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European Technical Assessment

ETA-13/0817 of 29/06/2018

General part

Technical Assessment Body issuing the European Technical Assessment	Instytut Techniki Budowlanej
Trade name of the construction product	WKS, WKF, WKFT
Product family to which the construction product belongs	Fastening screws for metal members and sheeting
Manufacturer	P.H. HAMAR Sp. J. B. i H. Grzesiak ul. Hutnicza 7 81-061 Gdynia Poland
Manufacturing plant(s)	P.H. HAMAR Sp. J. B. i H. Grzesiak ul. Hutnicza 7 81-061 Gdynia Poland Manufacturing Plant No 2 Manufacturing Plant No 3 Manufacturing Plant No 4 Manufacturing Plant No 5 Manufacturing Plant No 6 Manufacturing Plant No 7
This European Technical Assessment contains	54 pages including 49 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) 330046-01-0602 “Fastening screws for metal members and sheeting”
This version replaces	ETA-13/0817 issued on 26/06/2013 ETA-13/0087 issued on 13/03/2013

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Specific Part

1. Technical description of the product

The fastening screws WKS, WKF and WKFT are listed in Table 1. The fastening screws are partly completed with a metallic washers and an EPDM sealing rings. For details see the Annexes 1 to 48.

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

Table 1

No.	Screw	Material	Annex
1	WKS (H) 3,5 × L	galvanized carbon steel	1
2	WKS (H) PROTECT 3,5 × L	galvanized carbon steel with PROTECT coating	1
3	WKS (H) 4,2 × L	galvanized carbon steel	2
4	WKS (H) PROTECT 4,2 × L	galvanized carbon steel with PROTECT coating	2
5	WKS (H) 4,8 × L	galvanized carbon steel	3, 4
6	WKS (H) PROTECT 4,8 × L	galvanized carbon steel with PROTECT coating	3, 4
7	WKS (H) 5,5-6 × L	galvanized carbon steel	5, 6
8	WKS (H) PROTECT 5,5-6 × L	galvanized carbon steel with PROTECT coating	5, 6
9	WKS (H) PROTECT SH6 5,5-6 × L	galvanized carbon steel with PROTECT coating	7
10	WKS (H) 6,3 × L	galvanized carbon steel	8, 9
11	WKS (H) PROTECT 6,3 × L	galvanized carbon steel with PROTECT coating	8, 9
12	WKS (H) 5,5-8 × L	galvanized carbon steel	10, 11
13	WKS (H) PROTECT 5,5-8 × L	galvanized carbon steel with PROTECT coating	10, 11
14	WKS (H) 5,5-12 × L	galvanized carbon steel	12, 13
15	WKS (H) PROTECT 5,5-12 × L	galvanized carbon steel with PROTECT coating	12, 13
16	WKS (H) SH12 5,5-6 × L	galvanized carbon steel	14
17	WKS (H) PROTECT SH12 5,5-6 × L	galvanized carbon steel with PROTECT coating	14
18	WKS (H) 5,5-15 × L	galvanized carbon steel	15, 16
19	WKS (H) PROTECT 5,5-15 × L	galvanized carbon steel with PROTECT coating	15, 16
20	WKS (HS4) 4,2 × L	stainless steel	17
21	WKS (HS4) 4,8 × L	stainless steel	18, 19
22	WKS (HS4) 5,5 × L	stainless steel	20, 21
23	WKS (HS2) 5,5-6 × L	stainless steel	22, 23
24	WKS (HS2) 5,5-12 × L	stainless steel	24, 25
25	WKS (HS2) 5,5-12 × L	stainless steel	25
26	WKS TB (H) 6,3 × L	galvanized carbon steel	26
27	WKS TB (H) PROTECT 6,3 × L	galvanized carbon steel with PROTECT coating	26
28	WKS TB (HS3) 6,3 × L	stainless steel	27
29	WKF (H) 4,8 × L	galvanized carbon steel	28, 29

Table 1, cont.

No.	Screw	Material	Annex
30	WKF (H-GW) 4,8 × L	galvanized carbon steel	30, 31
31	WKF (H) 6,3 × L	galvanized carbon steel	32
32	WKF (H) PROTECT 6,3 × L	galvanized carbon steel with PROTECT coating	32
33	WKF (HS3H-GW) 6,3 × L	stainless steel	33
34	WKF (HS3H) 6,3 × L	stainless steel	34
35	WKF (H-GW) 6,3 × L	galvanized carbon steel	35
36	WKF (H-GW) PROTECT 6,3 × L	galvanized carbon steel with PROTECT coating	35
37	WKF (H) 6,5 × L	galvanized carbon steel	36, 37
38	WKF (H-GW) 6,5 × L	galvanized carbon steel	38
39	WKF (HS3H) 4,8 × L	stainless steel	39
40	WKF (HS3H-GW) 4,8 × L	stainless steel	40, 41
41	WKF (HS4) 4,8 × L	stainless steel	42
42	WKF (HS4-GW) 4,8 × L	stainless steel	43, 44
43	WKFT (H) 4,8 × L	galvanized carbon steel	45, 46
44	WKFT (HS2) 4,8 × L	stainless steel (bi-metal)	47, 48

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 48. 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 its 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 are given in Annex 1 to 48.

The design values shall be determined according to Annex 49 and EAD 330046-01-0602.

For the corrosion protection of the fastening screws the rules given in EN 1993-1-3, EN 1993-1-4 and EN 1999-1-4 shall be taken into account. 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.

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.

