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European Technical Assessment ETA-21/0376 of 21/06/2021

General part

Technical Assessment Body issuing the European Technical Assessment	Instytut Techniki Budowlanej
Trade name of the construction product	SWAL
Product family to which the construction product belongs	Fastening screws for sandwich panels
Manufacturer	SWAL Tomasz Żebrowski ul. Działkowa 2 02-234 Warszawa Poland
Manufacturing plants	1. SWAL Tomasz Żebrowski ul. Działkowa 2 02-234 Warsaw, Poland 2. Manufacturing Plant 2 3. Manufacturing Plant 3 4. Manufacturing Plant 4
This European Technical Assessment contains	97 pages including 93 Annexes which form an integral part of this Assessment
This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of	European Assessment Document (EAD) EAD 330047-01-0602 "Fastening screws for sandwich panels"

Specific part

1. Technical description of the product

SWAL fastening screws for sandwich panels are a self-drilling and self-tapping screws listed in Table 1. Screws are completed with washer and an EPDM sealing ring. For details see the Annexes 2 to 90. All screws can be completed with additional saddle washers (K or S), LAX caps and WELRO or WELRO-XL caps (Annexes 91 and 92).

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

Table 1

No.	Screw	Material	Annex
1	IMPACT-R 6 5,5/6,3 x L	carbon steel – SAE1022, quenched, tempered and coated: galvanized (12 µm) or ceramic coating DACRO500 or ceramic coating DACRO1000	2 – 14
2	IMPACT-R 14 5,5/6,3 x L		15 – 27
3	IMPACT-R 14+ 5,5/6,3 x L		28 – 40
4	IMPACT-S 5 5,5/6,3 x L	stainless steel – SAE304	41 – 53
5	IMPACT-S 12 5,5/6,3 x L		54 – 66
6	VCAT 6,3/7,0 x L	carbon steel – SAE1022, quenched, tempered and galvanized and additionally protected by ceramic coating DACRO1000	67 – 78
7	TAP A 6,3 x L	carbon steel – SAE1022, quenched, tempered and coated: galvanized (12 µm) or ceramic coating DACRO500 or ceramic coating DACRO1000	79 – 90

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

The fastening screws for sandwich panels are intended to be used for fastening sandwich panels to steel or timber substructures. For details see the Annexes 2 to 90. The component to be fastened is component I and the supporting structure is component II. The sandwich panel can either be used as wall or roof cladding or as load bearing wall and roof element.

The intended use comprises fastening screws and connections for indoor and outdoor applications. Fastening screws which are intended to be used in external environments with ≥ C2 corrosion according to the standard EN ISO 12944-2 are made of stainless steel.

Furthermore the intended use comprises connections with predominantly static loads (e.g. wind loads, dead loads).

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

The provisions made in this European Technical Assessment are based on an assumed working life of the fasteners of 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer or Technical Assessment Body, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3. Performances of the product and references to the methods used for their assessment

3.1. Performance of the product

3.1.1 Mechanical resistance and stability (BWR 1)

The characteristic values of the shear resistance of connections and tension resistance of connections with the fasteners as well as the maximum head displacement are given in Annexes 2 to 90. The values were determined by tests according to EAD 330047-01-0602.

The design values shall be determined according to Annex 93 and EAD 330047-01-0602.

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.

3.1.2 Safety in case of fire (BWR 2)

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

3.2. Methods used for the assessment

The assessment of the products has been made in accordance with EAD 330047-01-0602.

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

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

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

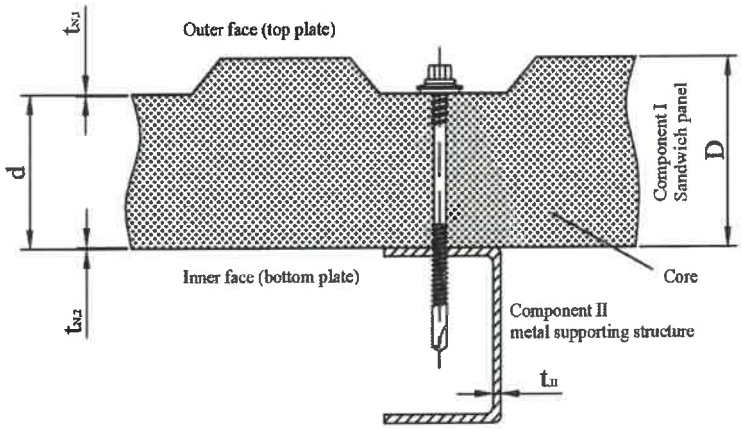
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at the Instytut Techniki Budowlanej.

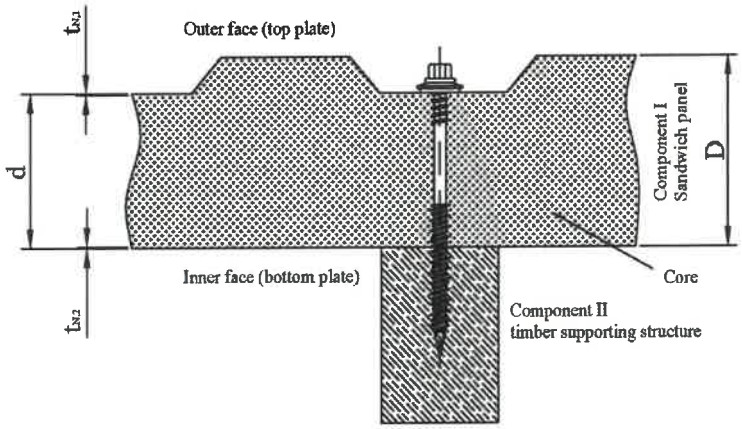
For type testing the results of the tests performed as part of the assessment for the European Technical Assessment shall be used unless there are changes in the production line or plant. In such cases the necessary type testing has to be agreed between Instytut Techniki Budowlanej and the notified body.

Issued in Warsaw on 21/06/2021 by Instytut Techniki Budowlanej

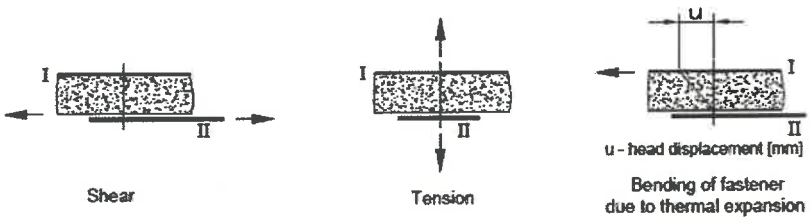
Anna Panek, MSc
Deputy Director of ITB

Examples of execution of a connections





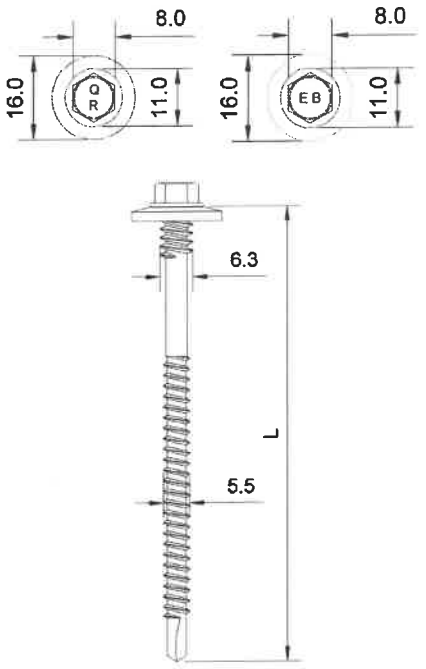
Loading conditions



SWAL Fastening screws for sandwich panels	**Annex 1** of European Technical Assessment ETA-21/0376
Example of execution of a connections. Loading conditions	

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16 – EPDM sealing ring with metal top made of coated carbon s16 – EPDM sealing ring with metal top made of stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346



Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed

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]	0,50	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	2,18	2,18	2,18	2,18	2,18
		0,55	2,18	2,18	2,18	2,18	2,18
		0,60	2,84	2,84	2,84	2,84	2,84
		0,75	3,00	3,00	3,00	3,00	3,00
		0,88	3,00	3,00	3,00	3,00	3,00
		1,00	3,00	3,00	3,00	3,00	3,00
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

SWAL Fastening screws for sandwich panels

IMPACT-R 6 5,5/6,3 x L with hexagon head
and washer made of EPDM sealing ring with metal top

Annex 2
of European
Technical Assessment
ETA-21/0376

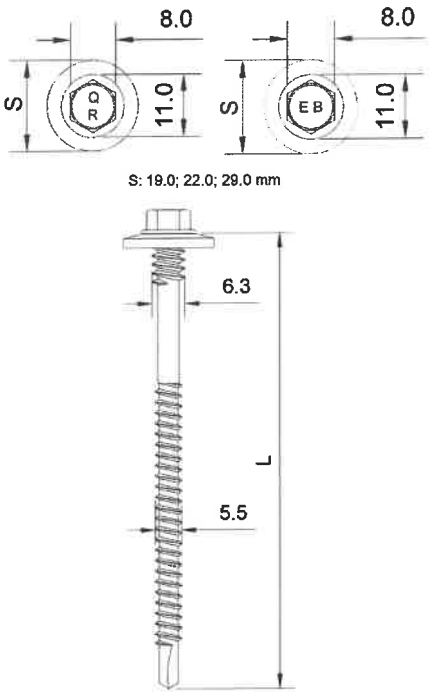
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



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]	0,50	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,32	3,32	3,32	3,32	3,32
		0,55	3,32	3,32	3,32	3,32	3,32
		0,60	3,32	3,32	3,32	3,32	3,32
		0,75	3,32	3,32	3,32	3,32	3,32
		0,88	3,32	3,32	3,32	3,32	3,32
		1,00	3,32	3,32	3,32	3,32	3,32
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

SWAL Fastening screws for sandwich panels

IMPACT-R 6 5,5/6,3 x L with hexagon head
and washer made of EPDM sealing ring with metal top

Annex 3
of European
Technical Assessment
ETA-21/0376

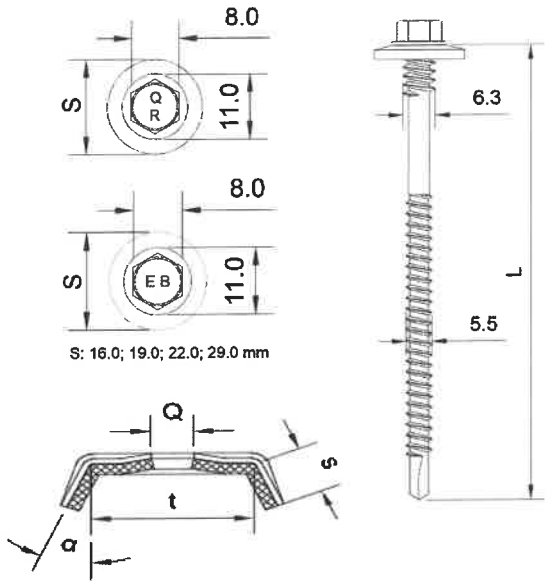
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



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]	0,50	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,32	3,32	3,32	3,32	3,32
		0,55	3,32	3,32	3,32	3,32	3,32
		0,60	3,32	3,32	3,32	3,32	3,32
		0,75	3,32	3,32	3,32	3,32	3,32
		0,88	3,32	3,32	3,32	3,32	3,32
		1,00	3,32	3,32	3,32	3,32	3,32
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

SWAL Fastening screws for sandwich panels

IMPACT-R 6 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and K 25 washer made of aluminum with EPDM

Annex 4
of European Technical Assessment ETA-21/0376

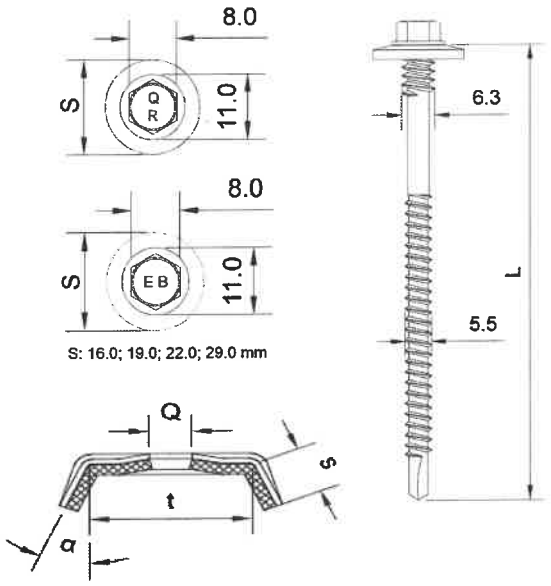
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



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]	0,50	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,32	3,32	3,32	3,32	3,32
		0,55	3,32	3,32	3,32	3,32	3,32
		0,60	3,32	3,32	3,32	3,32	3,32
		0,75	3,32	3,32	3,32	3,32	3,32
		0,88	3,32	3,32	3,32	3,32	3,32
		1,00	3,32	3,32	3,32	3,32	3,32
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

SWAL Fastening screws for sandwich panels

IMPACT-R 6 5,5/6,3 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
K 30 washer made of aluminum with EPDM

Annex 5
of European
Technical Assessment
ETA-21/0376

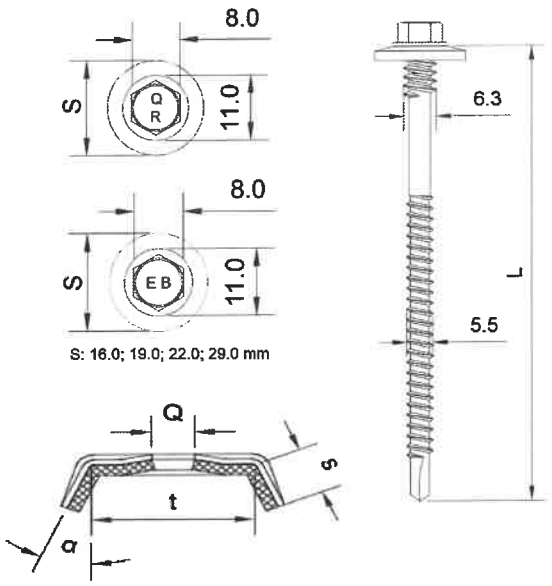
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



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]	0,50	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,32	3,32	3,32	3,32	3,32
		0,55	3,32	3,32	3,32	3,32	3,32
		0,60	3,32	3,32	3,32	3,32	3,32
		0,75	3,32	3,32	3,32	3,32	3,32
		0,88	3,32	3,32	3,32	3,32	3,32
		1,00	3,32	3,32	3,32	3,32	3,32
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

SWAL Fastening screws for sandwich panels

IMPACT-R 6 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and K 35 washer made of aluminum with EPDM

Annex 6
of European Technical Assessment ETA-21/0376

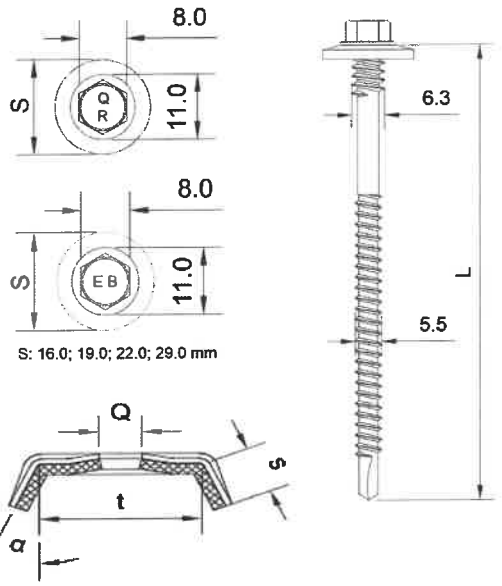
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



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]	0,50	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,32	3,32	3,32	3,32	3,32
		0,55	3,32	3,32	3,32	3,32	3,32
		0,60	3,32	3,32	3,32	3,32	3,32
		0,75	3,32	3,32	3,32	3,32	3,32
		0,88	3,32	3,32	3,32	3,32	3,32
		1,00	3,32	3,32	3,32	3,32	3,32
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

SWAL Fastening screws for sandwich panels

IMPACT-R 6 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and K 41 washer made of aluminum with EPDM

Annex 7
of European Technical Assessment ETA-21/0376

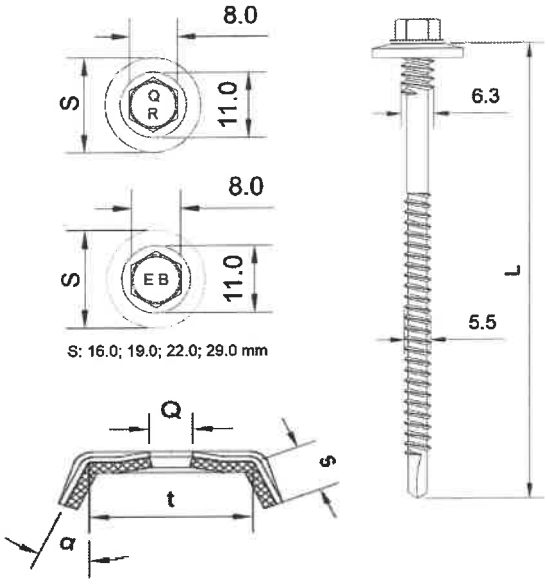
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



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]	0,50	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,32	3,32	3,32	3,32	3,32
		0,55	3,32	3,32	3,32	3,32	3,32
		0,60	3,32	3,32	3,32	3,32	3,32
		0,75	3,32	3,32	3,32	3,32	3,32
		0,88	3,32	3,32	3,32	3,32	3,32
		1,00	3,32	3,32	3,32	3,32	3,32
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

SWAL Fastening screws for sandwich panels

IMPACT-R 6 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and S 25 washer made of stainless steel with EPDM

Annex 8
of European Technical Assessment ETA-21/0376

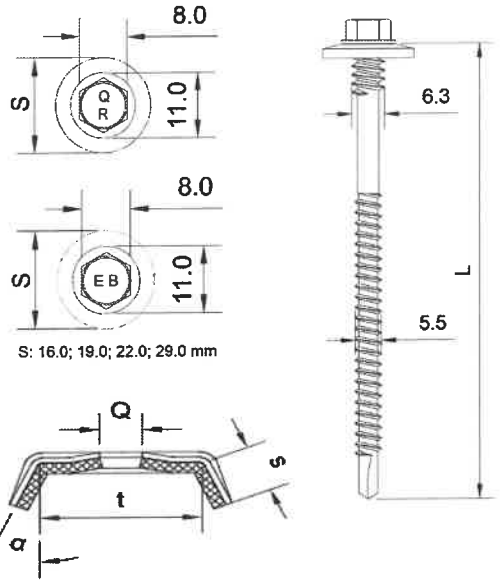
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



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]	0,50	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,32	3,32	3,32	3,32	3,32
		0,55	3,32	3,32	3,32	3,32	3,32
		0,60	3,32	3,32	3,32	3,32	3,32
		0,75	3,32	3,32	3,32	3,32	3,32
		0,88	3,32	3,32	3,32	3,32	3,32
		1,00	3,32	3,32	3,32	3,32	3,32
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

SWAL Fastening screws for sandwich panels

IMPACT-R 6 5,5/6,3 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
S 30 washer made of stainless steel with EPDM

Annex 9
of European
Technical Assessment
ETA-21/0376

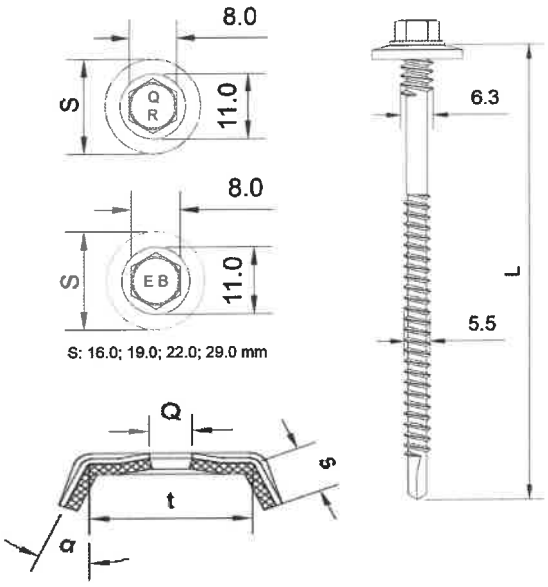
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



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]	0,50	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,32	3,32	3,32	3,32	3,32
		0,55	3,32	3,32	3,32	3,32	3,32
		0,60	3,32	3,32	3,32	3,32	3,32
		0,75	3,32	3,32	3,32	3,32	3,32
		0,88	3,32	3,32	3,32	3,32	3,32
		1,00	3,32	3,32	3,32	3,32	3,32
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

SWAL Fastening screws for sandwich panels

IMPACT-R 6 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and S 35 washer made of stainless steel with EPDM

