Ruspert sSilver 1000h

Washer: EPDM sealing ring with metal top made of coated carbon and washer SW painted aluminum sheet with elastomer or tension diffuser MRN

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S235 – EN 10025-1



Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 16 \text{ mm}$

Timber substructures
no performance determined

Component II: t_{II} in [mm]		8.00	10.00	11.00	12.00	13.00	14.00	15.00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0.40	0.82	0.82	0.82	0.82	0.82	0.82
		0.50	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
		0.63	1.69	1.69	1.69	1.69	1.69	1.69
		0.75	2.01	2.01	2.01	2.01	2.01	2.01
		0.88	2.01	2.01	2.01	2.01	2.01	2.01
		1.00	2.01	2.01	2.01	2.01	2.01	2.01
	$N_{R,k}$ [kN]	0.40	7.26	7.26	7.26	7.26	7.26	7.26
		0.50	7.26	7.26	7.26	7.26	7.26	7.26
		0.55	7.26	7.26	7.26	7.26	7.26	7.26
		0.63	7.26	7.26	7.26	7.26	7.26	7.26
		0.75	7.26	7.26	7.26	7.26	7.26	7.26
		0.88	7.26	7.26	7.26	7.26	7.26	7.26
		1.00	7.26	7.26	7.26	7.26	7.26	7.26
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	
	40	0.9	0.9	0.9	0.9	0.9	0.9	
	50	1.2	1.2	1.2	1.2	1.2	1.2	
	60	1.4	1.4	1.4	1.4	1.4	1.4	
	70	1.6	1.6	1.6	1.6	1.6	1.6	
	80	1.8	1.8	1.8	1.8	1.8	1.8	
	90	2.1	2.1	2.1	2.1	2.1	2.1	
	100	2.3	2.3	2.3	2.3	2.3	2.3	
	120	2.8	2.8	2.8	2.8	2.8	2.8	
	>140	3.2	3.2	3.2	3.2	3.2	3.2	

MPT16 SP Fastening screws for sandwich panels

MPT16 SP 6,3/7,0 x L
with hexagon head and EPDM washer type A $\varnothing(19,22,29)$
made of aluminum and SW washer aluminium sheet with elastomer
or tension diffuser MRN

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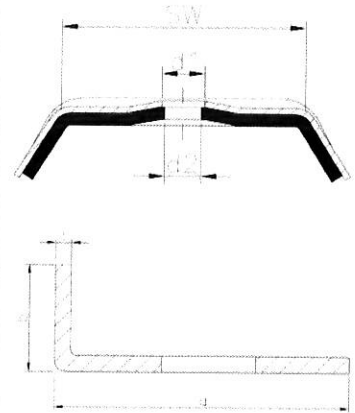
Materials

Fastener: carbon steel – SAE1022
quenched, tempered and galvanized

Washer: EPDM sealing ring with metal top made of coated carbon and washer
SW painted aluminum sheet with elastomer or tension diffuser MRN

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S235 – EN 10025-1



Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 25 \text{ mm}$

Timber substructures
no performance determined

Component II: t_{II} in [mm]		8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0.40	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
		0.50	1.29	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	1.29
		0.63	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.69
		0.75	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01
		0.88	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01
		1.00	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01
	$N_{R,k}$ [kN]	0.40	8.76	8.76	8.76	8.76	8.76	8.76	8.76	8.76
		0.50	8.76	8.76	8.76	8.76	8.76	8.76	8.76	8.76
		0.55	8.76	8.76	8.76	8.76	8.76	8.76	8.76	8.76
		0.63	8.76	8.76	8.76	8.76	8.76	8.76	8.76	8.76
		0.75	8.76	8.76	8.76	8.76	8.76	8.76	8.76	8.76
		0.88	8.76	8.76	8.76	8.76	8.76	8.76	8.76	8.76
		1.00	8.76	8.76	8.76	8.76	8.76	8.76	8.76	8.76
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	0.7	
	40	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	
	50	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	
	60	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	
	70	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	
	80	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
	90	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	
	100	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	
	120	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	
>140	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2		

MPZ25 SP Fastening screws for sandwich panels

MPZ25 SP 6,3/7,0 x L
with hexagon head and EPDM washer type S $\varnothing(19,22,29)$
made of coated carbon and SW washer aluminum sheet with
elastomer or tension diffuser MRN

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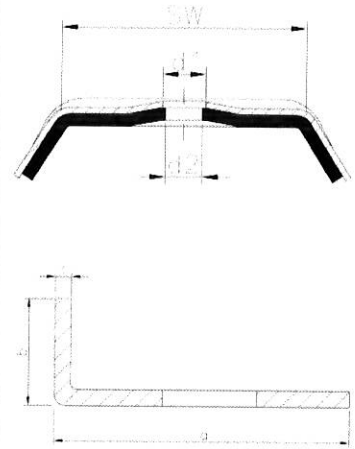
Materials

Fastener: carbon steel – SAE1022
quenched, tempered and galvanized and additionally protected by ceramic coating Ruspert Silver 1000h

Washer: EPDM sealing ring with metal top made of coated carbon and washer SW painted aluminum sheet with elastomer or tension diffuser MRN