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

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

3.2. Methods used for the assessment

The assessment of 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 29/06/2018 by Instytut Techniki Budowlanej

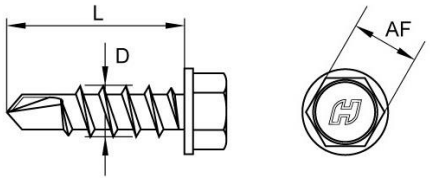
Anna Panek, MSc
Deputy Director of ITB

Materials
Fastener: carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 6 µm), with or without additional coating PROTECT
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: Σti ≤ 2,25 mm

Timber substructures

No performance assessed



L = 11 - 19 mm
D = 3,5 mm
AF = 5,5 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood
$M_{t,nom}$		1,5 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,61	0,61	0,61	0,61	0,61	0,61	0,61	—	
	0,55	0,61	0,61	0,61	0,61	0,61	0,61	0,61	—	
	0,63	0,61	0,61	0,78	0,78	0,78	0,78	0,78	—	
	0,75	0,61	0,61	0,78	1,09	1,09	1,09	1,09	—	
	0,88	0,61	0,61	0,78	1,09	1,33	1,33	1,33	—	
	1,00	0,61	0,61	0,78	1,09	1,33	1,50	1,50	—	
	1,13	—	—	—	—	—	—	—	—	
	1,25	—	—	—	—	—	—	—	—	
	1,50	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,28	0,28	0,28	0,28	0,28	0,28	0,28	—	
	0,55	0,28	0,28	0,28	0,28	0,28	0,28	0,28	—	
	0,63	0,28	0,28	0,42	0,42	0,42	0,42	0,42	—	
	0,75	0,28	0,28	0,42	0,44	0,44	0,44	0,44	—	
	0,88	0,28	0,28	0,42	0,44	0,45	0,45	0,4	—	
	1,00	0,28	0,28	0,42	0,44	0,45	0,52	0,52	—	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (H) 3,5 x L and WKS (H) PROTECT 3,5 x L
with hexagon head

Annex 1

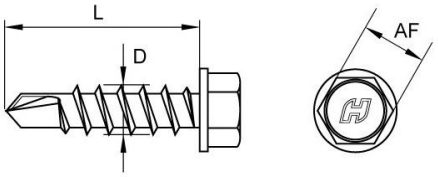
of European Technical Assessment ETA-13/0817

Materials
Fastener: carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 6 µm), with or without additional coating PROTECT
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: Σti ≤ 2,25 mm

Timber substructures

No performance assessed



L = 11 - 32 mm
D = 4,2 mm
AF = 7,0 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood
$M_{t,nom}$		2 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,75	0,75	0,75	0,75	0,75	0,75	0,75	—	
	0,55	0,75	0,75	0,75	0,75	0,75	0,75	0,75	—	
	0,63	0,75	0,75	0,95	0,95	0,95	0,95	0,95	—	
	0,75	0,75	0,75	0,95	1,33	1,33	1,33	1,33	—	
	0,88	0,75	0,75	0,95	1,33	1,62	1,62	1,62	—	
	1,00	0,75	0,75	0,95	1,33	1,62	1,83	1,83	—	
	1,13	—	—	—	—	—	—	—	—	
	1,25	—	—	—	—	—	—	—	—	
	1,50	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,35	0,35	0,35	0,35	0,35	0,35	0,35	—	
	0,55	0,35	0,35	0,35	0,35	0,35	0,35	0,35	—	
	0,63	0,35	0,35	0,52	0,52	0,52	0,52	0,52	—	
	0,75	0,35	0,35	0,52	0,55	0,55	0,55	0,55	—	
	0,88	0,35	0,35	0,52	0,55	0,55	0,55	0,55	—	
	1,00	0,35	0,35	0,52	0,55	0,55	0,64	0,64	—	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (H) 4,2 x L and WKS (H) PROTECT 4,2 x L
with hexagon head

Annex 2

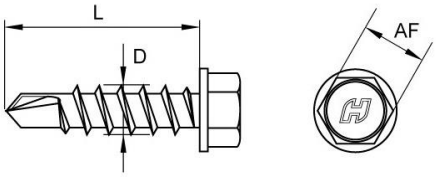
of European Technical Assessment ETA-13/0817

Materials
Fastener: carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 12 µm), with or without additional coating PROTECT
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: Σti ≤ 4,50 mm

Timber substructures

No performance assessed



L = 13 - 38 mm
D = 4,8 mm
AF = 8,0 mm

$t_{N,II}$ [mm]		1,50	2,00	3,00	4,00	5,00	6,00	8,00	10,00	Wood
$M_{t,nom}$		3 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,07	1,07	1,07	—	—	—	—	—	
	0,55	1,07	1,07	1,07	—	—	—	—	—	
	0,63	1,36	1,36	1,36	—	—	—	—	—	
	0,75	1,90	1,90	1,90	—	—	—	—	—	
	0,88	2,32	2,32	2,32	—	—	—	—	—	
	1,00	2,62	2,62	2,62	—	—	—	—	—	
	1,13	2,62	2,62	2,62	—	—	—	—	—	
	1,25	2,67	2,67	2,67	—	—	—	—	—	
	1,50	2,67	2,67	2,67	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,51	0,51	0,51	—	—	—	—	—	
	0,55	0,51	0,51	0,51	—	—	—	—	—	
	0,63	0,76	0,76	0,76	—	—	—	—	—	
	0,75	0,81	0,81	0,81	—	—	—	—	—	
	0,88	0,82	0,82	0,82	—	—	—	—	—	
	1,00	0,94	0,94	0,94	—	—	—	—	—	
	1,13	0,94	0,94	0,94	—	—	—	—	—	
	1,25	0,94	0,94	0,94	—	—	—	—	—	
	1,50	0,94	0,94	0,94	—	—	—	—	—	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (H) 4,8 x L and WKS (H) PROTECT 4,8 x L
with hexagon head