Annex 10
of European Technical Assessment ETA-21/0376

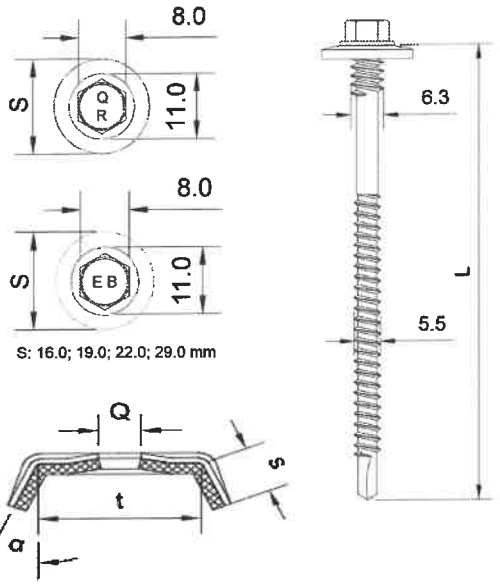
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



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]					
	0,50	1,43	1,43	1,43	1,43	1,43
	0,55	1,43	1,43	1,43	1,43	1,43
	0,60	1,52	1,52	1,52	1,52	1,52
	0,75	1,95	1,95	1,95	1,95	1,95
	0,88	1,95	1,95	1,95	1,95	1,95
	1,00	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]					
	0,50	3,32	3,32	3,32	3,32	3,32
	0,55	3,32	3,32	3,32	3,32	3,32
	0,60	3,32	3,32	3,32	3,32	3,32
	0,75	3,32	3,32	3,32	3,32	3,32
	0,88	3,32	3,32	3,32	3,32	3,32
	1,00	3,32	3,32	3,32	3,32	3,32
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

SWAL Fastening screws for sandwich panels

IMPACT-R 6 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and S 41 washer made of stainless steel with EPDM

Annex 11 of European Technical Assessment ETA-21/0376

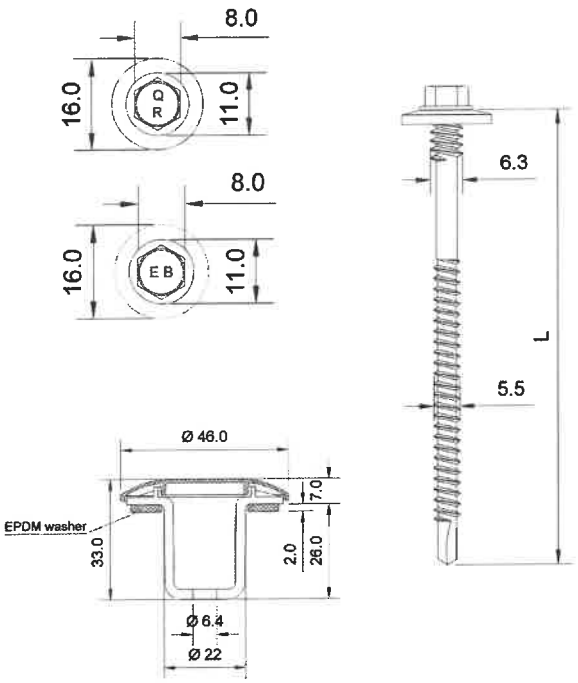
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16 – EPDM sealing ring with metal top made of coated carbon s16 – EPDM sealing ring with metal top made of stainless steel LAX cap made of polyamide
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



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	1,43	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	0,69	0,69	0,69	0,69	0,69
		0,50	1,12	1,12	1,12	1,12	1,12
		0,55	1,12	1,12	1,12	1,12	1,12
		0,60	1,44	1,44	1,44	1,44	1,44
		0,75	1,44	1,44	1,44	1,44	1,44
		0,88	1,44	1,44	1,44	1,44	1,44
		1,00	1,44	1,44	1,44	1,44	1,44
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

SWAL Fastening screws for sandwich panels

IMPACT-R 6 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and LAX cap made of polyamide

Annex 12
of European Technical Assessment ETA-21/0376

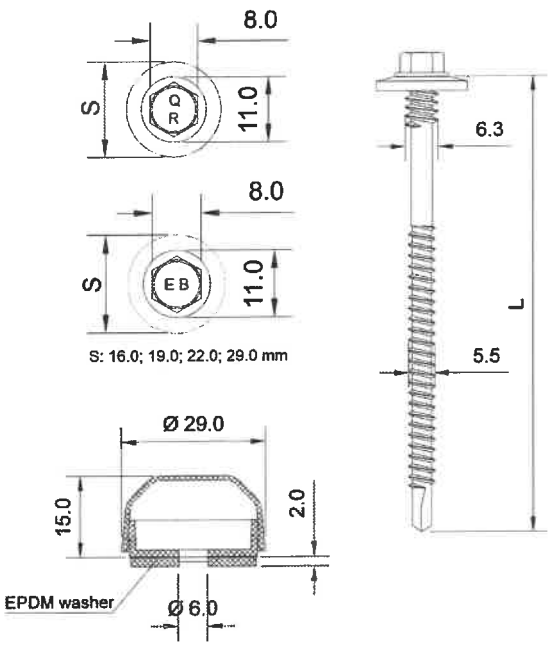
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19 and c22 – EPDM sealing ring with metal top made of coated carbon s16, s19 and s22 – EPDM sealing ring with metal top made of stainless steel WELRO cap made of polyamide
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



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	1,43	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	1,23	1,23	1,23	1,23	1,23
		0,50	1,93	1,93	1,93	1,93	1,93
		0,55	1,93	1,93	1,93	1,93	1,93
		0,60	2,97	2,97	2,97	2,97	2,97
		0,75	2,97	2,97	2,97	2,97	2,97
		0,88	2,97	2,97	2,97	2,97	2,97
		1,00	2,97	2,97	2,97	2,97	2,97
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

SWAL Fastening screws for sandwich panels

IMPACT-R 6 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and WELRO cap made of polyamide

Annex 13
of European Technical Assessment ETA-21/0376

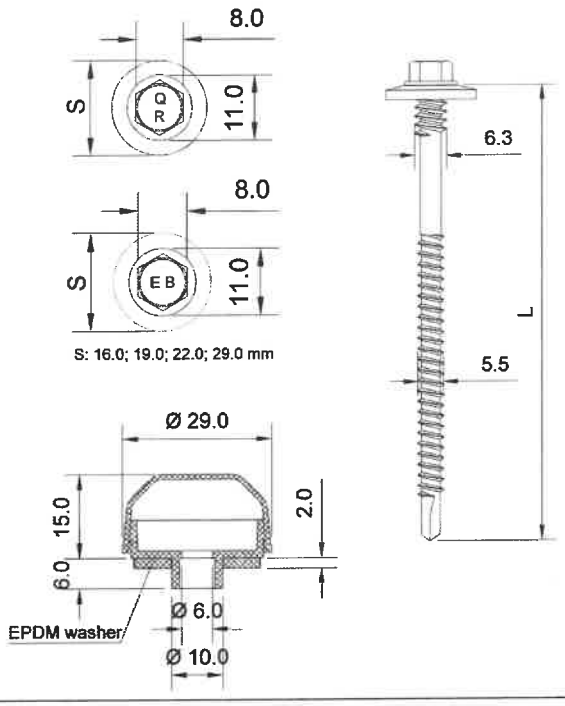
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19 and c22 – EPDM sealing ring with metal top made of coated carbon s16, s19 and s22 – EPDM sealing ring with metal top made of stainless steel WELRO-XL cap made of polyamide
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



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	1,43	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	0,80	0,80	0,80	0,80	0,80
		0,50	1,31	1,31	1,31	1,31	1,31
		0,55	1,31	1,31	1,31	1,31	1,31
		0,60	1,78	1,78	1,78	1,78	1,78
		0,75	1,78	1,78	1,78	1,78	1,78
		0,88	1,78	1,78	1,78	1,78	1,78
		1,00	1,78	1,78	1,78	1,78	1,78
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

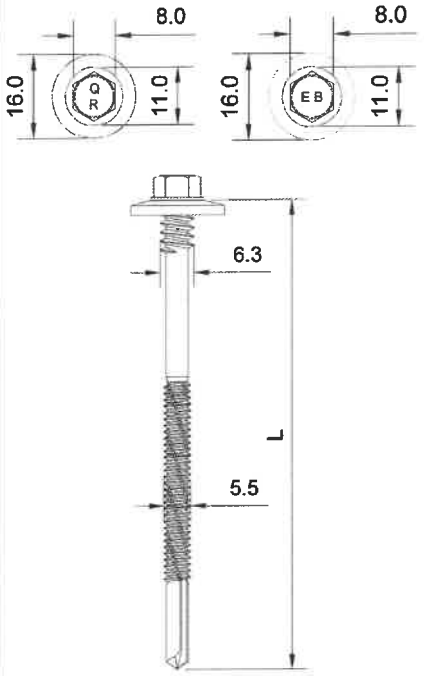
SWAL Fastening screws for sandwich panels

IMPACT-R 6 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and WELRO-XL cap made of polyamide

Annex 14
of European Technical Assessment ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16 – EPDM sealing ring with metal top made of coated carbon s16 – EPDM sealing ring with metal top made of stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1



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

Timber substructures

no performance assessed

Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	2,18	2,18	2,18	2,18	2,18	2,18	2,18
		0,55	2,18	2,18	2,18	2,18	2,18	2,18	2,18
		0,63	2,84	2,84	2,84	2,84	2,84	2,84	2,84
		0,75	3,00	3,00	3,00	3,00	3,00	3,00	3,00
		0,88	3,00	3,00	3,00	3,00	3,00	3,00	3,00
		1,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14 5,5/6,3 x L with hexagon head
and washer made of EPDM sealing ring with metal top

Annex 15
of European
Technical Assessment
ETA-21/0376

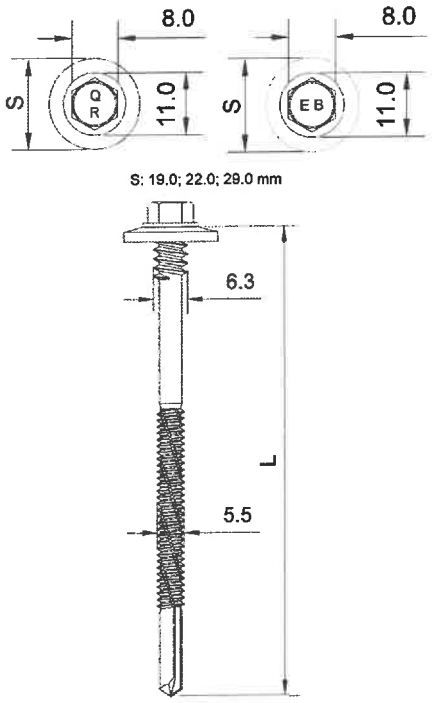
Materials

Fastener: carbon steel – SAE1022, quenched, tempered and coated:
- galvanized (12 µm) or
- ceramic coating DACRO500 or
- ceramic coating DACRO1000

Washer: c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon
s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S235 – EN 10025-1



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

Timber substructures

no performance assessed

Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,48	3,48	3,48	3,48	3,48	3,48	3,48
		0,55	3,48	3,48	3,48	3,48	3,48	3,48	3,48
		0,63	4,33	4,33	4,33	4,33	4,33	4,33	4,33
		0,75	5,10	5,10	5,10	5,10	5,10	5,10	5,10
		0,88	5,10	5,10	5,10	5,10	5,10	5,10	5,10
		1,00	5,10	5,10	5,10	5,10	5,10	5,10	5,10
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14 5,5/6,3 x L with hexagon head
and washer made of EPDM sealing ring with metal top

Annex 16
of European
Technical Assessment
ETA-21/0376

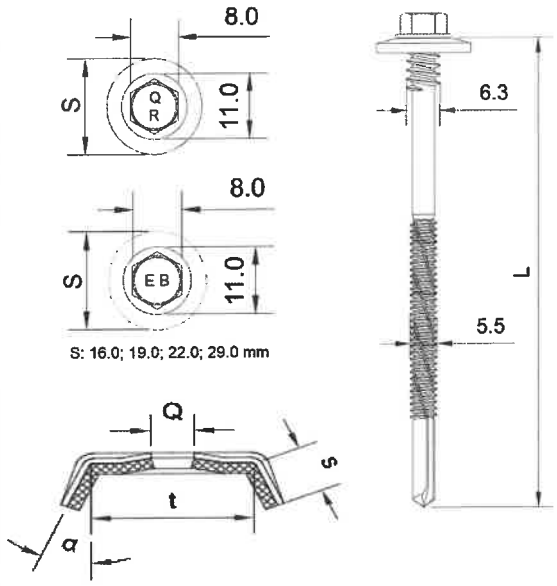
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1

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

Timber substructures

no performance assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		0,55	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		0,63	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		0,75	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		0,88	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		1,00	5,52	5,52	5,52	5,52	5,52	5,52	5,52
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and K 25 washer made of aluminum with EPDM

Annex 17
of European Technical Assessment ETA-21/0376

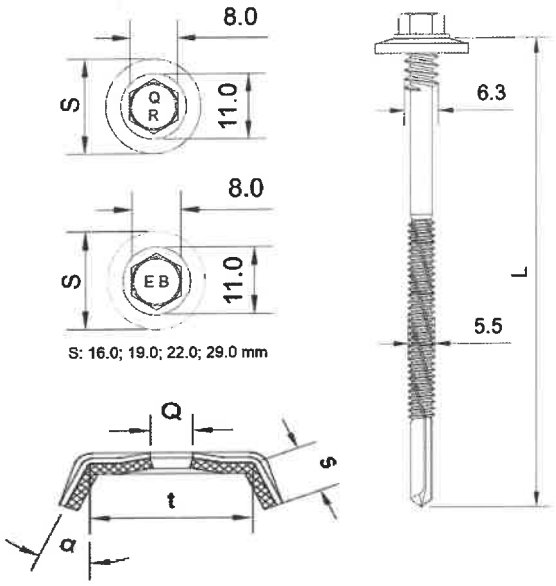
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1

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

Timber substructures

no performance assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		0,55	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		0,63	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		0,75	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		0,88	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		1,00	6,15	6,15	6,15	6,15	6,15	6,15	6,15
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and K 30 washer made of aluminum with EPDM

Annex 18
of European Technical Assessment ETA-21/0376

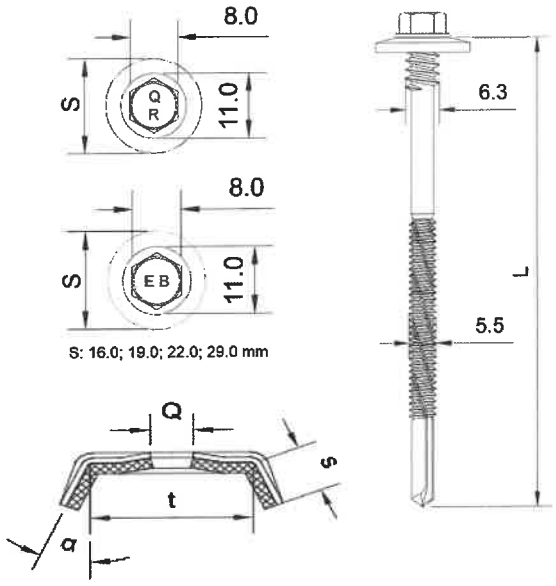
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1

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

Timber substructures

no performance assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		0,55	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		0,63	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		0,75	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		0,88	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		1,00	6,69	6,69	6,69	6,69	6,69	6,69	6,69
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

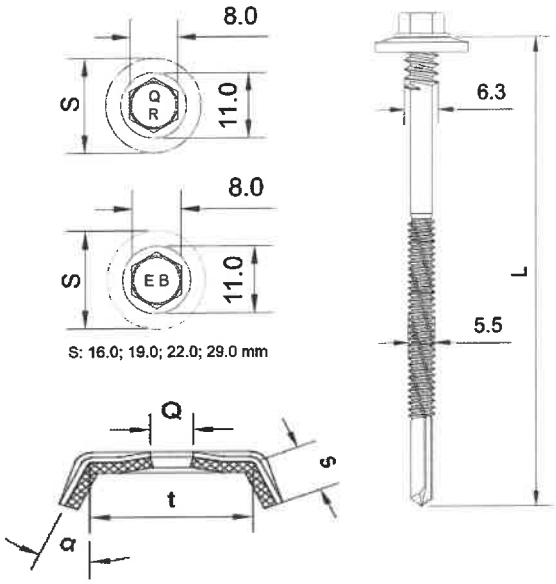
SWAL Fastening screws for sandwich panels

IMPACT-R 14 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and K 35 washer made of aluminum with EPDM

Annex 19
of European Technical Assessment ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1



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

Timber substructures

no performance assessed

Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		0,55	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		0,63	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		0,75	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		0,88	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		1,00	6,97	6,97	6,97	6,97	6,97	6,97	6,97
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and K 41 washer made of aluminum with EPDM

Annex 20
of European Technical Assessment ETA-21/0376

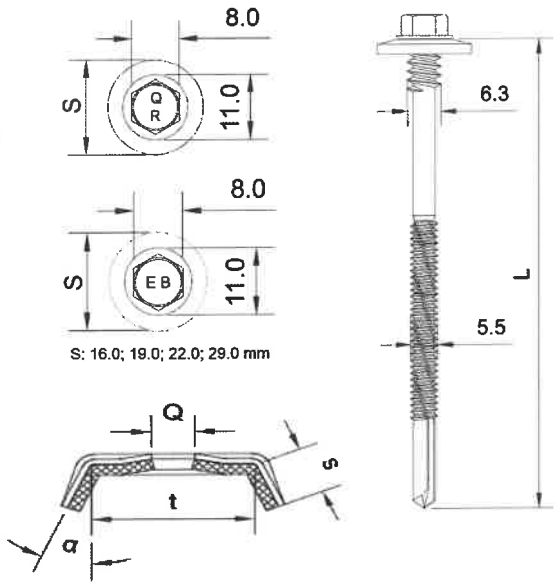
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1

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

Timber substructures

no performance assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		0,55	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		0,63	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		0,75	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		0,88	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		1,00	5,52	5,52	5,52	5,52	5,52	5,52	5,52
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and S 25 washer made of stainless steel with EPDM

Annex 21
of European Technical Assessment ETA-21/0376

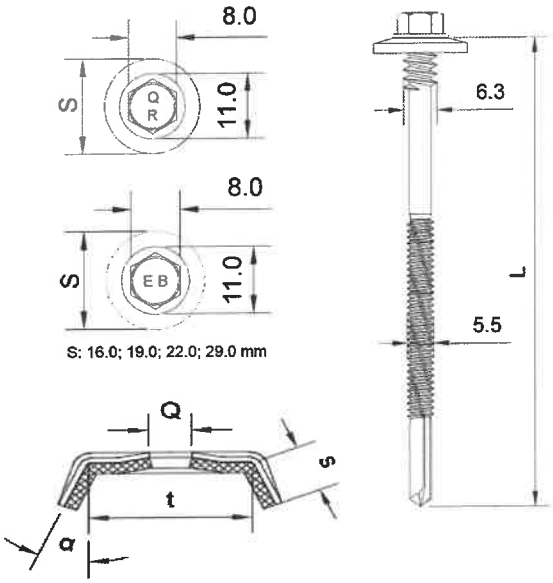
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1

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

Timber substructures

no performance assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		0,55	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		0,63	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		0,75	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		0,88	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		1,00	6,15	6,15	6,15	6,15	6,15	6,15	6,15
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and S 30 washer made of stainless steel with EPDM

Annex 22
of European Technical Assessment ETA-21/0376

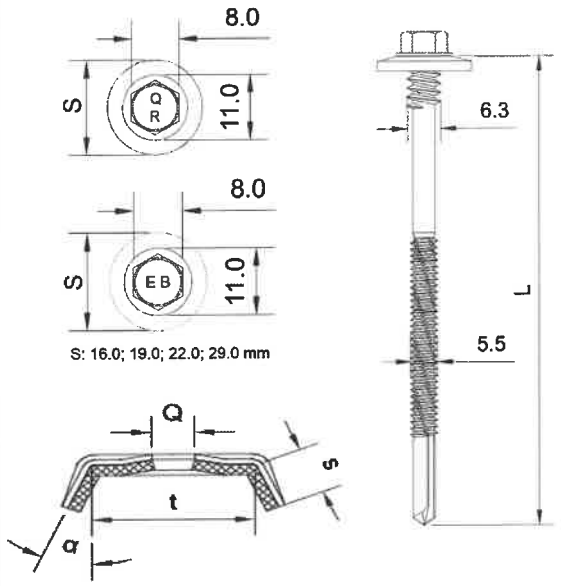
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1

