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European Technical Assessment ETA-16/0443 of 30/06/2016

General part

Technical Assessment Body issuing the European Technical Assessment	Instytut Techniki Budowlanej
Trade name of the construction product	WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6 WB6P, WB6Px, WB6P-D, A2-WB6P
Product family to which the construction product belongs	Fastening screws for metal members and sheeting
Manufacturer	KLIMAS Sp. z o.o. ul. Wincentego Witosa 135/137 42-233 Mykanów Poland
Manufacturing plant	WKRĘT-MET sp. z o.o., sp. komandytowa ul. Wincentego Witosa 170/176 42-233 Mykanów Poland
This European Technical Assessment contains	39 pages including 33 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 330046-01-0602 “Fastening screws for metal members and sheeting”

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

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may only be made with the written consent of the issuing Technical Assessment Body. Any partial reproduction has to be identified as such.

Specific Part

1. Technical description of the product

The fastening screws WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6 WB6P, WB6Px, WB6P-D and A2-WB6P are a self-drilling and self-taping screws listed in Table 1. The fastening screws are partly completed with a steel or aluminum washer and an EPDM sealing ring. For details see Annexes 1 to 32.

The fastening screws and the corresponding connections are subject to tension and shear forces.

Table 1

No.	Screw	Material	Annex
1	WFD-4,8 x L	galvanized carbon steel with ≥ 12 µm of zinc	1
2	WFDOC-4,8 x L	galvanized carbon steel with ≥ 12 µm of zinc	
3	WFDx-4,8 x L	galvanized carbon steel with ≥ 20 µm of zinc	
4	WFD-D-4,8 x L	galvanized carbon steel with ceramic coating	
5	WFD-5,5 x L	galvanized carbon steel with ≥ 12 µm of zinc	2
6	WFDOC-5,5 x L	galvanized carbon steel with ≥ 12 µm of zinc	
7	WFDx-5,5 x L	galvanized carbon steel with ≥ 20 µm of zinc	
8	WFD-D-5,5 x L	galvanized carbon steel with ceramic coating	
9	A2-WFD-4,8 x L	stainless steel (bi-metal)	3
10	A2-WFD-5,5 x L	stainless steel (bi-metal)	4
11	WDD-4,8 x L	galvanized carbon steel with ≥ 12 µm of zinc	5
12	WDDx-4,8 x L	galvanized carbon steel with ≥ 20 µm of zinc	
13	WDD-D-4,8 x L	galvanized carbon steel with ceramic coating	
14	WDD-5,5 x L	galvanized carbon steel with ≥ 12 µm of zinc	6
15	WDDx-5,5 x L	galvanized carbon steel with ≥ 20 µm of zinc	
16	WDD-D-5,5 x L	galvanized carbon steel with ceramic coating	
17	WSB-4,8 x L	galvanized carbon steel with ≥ 12 µm of zinc	7
18	WSBx-4,8 x L	galvanized carbon steel with ≥ 20 µm of zinc	
19	WSB-D-4,8 x L	galvanized carbon steel with ceramic coating	
20	A2-WSB-4,8 x L	stainless steel (bi-metal)	8
21	WSBP-4,8 x L	galvanized carbon steel with ≥ 12 µm of zinc	9
22	WSBPx-4,8 x L	galvanized carbon steel with ≥ 20 µm of zinc	
23	WSBP-D-4,8 x L	galvanized carbon steel with ceramic coating	
24	A2-WSBP-4,8 x L	stainless steel (bi-metal)	10
25	WS-4,2 x L	galvanized carbon steel with ≥ 12 µm of zinc	11
26	WSx-4,2 x L	galvanized carbon steel with ≥ 20 µm of zinc	
27	WS-D-4,2 x L	galvanized carbon steel with ceramic coating	
28	WS-4,8 x L	galvanized carbon steel with ≥ 12 µm of zinc	12
29	WSx-4,8 x L	galvanized carbon steel with ≥ 20 µm of zinc	
30	WS-D-4,8 x L	galvanized carbon steel with ceramic coating	
21	A2-WS-4,8 x L	stainless steel (bi-metal)	13
22	WS-5,5 x L	galvanized carbon steel with ≥ 12 µm of zinc	14
23	WSx-5,5 x L	galvanized carbon steel with ≥ 20 µm of zinc	
24	WS-D-5,5 x L	galvanized carbon steel with ceramic coating	
25	A2-WS-5,5 x L	stainless steel (bi-metal)	15
26	WS-6,3 x L	galvanized carbon steel with ≥ 12 µm of zinc	16
27	WSx-6,3 x L	galvanized carbon steel with ≥ 20 µm of zinc	
28	WS-D-6,3 x L	galvanized carbon steel with ceramic coating	
29	A2-WS-6,3 x L	stainless steel (bi-metal)	17

Table 1, cont.

No.	Screw	Material	Annex
30	WF-4,2 x L	galvanized carbon steel with ≥ 12 µm of zinc	18
31	WFx-4,2 x L	galvanized carbon steel with ≥ 20 µm of zinc	
32	WF-D-4,2 x L	galvanized carbon steel with ceramic coating	
33	WF-4,8 x L	galvanized carbon steel with ≥ 12 µm of zinc	19
34	WFOC-4,8 x L	galvanized carbon steel with ≥ 12 µm of zinc	
35	WFx-4,8 x L	galvanized carbon steel with ≥ 20 µm of zinc	
36	WF-D-4,8 x L	galvanized carbon steel with ceramic coating	
37	A2-WF-4,8 x L	stainless steel (bi-metal)	20
38	WF-5,5 x L	galvanized carbon steel with ≥ 12 µm of zinc	21
39	WFOC-5,5 x L	galvanized carbon steel with ≥ 12 µm of zinc	
40	WFx-5,5 x L	galvanized carbon steel with ≥ 20 µm of zinc	
41	WF-D-5,5 x L	galvanized carbon steel with ceramic coating	
42	A2-WF-5,5 x L	stainless steel (bi-metal)	22
43	WF-6,3 x L	galvanized carbon steel with ≥ 12 µm of zinc	23
44	WFOC-6,3 x L	galvanized carbon steel with ≥ 12 µm of zinc	
45	WFx-6,3 x L	galvanized carbon steel with ≥ 20 µm of zinc	
46	WF-D-6,3 x L	galvanized carbon steel with ceramic coating	
47	A2-WF-6,3 x L	stainless steel (bi-metal)	24
48	WSS-5,5 x L	galvanized carbon steel with ≥ 12 µm of zinc	25
49	WSSx-5,5 x L	galvanized carbon steel with ≥ 20 µm of zinc	
50	WSS-D-5,5 x L	galvanized carbon steel with ceramic coating	
51	A2-WSS-5,5	stainless steel (bi-metal)	26
52	WSSBP-5,5 x L	galvanized carbon steel with ≥ 12 µm of zinc	27
53	WSSBPx-5,5 x L	galvanized carbon steel with ≥ 20 µm of zinc	
54	WSSBP-D-5,5 x L	galvanized carbon steel with ceramic coating	
55	A2-WSSBP-5,5 x L	stainless steel (bi-metal)	28
56	WB6-6,3 x L	galvanized carbon steel with ≥ 12 µm of zinc	29
57	WB6x-6,3 x L	galvanized carbon steel with ≥ 20 µm of zinc	
58	WB6-D-6,3 x L	galvanized carbon steel with ceramic coating	
59	WB6P-6,3 x L	galvanized carbon steel with ≥ 12 µm of zinc	30
60	WB6Px-6,3 x L	galvanized carbon steel with ≥ 20 µm of zinc	
61	WB6P-D-6,3 x L	galvanized carbon steel with ceramic coating	
62	A2-WB6-6,3 x L	stainless steel (bi-metal)	31
63	A2-WB6P-6,3 x L	stainless steel (bi-metal)	32

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

The fastening screws are intended to be used for fastening steel sheeting to steel or timber supporting substructures. For details see the Annexes 1 to 32. The component to be fastened is component I and the supporting structure is component II. The sheeting can either be used as wall or roof cladding or as load bearing wall and roof element. The fastening screws can also be used for the fastening of any other thin gauge steel members.

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).

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 are given in Annex 1 to 32. The values were determined by tests according to EAD 330046-01-0602.

The design values shall be determined according to Annex 33 and EAD 330046-01-0602.

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. Fastening screw which are made of stainless steel are intended to be used in external environments ≥ C2 corrosion according to the standard EN ISO 12944-2.

3.1.2. Safety in case of fire (BWR 2)

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

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

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

3.2. Methods used for the assessment

The assessment of fitness of the mechanical fasteners for the declared intended use has been made in accordance with the EAD 330046-01-0602.

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

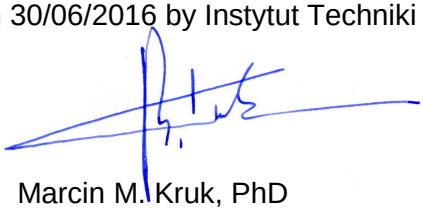
According to Decision 1998/214/EC, amended by 2001/596/EC, of the European Commission the system 2+ of assessment and verification of constancy of performance applies (see Annex V to Regulation (EU) No 305/2011).

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 30/06/2016 by Instytut Techniki Budowlanej



Marcin M. Kruk, PhD

Director of ITB

Materials

Fastener:	carbon steel – SAE1022 or 19MnB4 quenched, tempered and galvanized
Washer:	EPDM sealing ring with metal top made of aluminum, coated carbon steel or stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 2{,}5$ mm

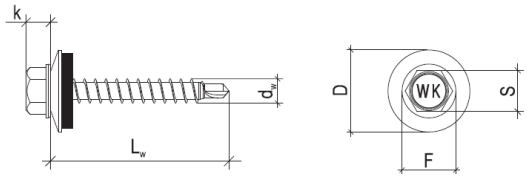
Timber substructures

For timber substructures performance assessed with:

$M_{y,Rk}$ = 4,390 Nm

$f_{ax,k}$ = 12,867 N/mm² for $l_{ef} \geq 20$ mm

$f_{ax,k}$ = 12,015 N/mm² for $l_{ef} \geq 30$ mm



d_w = 4,8 mm
L_w = 25-100 mm
s = 8 mm
k = 4,5 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	1,10*	1,10*	*bearing resistance of component I
	0,55	—	—	—	—	—	—	—	—	1,10*	1,10*	
	0,63	—	—	—	—	—	—	—	—	1,50*	1,50*	
	0,75	—	—	—	—	—	—	—	—	1,74*	1,74*	
	0,88	—	—	—	—	—	—	—	—	1,74*	1,74*	
	1,00	—	—	—	—	—	—	—	—	1,74*	1,74*	
	1,13	—	—	—	—	—	—	—	—	1,74*	1,74*	
	1,25	—	—	—	—	—	—	—	—	1,74*	1,74*	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	1,24*	1,73*	*bearing resistance of component II
	0,55	—	—	—	—	—	—	—	—	1,24*	1,73*	
	0,63	—	—	—	—	—	—	—	—	1,24*	1,73*	
	0,75	—	—	—	—	—	—	—	—	1,24*	1,73*	
	0,88	—	—	—	—	—	—	—	—	1,24*	1,73*	
	1,00	—	—	—	—	—	—	—	—	1,24*	1,73*	
	1,13	—	—	—	—	—	—	—	—	1,24*	1,73*	
	1,25	—	—	—	—	—	—	—	—	1,24*	1,73*	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