Annex 3

of European Technical Assessment ETA-13/0817

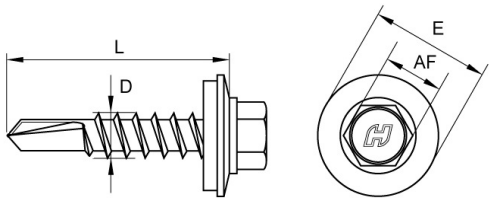
Materials

Fastener:	carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 12 µm), with or without additional coating PROTECT
Washer:	metallic washer made of zinc-coated carbon steel or stainless steel with EPDM sealing ring
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346

Drilling capacity: Σti ≤ 4,50 mm

Timber substructures

No performance assessed



L = 13 - 38 mm
D = 4,8 mm
AF = 8,0 mm
E ≥ 14 mm

	$t_{N,II}$ [mm]	1,50	2,00	3,00	4,00	5,00	6,00	8,00	10,00	Wood
	$M_{t,nom}$	3 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,07	1,07	1,07	—	—	—	—	—	
	0,55	1,07	1,07	1,07	—	—	—	—	—	
	0,63	1,36	1,36	1,36	—	—	—	—	—	
	0,75	1,90	1,90	1,90	—	—	—	—	—	
	0,88	2,32	2,32	2,32	—	—	—	—	—	
	1,00	2,62	2,62	2,62	—	—	—	—	—	
	1,13	2,62	2,62	2,62	—	—	—	—	—	
	1,25	2,67	2,67	2,67	—	—	—	—	—	
	1,50	2,67	2,67	2,67	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,76	2,19	2,19	—	—	—	—	—	
	0,55	1,76	2,70	2,19	—	—	—	—	—	
	0,63	1,76	2,70	2,96	—	—	—	—	—	
	0,75	1,76	2,70	3,45	—	—	—	—	—	
	0,88	1,76	2,70	3,57	—	—	—	—	—	
	1,00	1,76	2,70	4,08	—	—	—	—	—	
	1,13	1,76	2,70	4,08	—	—	—	—	—	
	1,25	1,76	2,70	4,08	—	—	—	—	—	
	1,50	1,76	2,70	4,08	—	—	—	—	—	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (H) 4,8 x L and WKS (H) PROTECT 4,8 x L
with hexagon head and sealing washer ≥ ø14

Annex 4

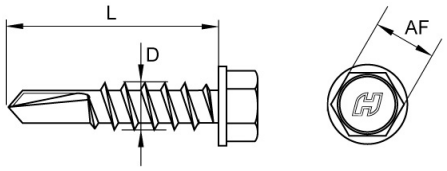
of European Technical Assessment ETA-13/0817

Materials
Fastener: carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 12 µm), with or without additional coating PROTECT
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: Σti ≤ 6,00 mm

Timber substructures

No performance assessed



L = 19 - 75 mm
D = 5,5 mm
AF = 8,0 mm

$t_{N,II}$ [mm]		2,00	3,00	4,00	5,00	6,00	8,00	10,00	12,00	Wood
$M_{t,nom}$		5 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,26	1,26	1,26	1,26	—	—	—	—	
	0,55	1,26	1,26	1,26	1,26	—	—	—	—	
	0,63	1,63	1,63	1,63	1,63	—	—	—	—	
	0,75	2,04	2,04	2,04	2,04	—	—	—	—	
	0,88	2,21	2,21	2,21	2,21	—	—	—	—	
	1,00	2,41	2,41	2,41	2,41	—	—	—	—	
	1,13	2,41	2,41	2,41	—	—	—	—	—	
	1,25	3,59	3,59	3,59	—	—	—	—	—	
	1,50	3,59	3,59	3,59	—	—	—	—	—	
	1,75	3,59	3,59	3,59	—	—	—	—	—	
	2,00	3,59	3,59	3,59	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,51	0,51	0,51	0,51	—	—	—	—	
	0,55	0,51	0,51	0,51	0,51	—	—	—	—	
	0,63	0,76	0,76	0,76	0,76	—	—	—	—	
	0,75	0,81	0,81	0,81	0,81	—	—	—	—	
	0,88	0,82	0,82	0,82	0,82	—	—	—	—	
	1,00	0,94	0,94	0,94	0,94	—	—	—	—	
	1,13	0,94	0,94	0,94	—	—	—	—	—	
	1,25	0,94	0,94	0,94	—	—	—	—	—	
	1,50	0,94	0,94	0,94	—	—	—	—	—	
	1,75	0,94	0,94	0,94	—	—	—	—	—	
	2,00	0,94	0,94	0,94	—	—	—	—	—	

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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (H) 5,5-6 x L and WKS (H) PROTECT 5,5-6 x L
with hexagon head

Annex 5

of European Technical Assessment ETA-13/0817

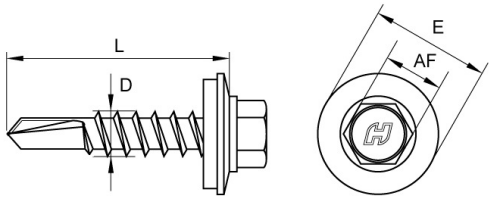
Materials

Fastener:	carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 12 µm), with or without additional coating PROTECT
Washer:	metallic washer made of zinc-coated carbon steel or stainless steel with EPDM sealing ring
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346