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

Timber substructures

no performance assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		0,55	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		0,63	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		0,75	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		0,88	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		1,00	6,69	6,69	6,69	6,69	6,69	6,69	6,69
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and S 35 washer made of stainless steel with EPDM

Annex 23
of European Technical Assessment ETA-21/0376

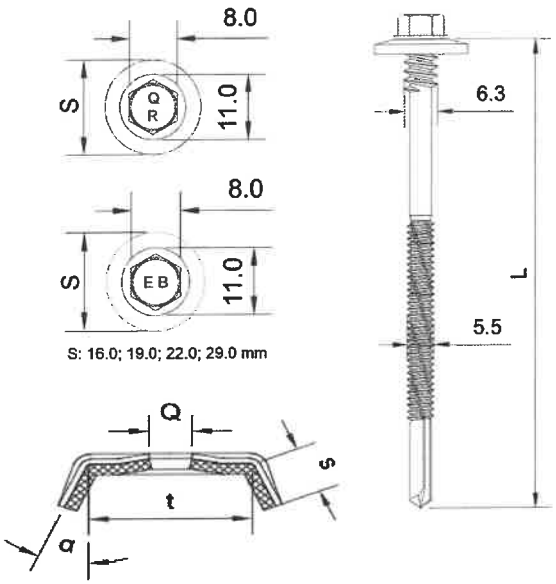
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1

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

Timber substructures

no performance assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		0,55	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		0,63	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		0,75	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		0,88	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		1,00	6,97	6,97	6,97	6,97	6,97	6,97	6,97
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

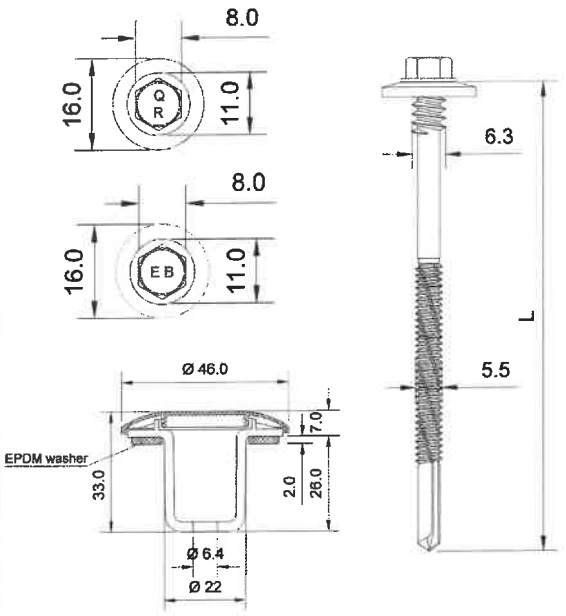
SWAL Fastening screws for sandwich panels

IMPACT-R 14 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and S 41 washer made of stainless steel with EPDM

Annex 24
of European Technical Assessment ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16 – EPDM sealing ring with metal top made of coated carbon s16 – EPDM sealing ring with metal top made of stainless steel LAX cap made of polyamide
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1



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

Timber substructures

no performance assessed

Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,40	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	0,69	0,69	0,69	0,69	0,69	0,69	0,69
		0,50	1,12	1,12	1,12	1,12	1,12	1,12	1,12
		0,55	1,12	1,12	1,12	1,12	1,12	1,12	1,12
		0,63	1,44	1,44	1,44	1,44	1,44	1,44	1,44
		0,75	1,44	1,44	1,44	1,44	1,44	1,44	1,44
		0,88	1,44	1,44	1,44	1,44	1,44	1,44	1,44
		1,00	1,44	1,44	1,44	1,44	1,44	1,44	1,44
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and LAX cap made of polyamide

Annex 25
of European Technical Assessment ETA-21/0376

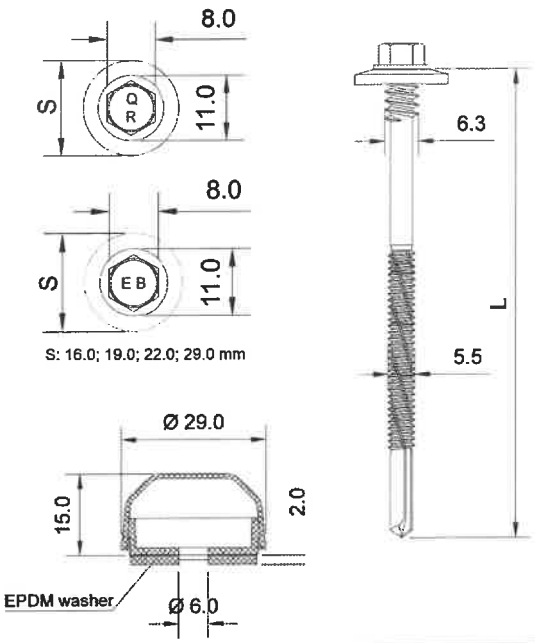
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19 and c22 – EPDM sealing ring with metal top made of coated carbon s16, s19 and s22 – EPDM sealing ring with metal top made of stainless steel WELRO cap made of polyamide
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1

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

Timber substructures

no performance assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,40	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	1,23	1,23	1,23	1,23	1,23	1,23	1,23
		0,50	1,93	1,93	1,93	1,93	1,93	1,93	1,93
		0,55	1,93	1,93	1,93	1,93	1,93	1,93	1,93
		0,63	2,97	2,97	2,97	2,97	2,97	2,97	2,97
		0,75	2,97	2,97	2,97	2,97	2,97	2,97	2,97
		0,88	2,97	2,97	2,97	2,97	2,97	2,97	2,97
		1,00	2,97	2,97	2,97	2,97	2,97	2,97	2,97
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and WELRO cap made with polyamide

Annex 26
of European Technical Assessment ETA-21/0376

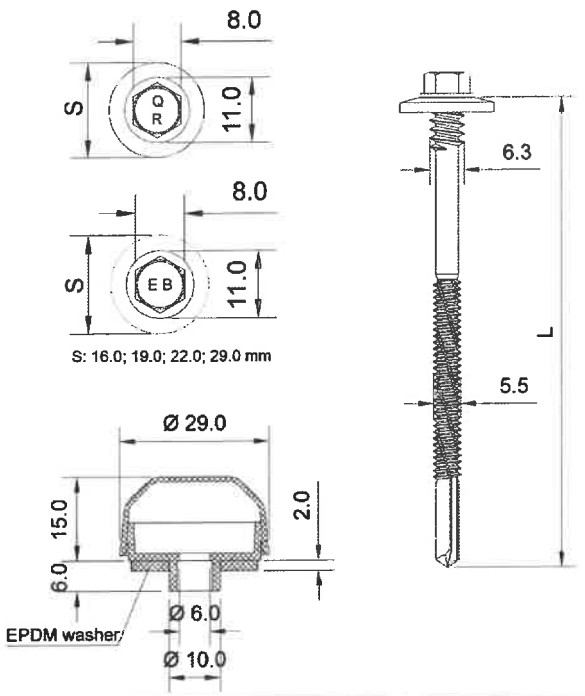
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19 and c22 – EPDM sealing ring with metal top made of coated carbon s16, s19 and s22 – EPDM sealing ring with metal top made of stainless steel WELRO-XL cap made of polyamide
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1

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

Timber substructures

no performance assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,40	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	0,80	0,80	0,80	0,80	0,80	0,80	0,80
		0,50	1,31	1,31	1,31	1,31	1,31	1,31	1,31
		0,55	1,31	1,31	1,31	1,31	1,31	1,31	1,31
		0,63	1,78	1,78	1,78	1,78	1,78	1,78	1,78
		0,75	1,78	1,78	1,78	1,78	1,78	1,78	1,78
		0,88	1,78	1,78	1,78	1,78	1,78	1,78	1,78
		1,00	1,78	1,78	1,78	1,78	1,78	1,78	1,78
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and WELRO-XL cap made with polyamide

Annex 27
of European Technical Assessment ETA-21/0376

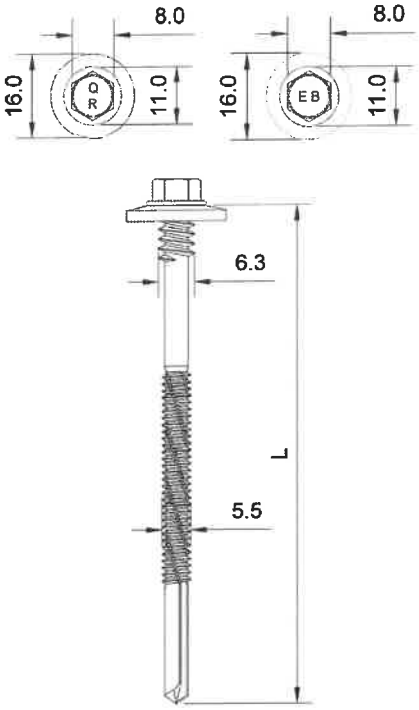
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16 – EPDM sealing ring with metal top made of coated carbon s16 – EPDM sealing ring with metal top made of stainless steel
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 assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	2,18	2,18	2,18	2,18	2,18	2,18	2,18
		0,55	2,18	2,18	2,18	2,18	2,18	2,18	2,18
		0,63	2,84	2,84	2,84	2,84	2,84	2,84	2,84
		0,75	3,00	3,00	3,00	3,00	3,00	3,00	3,00
		0,88	3,00	3,00	3,00	3,00	3,00	3,00	3,00
		1,00	3,00	3,00	3,00	3,00	3,00	3,00	3,00
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

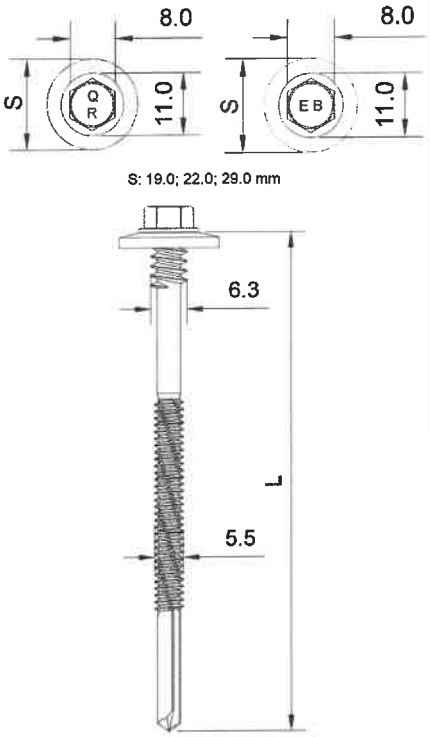
SWAL Fastening screws for sandwich panels

IMPACT-R 14+ 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top

Annex 28
of European Technical Assessment ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel
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 assessed

Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,48	3,48	3,48	3,48	3,48	3,48	3,48
		0,55	3,48	3,48	3,48	3,48	3,48	3,48	3,48
		0,63	4,33	4,33	4,33	4,33	4,33	4,33	4,33
		0,75	5,10	5,10	5,10	5,10	5,10	5,10	5,10
		0,88	5,10	5,10	5,10	5,10	5,10	5,10	5,10
		1,00	5,10	5,10	5,10	5,10	5,10	5,10	5,10
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14+ 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top

Annex 29
of European Technical Assessment ETA-21/0376

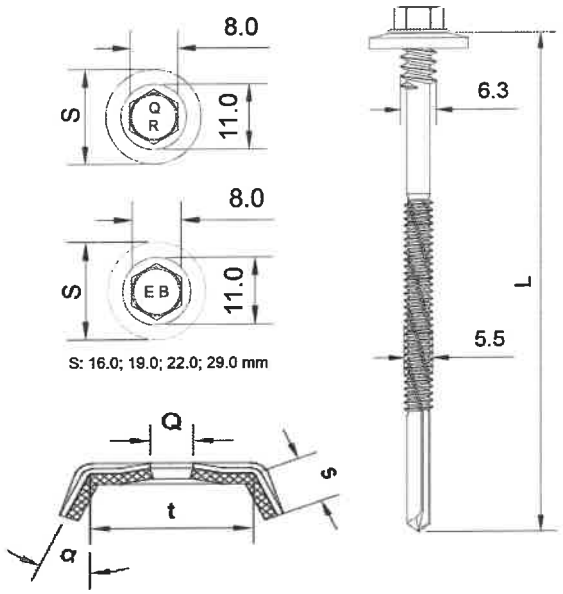
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
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 assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		0,55	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		0,63	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		0,75	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		0,88	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		1,00	5,52	5,52	5,52	5,52	5,52	5,52	5,52
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14+ 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and K 25 washer made of aluminum with EPDM

Annex 30
of European Technical Assessment ETA-21/0376

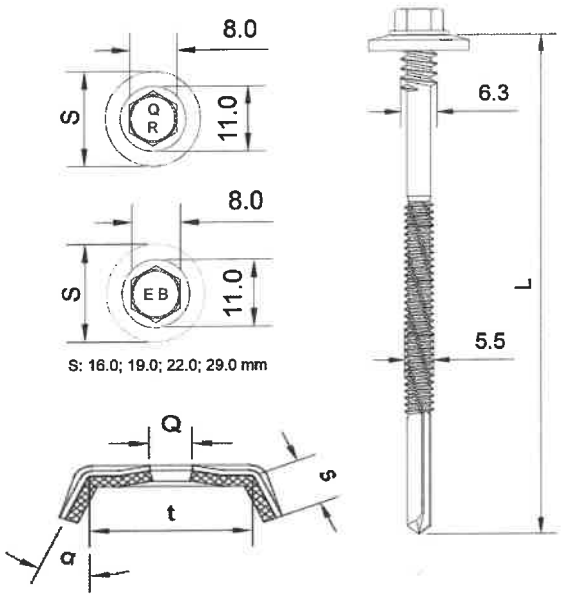
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
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 assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		0,55	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		0,63	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		0,75	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		0,88	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		1,00	6,15	6,15	6,15	6,15	6,15	6,15	6,15
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14+ 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and K 30 washer made of aluminum with EPDM

Annex 31
of European Technical Assessment ETA-21/0376

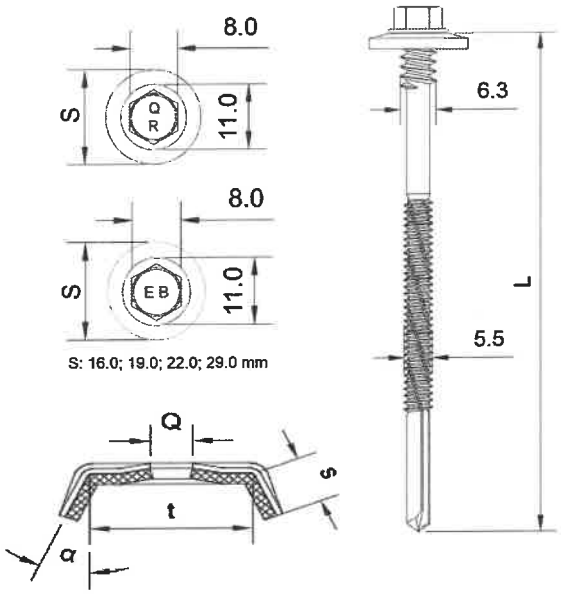
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
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 assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		0,55	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		0,63	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		0,75	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		0,88	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		1,00	6,69	6,69	6,69	6,69	6,69	6,69	6,69
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14+ 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and K 35 washer made of aluminum with EPDM

Annex 32
of European Technical Assessment ETA-21/0376

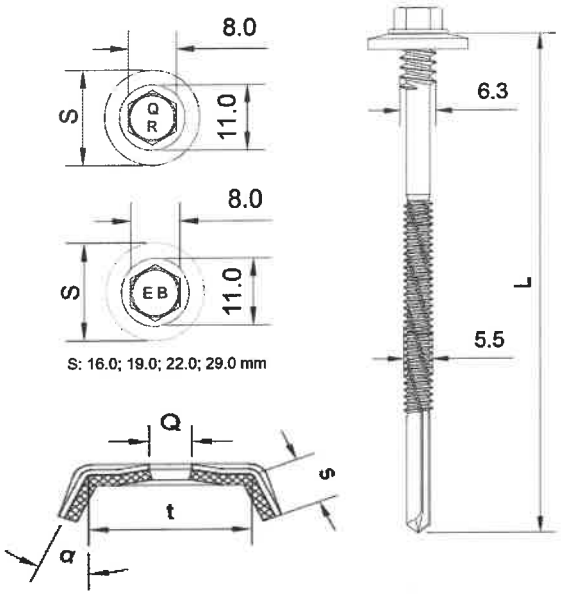
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
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 assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		0,55	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		0,63	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		0,75	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		0,88	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		1,00	6,97	6,97	6,97	6,97	6,97	6,97	6,97
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14+ 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and K 41 washer made of aluminum with EPDM

Annex 33
of European Technical Assessment ETA-21/0376

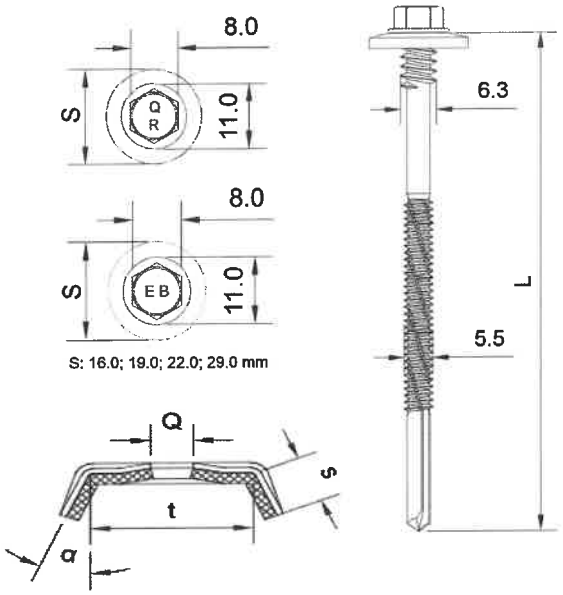
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
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 assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		0,55	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		0,63	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		0,75	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		0,88	5,52	5,52	5,52	5,52	5,52	5,52	5,52
		1,00	5,52	5,52	5,52	5,52	5,52	5,52	5,52
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14+ 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and S 25 washer made of stainless steel with EPDM

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of European Technical Assessment ETA-21/0376

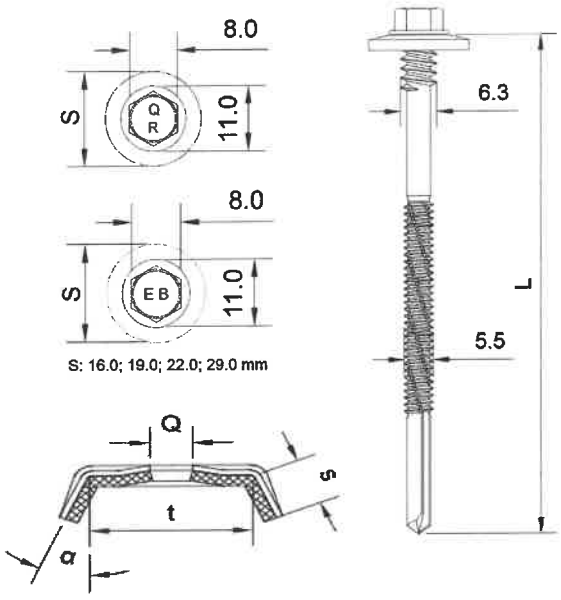
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
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 assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		0,55	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		0,63	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		0,75	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		0,88	6,15	6,15	6,15	6,15	6,15	6,15	6,15
		1,00	6,15	6,15	6,15	6,15	6,15	6,15	6,15
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

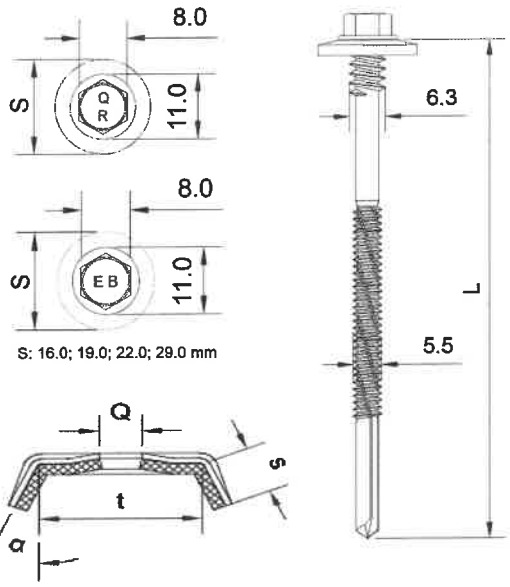
SWAL Fastening screws for sandwich panels

IMPACT-R 14+ 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and S 30 washer made of stainless steel with EPDM

Annex 35
of European Technical Assessment ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
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 assessed

Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		0,55	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		0,63	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		0,75	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		0,88	6,69	6,69	6,69	6,69	6,69	6,69	6,69
		1,00	6,69	6,69	6,69	6,69	6,69	6,69	6,69
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14+ 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and S 35 washer made of stainless steel with EPDM

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of European Technical Assessment ETA-21/0376

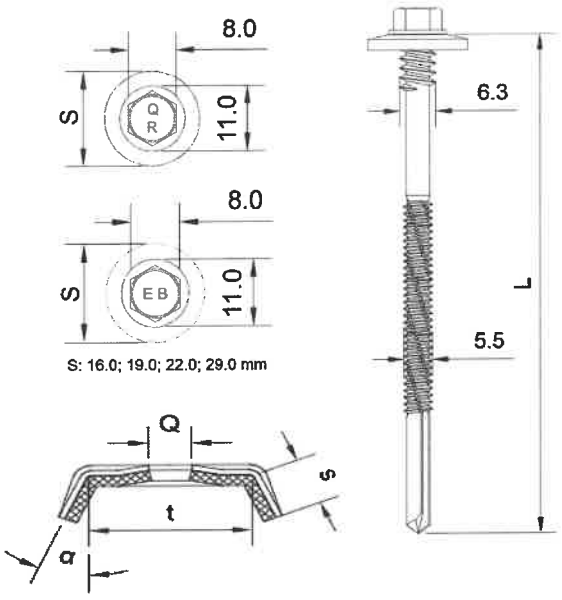
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
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 assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		0,55	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		0,63	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		0,75	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		0,88	6,97	6,97	6,97	6,97	6,97	6,97	6,97
		1,00	6,97	6,97	6,97	6,97	6,97	6,97	6,97
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14+ 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and S 41 washer made of stainless steel with EPDM

Annex 37
of European Technical Assessment ETA-21/0376

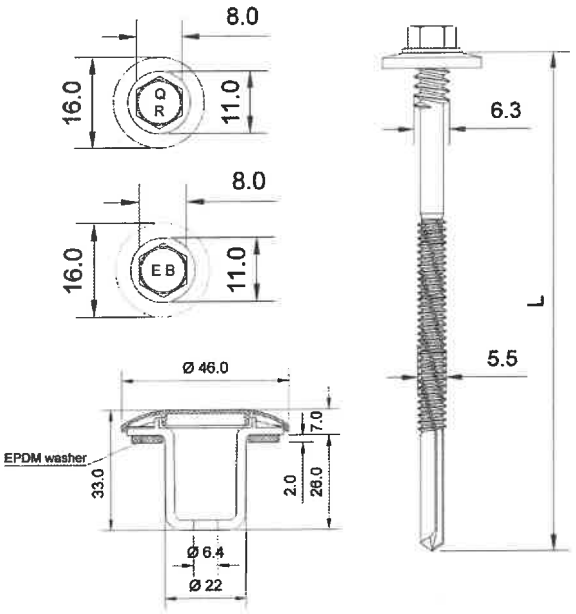
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16 – EPDM sealing ring with metal top made of coated carbon s16 – EPDM sealing ring with metal top made of stainless steel LAX cap made of polyamide
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 assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,40	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	0,69	0,69	0,69	0,69	0,69	0,69	0,69
		0,50	1,12	1,12	1,12	1,12	1,12	1,12	1,12
		0,55	1,12	1,12	1,12	1,12	1,12	1,12	1,12
		0,63	1,44	1,44	1,44	1,44	1,44	1,44	1,44
		0,75	1,44	1,44	1,44	1,44	1,44	1,44	1,44
		0,88	1,44	1,44	1,44	1,44	1,44	1,44	1,44
		1,00	1,44	1,44	1,44	1,44	1,44	1,44	1,44
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14+ 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and LAX cap made of polyamide

Annex 38
of European Technical Assessment ETA-21/0376

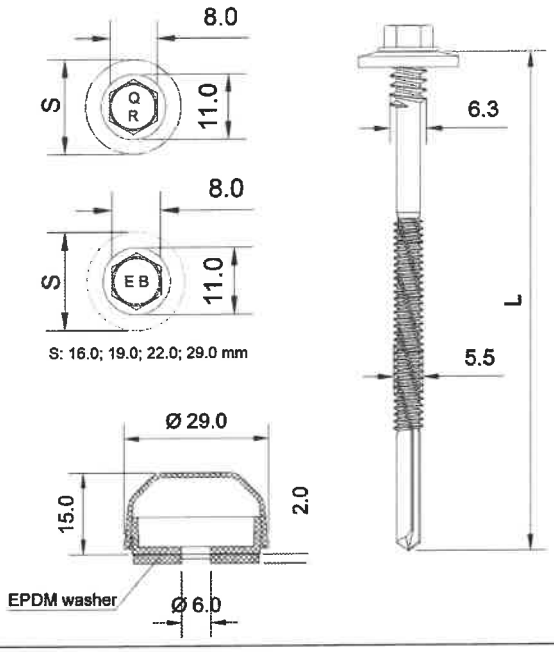
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19 and c22 – EPDM sealing ring with metal top made of coated carbon s16, s19 and s22 – EPDM sealing ring with metal top made of stainless steel WELRO cap made of polyamide
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 assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,40	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	1,23	1,23	1,23	1,23	1,23	1,23	1,23
		0,50	1,93	1,93	1,93	1,93	1,93	1,93	1,93
		0,55	1,93	1,93	1,93	1,93	1,93	1,93	1,93
		0,63	2,97	2,97	2,97	2,97	2,97	2,97	2,97
		0,75	2,97	2,97	2,97	2,97	2,97	2,97	2,97
		0,88	2,97	2,97	2,97	2,97	2,97	2,97	2,97
		1,00	2,97	2,97	2,97	2,97	2,97	2,97	2,97
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

SWAL Fastening screws for sandwich panels

IMPACT-R 14+ 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and WELRO cap made with polyamide

Annex 39
of European Technical Assessment ETA-21/0376

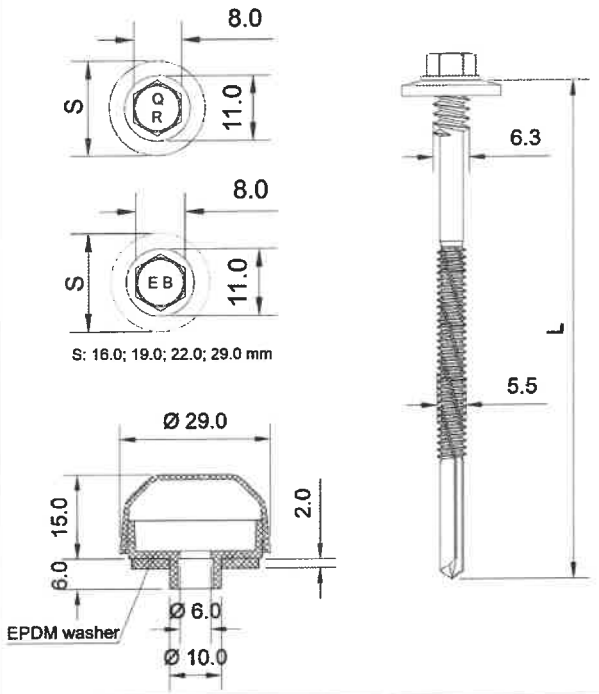
Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16, c19 and c22 – EPDM sealing ring with metal top made of coated carbon s16, s19 and s22 – EPDM sealing ring with metal top made of stainless steel WELRO-XL cap made of polyamide
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 assessed



Component II: t_{II} in [mm]			4,00	5,00	6,00	8,00	10,00	12,00	13,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,40	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	0,80	0,80	0,80	0,80	0,80	0,80	0,80
		0,50	1,31	1,31	1,31	1,31	1,31	1,31	1,31
		0,55	1,31	1,31	1,31	1,31	1,31	1,31	1,31
		0,63	1,78	1,78	1,78	1,78	1,78	1,78	1,78
		0,75	1,78	1,78	1,78	1,78	1,78	1,78	1,78
		0,88	1,78	1,78	1,78	1,78	1,78	1,78	1,78
		1,00	1,78	1,78	1,78	1,78	1,78	1,78	1,78
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

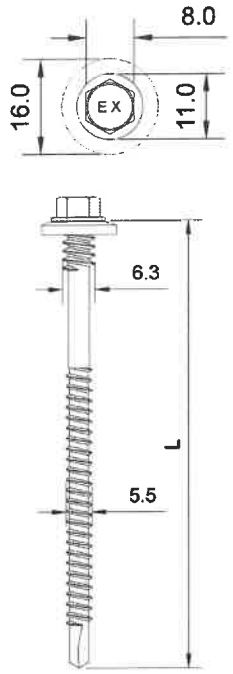
SWAL Fastening screws for sandwich panels

IMPACT-R 14+ 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and WELRO-XL cap made with polyamide

Annex 40
of European Technical Assessment ETA-21/0376

Materials

Fastener:	stainless steel – SAE304
Washer:	s16 – EPDM sealing ring with metal top made of stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1
	t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346



Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed

Component II: t_{II} in [mm]			2,00	2,50	3,00	4,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	2,18	2,18	2,18	2,18
		0,55	2,18	2,18	2,18	2,18
		0,60	2,84	2,84	2,84	2,84
		0,75	3,00	3,00	3,00	3,00
		0,88	3,00	3,00	3,00	3,00
		1,00	3,00	3,00	3,00	3,00
Max. head displacement u depending on the sandwich panel thickness in [mm]		30	0,7	0,7	0,7	0,7
		40	0,9	0,9	0,9	0,9
		50	1,2	1,2	1,2	1,2
		60	1,4	1,4	1,4	1,4
		70	1,6	1,6	1,6	1,6
		80	1,8	1,8	1,8	1,8
		90	2,1	2,1	2,1	2,1
		100	2,3	2,3	2,3	2,3
		120	2,8	2,8	2,8	2,8
		>140	3,2	3,2	3,2	3,2

SWAL Fastening screws for sandwich panels

IMPACT-S 5 5,5/6,3 x L with hexagon head
and washer made of EPDM sealing ring with metal top

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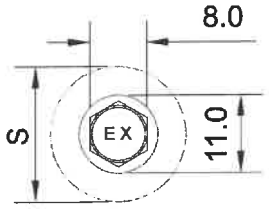
Materials

Fastener:	stainless steel – SAE304
Washer:	s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

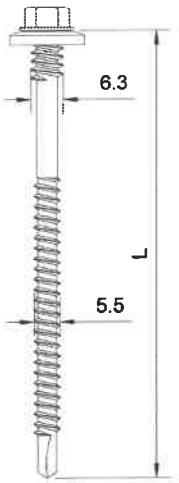
Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



S: 19.0; 22.0; 29.0 mm



Component II: t_{II} in [mm]			2,00	2,50	3,00	4,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,48	3,48	3,48	3,48
		0,55	3,49	3,49	3,49	3,49
		0,60	3,80	3,80	3,80	3,80
		0,75	3,80	3,80	3,80	3,80
		0,88	3,80	3,80	3,80	3,80
		1,00	3,80	3,80	3,80	3,80
Max. head displacement u depending on the sandwich panel thickness in [mm]		30	0,7	0,7	0,7	0,7
		40	0,9	0,9	0,9	0,9
		50	1,2	1,2	1,2	1,2
		60	1,4	1,4	1,4	1,4
		70	1,6	1,6	1,6	1,6
		80	1,8	1,8	1,8	1,8
		90	2,1	2,1	2,1	2,1
		100	2,3	2,3	2,3	2,3
		120	2,8	2,8	2,8	2,8
		>140	3,2	3,2	3,2	3,2

SWAL Fastening screws for sandwich panels

IMPACT-S 5 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top

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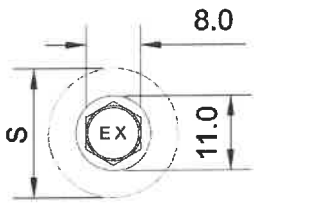
Materials

Fastener:	stainless steel – SAE304
Washer:	s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

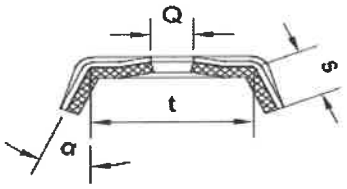
Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



S: 16.0; 19.0; 22.0; 29.0 mm



Component II: t_{II} in [mm]			2,00	2,50	3,00	4,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,80	3,80	3,80	3,80
		0,55	3,80	3,80	3,80	3,80
		0,60	3,80	3,80	3,80	3,80
		0,75	3,80	3,80	3,80	3,80
		0,88	3,80	3,80	3,80	3,80
		1,00	3,80	3,80	3,80	3,80
Max. head displacement u depending on the sandwich panel thickness in [mm]		30	0,7	0,7	0,7	0,7
		40	0,9	0,9	0,9	0,9
		50	1,2	1,2	1,2	1,2
		60	1,4	1,4	1,4	1,4
		70	1,6	1,6	1,6	1,6
		80	1,8	1,8	1,8	1,8
		90	2,1	2,1	2,1	2,1
		100	2,3	2,3	2,3	2,3
		120	2,8	2,8	2,8	2,8
		>140	3,2	3,2	3,2	3,2

SWAL Fastening screws for sandwich panels

IMPACT-S 5 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and K 25 washer made of aluminum with EPDM

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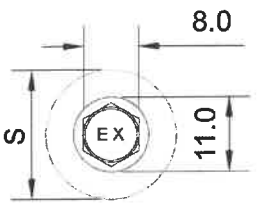
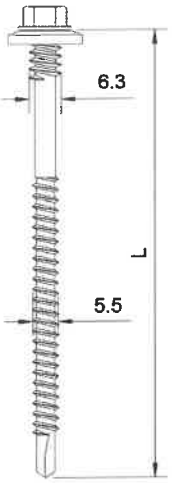
Materials

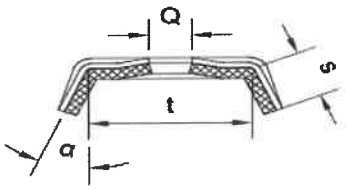
Fastener:	stainless steel – SAE304
Washer:	s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346



S: 16.0; 19.0; 22.0; 29.0 mm



Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm



Timber substructures

no performance assessed

Component II: t_{II} in [mm]			2,00	2,50	3,00	4,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,80	3,80	3,80	3,80
		0,55	3,80	3,80	3,80	3,80
		0,60	3,80	3,80	3,80	3,80
		0,75	3,80	3,80	3,80	3,80
		0,88	3,80	3,80	3,80	3,80
		1,00	3,80	3,80	3,80	3,80
Max. head displacement u depending on the sandwich panel thickness in [mm]		30	0,7	0,7	0,7	0,7
		40	0,9	0,9	0,9	0,9
		50	1,2	1,2	1,2	1,2
		60	1,4	1,4	1,4	1,4
		70	1,6	1,6	1,6	1,6
		80	1,8	1,8	1,8	1,8
		90	2,1	2,1	2,1	2,1
		100	2,3	2,3	2,3	2,3
		120	2,8	2,8	2,8	2,8
		>140	3,2	3,2	3,2	3,2

SWAL Fastening screws for sandwich panels

IMPACT-S 5 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and K 30 washer made of aluminum with EPDM

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of European Technical Assessment ETA-21/0376

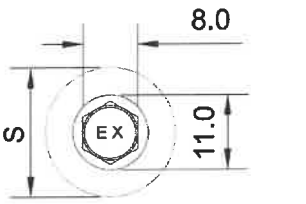
Materials

Fastener:	stainless steel – SAE304
Washer:	s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

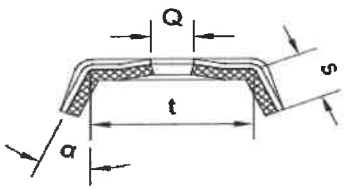
Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



S: 16.0; 19.0; 22.0; 29.0 mm



Component II: t_{II} in [mm]			2,00	2,50	3,00	4,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,80	3,80	3,80	3,80
		0,55	3,80	3,80	3,80	3,80
		0,60	3,80	3,80	3,80	3,80
		0,75	3,80	3,80	3,80	3,80
		0,88	3,80	3,80	3,80	3,80
		1,00	3,80	3,80	3,80	3,80
Max. head displacement u depending on the sandwich panel thickness in [mm]		30	0,7	0,7	0,7	0,7
		40	0,9	0,9	0,9	0,9
		50	1,2	1,2	1,2	1,2
		60	1,4	1,4	1,4	1,4
		70	1,6	1,6	1,6	1,6
		80	1,8	1,8	1,8	1,8
		90	2,1	2,1	2,1	2,1
		100	2,3	2,3	2,3	2,3
		120	2,8	2,8	2,8	2,8
		>140	3,2	3,2	3,2	3,2

SWAL Fastening screws for sandwich panels

IMPACT-S 5 5,5/6,3 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
K 35 washer made of aluminum with EPDM

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of European
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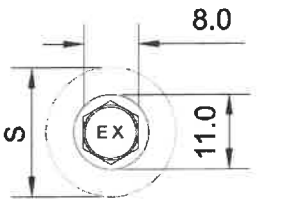
Materials

Fastener:	stainless steel – SAE304
Washer:	s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

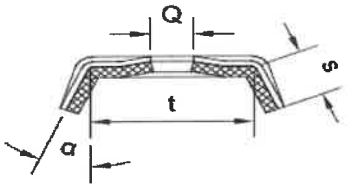
Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

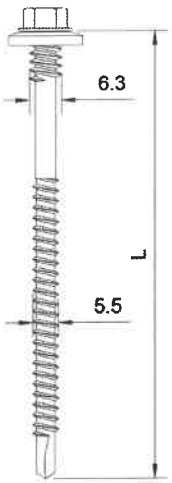
Timber substructures

no performance assessed



S: 16.0; 19.0; 22.0; 29.0 mm





Component II: t_{II} in [mm]			2,00	2,50	3,00	4,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,80	3,80	3,80	3,80
		0,55	3,80	3,80	3,80	3,80
		0,60	3,80	3,80	3,80	3,80
		0,75	3,80	3,80	3,80	3,80
		0,88	3,80	3,80	3,80	3,80
		1,00	3,80	3,80	3,80	3,80
Max. head displacement u depending on the sandwich panel thickness in [mm]		30	0,7	0,7	0,7	0,7
		40	0,9	0,9	0,9	0,9
		50	1,2	1,2	1,2	1,2
		60	1,4	1,4	1,4	1,4
		70	1,6	1,6	1,6	1,6
		80	1,8	1,8	1,8	1,8
		90	2,1	2,1	2,1	2,1
		100	2,3	2,3	2,3	2,3
		120	2,8	2,8	2,8	2,8
		>140	3,2	3,2	3,2	3,2

SWAL Fastening screws for sandwich panels

IMPACT-S 5 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and K 41 washer made of aluminum with EPDM

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of European Technical Assessment ETA-21/0376

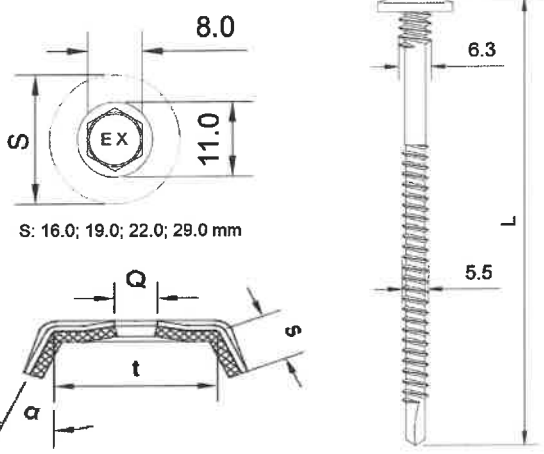
Materials

Fastener:	stainless steel – SAE304
Washer:	s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



Component II: t_{II} in [mm]			2,00	2,50	3,00	4,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,80	3,80	3,80	3,80
		0,55	3,80	3,80	3,80	3,80
		0,60	3,80	3,80	3,80	3,80
		0,75	3,80	3,80	3,80	3,80
		0,88	3,80	3,80	3,80	3,80
		1,00	3,80	3,80	3,80	3,80
Max. head displacement u depending on the sandwich panel thickness in [mm]		30	0,7	0,7	0,7	0,7
		40	0,9	0,9	0,9	0,9
		50	1,2	1,2	1,2	1,2
		60	1,4	1,4	1,4	1,4
		70	1,6	1,6	1,6	1,6
		80	1,8	1,8	1,8	1,8
		90	2,1	2,1	2,1	2,1
		100	2,3	2,3	2,3	2,3
		120	2,8	2,8	2,8	2,8
		>140	3,2	3,2	3,2	3,2

SWAL Fastening screws for sandwich panels

IMPACT-S 5 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and S 25 washer made of stainless steel with EPDM

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of European Technical Assessment ETA-21/0376