WFD-4,8 x L, WFDOC-4,8 x L, WFDx-4,8 x L and WFD-D-4,8 x L
Self-drilling screws with hexagon head and sealing washer Ø14 mm
with metal top made of aluminum (A), coated carbon steel (Z)
or stainless steel (S)

Annex 1

of European Technical Assessment ETA-16/0443

Materials

Fastener:	carbon steel – SAE1022 or 19MnB4 quenched, tempered and galvanized
Washer:	EPDM sealing ring with metal top made of aluminum, coated carbon steel or stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 2{,}5$ mm

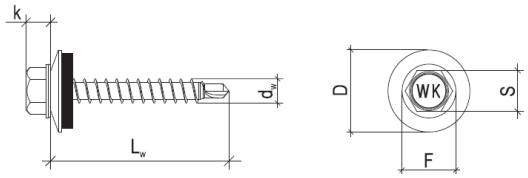
Timber substructures

For timber substructures performance assessed with:

$M_{y,Rk}$ = 4,390 Nm

$f_{ax,k}$ = 12,867 N/mm² for $l_{ef} \geq 20$ mm

$f_{ax,k}$ = 12,015 N/mm² for $l_{ef} \geq 30$ mm



d_w = 5,5 mm
L_w = 25-100 mm
s = 8 mm
k = 4,5 mm

$t_{N,II}$ [mm]	0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$	3 Nm								20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm] 0,50	—	—	—	—	—	—	—	—	1,10*	1,10*	*bearing resistance of component I
0,55	—	—	—	—	—	—	—	—	1,10*	1,10*	
0,63	—	—	—	—	—	—	—	—	1,50*	1,50*	
0,75	—	—	—	—	—	—	—	—	1,74*	1,74*	
0,88	—	—	—	—	—	—	—	—	1,74*	1,74*	
1,00	—	—	—	—	—	—	—	—	1,74*	1,74*	
1,13	—	—	—	—	—	—	—	—	1,74*	1,74*	
1,25	—	—	—	—	—	—	—	—	1,74*	1,74*	
1,50	—	—	—	—	—	—	—	—	—	—	
1,75	—	—	—	—	—	—	—	—	—	—	
2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm] 0,50	—	—	—	—	—	—	—	—	1,24*	1,73*	*bearing resistance of component II
0,55	—	—	—	—	—	—	—	—	1,24*	1,73*	
0,63	—	—	—	—	—	—	—	—	1,24*	1,73*	
0,75	—	—	—	—	—	—	—	—	1,24*	1,73*	
0,88	—	—	—	—	—	—	—	—	1,24*	1,73*	
1,00	—	—	—	—	—	—	—	—	1,24*	1,73*	
1,13	—	—	—	—	—	—	—	—	1,24*	1,73*	
1,25	—	—	—	—	—	—	—	—	1,24*	1,73*	
1,50	—	—	—	—	—	—	—	—	—	—	
1,75	—	—	—	—	—	—	—	—	—	—	
2,00	—	—	—	—	—	—	—	—	—	—	

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

WFD-5,5 x L, WFDOC-5,5 x L, WFDx-5,5 x L and WFD-D-5,5 x L
Self-drilling screws with hexagon head and sealing washer Ø16 mm
with metal top made of aluminum (A), coated carbon steel (Z)
or stainless steel (S)

Annex 2

of European Technical Assessment ETA-16/0443

Materials
Fastener: stainless steel – SAE 304 bi-metal

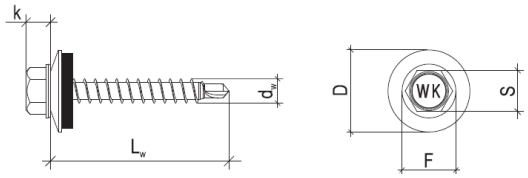
Washer: EPDM sealing ring with metal top made of aluminum or stainless steel

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 2{,}5$ mm

Timber substructures
For timber substructures performance assessed with:
$M_{y,Rk}$ = 4,390 Nm
$f_{ax,k}$ = 12,867 N/mm^2 for $l_{ef} \geq 20$ mm
$f_{ax,k}$ = 12,015 N/mm^2 for $l_{ef} \geq 30$ mm



d_w = 4,8 mm
L_w = 25-100 mm
s = 8 mm
k = 4,5 mm

$t_{N,II}$ [mm]	0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$	3 Nm								20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm] 0,50	—	—	—	—	—	—	—	—	1,10*	1,10*	*bearing resistance of component I
0,55	—	—	—	—	—	—	—	—	1,10*	1,10*	
0,63	—	—	—	—	—	—	—	—	1,50*	1,50*	
0,75	—	—	—	—	—	—	—	—	1,74*	1,74*	
0,88	—	—	—	—	—	—	—	—	1,74*	1,74*	
1,00	—	—	—	—	—	—	—	—	1,74*	1,74*	
1,13	—	—	—	—	—	—	—	—	1,74*	1,74*	
1,25	—	—	—	—	—	—	—	—	1,74*	1,74*	
1,50	—	—	—	—	—	—	—	—	—	—	
1,75	—	—	—	—	—	—	—	—	—	—	
2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm] 0,50	—	—	—	—	—	—	—	—	1,24*	1,73*	*bearing resistance of component II
0,55	—	—	—	—	—	—	—	—	1,24*	1,73*	
0,63	—	—	—	—	—	—	—	—	1,24*	1,73*	
0,75	—	—	—	—	—	—	—	—	1,24*	1,73*	
0,88	—	—	—	—	—	—	—	—	1,24*	1,73*	
1,00	—	—	—	—	—	—	—	—	1,24*	1,73*	
1,13	—	—	—	—	—	—	—	—	1,24*	1,73*	
1,25	—	—	—	—	—	—	—	—	1,24*	1,73*	
1,50	—	—	—	—	—	—	—	—	—	—	
1,75	—	—	—	—	—	—	—	—	—	—	
2,00	—	—	—	—	—	—	—	—	—	—	

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

A2-WFD-4,8 x L
Self-drilling screws with hexagon head and sealing washer Ø14 mm with metal top made of aluminum (A) or stainless steel (S)

Annex 3
of European Technical Assessment ETA-16/0443

Materials
Fastener: stainless steel – SAE 304 bi-metal

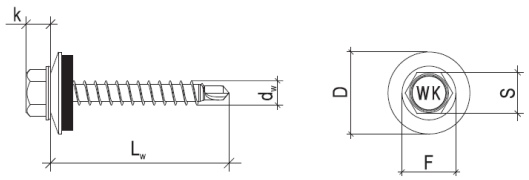
Washer: EPDM sealing ring with metal top made of aluminum or stainless steel

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 2{,}5$ mm

Timber substructures
For timber substructures performance assessed with:
$M_{y,Rk}$ = 4,390 Nm
$f_{ax,k}$ = 12,867 N/mm² for $l_{ef} \geq 20$ mm
$f_{ax,k}$ = 12,015 N/mm² for $l_{ef} \geq 30$ mm



d_w = 5,5 mm
L_w = 25-100 mm
s = 8 mm
k = 4,5 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	1,10*	1,10*	*bearing resistance of component I
	0,55	—	—	—	—	—	—	—	—	1,10*	1,10*	
	0,63	—	—	—	—	—	—	—	—	1,50*	1,50*	
	0,75	—	—	—	—	—	—	—	—	1,74*	1,74*	
	0,88	—	—	—	—	—	—	—	—	1,74*	1,74*	
	1,00	—	—	—	—	—	—	—	—	1,74*	1,74*	
	1,13	—	—	—	—	—	—	—	—	1,74*	1,74*	
	1,25	—	—	—	—	—	—	—	—	1,74*	1,74*	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	1,24*	1,73*	*bearing resistance of component II
	0,55	—	—	—	—	—	—	—	—	1,24*	1,73*	
	0,63	—	—	—	—	—	—	—	—	1,24*	1,73*	
	0,75	—	—	—	—	—	—	—	—	1,24*	1,73*	
	0,88	—	—	—	—	—	—	—	—	1,24*	1,73*	
	1,00	—	—	—	—	—	—	—	—	1,24*	1,73*	
	1,13	—	—	—	—	—	—	—	—	1,24*	1,73*	
	1,25	—	—	—	—	—	—	—	—	1,24*	1,73*	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

A2-WFD-5,5 x L
Self-drilling screws with hexagon head and sealing washer Ø14 mm with metal top made of aluminum (A) or stainless steel (S)

Annex 4

of European Technical Assessment ETA-16/0443

Materials

Fastener:	carbon steel – SAE1022 or 19MnB4 quenched, tempered and galvanized
Washer:	EPDM sealing ring with metal top made of aluminum, coated carbon steel or stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 2{,}5$ mm

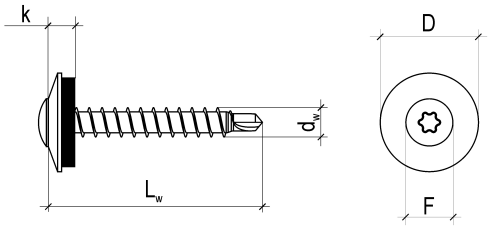
Timber substructures

For timber substructures performance assessed with:

$M_{y,Rk}$ = 4,390 Nm

$f_{ax,k}$ = 12,867 N/mm² for $l_{ef} \geq 20$ mm

$f_{ax,k}$ = 12,015 N/mm² for $l_{ef} \geq 30$ mm



d_w = 4,8 mm
L_w = 25-100 mm
D = 14 mm
F = 9 mm
k = 5 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	1,10*	1,10*	*bearing resistance of component I
	0,55	—	—	—	—	—	—	—	—	1,10*	1,10*	
	0,63	—	—	—	—	—	—	—	—	1,50*	1,50*	
	0,75	—	—	—	—	—	—	—	—	1,74*	1,74*	
	0,88	—	—	—	—	—	—	—	—	1,74*	1,74*	
	1,00	—	—	—	—	—	—	—	—	1,74*	1,74*	
	1,13	—	—	—	—	—	—	—	—	1,74*	1,74*	
	1,25	—	—	—	—	—	—	—	—	1,74*	1,74*	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	1,24*	1,73*	*bearing resistance of component II
	0,55	—	—	—	—	—	—	—	—	1,24*	1,73*	
	0,63	—	—	—	—	—	—	—	—	1,24*	1,73*	
	0,75	—	—	—	—	—	—	—	—	1,24*	1,73*	
	0,88	—	—	—	—	—	—	—	—	1,24*	1,73*	
	1,00	—	—	—	—	—	—	—	—	1,24*	1,73*	
	1,13	—	—	—	—	—	—	—	—	1,24*	1,73*	
	1,25	—	—	—	—	—	—	—	—	1,24*	1,73*	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

WDD-4,8 x L, WDDx-4,8 x L and WDD-D-4,8 x L
Self-drilling screws with circular head and sealing washer Ø14 mm
with metal top made of aluminum (A), coated carbon steel (Z)
or stainless steel (S)