Drilling capacity: Σti ≤ 6,00 mm

Timber substructures

No performance assessed



L = 19 - 75 mm
D = 5,5 mm
AF = 8,0 mm
E ≥ 14 mm

$t_{N,II}$ [mm]		2,00	3,00	4,00	5,00	6,00	8,00	10,00	12,00	Wood
$M_{t,nom}$		5 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,26	1,26	1,26	1,26	—	—	—	—	
	0,55	1,26	1,26	1,26	1,26	—	—	—	—	
	0,63	1,63	1,63	1,63	1,63	—	—	—	—	
	0,75	2,04	2,04	2,04	2,04	—	—	—	—	
	0,88	2,21	2,21	2,21	2,21	—	—	—	—	
	1,00	2,41	2,41	2,41	2,41	—	—	—	—	
	1,13	2,41	2,41	2,41	—	—	—	—	—	
	1,25	3,59	3,59	3,59	—	—	—	—	—	
	1,50	3,59	3,59	3,59	—	—	—	—	—	
	1,75	3,59	3,59	3,59	—	—	—	—	—	
	2,00	3,59	3,59	3,59	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	2,63	2,63	2,63	2,63	—	—	—	—	
	0,55	2,63	2,63	2,63	2,63	—	—	—	—	
	0,63	3,60	3,60	3,60	3,60	—	—	—	—	
	0,75	4,14	4,14	4,14	4,14	—	—	—	—	
	0,88	4,17	4,17	4,17	4,17	—	—	—	—	
	1,00	4,71	4,71	4,71	4,71	—	—	—	—	
	1,13	4,71	4,71	4,71	—	—	—	—	—	
	1,25	4,71	4,71	4,71	—	—	—	—	—	
	1,50	4,71	4,71	4,71	—	—	—	—	—	
	1,75	4,71	4,71	4,71	—	—	—	—	—	
	2,00	4,71	4,71	4,71	—	—	—	—	—	

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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (H) 5,5-6 x L and WKS (H) PROTECT 5,5-6 x L
with hexagon head and sealing washer ≥ ø14

Annex 6

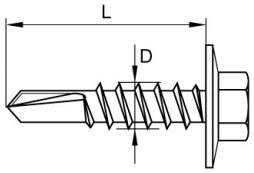
of European Technical Assessment ETA-13/0817

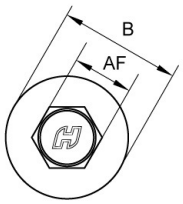
Materials
Fastener: carbon steel – SAE 1022, quenched, tempered and galvanized, with additional coating PROTECT
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: Σti ≤ 6,00 mm

Timber substructures

No performance assessed





L = 19 - 75 mm
D = 5,5 mm
AF = 8,0 mm
B = 14 mm

$t_{N,II}$ [mm]		2,00	3,00	4,00	5,00	6,00	8,00	10,00	12,00	Wood
$M_{t,nom}$		5 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,26	1,26	1,26	1,26	—	—	—	—	
	0,55	1,26	1,26	1,26	1,26	—	—	—	—	
	0,63	1,63	1,63	1,63	1,63	—	—	—	—	
	0,75	2,04	2,04	2,04	2,04	—	—	—	—	
	0,88	2,21	2,21	2,21	2,21	—	—	—	—	
	1,00	2,41	2,41	2,41	2,41	—	—	—	—	
	1,13	2,41	2,41	2,41	—	—	—	—	—	
	1,25	3,59	3,59	3,59	—	—	—	—	—	
	1,50	3,59	3,59	3,59	—	—	—	—	—	
	1,75	3,59	3,59	3,59	—	—	—	—	—	
	2,00	3,59	3,59	3,59	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	2,63	2,63	2,63	2,63	—	—	—	—	
	0,55	2,63	2,63	2,63	2,63	—	—	—	—	
	0,63	3,60	3,60	3,60	3,60	—	—	—	—	
	0,75	4,14	4,14	4,14	4,14	—	—	—	—	
	0,88	4,17	4,17	4,17	4,17	—	—	—	—	
	1,00	4,71	4,71	4,71	4,71	—	—	—	—	
	1,13	4,71	4,71	4,71	—	—	—	—	—	
	1,25	4,71	4,71	4,71	—	—	—	—	—	
	1,50	4,71	4,71	4,71	—	—	—	—	—	
	1,75	4,71	4,71	4,71	—	—	—	—	—	
	2,00	4,71	4,71	4,71	—	—	—	—	—	

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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (H) PROTECT SH6 5,5-6 x L
with hexagon head

Annex 7

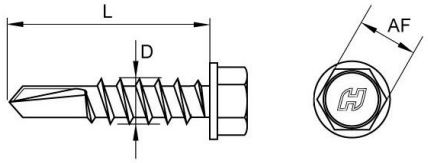
of European Technical Assessment ETA-13/0817

Materials
Fastener: carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 12 µm), with or without additional coating PROTECT
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: Σti ≤ 6,00 mm

Timber substructures

No performance assessed



L = 19 - 75 mm
D = 6,3 mm
AF = 10,0 mm

$t_{N,II}$ [mm]		2,00	3,00	4,00	5,00	6,00	8,00	10,00	12,00	Wood
$M_{t,nom}$		6 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,39	1,39	1,39	1,39	—	—	—	—	
	0,55	1,39	1,39	1,39	1,39	—	—	—	—	
	0,63	2,16	2,16	2,16	2,16	—	—	—	—	
	0,75	2,43	2,43	2,43	2,43	—	—	—	—	
	0,88	2,70	2,70	2,70	2,70	—	—	—	—	
	1,00	3,06	3,06	3,06	3,06	—	—	—	—	
	1,13	3,06	3,06	3,06	—	—	—	—	—	
	1,25	3,96	3,96	3,96	—	—	—	—	—	
	1,50	3,96	3,96	3,96	—	—	—	—	—	
	1,75	3,96	3,96	3,96	—	—	—	—	—	
	2,00	3,96	3,96	3,96	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,74	0,74	0,74	0,74	—	—	—	—	
	0,55	0,74	0,74	0,74	0,74	—	—	—	—	
	0,63	0,94	0,94	0,94	0,94	—	—	—	—	
	0,75	0,96	0,96	0,96	0,96	—	—	—	—	
	0,88	0,82	0,82	0,82	0,82	—	—	—	—	
	1,00	0,99	0,99	0,99	0,74	—	—	—	—	
	1,13	1,09	1,09	1,09	—	—	—	—	—	
	1,25	1,09	1,09	1,09	—	—	—	—	—	
	1,50	1,09	1,09	1,09	—	—	—	—	—	
	1,75	1,09	1,09	1,09	—	—	—	—	—	
	2,00	1,09	1,09	1,09	—	—	—	—	—	