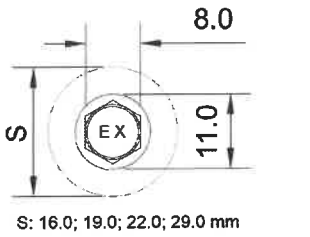
Materials

Fastener:	stainless steel – SAE304
Washer:	s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

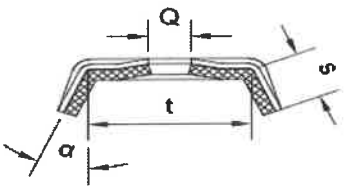
Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

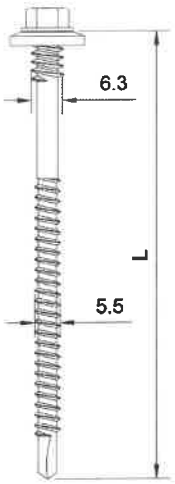
Timber substructures

no performance assessed



S: 16.0; 19.0; 22.0; 29.0 mm





Component II: t_{II} in [mm]			2,00	2,50	3,00	4,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,80	3,80	3,80	3,80
		0,55	3,80	3,80	3,80	3,80
		0,60	3,80	3,80	3,80	3,80
		0,75	3,80	3,80	3,80	3,80
		0,88	3,80	3,80	3,80	3,80
		1,00	3,80	3,80	3,80	3,80
Max. head displacement u depending on the sandwich panel thickness in [mm]		30	0,7	0,7	0,7	0,7
		40	0,9	0,9	0,9	0,9
		50	1,2	1,2	1,2	1,2
		60	1,4	1,4	1,4	1,4
		70	1,6	1,6	1,6	1,6
		80	1,8	1,8	1,8	1,8
		90	2,1	2,1	2,1	2,1
		100	2,3	2,3	2,3	2,3
		120	2,8	2,8	2,8	2,8
		>140	3,2	3,2	3,2	3,2

SWAL Fastening screws for sandwich panels

IMPACT-S 5 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and S 30 washer made of stainless steel with EPDM

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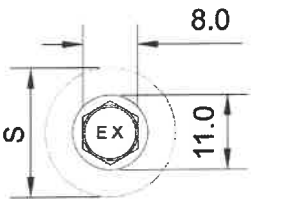
Materials

Fastener:	stainless steel – SAE304
Washer:	s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

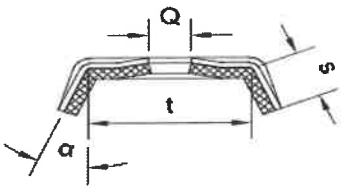
Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

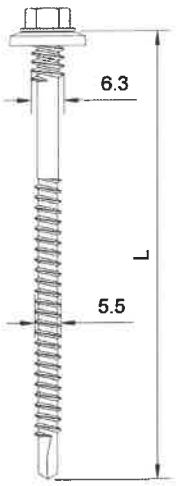
Timber substructures

no performance assessed



S: 16.0; 19.0; 22.0; 29.0 mm





Component II: t_{II} in [mm]			2,00	2,50	3,00	4,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,80	3,80	3,80	3,80
		0,55	3,80	3,80	3,80	3,80
		0,60	3,80	3,80	3,80	3,80
		0,75	3,80	3,80	3,80	3,80
		0,88	3,80	3,80	3,80	3,80
		1,00	3,80	3,80	3,80	3,80
Max. head displacement u depending on the sandwich panel thickness in [mm]		30	0,7	0,7	0,7	0,7
		40	0,9	0,9	0,9	0,9
		50	1,2	1,2	1,2	1,2
		60	1,4	1,4	1,4	1,4
		70	1,6	1,6	1,6	1,6
		80	1,8	1,8	1,8	1,8
		90	2,1	2,1	2,1	2,1
		100	2,3	2,3	2,3	2,3
		120	2,8	2,8	2,8	2,8
		>140	3,2	3,2	3,2	3,2

SWAL Fastening screws for sandwich panels

IMPACT-S 5 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and S 35 washer made of stainless steel with EPDM

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of European Technical Assessment ETA-21/0376

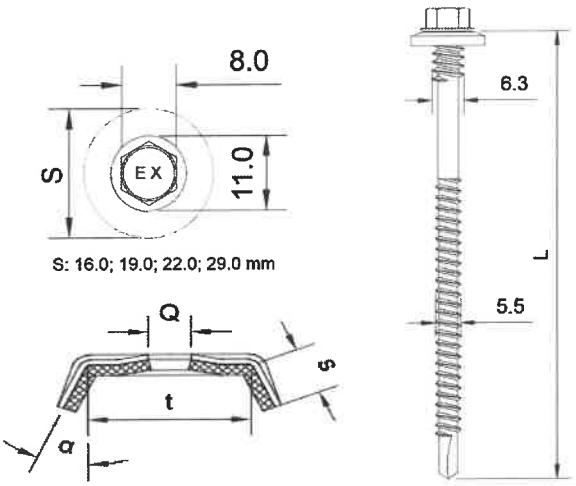
Materials

Fastener:	stainless steel – SAE304
Washer:	s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



Component II: t_{II} in [mm]			2,00	2,50	3,00	4,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,50	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,80	3,80	3,80	3,80
		0,55	3,80	3,80	3,80	3,80
		0,60	3,80	3,80	3,80	3,80
		0,75	3,80	3,80	3,80	3,80
		0,88	3,80	3,80	3,80	3,80
		1,00	3,80	3,80	3,80	3,80
Max. head displacement u depending on the sandwich panel thickness in [mm]		30	0,7	0,7	0,7	0,7
		40	0,9	0,9	0,9	0,9
		50	1,2	1,2	1,2	1,2
		60	1,4	1,4	1,4	1,4
		70	1,6	1,6	1,6	1,6
		80	1,8	1,8	1,8	1,8
		90	2,1	2,1	2,1	2,1
		100	2,3	2,3	2,3	2,3
		120	2,8	2,8	2,8	2,8
		>140	3,2	3,2	3,2	3,2

SWAL Fastening screws for sandwich panels

IMPACT-S 5 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and S 41 washer made of stainless steel with EPDM

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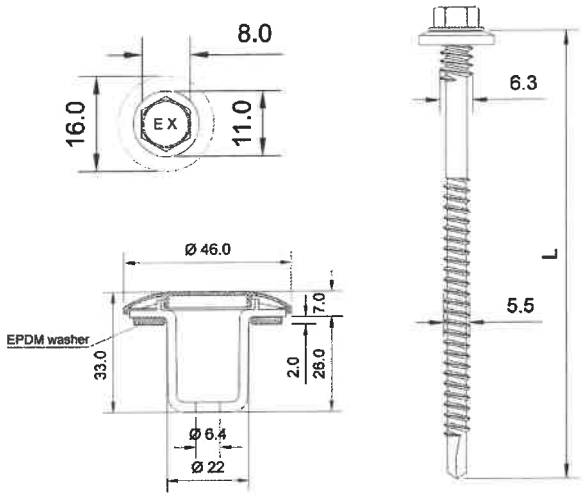
Materials

Fastener:	stainless steel – SAE304
Washer:	s16 – EPDM sealing ring with metal top made of stainless steel LAX cap made of polyamide
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



Component II: t_{II} in [mm]			2,00	2,50	3,00	4,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,40	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	0,69	0,69	0,69	0,69
		0,50	1,12	1,12	1,12	1,12
		0,55	1,12	1,12	1,12	1,12
		0,60	1,44	1,44	1,44	1,44
		0,75	1,44	1,44	1,44	1,44
		0,88	1,44	1,44	1,44	1,44
		1,00	1,44	1,44	1,44	1,44
Max. head displacement u depending on the sandwich panel thickness in [mm]		30	0,7	0,7	0,7	0,7
		40	0,9	0,9	0,9	0,9
		50	1,2	1,2	1,2	1,2
		60	1,4	1,4	1,4	1,4
		70	1,6	1,6	1,6	1,6
		80	1,8	1,8	1,8	1,8
		90	2,1	2,1	2,1	2,1
		100	2,3	2,3	2,3	2,3
		120	2,8	2,8	2,8	2,8
		>140	3,2	3,2	3,2	3,2

SWAL Fastening screws for sandwich panels

IMPACT-S 5 5,5/6,3 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
LAX cap made of polyamide

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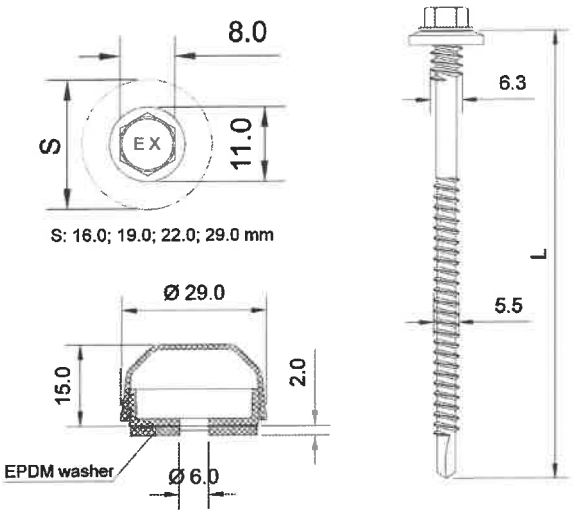
Materials

Fastener:	stainless steel – SAE304
Washer:	s16, s19 and s22 – EPDM sealing ring with metal top made of stainless steel WELRO cap made of polyamide
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



Component II: t_{II} in [mm]			2,00	2,50	3,00	4,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,40	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	1,23	1,23	1,23	1,23
		0,50	1,93	1,93	1,93	1,93
		0,55	1,93	1,93	1,93	1,93
		0,60	2,97	2,97	2,97	2,97
		0,75	2,97	2,97	2,97	2,97
		0,88	2,97	2,97	2,97	2,97
		1,00	2,97	2,97	2,97	2,97
Max. head displacement u depending on the sandwich panel thickness in [mm]		30	0,7	0,7	0,7	0,7
		40	0,9	0,9	0,9	0,9
		50	1,2	1,2	1,2	1,2
		60	1,4	1,4	1,4	1,4
		70	1,6	1,6	1,6	1,6
		80	1,8	1,8	1,8	1,8
		90	2,1	2,1	2,1	2,1
		100	2,3	2,3	2,3	2,3
		120	2,8	2,8	2,8	2,8
		>140	3,2	3,2	3,2	3,2

SWAL Fastening screws for sandwich panels

IMPACT-S 5 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and WELRO cap made of polyamide

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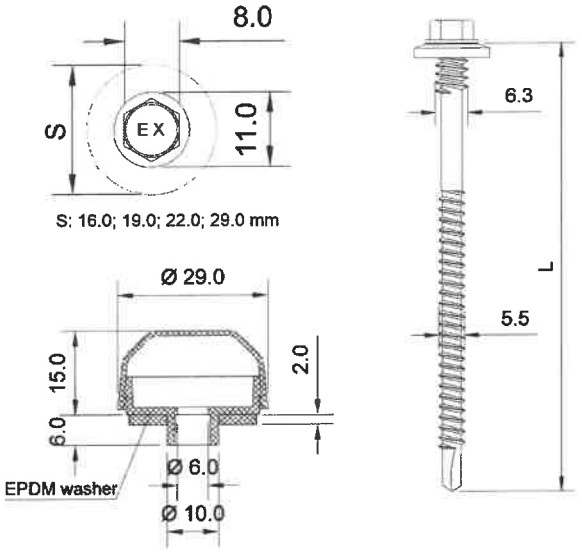
Materials

Fastener:	stainless steel – SAE304
Washer:	s16, s19 and s22 – EPDM sealing ring with metal top made of stainless steel WELRO-XL cap made of polyamide
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	t_{II} < 2 mm: S235 – EN 10025-1 t_{II} ≥ 2 mm: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma(t_{N2} + t_{II}) \leq 5$ mm

Timber substructures

no performance assessed



Component II: t_{II} in [mm]			2,00	2,50	3,00	4,00
Component I: $t_{N,1}$ or $t_{N,2}$ in [mm]	$V_{R,k}$ [kN]	0,40	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43
		0,60	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	0,80	0,80	0,80	0,80
		0,50	1,31	1,31	1,31	1,31
		0,55	1,31	1,31	1,31	1,31
		0,60	1,78	1,78	1,78	1,78
		0,75	1,78	1,78	1,78	1,78
		0,88	1,78	1,78	1,78	1,78
		1,00	1,78	1,78	1,78	1,78
Max. head displacement u depending on the sandwich panel thickness in [mm]		30	0,7	0,7	0,7	0,7
		40	0,9	0,9	0,9	0,9
		50	1,2	1,2	1,2	1,2
		60	1,4	1,4	1,4	1,4
		70	1,6	1,6	1,6	1,6
		80	1,8	1,8	1,8	1,8
		90	2,1	2,1	2,1	2,1
		100	2,3	2,3	2,3	2,3
		120	2,8	2,8	2,8	2,8
		>140	3,2	3,2	3,2	3,2

SWAL Fastening screws for sandwich panels

IMPACT-S 5 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and WELRO-XL cap made of polyamide

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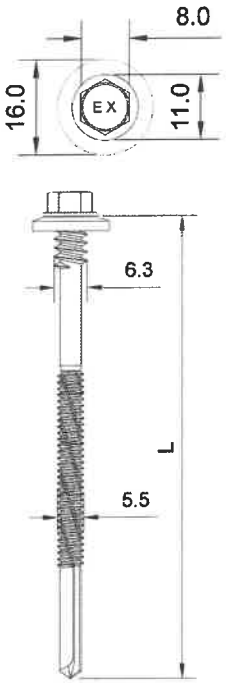
Materials

Fastener:	stainless steel – SAE304
Washer:	s16 – EPDM sealing ring with metal top made of stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1



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

Timber substructures

no performance assessed

Component II: t_{II} in [mm]			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	2,18	2,18	2,18	2,18	2,18	2,18
		0,55	2,18	2,18	2,18	2,18	2,18	2,18
		0,63	2,84	2,84	2,84	2,84	2,84	2,84
		0,75	3,00	3,00	3,00	3,00	3,00	3,00
		0,88	3,00	3,00	3,00	3,00	3,00	3,00
		1,00	3,00	3,00	3,00	3,00	3,00	3,00
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

SWAL Fastening screws for sandwich panels

IMPACT-S 12 5,5/6,3 x L with hexagon head
and washer made of EPDM sealing ring with metal top

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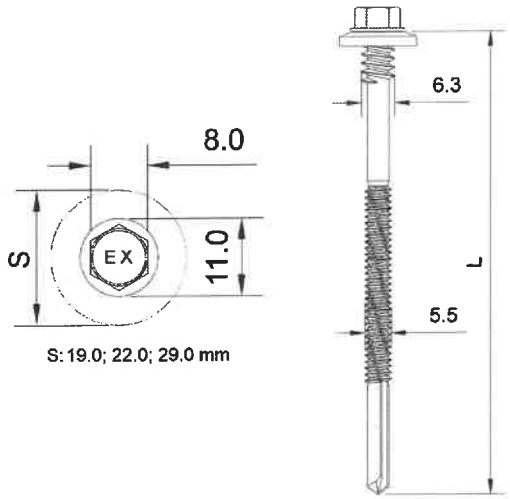
Materials

Fastener:	stainless steel – SAE304
Washer:	s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1



S: 19.0; 22.0; 29.0 mm

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

Timber substructures

no performance assessed

Component II: t_{II} in [mm]			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,48	3,48	3,48	3,48	3,48	3,48
		0,55	3,48	3,48	3,48	3,48	3,48	3,48
		0,63	4,33	4,33	4,33	4,33	4,33	4,33
		0,75	5,10	5,10	5,10	5,10	5,10	5,10
		0,88	5,10	5,10	5,10	5,10	5,10	5,10
		1,00	5,10	5,10	5,10	5,10	5,10	5,10
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

SWAL Fastening screws for sandwich panels

IMPACT-S 12 5,5/6,3 x L with hexagon head
and washer made of EPDM sealing ring with metal top

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of European
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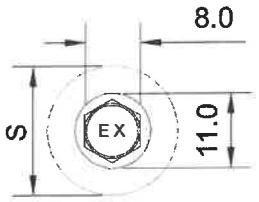
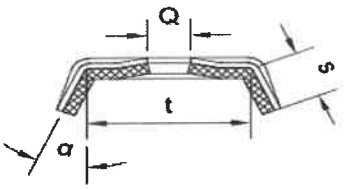
ETA-21/0376

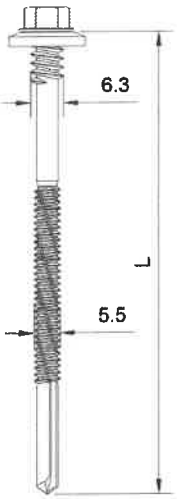
Materials

Fastener:	stainless steel – SAE304
Washer:	s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1



S: 16.0; 19.0; 22.0; 29.0 mm





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

Timber substructures

no performance assessed

Component II: t_{II} in [mm]			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	5,52	5,52	5,52	5,52	5,52	5,52
		0,55	5,52	5,52	5,52	5,52	5,52	5,52
		0,63	5,52	5,52	5,52	5,52	5,52	5,52
		0,75	5,52	5,52	5,52	5,52	5,52	5,52
		0,88	5,52	5,52	5,52	5,52	5,52	5,52
		1,00	5,52	5,52	5,52	5,52	5,52	5,52
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

SWAL Fastening screws for sandwich panels

IMPACT-S 12 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and K 25 washer made of aluminum with EPDM

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of European Technical Assessment ETA-21/0376

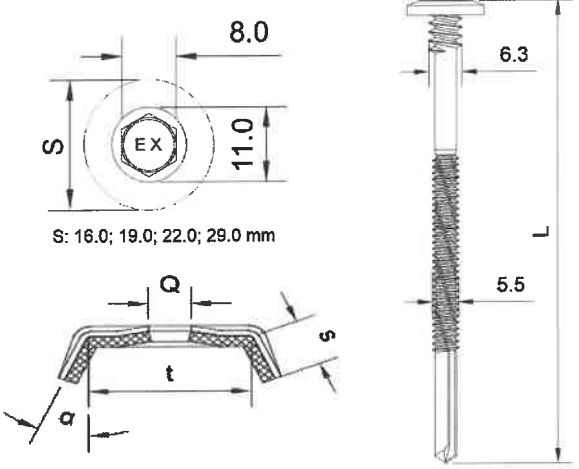
Materials

Fastener:	stainless steel – SAE304
Washer:	s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1

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

Timber substructures

no performance assessed



Component II: t_{II} in [mm]			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	6,15	6,15	6,15	6,15	6,15	6,15
		0,55	6,15	6,15	6,15	6,15	6,15	6,15
		0,63	6,15	6,15	6,15	6,15	6,15	6,15
		0,75	6,15	6,15	6,15	6,15	6,15	6,15
		0,88	6,15	6,15	6,15	6,15	6,15	6,15
		1,00	6,15	6,15	6,15	6,15	6,15	6,15
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

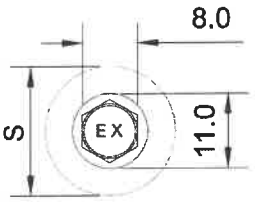
SWAL Fastening screws for sandwich panels

IMPACT-S 12 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and K 30 washer made of aluminum with EPDM

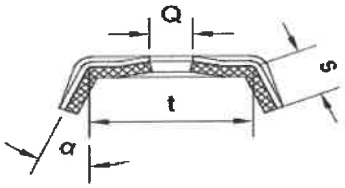
Annex 57
of European Technical Assessment ETA-21/0376

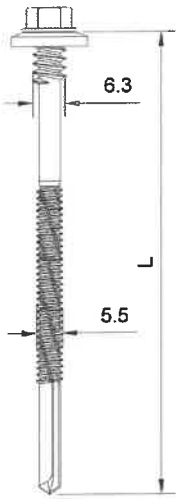
Materials

Fastener:	stainless steel – SAE304
Washer:	s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1



S: 16.0; 19.0; 22.0; 29.0 mm





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

Timber substructures

no performance assessed

Component II: t_{II} in [mm]			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	6,69	6,69	6,69	6,69	6,69	6,69
		0,55	6,69	6,69	6,69	6,69	6,69	6,69
		0,63	6,69	6,69	6,69	6,69	6,69	6,69
		0,75	6,69	6,69	6,69	6,69	6,69	6,69
		0,88	6,69	6,69	6,69	6,69	6,69	6,69
		1,00	6,69	6,69	6,69	6,69	6,69	6,69
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

SWAL Fastening screws for sandwich panels

IMPACT-S 12 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and K 35 washer made of aluminum with EPDM