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S235 – EN 10025-1



Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 25$ mm

Timber substructures
no performance determined

Component II: t_{II} in [mm]		8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0.40	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
		0.50	1.29	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	1.29
		0.63	1.69	1.69	1.69	1.69	1.69	1.69	1.69	1.69
		0.75	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01
		0.88	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01
		1.00	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01
	$N_{R,k}$ [kN]	0.40	8.76	8.76	8.76	8.76	8.76	8.76	8.76	8.76
		0.50	8.76	8.76	8.76	8.76	8.76	8.76	8.76	8.76
		0.55	8.76	8.76	8.76	8.76	8.76	8.76	8.76	8.76
		0.63	8.76	8.76	8.76	8.76	8.76	8.76	8.76	8.76
		0.75	8.76	8.76	8.76	8.76	8.76	8.76	8.76	8.76
		0.88	8.76	8.76	8.76	8.76	8.76	8.76	8.76	8.76
		1.00	8.76	8.76	8.76	8.76	8.76	8.76	8.76	8.76
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	0.7	
	40	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	
	50	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	
	60	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	
	70	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	
	80	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
	90	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	
	100	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	
	120	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	
>140	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2		

MPT25 SP Fastening screws for sandwich panels

MPT25 SP 6,3/7,0 x L
with hexagon head and EPDM washer type A $\varnothing(19,22,29)$
made of aluminum and SW washer aluminum sheet with elastomer
or tension diffuser MRN

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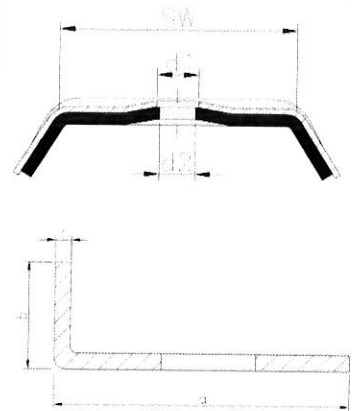
Materials

Fastener: carbon steel – SAE1022
quenched, tempered and galvanized and additionally protected by ceramic coating Ruspert Silver 1000h

Washer: EPDM sealing ring with metal top made of coated carbon and washer SW painted aluminum sheet with elastomer or tension diffuser MRN

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: timber wood C24



Drilling capacity: -

Timber substructures

For timber substructures performance determined with
 $M_{y,Rk} = 9,28 \text{ Nm}$
 $f_{ax,k} = 14,369 \text{ N/mm}^2$ for $l_{ef} \geq 20 \text{ mm}$

Component II: wood class \geq C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point							
			20,00	30,00	40,00	50,00	60,00	70,00	80,00	$\geq 90,00$
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0.40	0.77	0.77	0.77	0.77	0.77	0.77	0,77	0,77
		0.50	1.19	1.19	1.19	1.19	1.19	1.19	1,19	1,19
		0.55	1.19	1.19	1.19	1.19	1.19	1.19	1,19	1,19
		0.63	1.61	1.61	1.61	1.61	1.61	1.61	1,61	1,61
		0.75	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		0.88	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		1.00	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
	$N_{R,k}$ [kN]	0.40	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		0.50	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		0.55	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		0.63	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		0.75	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		0.88	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		1.00	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
max. head displacement u depending on the sandwich panel thickness in [mm]			0.7	0.9	1.2	1.4	1.6	1.8	2.1	2.3

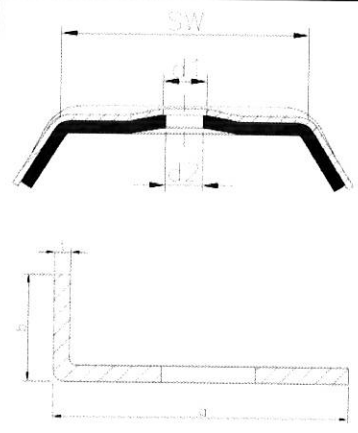
MPTC SP Fastening screws for sandwich panels

MPTC SP 6,4/7,0 x L
 with hexagon head and EPDM washer type A $\varnothing(19,22,29)$
 made of aluminum and SW washer aluminum sheet with elastomer
 or tension diffuser MRN

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Materials
Fastener: stainless steel – SAE304, bi-metal
 additionally protected by ceramic coating Ruspert Silver 500h
Washer: EPDM sealing ring with metal top made of aluminum and washer
 SW painted pregalvanized carbon steel with PE foam or washer MRN
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: timber wood C24



Drilling capacity: -

Timber substructures
 For timber substructures performance determined with
 $M_{y,Rk} = 7,11 \text{ Nm}$
 $f_{ax,k} = 14,369 \text{ N/mm}^2$ for $l_{ef} \geq 20 \text{ mm}$

Component II: wood class \geq C24 l_{ef} in [mm]		Thickness of sandwich panel d or D in the fixing point								
		20,00	30,00	40,00	50,00	60,00	70,00	80,00	$\geq 90,00$	
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0.40	0.77	0.77	0.77	0.77	0.77	0.77	0,77	0,77
		0.50	1.19	1.19	1.19	1.19	1.19	1.19	1,19	1,19
		0.55	1.19	1.19	1.19	1.19	1.19	1.19	1,19	1,19
		0.63	1.61	1.61	1.61	1.61	1.61	1.61	1,61	1,61
		0.75	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		0.88	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		1.00	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
	$N_{R,k}$ [kN]	0.40	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		0.50	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		0.55	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		0.63	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		0.75	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		0.88	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
		1.00	1.84	1.84	1.84	1.84	1.84	1.84	1,84	1,84
max. head displacement u depending on the sandwich panel thickness in [mm]		0.7	0.9	1.2	1.4	1.6	1.8	2.1	2.3	

MPXC SP Fastening screws for sandwich panels

MPXC SP 6,4/7,0 x L
 with hexagon head and EPDM washer type I $\emptyset(19,22,29)$
 made of stainless steel and SW washer aluminum sheet with
 elastomer or tension diffuser MRN

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Annex 3 Reference documents

- [1] European Assessment Document EAD 330047-01-0602 Fastening screws for sandwich panels (edition January 2016)
- [2] Test Report No. LZK01-06045/19/R55NZK dated 11.07.2019, regarding tests of shear and tension resistances of the connection, issued by Instytut Techniki Budowlanej, Republic of Poland