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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

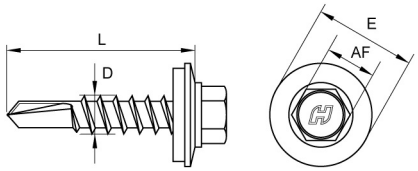
WKS (H) 6,3 x L and WKS (H) PROTECT 6,3 x L
with hexagon head

Annex 8

of European Technical Assessment ETA-13/0817

Materials

Fastener:	carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 12 µm), with or without additional coating PROTECT
Washer:	metallic washer made of zinc-coated carbon steel or stainless steel with EPDM sealing ring
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346



L = 19 - 75 mm
D = 6,3 mm
AF = 10,0 mm
E ≥ 16 mm

Drilling capacity: Σti ≤ 6,00 mm

Timber substructures

No performance assessed

$t_{N,II}$ [mm]		2,00	3,00	4,00	5,00	6,00	8,00	10,00	12,00	Wood
$M_{t,nom}$		6 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,39	1,39	1,39	1,39	—	—	—	—	
	0,55	1,39	1,39	1,39	1,39	—	—	—	—	
	0,63	2,16	2,16	2,16	2,16	—	—	—	—	
	0,75	2,43	2,43	2,43	2,43	—	—	—	—	
	0,88	2,70	2,70	2,70	2,70	—	—	—	—	
	1,00	3,06	3,06	3,06	3,06	—	—	—	—	
	1,13	3,06	3,06	3,06	—	—	—	—	—	
	1,25	3,96	3,96	3,96	—	—	—	—	—	
	1,50	3,96	3,96	3,96	—	—	—	—	—	
	1,75	3,96	3,96	3,96	—	—	—	—	—	
	2,00	3,96	3,96	3,96	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	3,15	3,15	3,15	3,15	—	—	—	—	
	0,55	3,15	3,15	3,15	3,15	—	—	—	—	
	0,63	3,64	3,64	3,64	3,64	—	—	—	—	
	0,75	4,18	4,18	4,18	4,18	—	—	—	—	
	0,88	4,21	4,21	4,21	4,21	—	—	—	—	
	1,00	4,75	4,75	4,75	4,75	—	—	—	—	
	1,13	4,75	4,75	4,75	—	—	—	—	—	
	1,25	4,75	4,75	4,75	—	—	—	—	—	
	1,50	4,75	4,75	4,75	—	—	—	—	—	
	1,75	4,75	4,75	4,75	—	—	—	—	—	
	2,00	4,75	4,75	4,75	—	—	—	—	—	

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%

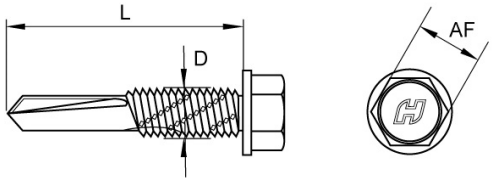
WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (H) 6,3 x L and WKS (H) PROTECT 6,3 x L
with hexagon head and sealing washer ≥ ø16

Annex 9

of European Technical Assessment ETA-13/0817

Materials
Fastener: carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 12 µm), with or without additional coating PROTECT
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346



L = 25 - 75 mm
D = 5,5 mm
AF = 8,0 mm

Drilling capacity: Σti ≤ 8,00 mm

Timber substructures

No performance assessed

$t_{N,II}$ [mm]		2,00	3,00	4,00	5,00	6,00	8,00	10,00	12,00	Wood
$M_{t,nom}$		5 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,26	1,26	1,26	1,26	1,26	—	—	—	
	0,55	1,26	1,26	1,26	1,26	1,26	—	—	—	
	0,63	1,63	1,63	1,63	1,63	1,63	—	—	—	
	0,75	2,04	2,04	2,04	2,04	2,04	—	—	—	
	0,88	2,21	2,21	2,21	2,21	2,21	—	—	—	
	1,00	2,41	2,41	2,41	2,41	2,41	—	—	—	
	1,13	2,41	2,41	2,41	2,41	2,41	—	—	—	
	1,25	3,59	3,59	3,59	3,59	3,59	—	—	—	
	1,50	3,59	3,59	3,59	3,59	3,59	—	—	—	
	1,75	3,59	3,59	3,59	3,59	3,59	—	—	—	
	2,00	3,59	3,59	3,59	3,59	3,59	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,51	0,51	0,51	0,51	0,51	—	—	—	
	0,55	0,51	0,51	0,51	0,51	0,51	—	—	—	
	0,63	0,76	0,76	0,76	0,76	0,76	—	—	—	
	0,75	0,81	0,81	0,81	0,81	0,81	—	—	—	
	0,88	0,82	0,82	0,82	0,82	0,82	—	—	—	
	1,00	0,94	0,94	0,94	0,94	0,94	—	—	—	
	1,13	0,94	0,94	0,94	0,94	0,94	—	—	—	
	1,25	0,94	0,94	0,94	0,94	0,94	—	—	—	
	1,50	0,94	0,94	0,94	0,94	0,94	—	—	—	
	1,75	0,94	0,94	0,94	0,94	0,94	—	—	—	
	2,00	0,94	0,94	0,94	0,94	0,94	—	—	—	

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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (H) 5,5-8 x L and WKS (H) PROTECT 5,5-8 x L
with hexagon head