Annex 5

of European Technical Assessment ETA-16/0443

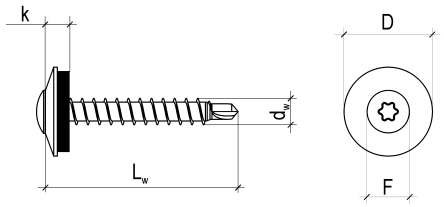
Materials

Fastener:	carbon steel – SAE1022 or 19MnB4 quenched, tempered and galvanized
Washer:	EPDM sealing ring with metal top made of aluminum, coated carbon steel or stainless steel
Component I:	S280GD, S320GD or S320GD – EN 10346
Component II:	structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 2{,}5$ mm

Timber substructures

For timber substructures performance assessed with:
$M_{y,Rk}$ = 4,390 Nm
$f_{ax,k}$ = 12,867 N/mm^2 for $l_{ef} \geq 20$ mm
$f_{ax,k}$ = 12,015 N/mm^2 for $l_{ef} \geq 30$ mm



d_w = 5,5 mm
L_w = 25-100 mm
D = 14 mm
F = 9 mm
k = 5 mm

$t_{N,II}$ [mm]	0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$	3 Nm								20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]											*bearing resistance of component I
0,50	—	—	—	—	—	—	—	—	1,10*	1,10*	
0,55	—	—	—	—	—	—	—	—	1,10*	1,10*	
0,63	—	—	—	—	—	—	—	—	1,50*	1,50*	
0,75	—	—	—	—	—	—	—	—	1,74*	1,74*	
0,88	—	—	—	—	—	—	—	—	1,74*	1,74*	
1,00	—	—	—	—	—	—	—	—	1,74*	1,74*	
1,13	—	—	—	—	—	—	—	—	1,74*	1,74*	
1,25	—	—	—	—	—	—	—	—	1,74*	1,74*	
1,50	—	—	—	—	—	—	—	—	—	—	
1,75	—	—	—	—	—	—	—	—	—	—	
2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]											*bearing resistance of component II
0,50	—	—	—	—	—	—	—	—	1,24*	1,73*	
0,55	—	—	—	—	—	—	—	—	1,24*	1,73*	
0,63	—	—	—	—	—	—	—	—	1,24*	1,73*	
0,75	—	—	—	—	—	—	—	—	1,24*	1,73*	
0,88	—	—	—	—	—	—	—	—	1,24*	1,73*	
1,00	—	—	—	—	—	—	—	—	1,24*	1,73*	
1,13	—	—	—	—	—	—	—	—	1,24*	1,73*	
1,25	—	—	—	—	—	—	—	—	1,24*	1,73*	
1,50	—	—	—	—	—	—	—	—	—	—	
1,75	—	—	—	—	—	—	—	—	—	—	
2,00	—	—	—	—	—	—	—	—	—	—	

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

WDD-5,5 x L, WDDx-5,5 x L and WDD-D-5,5 x L
Self-drilling screws with circular head and sealing washer Ø16 mm
with metal top made of aluminum (A), coated carbon steel (Z)
or stainless steel (S)

Annex 6

of European Technical Assessment ETA-16/0443

Materials

Fastener: carbon steel – SAE1022 or 19MnB4
quenched, tempered and galvanized

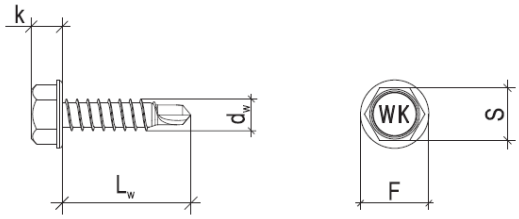
Washer: -

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 2{,}5$ mm

Timber substructures
no performance assessed



d_w = 4,8 mm
L_w = 16-35 mm
s = 8 mm
k = 4,5 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,10	1,10	1,10	1,10	1,10	1,10	1,10	—	—	—	
	0,55	1,10	1,10	1,10	1,10	1,10	1,10	1,10	—	—	—	
	0,63	1,10	1,10	1,50	1,50	1,50	1,50	1,50	—	—	—	
	0,75	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	
	0,88	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	
	1,00	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	—
	1,13	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	
	1,25	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,55	0,55	0,55	0,55	0,55	0,55	0,55	—	—	—	
	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	—	—	—	
	0,63	0,55	0,55	0,82	0,82	0,82	0,82	0,82	—	—	—	
	0,75	0,55	0,55	0,82	0,96	0,96	0,96	0,96	—	—	—	
	0,88	0,55	0,55	0,82	0,96	0,98	0,98	0,98	—	—	—	
	1,00	0,55	0,55	0,82	0,96	0,98	0,98	0,98	—	—	—	—
	1,13	0,55	0,55	0,82	0,96	0,98	0,98	0,98	—	—	—	
	1,25	0,55	0,55	0,82	0,96	0,98	0,98	0,98	—	—	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

WSB-4,8 x L, WSBx-4,8 x L and WSB-D-4,8 x L
Self-drilling screws with hexagon head

Annex 7

of European Technical Assessment ETA-16/0443

Materials
Fastener: stainless steel – SAE 304 bi-metal

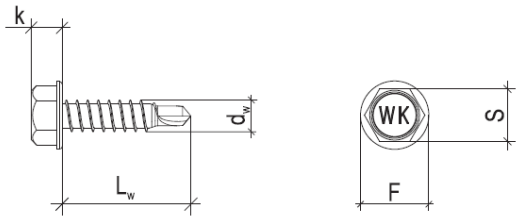
Washer: -

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 2{,}5$ mm

Timber substructures
no performance assessed



d_w = 4,8 mm
L_w = 16-35 mm
s = 8 mm
k = 4,5 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								20 mm	0 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,10	1,10	1,10	1,10	1,10	1,10	1,10	—	—	—	
	0,55	1,10	1,10	1,10	1,10	1,10	1,10	1,10	—	—	—	
	0,63	1,10	1,10	1,50	1,50	1,50	1,50	1,50	—	—	—	
	0,75	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	
	0,88	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	
	1,00	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	—
	1,13	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	
	1,25	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,55	0,55	0,55	0,55	0,55	0,55	0,55	—	—	—	
	0,55	0,55	0,55	0,55	0,55	0,55	0,55	0,55	—	—	—	
	0,63	0,55	0,55	0,82	0,82	0,82	0,82	0,82	—	—	—	
	0,75	0,55	0,55	0,82	0,96	0,96	0,96	0,96	—	—	—	
	0,88	0,55	0,55	0,82	0,96	0,98	0,98	0,98	—	—	—	
	1,00	0,55	0,55	0,82	0,96	0,98	0,98	0,98	—	—	—	—
	1,13	0,55	0,55	0,82	0,96	0,98	0,98	0,98	—	—	—	
	1,25	0,55	0,55	0,82	0,96	0,98	0,98	0,98	—	—	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

Annex 8
of European Technical Assessment ETA-16/0443

A2-WSB-4,8 x L
Self-drilling screws with hexagon head

Materials

Fastener: carbon steel – SAE1022 or 19MnB4
quenched, tempered and galvanized

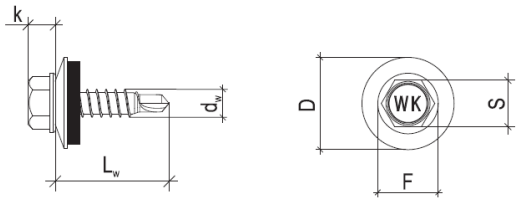
Washer: EPDM sealing ring with metal top
made of aluminum, coated carbon steel or stainless steel

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 2{,}5$ mm

Timber substructures
no performance assessed



d_w = 4,8 mm
L_w = 16-35 mm
s = 8 mm
k = 4,5 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,10	1,10	1,10	1,10	1,10	1,10	1,10	—	—	—	
	0,55	1,10	1,10	1,10	1,10	1,10	1,10	1,10	—	—	—	
	0,63	1,10	1,10	1,50	1,50	1,50	1,50	1,50	—	—	—	
	0,75	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	
	0,88	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	
	1,00	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	—
	1,13	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	
	1,25	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,64	0,64	0,64	0,64	0,64	0,64	0,64	—	—	—	
	0,55	0,64	0,64	0,64	0,64	0,64	0,64	0,64	—	—	—	
	0,63	0,64	0,64	0,82	0,82	0,82	0,82	0,82	—	—	—	
	0,75	0,64	0,64	0,82	0,96	0,96	0,96	0,96	—	—	—	
	0,88	0,64	0,64	0,82	0,96	1,28	1,28	1,28	—	—	—	
	1,00	0,64	0,64	0,82	0,96	1,28	1,55	1,55	—	—	—	—
	1,13	0,64	0,64	0,82	0,96	1,28	1,55	1,55	—	—	—	
	1,25	0,64	0,64	0,82	0,96	1,28	1,55	2,21	—	—	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

WSBP-4,8 x L, WSBPx-4,8 x L and WSBP-D-4,8 x L
Self-drilling screws with hexagon head and sealing washer Ø14 mm
with metal top made of aluminum (A), coated carbon steel (Z)
or stainless steel (S)

Annex 9
of European Technical Assessment ETA-16/0443

Materials
Fastener: stainless steel – SAE 304 bi-metal

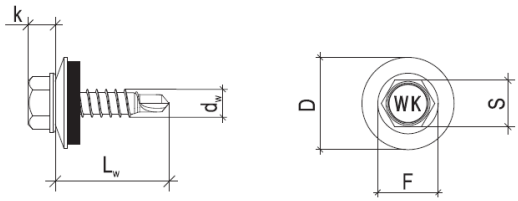
Washer: EPDM sealing ring with metal top made of aluminum or stainless steel

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 2{,}5$ mm

Timber substructures
no performance assessed



d_w = 4,8 mm
L_w = 16-35 mm
s = 8 mm
k = 4,5 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,10	1,10	1,10	1,10	1,10	1,10	1,10	—	—	—	
	0,55	1,10	1,10	1,10	1,10	1,10	1,10	1,10	—	—	—	
	0,63	1,10	1,10	1,50	1,50	1,50	1,50	1,50	—	—	—	
	0,75	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	
	0,88	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	
	1,00	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	—
	1,13	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	
	1,25	1,10	1,10	1,50	1,74	1,74	1,74	1,74	—	—	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,64	0,64	0,64	0,64	0,64	0,64	0,64	—	—	—	
	0,55	0,64	0,64	0,64	0,64	0,64	0,64	0,64	—	—	—	
	0,63	0,64	0,64	0,82	0,82	0,82	0,82	0,82	—	—	—	
	0,75	0,64	0,64	0,82	0,96	0,96	0,96	0,96	—	—	—	
	0,88	0,64	0,64	0,82	0,96	1,28	1,28	1,28	—	—	—	
	1,00	0,64	0,64	0,82	0,96	1,28	1,55	1,55	—	—	—	—
	1,13	0,64	0,64	0,82	0,96	1,28	1,55	1,55	—	—	—	
	1,25	0,64	0,64	0,82	0,96	1,28	1,55	2,21	—	—	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