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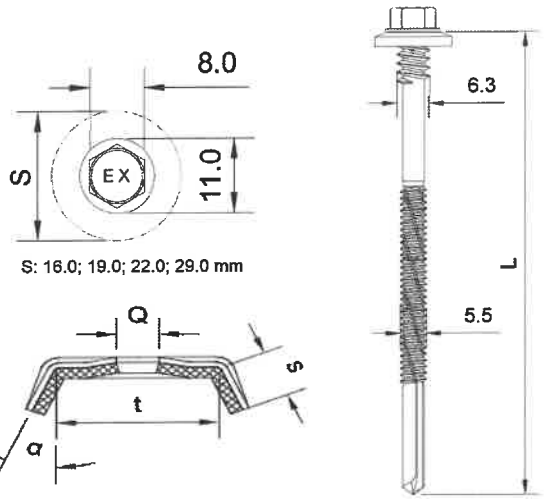
of European Technical Assessment ETA-21/0376

Materials

Fastener:	stainless steel – SAE304
Washer:	s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1



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

Timber substructures

no performance assessed

Component II: t_{II} in [mm]			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	6,97	6,97	6,97	6,97	6,97	6,97
		0,55	6,97	6,97	6,97	6,97	6,97	6,97
		0,63	6,97	6,97	6,97	6,97	6,97	6,97
		0,75	6,97	6,97	6,97	6,97	6,97	6,97
		0,88	6,97	6,97	6,97	6,97	6,97	6,97
		1,00	6,97	6,97	6,97	6,97	6,97	6,97
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

SWAL Fastening screws for sandwich panels

IMPACT-S 12 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and K 41 washer made of aluminum with EPDM

Annex 59
of European Technical Assessment ETA-21/0376

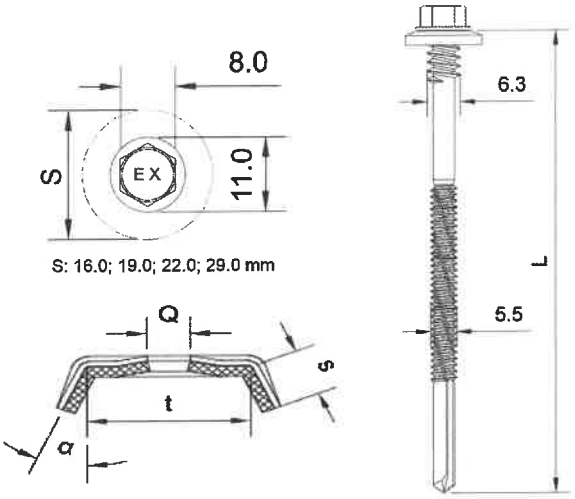
Materials

Fastener:	stainless steel – SAE304
Washer:	s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1

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

Timber substructures

no performance assessed



Component II: t_{II} in [mm]			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	5,52	5,52	5,52	5,52	5,52	5,52
		0,55	5,52	5,52	5,52	5,52	5,52	5,52
		0,63	5,52	5,52	5,52	5,52	5,52	5,52
		0,75	5,52	5,52	5,52	5,52	5,52	5,52
		0,88	5,52	5,52	5,52	5,52	5,52	5,52
		1,00	5,52	5,52	5,52	5,52	5,52	5,52
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

SWAL Fastening screws for sandwich panels

IMPACT-S 12 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and S 25 washer made of stainless steel with EPDM

Annex 60
of European Technical Assessment ETA-21/0376

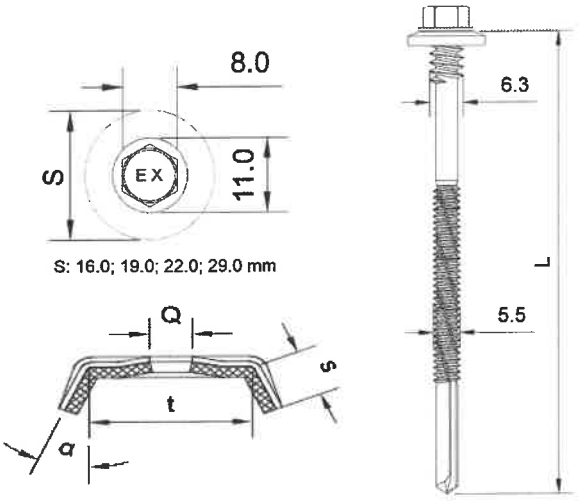
Materials

Fastener:	stainless steel – SAE304
Washer:	s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1

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

Timber substructures

no performance assessed



Component II: t_{II} in [mm]			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	6,15	6,15	6,15	6,15	6,15	6,15
		0,55	6,15	6,15	6,15	6,15	6,15	6,15
		0,63	6,15	6,15	6,15	6,15	6,15	6,15
		0,75	6,15	6,15	6,15	6,15	6,15	6,15
		0,88	6,15	6,15	6,15	6,15	6,15	6,15
		1,00	6,15	6,15	6,15	6,15	6,15	6,15
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

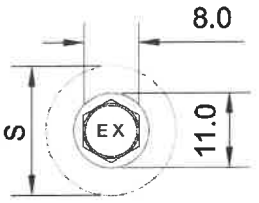
SWAL Fastening screws for sandwich panels

IMPACT-S 12 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and S 30 washer made of stainless steel with EPDM

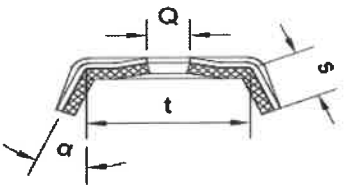
Annex 61
of European Technical Assessment ETA-21/0376

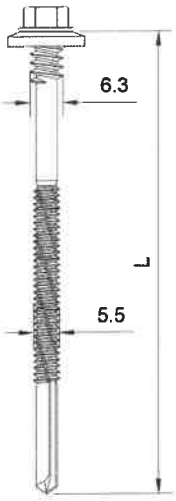
Materials

Fastener:	stainless steel – SAE304
Washer:	s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1



S: 16.0; 19.0; 22.0; 29.0 mm





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

Timber substructures

no performance assessed

Component II: t_{II} in [mm]			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	6,69	6,69	6,69	6,69	6,69	6,69
		0,55	6,69	6,69	6,69	6,69	6,69	6,69
		0,63	6,69	6,69	6,69	6,69	6,69	6,69
		0,75	6,69	6,69	6,69	6,69	6,69	6,69
		0,88	6,69	6,69	6,69	6,69	6,69	6,69
		1,00	6,69	6,69	6,69	6,69	6,69	6,69
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

SWAL Fastening screws for sandwich panels

IMPACT-S 12 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and S 35 washer made of stainless steel with EPDM

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of European Technical Assessment ETA-21/0376

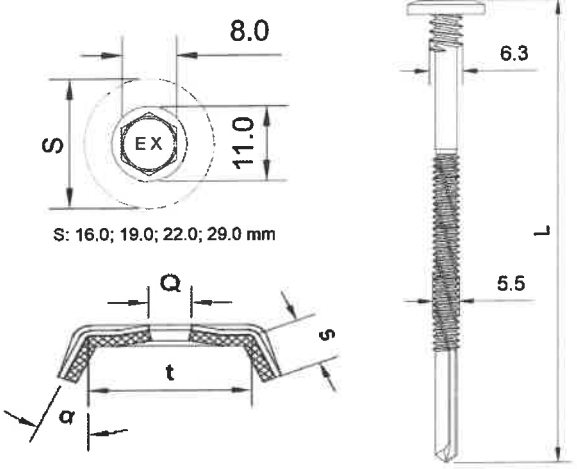
Materials

Fastener:	stainless steel – SAE304
Washer:	s16, s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1

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

Timber substructures

no performance assessed



Component II: t_{II} in [mm]			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	6,97	6,97	6,97	6,97	6,97	6,97
		0,55	6,97	6,97	6,97	6,97	6,97	6,97
		0,63	6,97	6,97	6,97	6,97	6,97	6,97
		0,75	6,97	6,97	6,97	6,97	6,97	6,97
		0,88	6,97	6,97	6,97	6,97	6,97	6,97
		1,00	6,97	6,97	6,97	6,97	6,97	6,97
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

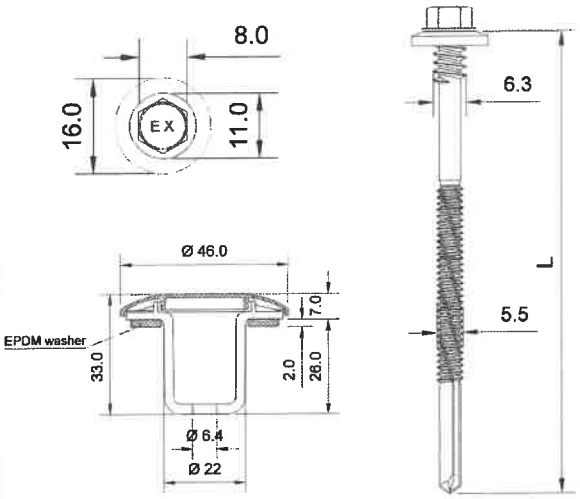
SWAL Fastening screws for sandwich panels

IMPACT-S 12 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and S 41 washer made of stainless steel with EPDM

Annex 63
of European Technical Assessment ETA-21/0376

Materials

Fastener:	stainless steel – SAE304
Washer:	s16 – EPDM sealing ring with metal top made of stainless steel LAX cap made of polyamide
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1



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

Timber substructures

no performance assessed

Component II: t_{II} in [mm]			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	1,43	1,43	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	0,69	0,69	0,69	0,69	0,69	0,69
		0,50	1,12	1,12	1,12	1,12	1,12	1,12
		0,55	1,12	1,12	1,12	1,12	1,12	1,12
		0,63	1,44	1,44	1,44	1,44	1,44	1,44
		0,75	1,44	1,44	1,44	1,44	1,44	1,44
		0,88	1,44	1,44	1,44	1,44	1,44	1,44
		1,00	1,44	1,44	1,44	1,44	1,44	1,44
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

SWAL Fastening screws for sandwich panels

IMPACT-S 12 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and LAX cap made of polyamide

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of European Technical Assessment ETA-21/0376

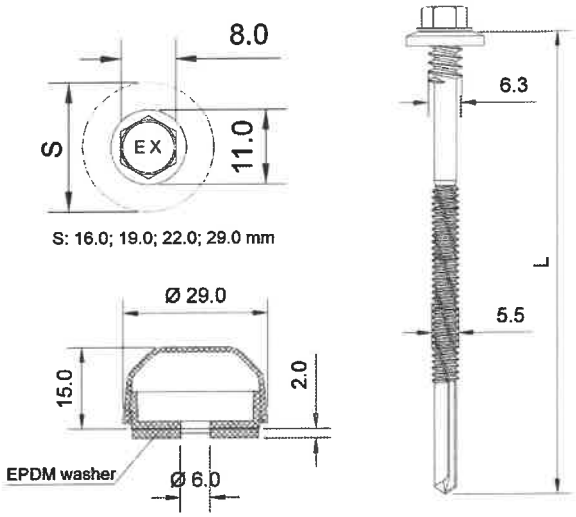
Materials

Fastener:	stainless steel – SAE304
Washer:	s16, s19 and s22 – EPDM sealing ring with metal top made of stainless steel WELRO cap made of polyamide
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1

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

Timber substructures

no performance assessed



Component II: t_{II} in [mm]			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	1,43	1,43	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	1,23	1,23	1,23	1,23	1,23	1,23
		0,50	1,93	1,93	1,93	1,93	1,93	1,93
		0,55	1,93	1,93	1,93	1,93	1,93	1,93
		0,63	2,97	2,97	2,97	2,97	2,97	2,97
		0,75	2,97	2,97	2,97	2,97	2,97	2,97
		0,88	2,97	2,97	2,97	2,97	2,97	2,97
		1,00	2,97	2,97	2,97	2,97	2,97	2,97
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

SWAL Fastening screws for sandwich panels

IMPACT-S 12 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and WELRO cap made of polyamide

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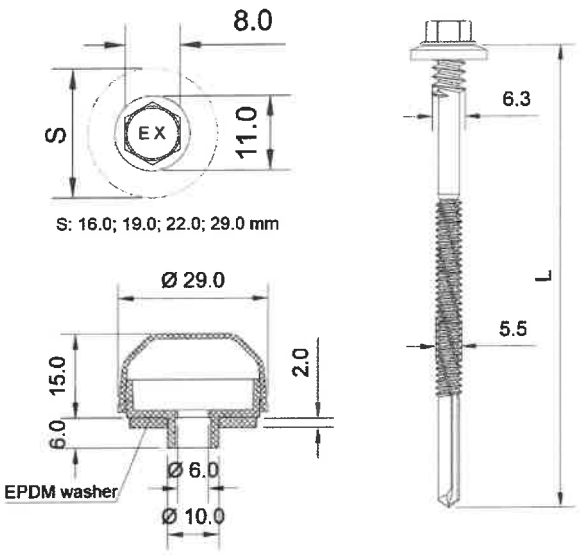
of European Technical Assessment ETA-21/0376

Materials

Fastener:	stainless steel – SAE304
Washer:	s16, s19 and s22 – EPDM sealing ring with metal top made of stainless steel WELRO cap made of polyamide
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S235 – EN 10025-1



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

Timber substructures

no performance assessed

Component II: t_{II} in [mm]			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	1,43	1,43	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	0,80	0,80	0,80	0,80	0,80	0,80
		0,50	1,31	1,31	1,31	1,31	1,31	1,31
		0,55	1,31	1,31	1,31	1,31	1,31	1,31
		0,63	1,78	1,78	1,78	1,78	1,78	1,78
		0,75	1,78	1,78	1,78	1,78	1,78	1,78
		0,88	1,78	1,78	1,78	1,78	1,78	1,78
		1,00	1,78	1,78	1,78	1,78	1,78	1,78
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

SWAL Fastening screws for sandwich panels

IMPACT-S 12 5,5/6,3 x L with hexagon head and washer made of EPDM sealing ring with metal top and WELRO-XL cap made of polyamide

Annex 66
of European Technical Assessment ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

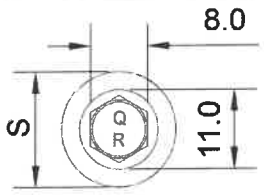
Drilling capacity: -

Timber substructures

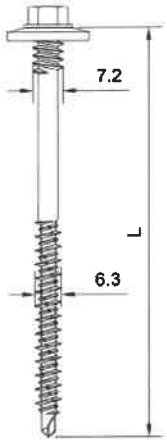
For timber substructures performance determined with

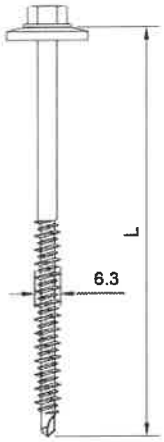
$M_{y,Rk}$ = 8,91 Nm

$f_{ax,k}$ = 22,135 N/mm² for $l_{ef} \geq 30$ mm



S: 19.0; 22.0; 29.0 mm





Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,48	3,48	3,48	3,48	3,48	3,48	3,48
		0,55	3,48	3,48	3,48	3,48	3,48	3,48	3,48
		0,63	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,75	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,88	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		1,00	4,25	4,25	4,25	4,25	4,25	4,25	4,25
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

VCAT 6,3/7,0 x L with hexagon head
and washer made of EPDM sealing ring with metal top

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of European
Technical Assessment
ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

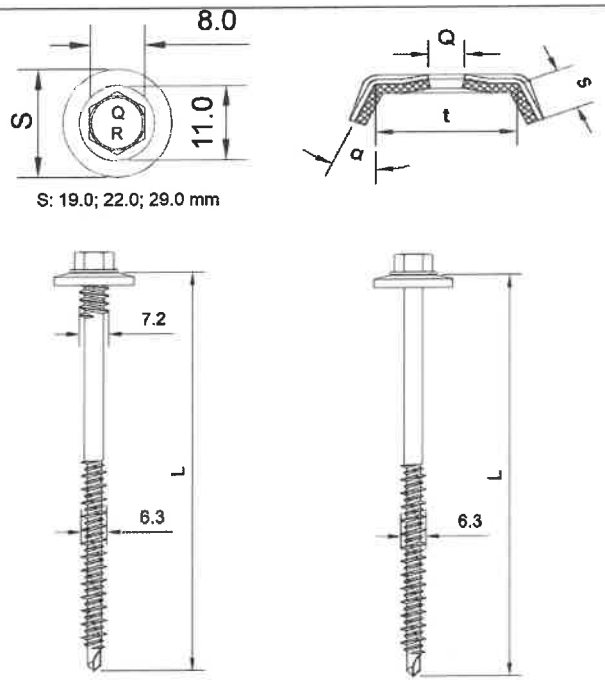
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 8,91 Nm

$f_{ax,k}$ = 22,135 N/mm² for $l_{ef} \geq 30$ mm



Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,55	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,63	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,75	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,88	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		1,00	4,25	4,25	4,25	4,25	4,25	4,25	4,25
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

VCAT 6,3/7,0 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
K 25 washer made of aluminum with EPDM

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of European
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ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

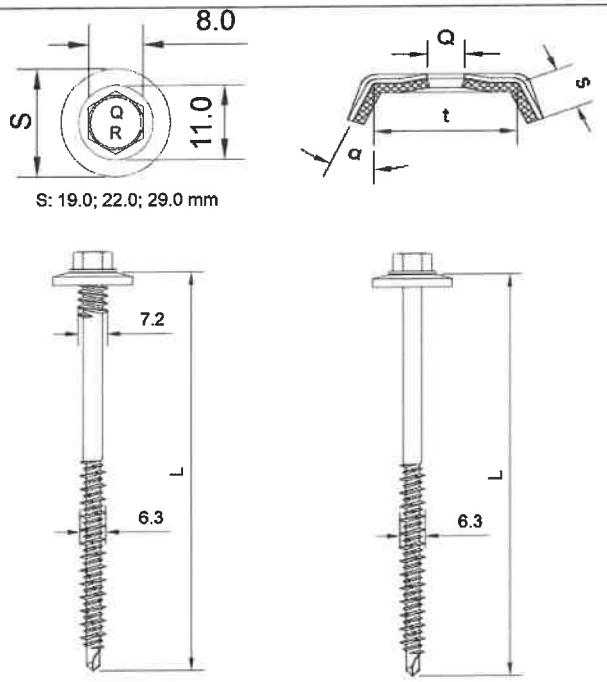
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 8,91 Nm

$f_{ax,k}$ = 22,135 N/mm² for $l_{ef} \geq$ 30 mm



Component II: wood class ≥ C24 l_{ef} in [mm]		Thickness of sandwich panel d or D in the fixing point						
		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]							
0,50		1,43	1,43	1,43	1,43	1,43	1,43	1,43
0,55		1,43	1,43	1,43	1,43	1,43	1,43	1,43
0,63		1,52	1,52	1,52	1,52	1,52	1,52	1,52
0,75		1,95	1,95	1,95	1,95	1,95	1,95	1,95
0,88		1,95	1,95	1,95	1,95	1,95	1,95	1,95
1,00		1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]							
0,50		4,25	4,25	4,25	4,25	4,25	4,25	4,25
0,55		4,25	4,25	4,25	4,25	4,25	4,25	4,25
0,63		4,25	4,25	4,25	4,25	4,25	4,25	4,25
0,75		4,25	4,25	4,25	4,25	4,25	4,25	4,25
0,88		4,25	4,25	4,25	4,25	4,25	4,25	4,25
1,00		4,25	4,25	4,25	4,25	4,25	4,25	4,25
Max. head displacement u depending on the sandwich panel thickness in [mm]		0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

VCAT 6,3/7,0 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
K 30 washer made of aluminum with EPDM

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of European
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ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

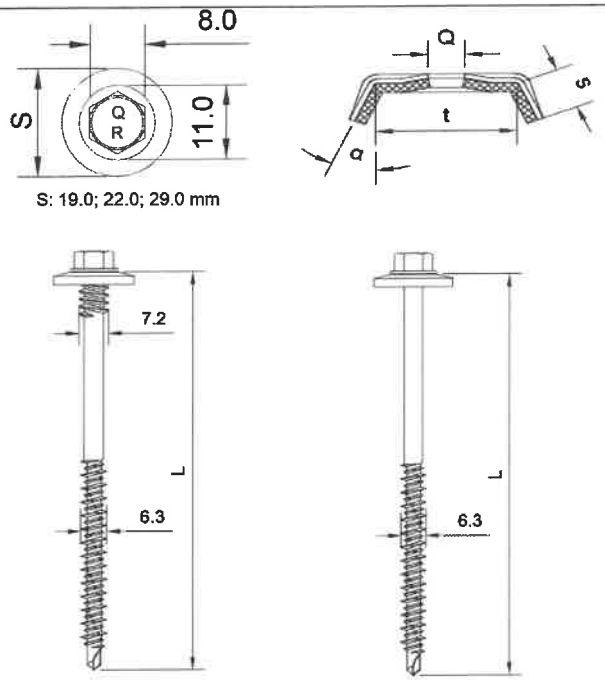
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 8,91 Nm