Annex 10

of European Technical Assessment ETA-13/0817

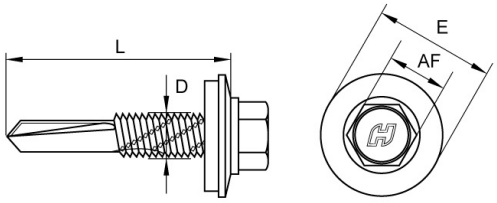
Materials

Fastener:	carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 12 µm), with or without additional coating PROTECT
Washer:	metallic washer made of zinc-coated carbon steel or stainless steel with EPDM sealing ring
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346

Drilling capacity: Σti ≤ 8,00 mm

Timber substructures

No performance assessed



L = 25 - 75 mm
D = 5,5 mm
AF = 8,0 mm
E ≥ 14 mm

$t_{N,II}$ [mm]		2,00	3,00	4,00	5,00	6,00	8,00	10,00	12,00	Wood
$M_{t,nom}$		5 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,26	1,26	1,26	1,26	1,26	—	—	—	
	0,55	1,26	1,26	1,26	1,26	1,26	—	—	—	
	0,63	1,63	1,63	1,63	1,63	1,63	—	—	—	
	0,75	2,04	2,04	2,04	2,04	2,04	—	—	—	
	0,88	2,21	2,21	2,21	2,21	2,21	—	—	—	
	1,00	2,41	2,41	2,41	2,41	2,41	—	—	—	
	1,13	2,41	2,41	2,41	2,41	2,41	—	—	—	
	1,25	3,59	3,59	3,59	3,59	3,59	—	—	—	
	1,50	3,59	3,59	3,59	3,59	3,59	—	—	—	
	1,75	3,59	3,59	3,59	3,59	3,59	—	—	—	
	2,00	3,59	3,59	3,59	3,59	3,59	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	2,63	2,63	2,63	2,63	2,63	—	—	—	
	0,55	2,63	2,63	2,63	2,63	2,63	—	—	—	
	0,63	2,66	3,60	3,60	3,60	3,60	—	—	—	
	0,75	2,66	4,14	4,14	4,14	4,14	—	—	—	
	0,88	2,66	4,17	4,17	4,17	4,17	—	—	—	
	1,00	2,66	4,71	4,71	4,71	4,71	—	—	—	
	1,13	2,66	4,71	4,71	4,71	4,71	—	—	—	
	1,25	2,66	4,71	4,71	4,71	4,71	—	—	—	
	1,50	2,66	4,71	4,71	4,71	4,71	—	—	—	
	1,75	2,66	4,71	4,71	4,71	4,71	—	—	—	
	2,00	2,66	4,71	4,71	4,71	4,71	—	—	—	

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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (H) 5,5-8 x L and WKS (H) PROTECT 5,5-8 x L
with hexagon head and sealing washer ≥ ø14

Annex 11

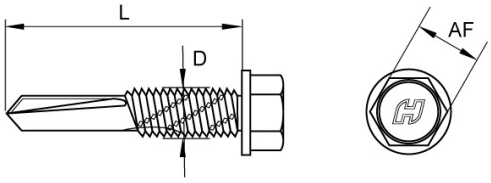
of European Technical Assessment ETA-13/0817

Materials
Fastener: carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 12 µm), with or without additional coating PROTECT
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: Σti ≤ 12,00 mm

Timber substructures

No performance assessed



L = 25 - 75 mm
D = 5,5 mm
AF = 8,0 mm

$t_{N,II}$ [mm]		4,00	5,00	6,00	8,00	10,00	12,00	14,00	16,00	Wood
$M_{t,nom}$		5 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,26	1,26	1,26	1,26	1,26	—	—	—	
	0,55	1,26	1,26	1,26	1,26	1,26	—	—	—	
	0,63	1,63	1,63	1,63	1,63	1,63	—	—	—	
	0,75	2,04	2,04	2,04	2,04	2,04	—	—	—	
	0,88	2,21	2,21	2,21	2,21	2,21	—	—	—	
	1,00	2,41	2,41	2,41	2,41	2,41	—	—	—	
	1,13	2,41	2,41	2,41	2,41	2,41	—	—	—	
	1,25	3,59	3,59	3,59	3,59	3,59	—	—	—	
	1,50	3,59	3,59	3,59	3,59	3,59	—	—	—	
	1,75	3,59	3,59	3,59	3,59	3,59	—	—	—	
	2,00	3,59	3,59	3,59	3,59	3,59	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,51	0,51	0,51	0,51	0,51	—	—	—	
	0,55	0,51	0,51	0,51	0,51	0,51	—	—	—	
	0,63	0,76	0,76	0,76	0,76	0,76	—	—	—	
	0,75	0,81	0,81	0,81	0,81	0,81	—	—	—	
	0,88	0,82	0,82	0,82	0,82	0,82	—	—	—	
	1,00	0,94	0,94	0,94	0,94	0,94	—	—	—	
	1,13	0,94	0,94	0,94	0,94	0,94	—	—	—	
	1,25	0,94	0,94	0,94	0,94	0,94	—	—	—	
	1,50	0,94	0,94	0,94	0,94	0,94	—	—	—	
	1,75	0,94	0,94	0,94	0,94	0,94	—	—	—	
	2,00	0,94	0,94	0,94	0,94	0,94	—	—	—	

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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (H) 5,5-12 x L and WKS (H) PROTECT 5,5-12 x L
with hexagon head