A2-WSBP-4,8 x L
Self-drilling screws with hexagon head and sealing washer Ø14 mm with metal top made of aluminum (A) or stainless steel (S)

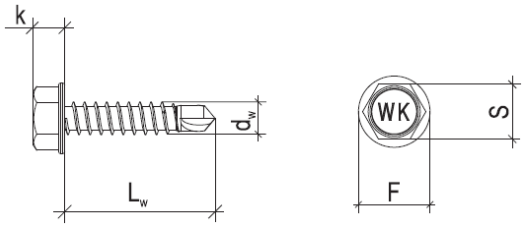
Annex 10
of European Technical Assessment ETA-16/0443

Materials

Fastener:	carbon steel – SAE1022 or 19MnB4 quenched, tempered and galvanized
Washer:	-
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 2{,}0$ mm

Timber substructures
no performance assessed



d_w = 4,2 mm
L_w = 16-75 mm
s = 7 mm
k = 4,5 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,92	0,92	0,92	0,92	0,92	0,92	—	—	—	—	
	0,55	0,92	0,92	0,92	0,92	0,92	0,92	—	—	—	—	
	0,63	0,92	0,92	1,11	1,11	1,11	1,11	—	—	—	—	
	0,75	0,92	0,92	1,11	1,66	1,66	1,66	—	—	—	—	
	0,88	0,92	0,92	1,11	1,66	1,84	1,84	—	—	—	—	
	1,00	0,92	0,92	1,11	1,66	1,84	1,88	—	—	—	—	—
	1,13	—	—	—	—	—	—	—	—	—	—	
	1,25	—	—	—	—	—	—	—	—	—	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,43	0,43	0,43	0,43	0,43	0,43	—	—	—	—	
	0,55	0,43	0,43	0,43	0,43	0,43	0,43	—	—	—	—	
	0,63	0,43	0,43	0,57	0,57	0,57	0,57	—	—	—	—	
	0,75	0,43	0,43	0,57	0,69	0,69	0,69	—	—	—	—	
	0,88	0,43	0,43	0,57	0,69	0,73	0,73	—	—	—	—	
	1,00	0,43	0,43	0,57	0,69	0,73	0,78	—	—	—	—	—
	1,13	—	—	—	—	—	—	—	—	—	—	
	1,25	—	—	—	—	—	—	—	—	—	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

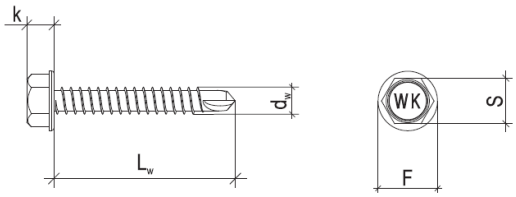
WS-4,2 x L, WSx-4,2 x L and WS-D-4,2 x L
Self-drilling screws with hexagon head

Annex 11
of European Technical Assessment ETA-16/0443

Materials
Fastener: carbon steel – SAE1022 or 19MnB4
quenched, tempered and galvanized
Washer: -
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 3{,}0$ mm

Timber substructures
no performance assessed



d_w = 4,8 mm
L_w = 16-75 mm
s = 8 mm
k = 4,5 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	1,32	1,32	1,32	1,32	1,32	—	—	
	0,55	—	—	—	1,32	1,32	1,32	1,32	1,32	—	—	
	0,63	—	—	—	1,59	1,59	1,59	1,59	1,59	—	—	
	0,75	—	—	—	2,38	2,38	2,38	2,38	2,38	—	—	
	0,88	—	—	—	2,38	3,02	3,02	3,02	3,02	—	—	
	1,00	—	—	—	2,38	3,02	3,03	3,03	3,03	—	—	—
	1,13	—	—	—	2,38	3,02	3,03	3,03	3,03	—	—	
	1,25	—	—	—	2,38	3,02	3,03	3,10	3,10	—	—	
	1,50	—	—	—	2,38	3,02	3,03	3,10	3,15	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	0,63	0,63	0,63	0,63	0,63	—	—	
	0,55	—	—	—	0,63	0,63	0,63	0,63	0,63	—	—	
	0,63	—	—	—	0,78	0,89	0,89	0,89	0,89	—	—	
	0,75	—	—	—	0,78	0,97	1,01	1,01	1,01	—	—	
	0,88	—	—	—	0,78	0,97	1,07	1,07	1,07	—	—	
	1,00	—	—	—	0,78	0,97	1,16	1,16	1,16	—	—	—
	1,13	—	—	—	0,78	0,97	1,16	1,16	1,16	—	—	
	1,25	—	—	—	0,78	0,97	1,16	1,16	1,16	—	—	
	1,50	—	—	—	0,78	0,97	1,16	1,16	1,16	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

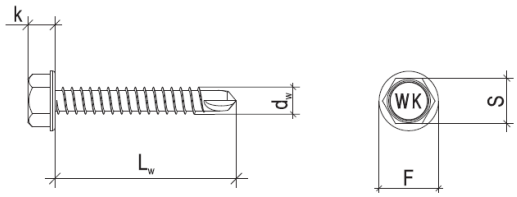
WS-4,8 x L, WSx-4,8 x L and WS-D-4,8 x L
Self-drilling screws with hexagon head

Annex 12
of European Technical Assessment ETA-16/0443

Materials
Fastener: stainless steel – SAE 304 bi-metal
Washer: -
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 3{,}0$ mm

Timber substructures
no performance assessed



d_w = 4,8 mm
L_w = 16-75 mm
s = 8 mm
k = 4,5 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	1,32	1,32	1,32	1,32	1,32	—	—	
	0,55	—	—	—	1,32	1,32	1,32	1,32	1,32	—	—	
	0,63	—	—	—	1,59	1,59	1,59	1,59	1,59	—	—	
	0,75	—	—	—	2,38	2,38	2,38	2,38	2,38	—	—	
	0,88	—	—	—	2,38	3,02	3,02	3,02	3,02	—	—	
	1,00	—	—	—	2,38	3,02	3,03	3,03	3,03	—	—	—
	1,13	—	—	—	2,38	3,02	3,03	3,03	3,03	—	—	
	1,25	—	—	—	2,38	3,02	3,03	3,10	3,10	—	—	
	1,50	—	—	—	2,38	3,02	3,03	3,10	3,15	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	0,63	0,63	0,63	0,63	0,63	—	—	
	0,55	—	—	—	0,63	0,63	0,63	0,63	0,63	—	—	
	0,63	—	—	—	0,78	0,89	0,89	0,89	0,89	—	—	
	0,75	—	—	—	0,78	0,97	1,01	1,01	1,01	—	—	
	0,88	—	—	—	0,78	0,97	1,07	1,07	1,07	—	—	
	1,00	—	—	—	0,78	0,97	1,16	1,16	1,16	—	—	—
	1,13	—	—	—	0,78	0,97	1,16	1,16	1,16	—	—	
	1,25	—	—	—	0,78	0,97	1,16	1,16	1,16	—	—	
	1,50	—	—	—	0,78	0,97	1,16	1,16	1,16	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

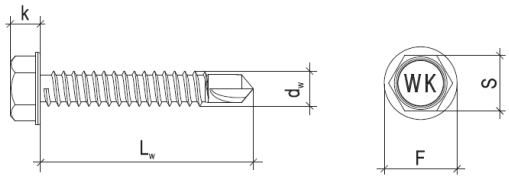
Annex 13
of European Technical Assessment ETA-16/0443

A2-WS-4,8 x L
Self-drilling screws with hexagon head

Materials
Fastener: carbon steel – SAE1022 or 19MnB4
quenched, tempered and galvanized
Washer: -
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 5{,}0$ mm

Timber substructures
no performance assessed



d_w = 5,5 mm
L_w = 16-140 mm
s = 8 mm
k = 4,9 mm

$t_{N,II}$ [mm]		1,00	1,25	1,50	2,00	2,50	3,00	4,00	5,00	6,00	Wood class ≥ C24		
$M_{t,nom}$		5 Nm									20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,53	1,53	1,53	1,53	1,53	1,53	—	—	—	—	—	—
	0,55	1,53	1,53	1,53	1,53	1,53	1,53	—	—	—	—	—	
	0,63	1,88	1,88	1,88	1,88	1,88	1,88	—	—	—	—	—	
	0,75	2,52	2,52	2,52	2,52	2,52	2,52	—	—	—	—	—	
	0,88	2,87	2,87	2,87	2,87	2,87	2,87	—	—	—	—	—	
	1,00	2,90	2,90	2,90	2,90	2,90	2,90	—	—	—	—	—	
	1,13	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
	1,25	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
	1,50	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
	1,75	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
	2,00	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,63	0,63	0,63	0,63	0,63	0,63	—	—	—	—	—	—
	0,55	0,63	0,63	0,63	0,63	0,63	0,63	—	—	—	—	—	
	0,63	0,89	0,89	0,89	0,89	0,89	0,89	—	—	—	—	—	
	0,75	1,01	1,01	1,01	1,01	1,01	1,01	—	—	—	—	—	
	0,88	1,07	1,07	1,07	1,07	1,07	1,07	—	—	—	—	—	
	1,00	1,10	1,16	1,16	1,16	1,16	1,16	—	—	—	—	—	
	1,13	1,10	1,16	1,16	1,16	1,16	1,16	—	—	—	—	—	
	1,25	1,10	1,16	1,16	1,16	1,16	1,16	—	—	—	—	—	
	1,50	1,10	1,16	1,16	1,16	1,16	1,16	—	—	—	—	—	
	1,75	1,10	1,16	1,16	1,16	1,16	1,16	—	—	—	—	—	
	2,00	1,10	1,16	1,16	1,16	1,16	1,16	—	—	—	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

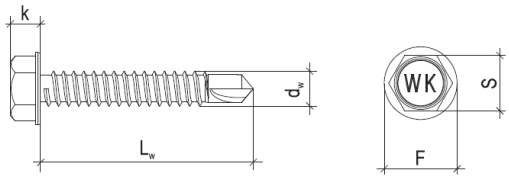
WS-5,5 x L, WSx-5,5 x L and WS-D-5,5 x L
Self-drilling screws with hexagon head

Annex 14
of European Technical Assessment ETA-16/0443

Materials
Fastener: stainless steel – SAE 304 bi-metal
Washer: -
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 5{,}0$ mm