$f_{ax,k}$ = 22,135 N/mm² for $l_{ef} \geq$ 30 mm



Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,55	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,63	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,75	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,88	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		1,00	4,25	4,25	4,25	4,25	4,25	4,25	4,25
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

VCAT 6,3/7,0 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
K 35 washer made of aluminum with EPDM

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Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

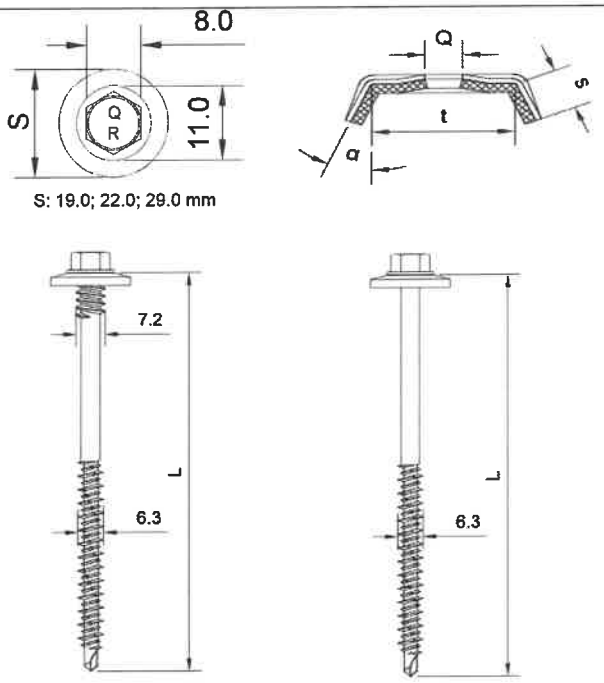
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 8,91 Nm

$f_{ax,k}$ = 22,135 N/mm² for $l_{ef} \geq$ 30 mm



Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,55	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,63	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,75	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,88	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		1,00	4,25	4,25	4,25	4,25	4,25	4,25	4,25
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

VCAT 6,3/7,0 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
K 41 washer made of aluminum with EPDM

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of European
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Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

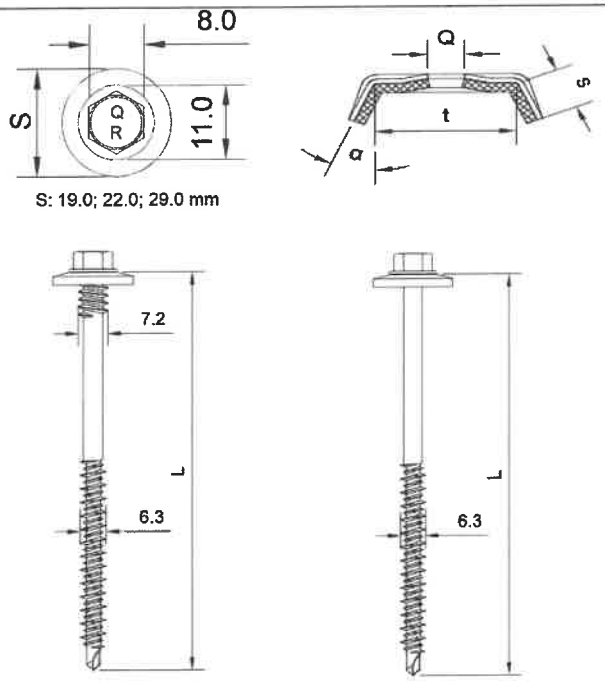
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 8,91 Nm

$f_{ax,k}$ = 22,135 N/mm² for $l_{ef} \geq 30$ mm



Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,55	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,63	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,75	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,88	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		1,00	4,25	4,25	4,25	4,25	4,25	4,25	4,25
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

VCAT 6,3/7,0 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
S 25 washer made of stainless steel with EPDM

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Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

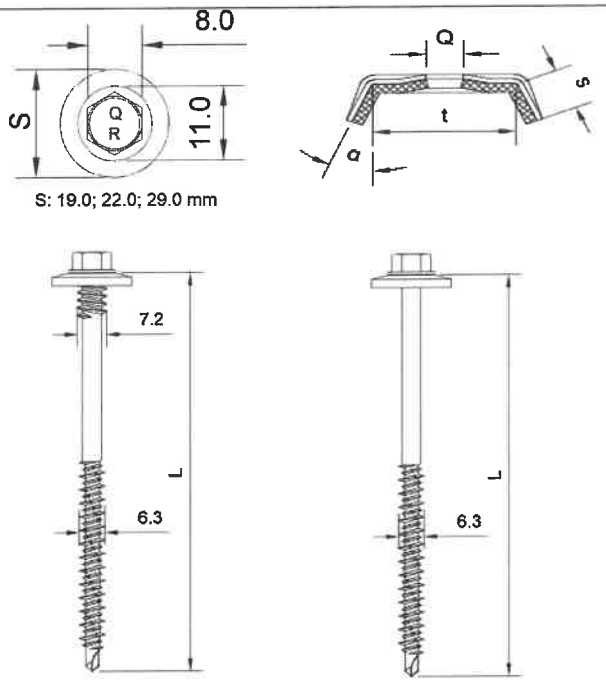
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 8,91 Nm

$f_{ax,k}$ = 22,135 N/mm² for l_{ef} ≥ 30 mm



Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,55	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,63	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,75	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,88	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		1,00	4,25	4,25	4,25	4,25	4,25	4,25	4,25
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

VCAT 6,3/7,0 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
S 30 washer made of stainless steel with EPDM

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of European
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Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

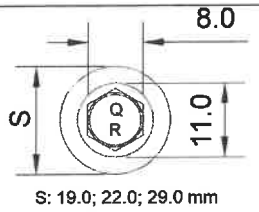
Drilling capacity: -

Timber substructures

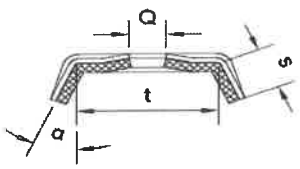
For timber substructures performance determined with

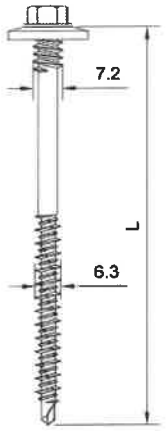
$M_{y,Rk}$ = 8,91 Nm

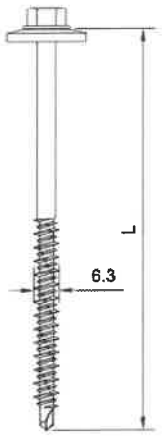
$f_{ax,k}$ = 22,135 N/mm² for l_{ef} ≥ 30 mm



S: 19.0; 22.0; 29.0 mm







Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,55	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,63	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,75	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,88	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		1,00	4,25	4,25	4,25	4,25	4,25	4,25	4,25
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

VCAT 6,3/7,0 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
S 35 washer made of stainless steel with EPDM

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of European
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ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

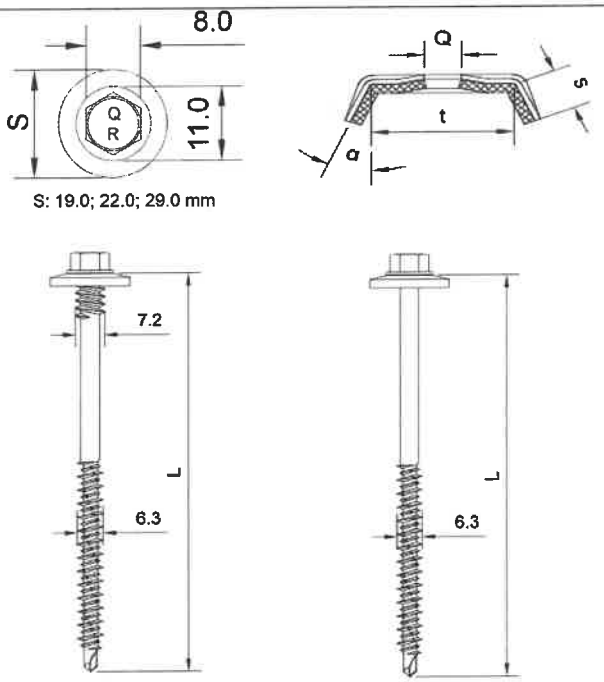
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 8,91 Nm

$f_{ax,k}$ = 22,135 N/mm² for $l_{ef} \geq$ 30 mm



Component II: wood class ≥ C24 l_{ef} in [mm]		Thickness of sandwich panel d or D in the fixing point						
		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]							
0,50		1,43	1,43	1,43	1,43	1,43	1,43	1,43
0,55		1,43	1,43	1,43	1,43	1,43	1,43	1,43
0,63		1,52	1,52	1,52	1,52	1,52	1,52	1,52
0,75		1,95	1,95	1,95	1,95	1,95	1,95	1,95
0,88		1,95	1,95	1,95	1,95	1,95	1,95	1,95
1,00		1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]							
0,50		4,25	4,25	4,25	4,25	4,25	4,25	4,25
0,55		4,25	4,25	4,25	4,25	4,25	4,25	4,25
0,63		4,25	4,25	4,25	4,25	4,25	4,25	4,25
0,75		4,25	4,25	4,25	4,25	4,25	4,25	4,25
0,88		4,25	4,25	4,25	4,25	4,25	4,25	4,25
1,00		4,25	4,25	4,25	4,25	4,25	4,25	4,25
Max. head displacement u depending on the sandwich panel thickness in [mm]		0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

VCAT 6,3/7,0 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
S 41 washer made of stainless steel with EPDM

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of European
Technical Assessment
ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16 – EPDM sealing ring with metal top made of coated carbon s16 – EPDM sealing ring with metal top made of stainless steel LAX cap made of polyamide
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

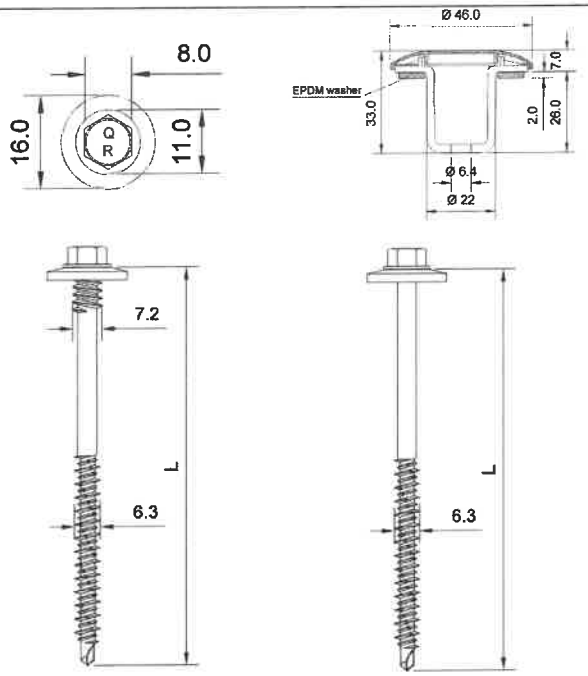
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 8,91 Nm

$f_{ax,k}$ = 22,135 N/mm² for $l_{ef} \geq$ 30 mm



Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	0,69	0,69	0,69	0,69	0,69	0,69	0,69
		0,50	1,12	1,12	1,12	1,12	1,12	1,12	1,12
		0,55	1,12	1,12	1,12	1,12	1,12	1,12	1,12
		0,63	1,44	1,44	1,44	1,44	1,44	1,44	1,44
		0,75	1,44	1,44	1,44	1,44	1,44	1,44	1,44
		0,88	1,44	1,44	1,44	1,44	1,44	1,44	1,44
		1,00	1,44	1,44	1,44	1,44	1,44	1,44	1,44
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

VCAT 6,3/7,0 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
LAX cap made of polyamide

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of European
Technical Assessment
ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19 and c22 – EPDM sealing ring with metal top made of coated carbon s19 and s22 – EPDM sealing ring with metal top made of stainless steel WELRO cap made of polyamide
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

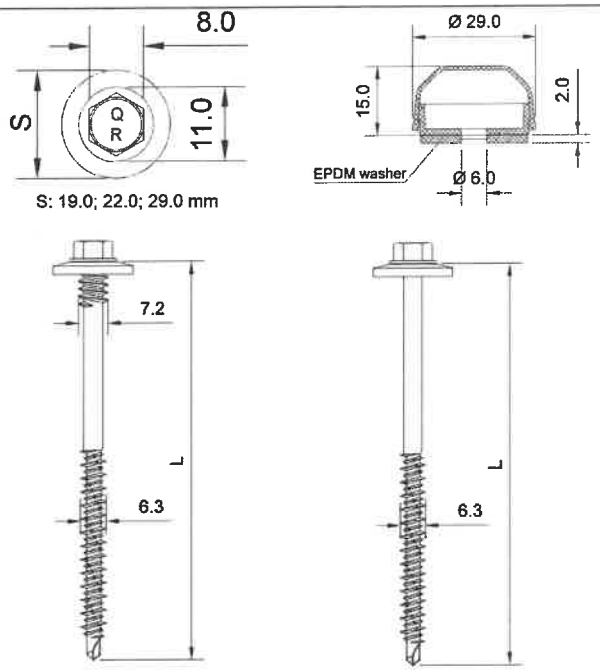
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 8,91 Nm

$f_{ax,k}$ = 22,135 N/mm² for $l_{ef} \geq$ 30 mm



Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	1,23	1,23	1,23	1,23	1,23	1,23	1,23
		0,50	1,93	1,93	1,93	1,93	1,93	1,93	1,93
		0,55	1,93	1,93	1,93	1,93	1,93	1,93	1,93
		0,63	2,97	2,97	2,97	2,97	2,97	2,97	2,97
		0,75	2,97	2,97	2,97	2,97	2,97	2,97	2,97
		0,88	2,97	2,97	2,97	2,97	2,97	2,97	2,97
		1,00	2,97	2,97	2,97	2,97	2,97	2,97	2,97
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

VCAT 6,3/7,0 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
WELRO cap made of polyamide

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of European
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ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19 and c22 – EPDM sealing ring with metal top made of coated carbon s19 and s22 – EPDM sealing ring with metal top made of stainless steel WELRO-XL cap made of polyamide
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

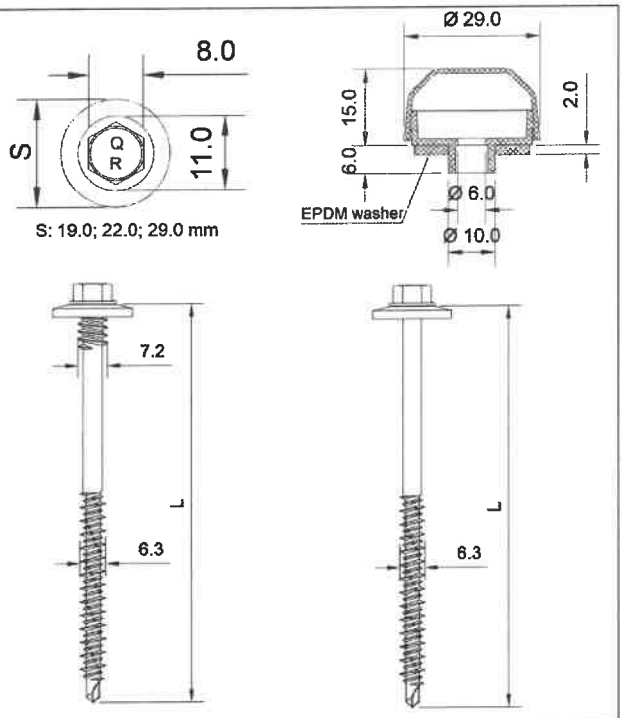
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 8,91 Nm

$f_{ax,k}$ = 22,135 N/mm² for $l_{ef} \geq 30$ mm



Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	0,80	0,80	0,80	0,80	0,80	0,80	0,80
		0,50	1,31	1,31	1,31	1,31	1,31	1,31	1,31
		0,55	1,31	1,31	1,31	1,31	1,31	1,31	1,31
		0,63	1,78	1,78	1,78	1,78	1,78	1,78	1,78
		0,75	1,78	1,78	1,78	1,78	1,78	1,78	1,78
		0,88	1,78	1,78	1,78	1,78	1,78	1,78	1,78
		1,00	1,78	1,78	1,78	1,78	1,78	1,78	1,78
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

VCAT 6,3/7,0 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
WELRO-XL cap made of poylamide

Annex 78
of European
Technical Assessment
ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel
Component I: 10346	S280GD, S320GD or S350GD – EN
Component II:	structural timber – EN 14081

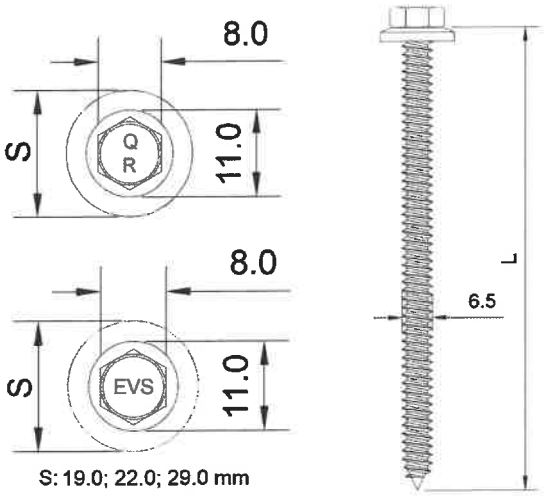
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 9,66 Nm

$f_{ax,k}$ = 21,795 N/mm² for $l_{ef} \geq 30$ mm



S: 19.0; 22.0; 29.0 mm

Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	3,48	3,48	3,48	3,48	3,48	3,48	3,48
		0,55	3,48	3,48	3,48	3,48	3,48	3,48	3,48
		0,63	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,75	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,88	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		1,00	4,25	4,25	4,25	4,25	4,25	4,25	4,25
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

TAP A 6,3 x L with hexagon head
and washer made of EPDM sealing ring with metal top

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of European Technical Assessment ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

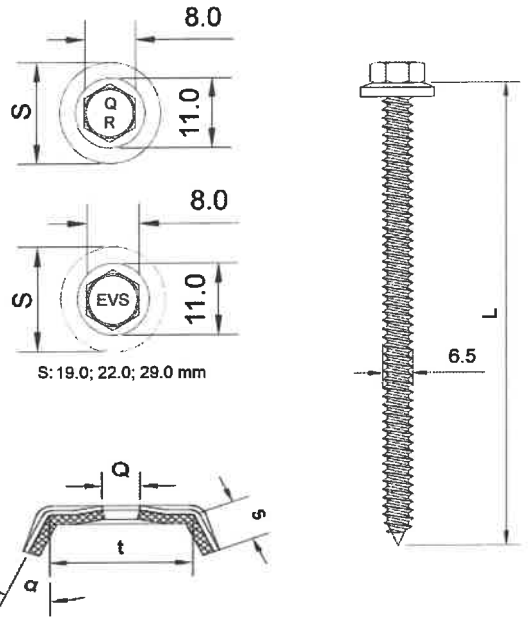
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 9,66 Nm

$f_{ax,k}$ = 21,795 N/mm² for $l_{ef} \geq$ 30 mm



Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,55	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,63	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,75	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,88	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		1,00	4,25	4,25	4,25	4,25	4,25	4,25	4,25
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

TAP A 6,3 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
K 25 washer made of aluminum with EPDM

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Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

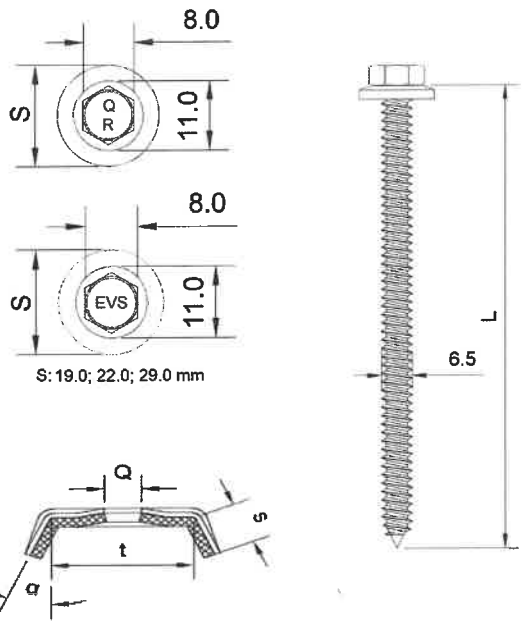
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 9,66 Nm

$f_{ax,k}$ = 21,795 N/mm² for $l_{ef} \geq$ 30 mm



Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,55	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,63	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,75	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,88	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		1,00	4,25	4,25	4,25	4,25	4,25	4,25	4,25
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