Annex 12

of European Technical Assessment ETA-13/0817

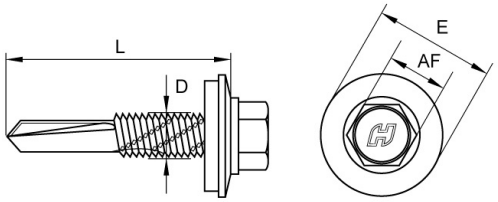
Materials

Fastener:	carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 12 µm), with or without additional coating PROTECT
Washer:	metallic washer made of zinc-coated carbon steel or stainless steel with EPDM sealing ring
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346

Drilling capacity: Σti ≤ 12,00 mm

Timber substructures

No performance assessed



L = 19 - 75 mm
D = 5,5 mm
AF = 8,0 mm
E ≥ 14 mm

$t_{N,II}$ [mm]		4,00	5,00	6,00	8,00	10,00	12,00	14,00	16,00	Wood
$M_{t,nom}$		5 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,26	1,26	1,26	1,26	1,26	—	—	—	
	0,55	1,26	1,26	1,26	1,26	1,26	—	—	—	
	0,63	1,63	1,63	1,63	1,63	1,63	—	—	—	
	0,75	2,04	2,04	2,04	2,04	2,04	—	—	—	
	0,88	2,21	2,21	2,21	2,21	2,21	—	—	—	
	1,00	2,41	2,41	2,41	2,41	2,41	—	—	—	
	1,13	2,41	2,41	2,41	2,41	2,41	—	—	—	
	1,25	3,59	3,59	3,59	3,59	3,59	—	—	—	
	1,50	3,59	3,59	3,59	3,59	3,59	—	—	—	
	1,75	3,59	3,59	3,59	3,59	3,59	—	—	—	
	2,00	3,59	3,59	3,59	3,59	3,59	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	2,63	2,63	2,63	2,63	2,63	—	—	—	
	0,55	2,63	2,63	2,63	2,63	2,63	—	—	—	
	0,63	3,60	3,60	3,60	3,60	3,60	—	—	—	
	0,75	4,14	4,14	4,14	4,14	4,14	—	—	—	
	0,88	4,17	4,17	4,17	4,17	4,17	—	—	—	
	1,00	4,71	4,71	4,71	4,71	4,71	—	—	—	
	1,13	4,71	4,71	4,71	4,71	4,71	—	—	—	
	1,25	4,71	4,71	4,71	4,71	4,71	—	—	—	
	1,50	4,71	4,71	4,71	4,71	4,71	—	—	—	
	1,75	4,71	4,71	4,71	4,71	4,71	—	—	—	
	2,00	4,71	4,71	4,71	4,71	4,71	—	—	—	

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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (H) 5,5-12 x L and WKS (H) PROTECT 5,5-12 x L
with hexagon head and sealing washer ≥ ø14

Annex 13

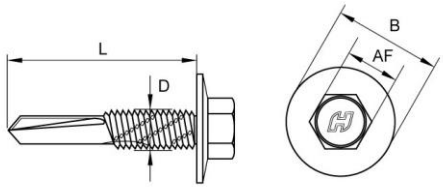
of European Technical Assessment ETA-13/0817

Materials
Fastener: carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 12 µm), with or without additional coating PROTECT
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: Σti ≤ 12,00 mm

Timber substructures

No performance assessed



L = 19 - 75 mm
D = 5,5 mm
AF = 8,0 mm
B = 14 mm

$t_{N,II}$ [mm]		4,00	5,00	6,00	8,00	10,00	12,00	14,00	16,00	Wood
$M_{t,nom}$		5 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,26	1,26	1,26	1,26	1,26	—	—	—	
	0,55	1,26	1,26	1,26	1,26	1,26	—	—	—	
	0,63	1,63	1,63	1,63	1,63	1,63	—	—	—	
	0,75	2,04	2,04	2,04	2,04	2,04	—	—	—	
	0,88	2,21	2,21	2,21	2,21	2,21	—	—	—	
	1,00	2,41	2,41	2,41	2,41	2,41	—	—	—	
	1,13	2,41	2,41	2,41	2,41	2,41	—	—	—	
	1,25	3,59	3,59	3,59	3,59	3,59	—	—	—	
	1,50	3,59	3,59	3,59	3,59	3,59	—	—	—	
	1,75	3,59	3,59	3,59	3,59	3,59	—	—	—	
	2,00	3,59	3,59	3,59	3,59	3,59	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	2,63	2,63	2,63	2,63	2,63	—	—	—	
	0,55	2,63	2,63	2,63	2,63	2,63	—	—	—	
	0,63	3,60	3,60	3,60	3,60	3,60	—	—	—	
	0,75	4,14	4,14	4,14	4,14	4,14	—	—	—	
	0,88	4,17	4,17	4,17	4,17	4,17	—	—	—	
	1,00	4,71	4,71	4,71	4,71	4,71	—	—	—	
	1,13	4,71	4,71	4,71	4,71	4,71	—	—	—	
	1,25	4,71	4,71	4,71	4,71	4,71	—	—	—	
	1,50	4,71	4,71	4,71	4,71	4,71	—	—	—	
	1,75	4,71	4,71	4,71	4,71	4,71	—	—	—	
	2,00	4,71	4,71	4,71	4,71	4,71	—	—	—	

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%

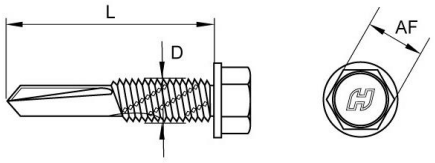
WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (H) SH12 5,5-12 x L and WKS (H) PROTECT SH12 5,5-12 x L with hexagon head

Annex 14

of European Technical Assessment ETA-13/0817

Materials
Fastener: carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 12 µm), with or without additional coating PROTECT
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346