Timber substructures
no performance assessed



d_w = 5,5 mm
L_w = 16-140 mm
s = 8 mm
k = 4,9 mm

$t_{N,II}$ [mm]		1,00	1,25	1,50	2,00	2,50	3,00	4,00	5,00	6,00	Wood class ≥ C24		
$M_{t,nom}$		5 Nm									20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,53	1,53	1,53	1,53	1,53	1,53	—	—	—	—	—	—
	0,55	1,53	1,53	1,53	1,53	1,53	1,53	—	—	—	—	—	
	0,63	1,88	1,88	1,88	1,88	1,88	1,88	—	—	—	—	—	
	0,75	2,52	2,52	2,52	2,52	2,52	2,52	—	—	—	—	—	
	0,88	2,87	2,87	2,87	2,87	2,87	2,87	—	—	—	—	—	
	1,00	2,90	2,90	2,90	2,90	2,90	2,90	—	—	—	—	—	
	1,13	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
	1,25	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
	1,50	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
	1,75	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
	2,00	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,63	0,63	0,63	0,63	0,63	0,63	—	—	—	—	—	—
	0,55	0,63	0,63	0,63	0,63	0,63	0,63	—	—	—	—	—	
	0,63	0,89	0,89	0,89	0,89	0,89	0,89	—	—	—	—	—	
	0,75	1,01	1,01	1,01	1,01	1,01	1,01	—	—	—	—	—	
	0,88	1,07	1,07	1,07	1,07	1,07	1,07	—	—	—	—	—	
	1,00	1,10	1,16	1,16	1,16	1,16	1,16	—	—	—	—	—	
	1,13	1,10	1,16	1,16	1,16	1,16	1,16	—	—	—	—	—	
	1,25	1,10	1,16	1,16	1,16	1,16	1,16	—	—	—	—	—	
	1,50	1,10	1,16	1,16	1,16	1,16	1,16	—	—	—	—	—	
	1,75	1,10	1,16	1,16	1,16	1,16	1,16	—	—	—	—	—	
	2,00	1,10	1,16	1,16	1,16	1,16	1,16	—	—	—	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

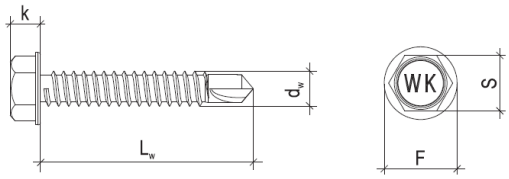
A2-WS-5,5 x L
Self-drilling screws with hexagon head

Annex 15
of European Technical Assessment ETA-16/0443

Materials
Fastener: carbon steel – SAE1022 or 19MnB4
quenched, tempered and galvanized
Washer: -
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 7{,}0$ mm

Timber substructures
no performance assessed



d_w = 6,3 mm
L_w = 16-140 mm
s = 10 mm
k = 5,4 mm

$t_{N,II}$ [mm]		1,00	1,25	1,50	2,00	2,50	3,00	4,00	5,00	6,00	Wood class ≥ C24		
$M_{t,nom}$		7 Nm									20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	1,75	1,75	1,75	—	—	—	
	0,55	—	—	—	—	—	1,75	1,75	1,75	—	—	—	
	0,63	—	—	—	—	—	2,48	2,48	2,48	—	—	—	
	0,75	—	—	—	—	—	3,04	3,04	3,04	—	—	—	
	0,88	—	—	—	—	—	3,59	3,59	3,59	—	—	—	
	1,00	—	—	—	—	—	3,62	3,62	3,62	—	—	—	—
	1,13	—	—	—	—	—	3,62	3,62	3,62	—	—	—	
	1,25	—	—	—	—	—	4,57	4,57	4,57	—	—	—	
	1,50	—	—	—	—	—	4,57	4,57	4,57	—	—	—	
	1,75	—	—	—	—	—	4,57	4,57	4,57	—	—	—	
	2,00	—	—	—	—	—	4,57	4,57	4,57	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	0,63	0,63	0,63	—	—	—	
	0,55	—	—	—	—	—	0,63	0,63	0,63	—	—	—	
	0,63	—	—	—	—	—	0,89	0,89	0,89	—	—	—	
	0,75	—	—	—	—	—	1,01	1,01	1,01	—	—	—	
	0,88	—	—	—	—	—	1,07	1,07	1,07	—	—	—	
	1,00	—	—	—	—	—	1,16	1,16	1,16	—	—	—	—
	1,13	—	—	—	—	—	1,16	1,16	1,16	—	—	—	
	1,25	—	—	—	—	—	1,16	1,16	1,16	—	—	—	
	1,50	—	—	—	—	—	1,16	1,16	1,16	—	—	—	
	1,75	—	—	—	—	—	1,16	1,16	1,16	—	—	—	
	2,00	—	—	—	—	—	1,16	1,16	1,16	—	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

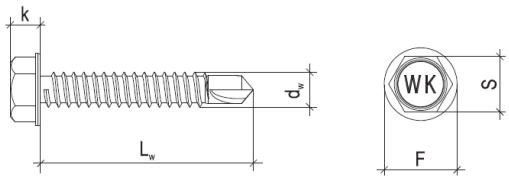
WS-6,3 x L, WSx-6,3 x L and WS-D-6,3 x L
Self-drilling screws with hexagon head

Annex 16
of European Technical Assessment ETA-16/0443

Materials
Fastener: stainless steel – SAE 304 bi-metal
Washer: -
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 7{,}0$ mm

Timber substructures
no performance assessed



d_w = 6,3 mm
L_w = 16-140 mm
s = 10 mm
k = 5,4 mm

$t_{N,II}$ [mm]		1,00	1,25	1,50	2,00	2,50	3,00	4,00	5,00	6,00	Wood class ≥ C24		
$M_{t,nom}$		7 Nm									20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	1,75	1,75	1,75	—	—	—	—
	0,55	—	—	—	—	—	1,75	1,75	1,75	—	—	—	
	0,63	—	—	—	—	—	2,48	2,48	2,48	—	—	—	
	0,75	—	—	—	—	—	3,04	3,04	3,04	—	—	—	
	0,88	—	—	—	—	—	3,59	3,59	3,59	—	—	—	
	1,00	—	—	—	—	—	3,62	3,62	3,62	—	—	—	
	1,13	—	—	—	—	—	3,62	3,62	3,62	—	—	—	
	1,25	—	—	—	—	—	4,57	4,57	4,57	—	—	—	
	1,50	—	—	—	—	—	4,57	4,57	4,57	—	—	—	
	1,75	—	—	—	—	—	4,57	4,57	4,57	—	—	—	
	2,00	—	—	—	—	—	4,57	4,57	4,57	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	0,63	0,63	0,63	—	—	—	—
	0,55	—	—	—	—	—	0,63	0,63	0,63	—	—	—	
	0,63	—	—	—	—	—	0,89	0,89	0,89	—	—	—	
	0,75	—	—	—	—	—	1,01	1,01	1,01	—	—	—	
	0,88	—	—	—	—	—	1,07	1,07	1,07	—	—	—	
	1,00	—	—	—	—	—	1,16	1,16	1,16	—	—	—	
	1,13	—	—	—	—	—	1,16	1,16	1,16	—	—	—	
	1,25	—	—	—	—	—	1,16	1,16	1,16	—	—	—	
	1,50	—	—	—	—	—	1,16	1,16	1,16	—	—	—	
	1,75	—	—	—	—	—	1,16	1,16	1,16	—	—	—	
	2,00	—	—	—	—	—	1,16	1,16	1,16	—	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

A2-WS-6,3 x L
Self-drilling screws with hexagon head

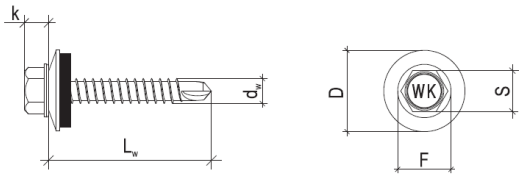
Annex 17
of European Technical Assessment ETA-16/0443

Materials

Fastener:	carbon steel – SAE1022 or 19MnB4 quenched, tempered and galvanized
Washer:	EPDM sealing ring with metal top made of aluminum, coated carbon steel or stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 2{,}0$ mm

Timber substructures
no performance assessed



d_w = 4,2 mm
L_w = 16-75 mm
s = 7 mm
k = 4,5 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,92	0,92	0,92	0,92	0,92	0,92	—	—	—	—	
	0,55	0,92	0,92	0,92	0,92	0,92	0,92	—	—	—	—	
	0,63	0,92	0,92	1,11	1,11	1,11	1,11	—	—	—	—	
	0,75	0,92	0,92	1,11	1,66	1,66	1,66	—	—	—	—	
	0,88	0,92	0,92	1,11	1,66	1,84	1,84	—	—	—	—	
	1,00	0,92	0,92	1,11	1,66	1,84	1,88	—	—	—	—	—
	1,13	—	—	—	—	—	—	—	—	—	—	
	1,25	—	—	—	—	—	—	—	—	—	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,48	0,48	0,57	0,75	0,83	1,06	—	—	—	—	
	0,55	0,48	0,48	0,57	0,75	0,83	1,06	—	—	—	—	
	0,63	0,48	0,48	0,57	0,75	0,83	1,06	—	—	—	—	
	0,75	0,48	0,48	0,57	0,75	0,83	1,06	—	—	—	—	
	0,88	0,48	0,48	0,57	0,75	0,83	1,06	—	—	—	—	
	1,00	0,48	0,48	0,57	0,75	0,83	1,06	—	—	—	—	—
	1,13	—	—	—	—	—	—	—	—	—	—	
	1,25	—	—	—	—	—	—	—	—	—	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

WF-4,2 x L, WFx-4,2 x L and WF-D-4,2 x L
Self-drilling screws with hexagon head and sealing washer Ø14 mm with metal top made of aluminum (A), coated carbon steel (Z) or stainless steel (S)

Annex 18
of European Technical Assessment ETA-16/0443

Materials

Fastener: carbon steel – SAE1022 or 19MnB4
quenched, tempered and galvanized

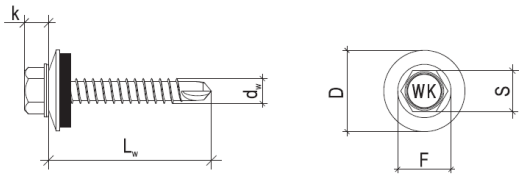
Washer: EPDM sealing ring with metal top
made of aluminum, coated carbon steel or stainless steel

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 3{,}0$ mm

Timber substructures
no performance assessed



d_w = 4,8 mm
L_w = 16-75 mm
s = 8 mm
k = 4,5 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	1,32	1,32	1,32	1,32	1,32	—	—	
	0,55	—	—	—	1,32	1,32	1,32	1,32	1,32	—	—	
	0,63	—	—	—	1,59	1,59	1,59	1,59	1,59	—	—	
	0,75	—	—	—	2,38	2,38	2,38	2,38	2,38	—	—	
	0,88	—	—	—	2,38	3,02	3,02	3,02	3,02	—	—	
	1,00	—	—	—	2,38	3,02	3,03	3,03	3,03	—	—	—
	1,13	—	—	—	2,38	3,02	3,03	3,03	3,03	—	—	
	1,25	—	—	—	2,38	3,02	3,03	3,10	3,10	—	—	
	1,50	—	—	—	2,38	3,02	3,03	3,10	3,15	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	0,78	0,97	1,18	1,69	2,04	—	—	
	0,55	—	—	—	0,78	0,97	1,18	1,69	2,04	—	—	
	0,63	—	—	—	0,78	0,97	1,18	1,69	2,04	—	—	
	0,75	—	—	—	0,78	0,97	1,18	1,69	2,04	—	—	
	0,88	—	—	—	0,78	0,97	1,18	1,69	2,04	—	—	
	1,00	—	—	—	0,78	0,97	1,18	1,69	2,04	—	—	—
	1,13	—	—	—	0,78	0,97	1,18	1,69	2,04	—	—	
	1,25	—	—	—	0,78	0,97	1,18	1,69	2,04	—	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