TAP A 6,3 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
K 30 washer made of aluminum with EPDM

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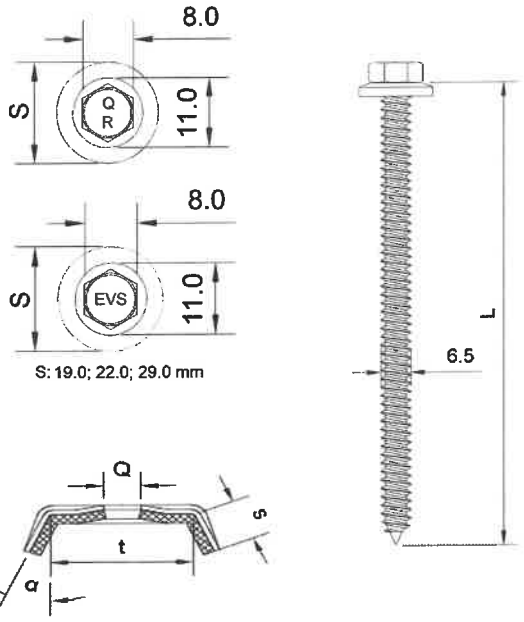
of European
Technical Assessment
ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

Drilling capacity: -



Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 9,66 Nm

$f_{ax,k}$ = 21,795 N/mm² for l_{ef} ≥ 30 mm

Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,55	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,63	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,75	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,88	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		1,00	4,25	4,25	4,25	4,25	4,25	4,25	4,25
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

TAP A 6,3 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
K 35 washer made of aluminum with EPDM

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of European
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Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer K – painted aluminum and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

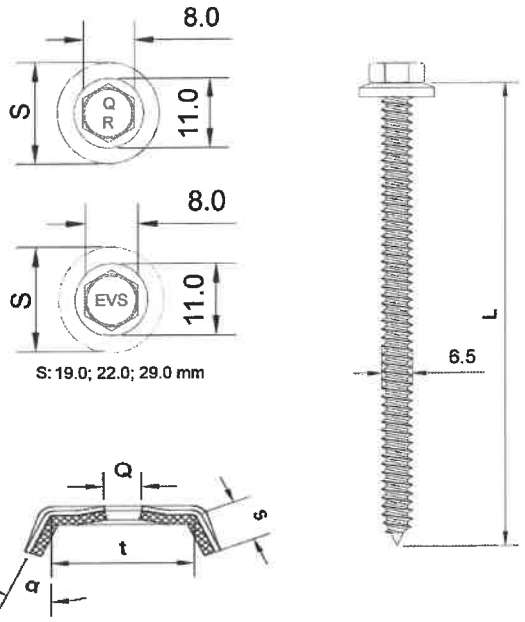
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 9,66 Nm

$f_{ax,k}$ = 21,795 N/mm² for $l_{ef} \geq 30$ mm



Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,55	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,63	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,75	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,88	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		1,00	4,25	4,25	4,25	4,25	4,25	4,25	4,25
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

TAP A 6,3 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
K 41 washer made of aluminum with EPDM

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of European
Technical Assessment
ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

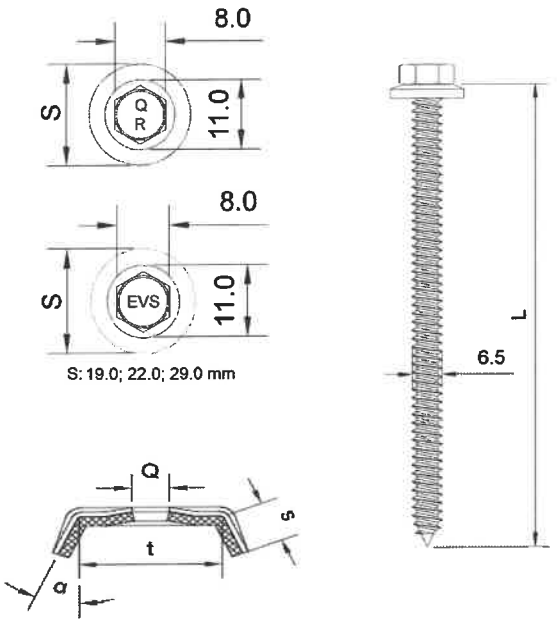
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 9,66 Nm

$f_{ax,k}$ = 21,795 N/mm² for l_{ef} ≥ 30 mm



Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,55	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,63	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,75	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,88	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		1,00	4,25	4,25	4,25	4,25	4,25	4,25	4,25
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

TAP A 6,3 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
S 25 washer made of stainless steel with EPDM

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of European Technical Assessment ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

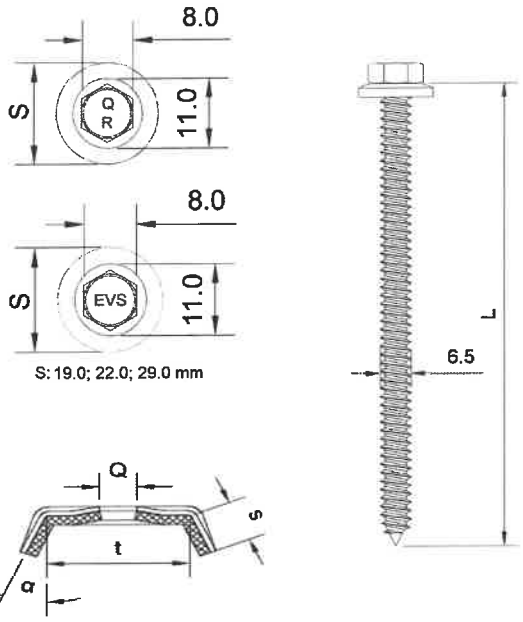
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 9,66 Nm

$f_{ax,k}$ = 21,795 N/mm² for l_{ef} ≥ 30 mm



Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,55	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,63	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,75	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,88	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		1,00	4,25	4,25	4,25	4,25	4,25	4,25	4,25
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

TAP A 6,3 x L with hexagon head
and Ø19 washer made of EPDM sealing ring with metal top and
S 30 washer made of stainless steel with EPDM

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of European
Technical Assessment
ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

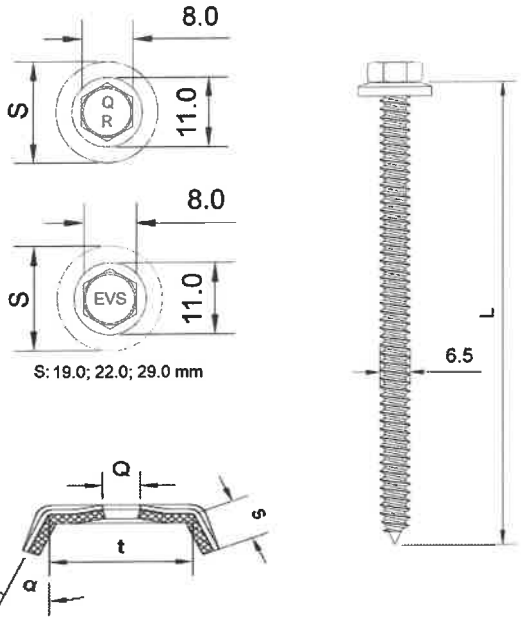
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 9,66 Nm

$f_{ax,k}$ = 21,795 N/mm² for $l_{ef} \geq$ 30 mm



Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,55	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,63	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,75	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,88	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		1,00	4,25	4,25	4,25	4,25	4,25	4,25	4,25
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

TAP A 6,3 x L with hexagon head
and Ø19 washer made of EPDM sealing ring with metal top and
S 35 washer made of stainless steel with EPDM

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of European
Technical Assessment
ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19, c22 and c29 – EPDM sealing ring with metal top made of coated carbon s19, s22, s29 – EPDM sealing ring with metal top made of stainless steel saddle washer S – painted stainless steel and EPDM
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

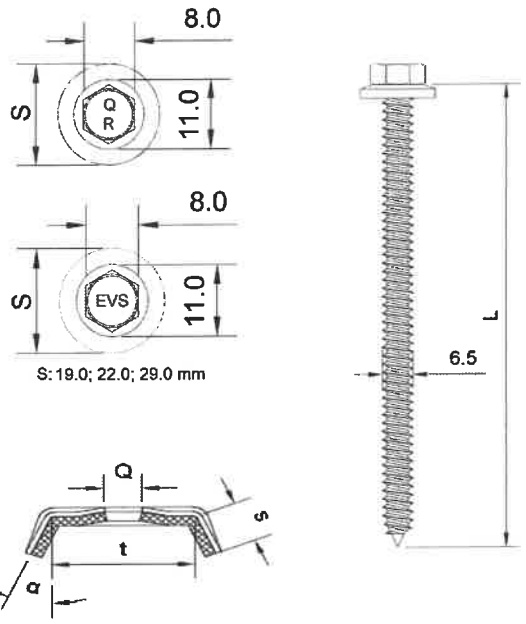
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 9,66 Nm

$f_{ax,k}$ = 21,795 N/mm² for l_{ef} ≥ 30 mm



Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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]	0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,50	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,55	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,63	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,75	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		0,88	4,25	4,25	4,25	4,25	4,25	4,25	4,25
		1,00	4,25	4,25	4,25	4,25	4,25	4,25	4,25
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

TAP A 6,3 x L with hexagon head
and Ø19 washer made of EPDM sealing ring with metal top and
S 41 washer made of stainless steel with EPDM

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of European
Technical Assessment
ETA-21/0376

Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c16 – EPDM sealing ring with metal top made of coated carbon s16 – EPDM sealing ring with metal top made of stainless steel LAX cap made of polyamide
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

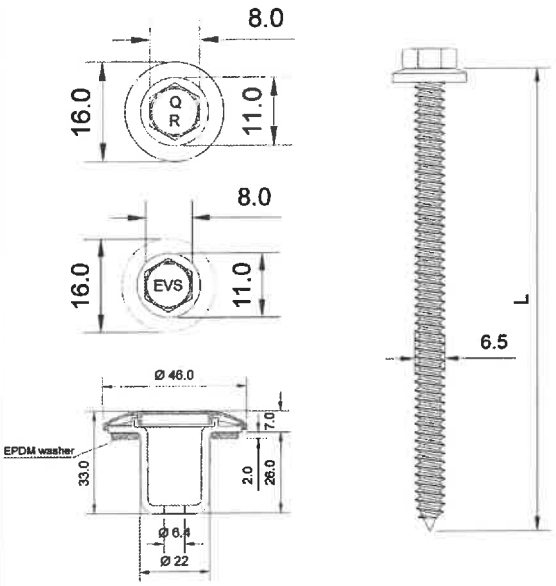
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 9,66 Nm

$f_{ax,k}$ = 21,795 N/mm² for l_{ef} ≥ 30 mm



Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	0,69	0,69	0,69	0,69	0,69	0,69	0,69
		0,50	1,12	1,12	1,12	1,12	1,12	1,12	1,12
		0,55	1,12	1,12	1,12	1,12	1,12	1,12	1,12
		0,63	1,44	1,44	1,44	1,44	1,44	1,44	1,44
		0,75	1,44	1,44	1,44	1,44	1,44	1,44	1,44
		0,88	1,44	1,44	1,44	1,44	1,44	1,44	1,44
		1,00	1,44	1,44	1,44	1,44	1,44	1,44	1,44
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

TAP A 6,3 x L with hexagon head
and Ø16 washer made of EPDM sealing ring with metal top and
LAX cap made of polyamide

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Technical Assessment
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Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19 and c22 – EPDM sealing ring with metal top made of coated carbon s19 and s22 – EPDM sealing ring with metal top made of stainless steel WELRO cap made of polyamide
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

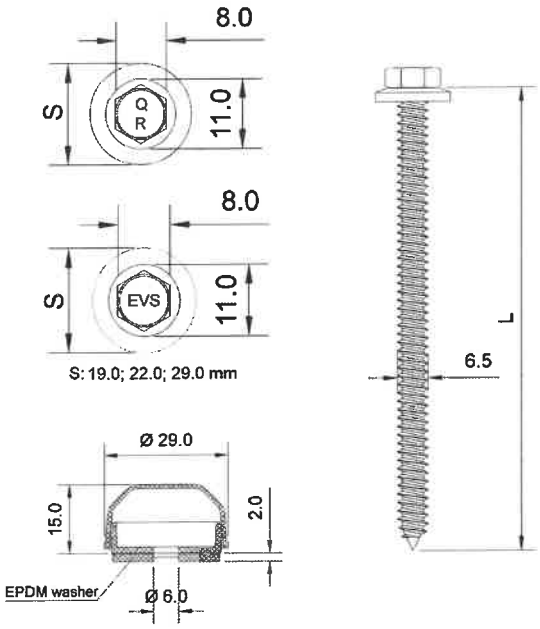
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 9,66 Nm

$f_{ax,k}$ = 21,795 N/mm² for l_{ef} ≥ 30 mm



Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	1,23	1,23	1,23	1,23	1,23	1,23	1,23
		0,50	1,93	1,93	1,93	1,93	1,93	1,93	1,93
		0,55	1,93	1,93	1,93	1,93	1,93	1,93	1,93
		0,63	2,97	2,97	2,97	2,97	2,97	2,97	2,97
		0,75	2,97	2,97	2,97	2,97	2,97	2,97	2,97
		0,88	2,97	2,97	2,97	2,97	2,97	2,97	2,97
		1,00	2,97	2,97	2,97	2,97	2,97	2,97	2,97
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

TAP A 6,3 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
WELRO cap made of polyamide

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of European
Technical Assessment
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Materials

Fastener:	carbon steel – SAE1022, quenched, tempered and coated: - galvanized (12 µm) or - ceramic coating DACRO500 or - ceramic coating DACRO1000
Washer:	c19 and c22 – EPDM sealing ring with metal top made of coated carbon s19 and s22 – EPDM sealing ring with metal top made of stainless steel WELRO-XL cap made of polyamide
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

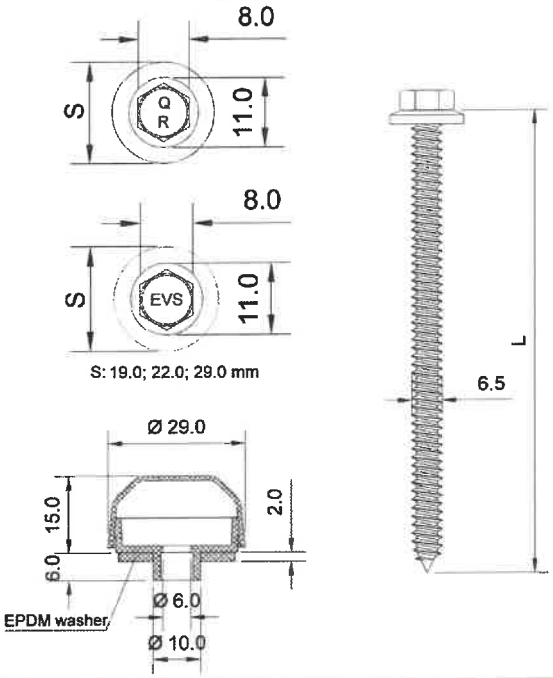
Drilling capacity: -

Timber substructures

For timber substructures performance determined with

$M_{y,Rk}$ = 9,66 Nm

$f_{ax,k}$ = 21,795 N/mm² for $l_{ef} \geq 30$ mm



Component II: wood class ≥ C24 l_{ef} in [mm]			Thickness of sandwich panel d or D in the fixing point						
			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	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,50	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,55	1,43	1,43	1,43	1,43	1,43	1,43	1,43
		0,63	1,52	1,52	1,52	1,52	1,52	1,52	1,52
		0,75	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		0,88	1,95	1,95	1,95	1,95	1,95	1,95	1,95
		1,00	1,95	1,95	1,95	1,95	1,95	1,95	1,95
	$N_{R,k}$ [kN]	0,40	0,80	0,80	0,80	0,80	0,80	0,80	0,80
		0,50	1,31	1,31	1,31	1,31	1,31	1,31	1,31
		0,55	1,31	1,31	1,31	1,31	1,31	1,31	1,31
		0,63	1,78	1,78	1,78	1,78	1,78	1,78	1,78
		0,75	1,78	1,78	1,78	1,78	1,78	1,78	1,78
		0,88	1,78	1,78	1,78	1,78	1,78	1,78	1,78
		1,00	1,78	1,78	1,78	1,78	1,78	1,78	1,78
Max. head displacement u depending on the sandwich panel thickness in [mm]			0,9	1,2	1,4	1,6	1,8	2,1	2,3

SWAL Fastening screws for sandwich panels

TAP A 6,3 x L with hexagon head
and washer made of EPDM sealing ring with metal top and
WELRO-XL cap made of polyamide

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of European
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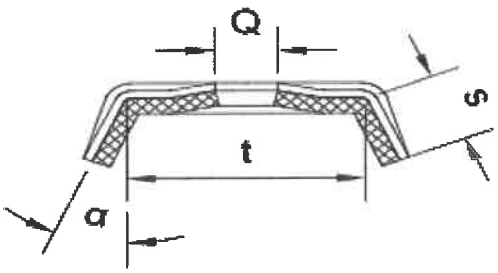
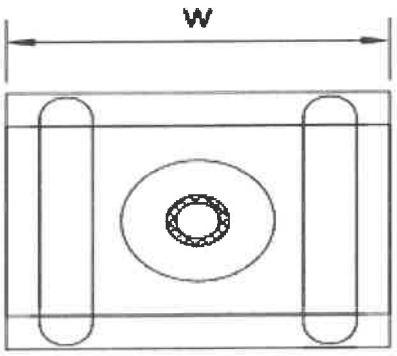
Saddle washer K and S

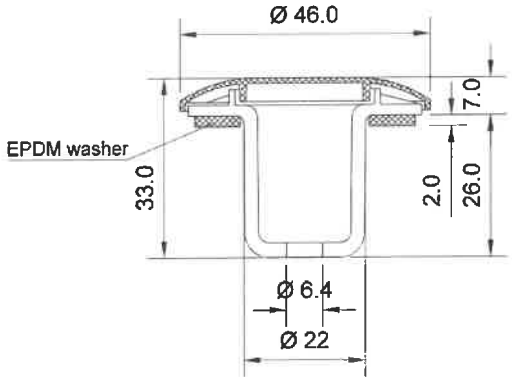




Item	t, mm	w, mm	s, mm	Q, mm	α
Saddle washer K 25 / S 25	25	40	9	6.30	23°
Saddle washer K 30 / S 25	32	40	10	6.30	24°
Saddle washer K 35 / S 35	36	35	10	6.30	43°
Saddle washer K 41 / S 41	41.5	40	10	6.70	36°

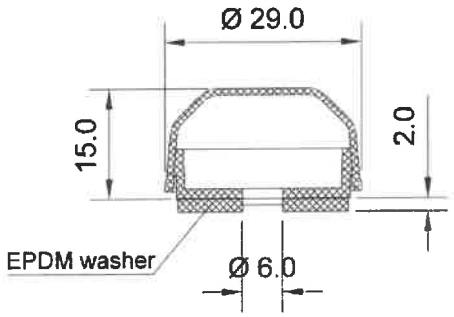
Materials:
- saddle washer K – painted (RAL 9010) aluminum and EPDM
- saddle washer S – panted (RAL 9006) stainless and with EPDM

LAX cap

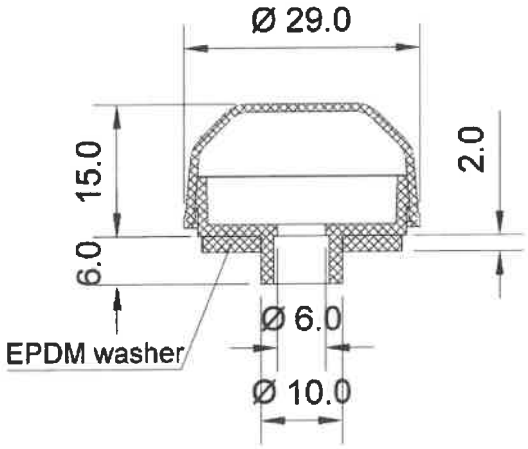


Materials:
- polyamide PA 6.6 and EPDM

WALRO cap



WALRO-XL cap



Materials:
- polyamide PA 6 and EPDM

SWAL Fastening screws for sandwich panels	**Annex 92**
LAX, WALRO, WALRO XL caps	of European Technical Assessment ETA-21/0376

Determination of design values

1. Determination of Design Shear Resistance

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

For Metal Supporting Substructures the following applies:

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

For Timber Supporting Substructures the following applies:

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

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

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

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

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

For Metal Supporting Substructures the following applies:

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

For Timber Supporting Substructures the following applies:

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

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

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

In case of combined tension and shear forces the linear interaction formula according to EN 1993-1-3, section 8.3 (8) or EN 1999-1-4, section 8.1 (7) should be taken into account.