WF-4,8 x L, WFOC-4,8 x L, WFx-4,8 x L and WF-D-4,8 x L
Self-drilling screws with hexagon head and sealing washer Ø14 mm
with metal top made of aluminum (A), coated carbon steel (Z)
or stainless steel (S)

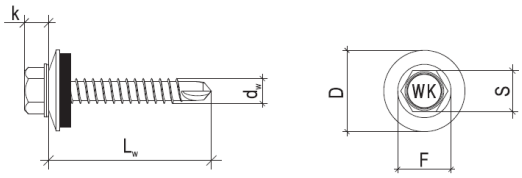
Annex 19

of European Technical Assessment ETA-16/0443

Materials
Fastener: stainless steel – SAE 304 bi-metal
Washer: EPDM sealing ring with metal top made of aluminum or stainless steel
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 3{,}0$ mm

Timber substructures
no performance assessed



d_w = 4,8 mm
L_w = 16-75 mm
s = 8 mm
k = 4,5 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	1,32	1,32	1,32	1,32	1,32	—	—	
	0,55	—	—	—	1,32	1,32	1,32	1,32	1,32	—	—	
	0,63	—	—	—	1,59	1,59	1,59	1,59	1,59	—	—	
	0,75	—	—	—	2,38	2,38	2,38	2,38	2,38	—	—	
	0,88	—	—	—	2,38	3,02	3,02	3,02	3,02	—	—	
	1,00	—	—	—	2,38	3,02	3,03	3,03	3,03	—	—	—
	1,13	—	—	—	2,38	3,02	3,03	3,03	3,03	—	—	
	1,25	—	—	—	2,38	3,02	3,03	3,10	3,10	—	—	
	1,50	—	—	—	2,38	3,02	3,03	3,10	3,15	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	0,78	0,97	1,18	1,69	2,04	—	—	
	0,55	—	—	—	0,78	0,97	1,18	1,69	2,04	—	—	
	0,63	—	—	—	0,78	0,97	1,18	1,69	2,04	—	—	
	0,75	—	—	—	0,78	0,97	1,18	1,69	2,04	—	—	
	0,88	—	—	—	0,78	0,97	1,18	1,69	2,04	—	—	
	1,00	—	—	—	0,78	0,97	1,18	1,69	2,04	—	—	—
	1,13	—	—	—	0,78	0,97	1,18	1,69	2,04	—	—	
	1,25	—	—	—	0,78	0,97	1,18	1,69	2,04	—	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

A2-WF-4,8 x L
Self-drilling screws with hexagon head and sealing washer Ø14 mm with metal top made of aluminum (A) or stainless steel (S)

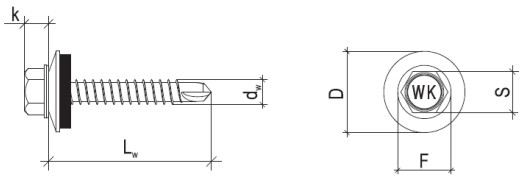
Annex 20
of European Technical Assessment ETA-16/0443

Materials

Fastener:	carbon steel – SAE1022 or 19MnB4 quenched, tempered and galvanized
Washer:	EPDM sealing ring with metal top made of aluminum, coated carbon steel or stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 5{,}0$ mm

Timber substructures
no performance assessed



d_w = 5,5 mm
L_w = 16-140 mm
s = 8 mm
k = 4,9 mm

$t_{N,II}$ [mm]		1,00	1,25	1,50	2,00	2,50	3,00	4,00	5,00	6,00	Wood class ≥ C24		
$M_{t,nom}$		5 Nm									20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,53	1,53	1,53	1,53	1,53	1,53	—	—	—	—	—	
	0,55	1,53	1,53	1,53	1,53	1,53	1,53	—	—	—	—	—	
	0,63	1,88	1,88	1,88	1,88	1,88	1,88	—	—	—	—	—	
	0,75	2,52	2,52	2,52	2,52	2,52	2,52	—	—	—	—	—	
	0,88	2,87	2,87	2,87	2,87	2,87	2,87	—	—	—	—	—	
	1,00	2,90	2,90	2,90	2,90	2,90	2,90	—	—	—	—	—	—
	1,13	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
	1,25	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
	1,50	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
	1,75	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
	2,00	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	
	0,55	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	
	0,63	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	
	0,75	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	
	0,88	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	
	1,00	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	—
	1,13	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	
	1,25	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	
	1,50	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	
	1,75	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	
	2,00	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

WF-5,5 x L, WFOC-5,5 x L, WFx-5,5 x L and WF-D-5,5 x L
Self-drilling screws with hexagon head and sealing washer Ø16 mm with metal top made of aluminum (A), coated carbon steel (Z) or stainless steel (S)

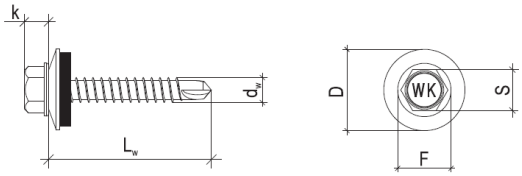
Annex 21
of European Technical Assessment ETA-16/0443

Materials

Fastener:	stainless steel – SAE 304 bi-metal
Washer:	EPDM sealing ring with metal top made of aluminum or stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 5{,}0$ mm

Timber substructures
no performance assessed



d_w = 5,5 mm
L_w = 16-140 mm
s = 8 mm
k = 4,9 mm

$t_{N,II}$ [mm]		1,00	1,25	1,50	2,00	2,50	3,00	4,00	5,00	6,00	Wood class ≥ C24		
$M_{t,nom}$		5 Nm									20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,53	1,53	1,53	1,53	1,53	1,53	—	—	—	—	—	
	0,55	1,53	1,53	1,53	1,53	1,53	1,53	—	—	—	—	—	
	0,63	1,88	1,88	1,88	1,88	1,88	1,88	—	—	—	—	—	
	0,75	2,52	2,52	2,52	2,52	2,52	2,52	—	—	—	—	—	
	0,88	2,87	2,87	2,87	2,87	2,87	2,87	—	—	—	—	—	
	1,00	2,90	2,90	2,90	2,90	2,90	2,90	—	—	—	—	—	—
	1,13	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
	1,25	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
	1,50	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
	1,75	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
	2,00	4,09	4,09	4,09	4,09	4,09	4,09	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	
	0,55	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	
	0,63	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	
	0,75	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	
	0,88	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	
	1,00	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	—
	1,13	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	
	1,25	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	
	1,50	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	
	1,75	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	
	2,00	1,10	1,86	1,97	2,99	2,99	2,99	—	—	—	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

A2-WF-5,5 x L
Self-drilling screws with hexagon head and sealing washer Ø16 mm with metal top made of aluminum (A) or stainless steel (S)

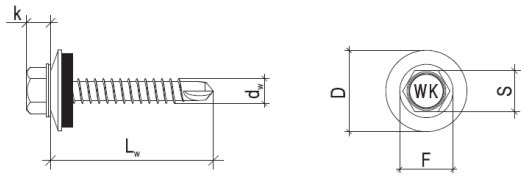
Annex 22
of European Technical Assessment ETA-16/0443

Materials

Fastener:	carbon steel – SAE1022 or 19MnB4 quenched, tempered and galvanized
Washer:	EPDM sealing ring with metal top made of aluminum, coated carbon steel or stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 7{,}0$ mm

Timber substructures
no performance assessed



d_w = 6,3 mm
L_w = 16-140 mm
s = 10 mm
k = 5,4 mm

$t_{N,II}$ [mm]		1,00	1,25	1,50	2,00	2,50	3,00	4,00	5,00	6,00	Wood class ≥ C24		
$M_{t,nom}$		7 Nm									20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	1,75	1,75	1,75	—	—	—	—
	0,55	—	—	—	—	—	1,75	1,75	1,75	—	—	—	
	0,63	—	—	—	—	—	2,48	2,48	2,48	—	—	—	
	0,75	—	—	—	—	—	3,04	3,04	3,04	—	—	—	
	0,88	—	—	—	—	—	3,59	3,59	3,59	—	—	—	
	1,00	—	—	—	—	—	3,62	3,62	3,62	—	—	—	
	1,13	—	—	—	—	—	3,62	3,62	3,62	—	—	—	
	1,25	—	—	—	—	—	4,57	4,57	4,57	—	—	—	
	1,50	—	—	—	—	—	4,57	4,57	4,57	—	—	—	
	1,75	—	—	—	—	—	4,57	4,57	4,57	—	—	—	
	2,00	—	—	—	—	—	4,57	4,57	4,57	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	3,93	3,93	3,93	—	—	—	—
	0,55	—	—	—	—	—	3,93	3,93	3,93	—	—	—	
	0,63	—	—	—	—	—	4,69	4,69	4,69	—	—	—	
	0,75	—	—	—	—	—	6,87	6,87	6,87	—	—	—	
	0,88	—	—	—	—	—	7,23	7,23	7,23	—	—	—	
	1,00	—	—	—	—	—	7,23	7,23	7,23	—	—	—	
	1,13	—	—	—	—	—	7,23	7,23	7,23	—	—	—	
	1,25	—	—	—	—	—	7,23	7,23	7,23	—	—	—	
	1,50	—	—	—	—	—	7,23	7,23	7,23	—	—	—	
	1,75	—	—	—	—	—	7,23	7,23	7,23	—	—	—	
	2,00	—	—	—	—	—	7,23	7,23	7,23	—	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

WF-6,3 x L, WFOC-6,3 x L, WFx-6,3 x L and WF-D-6,3 x L
Self-drilling screws with hexagon head and sealing washer Ø19 mm
with metal top made of aluminum (A), coated carbon steel (Z)
or stainless steel (S)

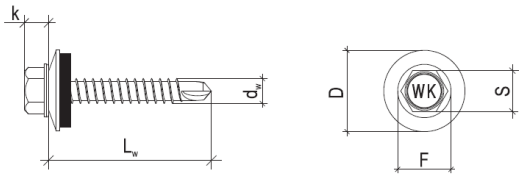
Annex 23
of European Technical Assessment ETA-16/0443

Materials

Fastener:	stainless steel – SAE 304 bi-metal
Washer:	EPDM sealing ring with metal top made of aluminum or stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 7{,}0$ mm

Timber substructures
no performance assessed



d_w = 6,3 mm
L_w = 16-140 mm
s = 10 mm
k = 5,4 mm

$t_{N,II}$ [mm]		1,00	1,25	1,50	2,00	2,50	3,00	4,00	5,00	6,00	Wood class ≥ C24		
$M_{t,nom}$		7 Nm									20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	1,75	1,75	1,75	—	—	—	
	0,55	—	—	—	—	—	1,75	1,75	1,75	—	—	—	
	0,63	—	—	—	—	—	2,48	2,48	2,48	—	—	—	
	0,75	—	—	—	—	—	3,04	3,04	3,04	—	—	—	
	0,88	—	—	—	—	—	3,59	3,59	3,59	—	—	—	
	1,00	—	—	—	—	—	3,62	3,62	3,62	—	—	—	—
	1,13	—	—	—	—	—	3,62	3,62	3,62	—	—	—	
	1,25	—	—	—	—	—	4,57	4,57	4,57	—	—	—	
	1,50	—	—	—	—	—	4,57	4,57	4,57	—	—	—	
	1,75	—	—	—	—	—	4,57	4,57	4,57	—	—	—	
	2,00	—	—	—	—	—	4,57	4,57	4,57	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	3,93	3,93	3,93	—	—	—	
	0,55	—	—	—	—	—	3,93	3,93	3,93	—	—	—	
	0,63	—	—	—	—	—	4,69	4,69	4,69	—	—	—	
	0,75	—	—	—	—	—	6,87	6,87	6,87	—	—	—	
	0,88	—	—	—	—	—	7,23	7,23	7,23	—	—	—	
	1,00	—	—	—	—	—	7,23	7,23	7,23	—	—	—	—
	1,13	—	—	—	—	—	7,23	7,23	7,23	—	—	—	
	1,25	—	—	—	—	—	7,23	7,23	7,23	—	—	—	
	1,50	—	—	—	—	—	7,23	7,23	7,23	—	—	—	
	1,75	—	—	—	—	—	7,23	7,23	7,23	—	—	—	
	2,00	—	—	—	—	—	7,23	7,23	7,23	—	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

A2-WF-6,3 x L
Self-drilling screws with hexagon head and sealing washer Ø19 mm with metal top made of aluminum (A) or stainless steel (S)

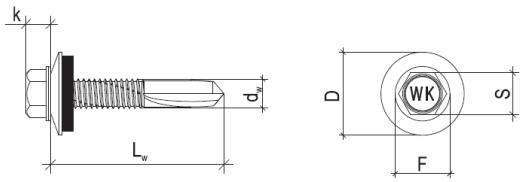
Annex 24
of European Technical Assessment ETA-16/0443

Materials

Fastener:	carbon steel – SAE1022 or 19MnB4 quenched, tempered and galvanized
Washer:	EPDM sealing ring with metal top made of aluminum, coated carbon steel or stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 12{,}0$ mm

Timber substructures
no performance assessed



d_w = 5,5 mm
L_w = 19-90 mm
s = 8 mm
k = 4,9 mm

$t_{N,II}$ [mm]		1,50	2,00	2,50	3,00	4,00	5,00	6,00	8,00	10,00	Wood class ≥ C24		
$M_{t,nom}$		7 Nm									20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	1,53	1,53	1,53	1,53	1,53	—	—	
	0,55	—	—	—	—	1,53	1,53	1,53	1,53	1,53	—	—	
	0,63	—	—	—	—	1,88	1,88	1,88	1,88	1,88	—	—	
	0,75	—	—	—	—	2,50	2,50	2,50	2,50	2,50	—	—	
	0,88	—	—	—	—	2,87	2,87	2,87	2,87	2,87	—	—	
	1,00	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	—
	1,13	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	1,25	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	1,50	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	1,75	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	2,00	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	
	0,55	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	
	0,63	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	
	0,75	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	
	0,88	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	
	1,00	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	—
	1,13	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	
	1,25	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	
	1,50	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	
	1,75	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	
	2,00	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

WSS-5,5 x L, WSSx-5,5 x L, WSS-D-5,5 x L,
WF-5,5/12 x L, WFx-5,5/12 x L and WF-D-5,5/12 x L
Self-drilling screws with hexagon head and sealing washer Ø16 mm
with metal top made of aluminum (A), coated carbon steel (Z)
or stainless steel (S)

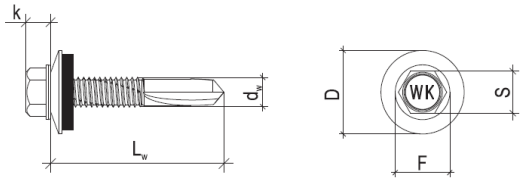
Annex 25
of European Technical Assessment ETA-16/0443

Materials

Fastener:	stainless steel – SAE 304 bi-metal
Washer:	EPDM sealing ring with metal top made of aluminum or stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 12{,}0$ mm

Timber substructures
no performance assessed



d_w = 5,5 mm
L_w = 19-90 mm
s = 8 mm
k = 4,9 mm

$t_{N,II}$ [mm]		1,50	2,00	2,50	3,00	4,00	5,00	6,00	8,00	10,00	Wood class ≥ C24		
$M_{t,nom}$		7 Nm									20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	1,53	1,53	1,53	1,53	1,53	—	—	
	0,55	—	—	—	—	1,53	1,53	1,53	1,53	1,53	—	—	
	0,63	—	—	—	—	1,88	1,88	1,88	1,88	1,88	—	—	
	0,75	—	—	—	—	2,50	2,50	2,50	2,50	2,50	—	—	
	0,88	—	—	—	—	2,87	2,87	2,87	2,87	2,87	—	—	
	1,00	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	—
	1,13	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	1,25	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	1,50	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	1,75	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	2,00	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	
	0,55	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	
	0,63	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	
	0,75	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	
	0,88	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	
	1,00	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	—
	1,13	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	
	1,25	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	
	1,50	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	
	1,75	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	
	2,00	—	—	—	—	3,81	3,81	3,81	3,81	3,81	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

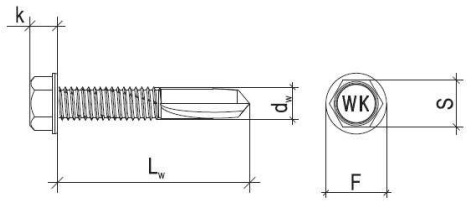
A2-WSS-5,5 x L and A2-WF-5,5/12 x L
Self-drilling screws with hexagon head and sealing washer Ø16 mm with metal top made of aluminum (A) or stainless steel (S)

Annex 26
of European Technical Assessment ETA-16/0443

Materials
Fastener: carbon steel – SAE1022 or 19MnB4
quenched, tempered and galvanized
Washer: -
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 12{,}0$ mm

Timber substructures
no performance assessed



d_w = 5,5 mm
L_w = 19-90 mm
s = 8 mm
k = 4,9 mm

$t_{N,II}$ [mm]		1,50	2,00	2,50	3,00	4,00	5,00	6,00	8,00	10,00	Wood class ≥ C24		
$M_{t,nom}$		7 Nm									20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	1,53	1,53	1,53	1,53	1,53	—	—	
	0,55	—	—	—	—	1,53	1,53	1,53	1,53	1,53	—	—	
	0,63	—	—	—	—	1,88	1,88	1,88	1,88	1,88	—	—	
	0,75	—	—	—	—	2,50	2,50	2,50	2,50	2,50	—	—	
	0,88	—	—	—	—	2,87	2,87	2,87	2,87	2,87	—	—	
	1,00	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	—
	1,13	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	1,25	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	1,50	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	1,75	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	2,00	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	0,63	0,63	0,63	0,63	0,63	—	—	
	0,55	—	—	—	—	0,63	0,63	0,63	0,63	0,63	—	—	
	0,63	—	—	—	—	0,89	0,89	0,89	0,89	0,89	—	—	
	0,75	—	—	—	—	1,01	1,01	1,01	1,01	1,01	—	—	
	0,88	—	—	—	—	1,07	1,07	1,07	1,07	1,07	—	—	
	1,00	—	—	—	—	1,16	1,16	1,16	1,16	1,16	—	—	—
	1,13	—	—	—	—	1,16	1,16	1,16	1,16	1,16	—	—	
	1,25	—	—	—	—	1,16	1,16	1,16	1,16	1,16	—	—	
	1,50	—	—	—	—	1,16	1,16	1,16	1,16	1,16	—	—	
	1,75	—	—	—	—	1,16	1,16	1,16	1,16	1,16	—	—	
	2,00	—	—	—	—	1,16	1,16	1,16	1,16	1,16	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

WSSBP-5,5 x L, WSSBPx-5,5 x L and WSSBP-D-5,5 x L
Self-drilling screws with hexagon head

Annex 27
of European Technical Assessment ETA-16/0443

Materials

Fastener: stainless steel – SAE 304 bi-metal

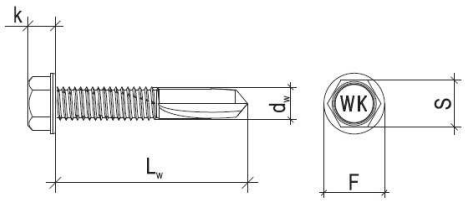
Washer: -

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 12{,}0$ mm

Timber substructures
no performance assessed



d_w = 5,5 mm
L_w = 19-90 mm
s = 8 mm
k = 4,9 mm

$t_{N,II}$ [mm]		1,50	2,00	2,50	3,00	4,00	5,00	6,00	8,00	10,00	Wood class ≥ C24		
$M_{t,nom}$		7 Nm									20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	1,53	1,53	1,53	1,53	1,53	—	—	—
	0,55	—	—	—	—	1,53	1,53	1,53	1,53	1,53	—	—	
	0,63	—	—	—	—	1,88	1,88	1,88	1,88	1,88	—	—	
	0,75	—	—	—	—	2,50	2,50	2,50	2,50	2,50	—	—	
	0,88	—	—	—	—	2,87	2,87	2,87	2,87	2,87	—	—	
	1,00	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	1,13	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	1,25	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	1,50	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	1,75	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
	2,00	—	—	—	—	2,89	2,89	2,89	2,89	2,89	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	0,63	0,63	0,63	0,63	0,63	—	—	—
	0,55	—	—	—	—	0,63	0,63	0,63	0,63	0,63	—	—	
	0,63	—	—	—	—	0,89	0,89	0,89	0,89	0,89	—	—	
	0,75	—	—	—	—	1,01	1,01	1,01	1,01	1,01	—	—	
	0,88	—	—	—	—	1,07	1,07	1,07	1,07	1,07	—	—	
	1,00	—	—	—	—	1,16	1,16	1,16	1,16	1,16	—	—	
	1,13	—	—	—	—	1,16	1,16	1,16	1,16	1,16	—	—	
	1,25	—	—	—	—	1,16	1,16	1,16	1,16	1,16	—	—	
	1,50	—	—	—	—	1,16	1,16	1,16	1,16	1,16	—	—	
	1,75	—	—	—	—	1,16	1,16	1,16	1,16	1,16	—	—	
	2,00	—	—	—	—	1,16	1,16	1,16	1,16	1,16	—	—	

If both components I and II are made of S320GD the values $V_{R,k}$ may be increased by 8,3%
If both components I and II are made of S350GD the values $V_{R,k}$ may be increased by 16,6%

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

A2-WSSBP-5,5 x L
Self-drilling screws with hexagon head

Annex 28
of European Technical Assessment ETA-16/0443

Materials
Fastener: carbon steel – SAE1022 or 19MnB4
quenched, tempered and galvanized

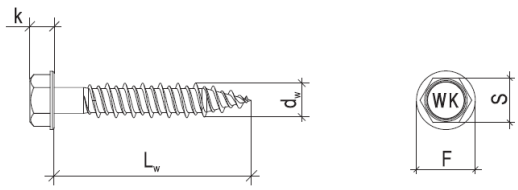
Washer: -

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: structural timber – EN 14081

Drilling capacity: -

Timber substructures
For timber substructures performance assessed with:
$M_{y,Rk}$ = 8,91 Nm
$f_{ax,k}$ = 16,586 N/mm^2 for $l_{ef} \geq 30$ mm



d_w = 6,3 mm
L_w = 19-90 mm
s = 10 mm
k = 5,3 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	1,35*	*bearing resistance of component I
	0,55	—	—	—	—	—	—	—	—	—	1,35*	
	0,63	—	—	—	—	—	—	—	—	—	1,70*	
	0,75	—	—	—	—	—	—	—	—	—	2,10*	
	0,88	—	—	—	—	—	—	—	—	—	2,10*	
	1,00	—	—	—	—	—	—	—	—	—	2,10*	
	1,13	—	—	—	—	—	—	—	—	—	2,10*	
	1,25	—	—	—	—	—	—	—	—	—	2,10*	
	1,50	—	—	—	—	—	—	—	—	—	2,10*	
	1,75	—	—	—	—	—	—	—	—	—	2,10*	
	2,00	—	—	—	—	—	—	—	—	—	2,10*	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	3,13*	*bearing resistance of component II
	0,55	—	—	—	—	—	—	—	—	—	3,13*	
	0,63	—	—	—	—	—	—	—	—	—	3,13*	
	0,75	—	—	—	—	—	—	—	—	—	3,13*	
	0,88	—	—	—	—	—	—	—	—	—	3,13*	
	1,00	—	—	—	—	—	—	—	—	—	3,13*	
	1,13	—	—	—	—	—	—	—	—	—	3,13*	
	1,25	—	—	—	—	—	—	—	—	—	3,13*	
	1,50	—	—	—	—	—	—	—	—	—	3,13*	
	1,75	—	—	—	—	—	—	—	—	—	3,13*	
	2,00	—	—	—	—	—	—	—	—	—	3,13*	

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

WB6-6,3 x L, WB6x-6,3 x L and WB6-D-6,3 x L
Self-tapping screws with hexagon head

Annex 29
of European Technical Assessment ETA-16/0443

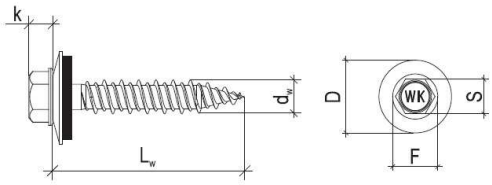
Materials

Fastener:	carbon steel – SAE1022 or 19MnB4 quenched, tempered and galvanized
Washer:	EPDM sealing ring with metal top made of aluminum, coated carbon steel or stainless steel
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	structural timber – EN 14081

Drilling capacity: -

Timber substructures

For timber substructures performance assessed with:
$M_{y,Rk}$ = 8,91 Nm
$f_{ax,k}$ = 16,586 N/mm^2 for $l_{ef} \geq 30$ mm



d_w = 6,3 mm
L_w = 19-90 mm
s = 10 mm
k = 5,3 mm

$t_{N,II}$ [mm]	0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$	3 Nm								20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm] 0,50	—	—	—	—	—	—	—	—	—	1,35*	*bearing resistance of component I
0,55	—	—	—	—	—	—	—	—	—	1,35*	
0,63	—	—	—	—	—	—	—	—	—	1,70*	
0,75	—	—	—	—	—	—	—	—	—	2,10*	
0,88	—	—	—	—	—	—	—	—	—	2,10*	
1,00	—	—	—	—	—	—	—	—	—	2,10*	
1,13	—	—	—	—	—	—	—	—	—	2,10*	
1,25	—	—	—	—	—	—	—	—	—	2,10*	
1,50	—	—	—	—	—	—	—	—	—	2,10*	
1,75	—	—	—	—	—	—	—	—	—	2,10*	
2,00	—	—	—	—	—	—	—	—	—	2,10*	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm] 0,50	—	—	—	—	—	—	—	—	—	3,13*	*bearing resistance of component II
0,55	—	—	—	—	—	—	—	—	—	3,13*	
0,63	—	—	—	—	—	—	—	—	—	3,13*	
0,75	—	—	—	—	—	—	—	—	—	3,13*	
0,88	—	—	—	—	—	—	—	—	—	3,13*	
1,00	—	—	—	—	—	—	—	—	—	3,13*	
1,13	—	—	—	—	—	—	—	—	—	3,13*	
1,25	—	—	—	—	—	—	—	—	—	3,13*	
1,50	—	—	—	—	—	—	—	—	—	3,13*	
1,75	—	—	—	—	—	—	—	—	—	3,13*	
2,00	—	—	—	—	—	—	—	—	—	3,13*	

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

WB6P-6,3 x L, WB6Px-6,3 x L and WB6P-D-6,3 x L,
Self-tapping screws with hexagon head and sealing washer Ø19 mm
with metal top made of aluminum (A), coated carbon steel (Z)
or stainless steel (S)

Annex 30

of European Technical Assessment ETA-16/0443

Materials

Fastener: stainless steel – SAE 304 bi-metal Washer: -

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: structural timber – EN 14081

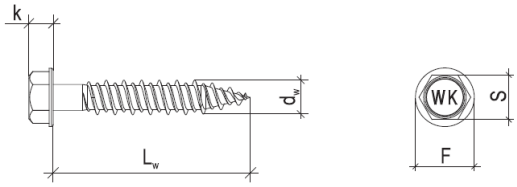
Drilling capacity: -

Timber substructures

For timber substructures performance assessed with:

$M_{y,Rk}$ = 6,83 Nm

$f_{ax,k}$ = 16,586 N/mm^2 for $l_{ef} \geq 30$ mm



d_w = 6,3 mm
L_w = 19-90 mm
s = 10 mm
k = 5,3 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	1,35*	*bearing resistance of component I
	0,55	—	—	—	—	—	—	—	—	—	1,35*	
	0,63	—	—	—	—	—	—	—	—	—	1,70*	
	0,75	—	—	—	—	—	—	—	—	—	2,10*	
	0,88	—	—	—	—	—	—	—	—	—	2,10*	
	1,00	—	—	—	—	—	—	—	—	—	2,10*	
	1,13	—	—	—	—	—	—	—	—	—	2,10*	
	1,25	—	—	—	—	—	—	—	—	—	2,10*	
	1,50	—	—	—	—	—	—	—	—	—	2,10*	
	1,75	—	—	—	—	—	—	—	—	—	2,10*	
	2,00	—	—	—	—	—	—	—	—	—	2,10*	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	—	—	—	—	—	—	—	—	—	3,13*	*bearing resistance of component II
	0,55	—	—	—	—	—	—	—	—	—	3,13*	
	0,63	—	—	—	—	—	—	—	—	—	3,13*	
	0,75	—	—	—	—	—	—	—	—	—	3,13*	
	0,88	—	—	—	—	—	—	—	—	—	3,13*	
	1,00	—	—	—	—	—	—	—	—	—	3,13*	
	1,13	—	—	—	—	—	—	—	—	—	3,13*	
	1,25	—	—	—	—	—	—	—	—	—	3,13*	
	1,50	—	—	—	—	—	—	—	—	—	3,13*	
	1,75	—	—	—	—	—	—	—	—	—	3,13*	
	2,00	—	—	—	—	—	—	—	—	—	3,13*	

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

A2-WB6-6,3 x L
Self-tapping screws with hexagon head

Annex 31

of European Technical Assessment ETA-16/0443

Materials

Fastener: stainless steel – SAE 304 bi-metal

Washer: EPDM sealing ring with metal top made of aluminum or stainless steel

Component I: S280GD, S320GD or S350GD – EN 10346

Component II: structural timber – EN 14081

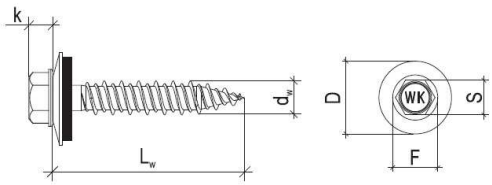
Drilling capacity: -

Timber substructures

For timber substructures performance assessed with:

$M_{y,Rk}$ = 6,83 Nm

$f_{ax,k}$ = 16,586 N/mm^2 for $l_{ef} \geq 30$ mm



d_w = 6,3 mm
L_w = 19-90 mm
s = 10 mm
k = 5,3 mm

$t_{N,II}$ [mm]	0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood class ≥ C24		
$M_{t,nom}$	3 Nm								20 mm	30 mm	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm] 0,50	—	—	—	—	—	—	—	—	—	1,35*	*bearing resistance of component I
0,55	—	—	—	—	—	—	—	—	—	1,35*	
0,63	—	—	—	—	—	—	—	—	—	1,70*	
0,75	—	—	—	—	—	—	—	—	—	2,10*	
0,88	—	—	—	—	—	—	—	—	—	2,10*	
1,00	—	—	—	—	—	—	—	—	—	2,10*	
1,13	—	—	—	—	—	—	—	—	—	2,10*	
1,25	—	—	—	—	—	—	—	—	—	2,10*	
1,50	—	—	—	—	—	—	—	—	—	2,10*	
1,75	—	—	—	—	—	—	—	—	—	2,10*	
2,00	—	—	—	—	—	—	—	—	—	2,10*	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm] 0,50	—	—	—	—	—	—	—	—	—	3,13*	*bearing resistance of component II
0,55	—	—	—	—	—	—	—	—	—	3,13*	
0,63	—	—	—	—	—	—	—	—	—	3,13*	
0,75	—	—	—	—	—	—	—	—	—	3,13*	
0,88	—	—	—	—	—	—	—	—	—	3,13*	
1,00	—	—	—	—	—	—	—	—	—	3,13*	
1,13	—	—	—	—	—	—	—	—	—	3,13*	
1,25	—	—	—	—	—	—	—	—	—	3,13*	
1,50	—	—	—	—	—	—	—	—	—	3,13*	
1,75	—	—	—	—	—	—	—	—	—	3,13*	
2,00	—	—	—	—	—	—	—	—	—	3,13*	

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P
Fastening screws for metal members and sheeting

Annex 32

of European Technical Assessment ETA-16/0443

A2-WB6P-6,3 x L
Self-tapping screws with hexagon head and sealing washer Ø19 mm with metal top made of aluminum (A) or stainless steel (S)

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 supporting substructure.

For Metal 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 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, Table 3.1, and divided by the recommended partial safety factor γ_M = 1,33. If failure of the metal component with the thickness t_l 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 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 Substructures the following applies:

The design values of the pull-out resistance are the characteristic values of the pull-out resistance multiplied by kmod according to EN 1995-1-1, 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 NR,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.

WFD, WFDOC, WFDx, WFD-D, A2-WFD, WDD, WDDx, WDD-D, WSB, WSBx, WSB-D, A2-WSB, WSBP, WSPBx, WSPB-D, A2-WSBP, WS, WSx, WS-D, A2-WS, WF, WFOC, WFx, WF-D, A2-WF, WSS, WSSx, WSS-D, A2-WSS, WSSBP, WSSBPx, WSSBP-D, A2-WSSBP, WB6, WB6x, WB6-D, A2-WB6, WB6P, WB6Px, WB6P-D, A2-WB6P **Fastening screws for metal members and sheeting**	**Annex 33** of European Technical Assessment ETA-16/0443
Determination of Design Values	