Drilling capacity: Σti ≤ 15,00 mm

L = 38 - 75 mm
D = 5,5 mm
AF = 8,0 mm

Timber substructures

No performance assessed

$t_{N,II}$ [mm]		4,00	5,00	6,00	8,00	10,00	12,00	14,00	16,00	Wood
$M_{t,nom}$		7 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,26	1,26	1,26	1,26	1,26	1,26	1,26	—	
	0,55	1,26	1,26	1,26	1,26	1,26	1,26	1,26	—	
	0,63	1,63	1,63	1,63	1,63	1,63	1,63	1,63	—	
	0,75	2,04	2,04	2,04	2,04	2,04	2,04	2,04	—	
	0,88	2,21	2,21	2,21	2,21	2,21	2,21	2,21	—	
	1,00	2,41	2,41	2,41	2,41	2,41	2,41	2,41	—	
	1,13	2,41	2,41	2,41	2,41	2,41	2,41	2,41	—	
	1,25	3,59	3,59	3,59	3,59	3,59	3,59	3,59	—	
	1,50	3,59	3,59	3,59	3,59	3,59	3,59	3,59	—	
	1,75	3,59	3,59	3,59	3,59	3,59	3,59	3,59	—	
	2,00	3,59	3,59	3,59	3,59	3,59	3,59	3,59	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,51	0,51	0,51	0,51	0,51	0,51	0,51	—	
	0,55	0,51	0,51	0,51	0,51	0,51	0,51	0,51	—	
	0,63	0,76	0,76	0,76	0,76	0,76	0,76	0,76	—	
	0,75	0,81	0,81	0,81	0,81	0,81	0,81	0,81	—	
	0,88	0,82	0,82	0,82	0,82	0,82	0,82	0,82	—	
	1,00	0,94	0,94	0,94	0,94	0,94	0,94	0,94	—	
	1,13	0,94	0,94	0,94	0,94	0,94	0,94	0,94	—	
	1,25	0,94	0,94	0,94	0,94	0,94	0,94	0,94	—	
	1,50	0,94	0,94	0,94	0,94	0,94	0,94	0,94	—	
	1,75	0,94	0,94	0,94	0,94	0,94	0,94	0,94	—	
	2,00	0,94	0,94	0,94	0,94	0,94	0,94	0,94	—	

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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (H) 5,5-15 x L and WKS (H) PROTECT 5,5-15 x L
with hexagon head

Annex 15

of European Technical Assessment ETA-13/0817

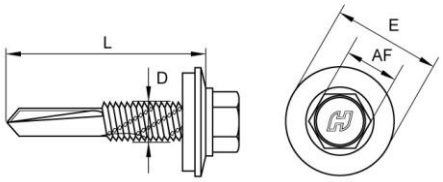
Materials

Fastener:	carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 12 µm), with or without additional coating PROTECT
Washer:	metallic washer made of zinc-coated carbon steel or stainless steel with EPDM sealing ring
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346

Drilling capacity: Σti ≤ 15,00 mm

Timber substructures

No performance assessed



L = 38 - 75 mm
D = 5,5 mm
AF = 8,0 mm
E ≥ 14 mm

	$t_{N,II}$ [mm]	4,00	5,00	6,00	8,00	10,00	12,00	14,00	16,00	Wood
	$M_{t,nom}$	7 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,26	1,26	1,26	1,26	1,26	1,26	1,26	—	
	0,55	1,26	1,26	1,26	1,26	1,26	1,26	1,26	—	
	0,63	1,63	1,63	1,63	1,63	1,63	1,63	1,63	—	
	0,75	2,04	2,04	2,04	2,04	2,04	2,04	2,04	—	
	0,88	2,21	2,21	2,21	2,21	2,21	2,21	2,21	—	
	1,00	2,41	2,41	2,41	2,41	2,41	2,41	2,41	—	
	1,13	2,41	2,41	2,41	2,41	2,41	2,41	2,41	—	
	1,25	3,59	3,59	3,59	3,59	3,59	3,59	3,59	—	
	1,50	3,59	3,59	3,59	3,59	3,59	3,59	3,59	—	
	1,75	3,59	3,59	3,59	3,59	3,59	3,59	3,59	—	
	2,00	3,59	3,59	3,59	3,59	3,59	3,59	3,59	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	2,63	2,63	2,63	2,63	2,63	2,63	2,63	—	
	0,55	2,63	2,63	2,63	2,63	2,63	2,63	2,63	—	
	0,63	3,60	3,60	3,60	3,60	3,60	3,60	3,60	—	
	0,75	4,14	4,14	4,14	4,14	4,14	4,14	4,14	—	
	0,88	4,17	4,17	4,17	4,17	4,17	4,17	4,17	—	
	1,00	4,71	4,71	4,71	4,71	4,71	4,71	4,71	—	
	1,13	4,71	4,71	4,71	4,71	4,71	4,71	4,71	—	
	1,25	4,71	4,71	4,71	4,71	4,71	4,71	4,71	—	
	1,50	4,71	4,71	4,71	4,71	4,71	4,71	4,71	—	
	1,75	4,71	4,71	4,71	4,71	4,71	4,71	4,71	—	
	2,00	4,71	4,71	4,71	4,71	4,71	4,71	4,71	—	

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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (H) 5,5-15 x L and WKS (H) PROTECT 5,5-15 x L
with hexagon head and sealing washer ≥ ø14

Annex 16

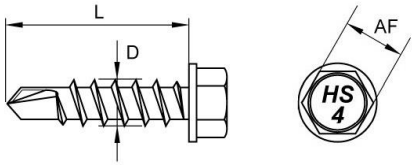
of European Technical Assessment ETA-13/0817

Materials
Fastener: stainless steel – 1.4006 – EN 10088-1
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: Σti ≤ 2,25 mm

Timber substructures

No performance assessed



L = 11 - 32 mm
D = 4,2 mm
AF = 7,0 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,25	1,50	Wood
$M_{t,nom}$		2 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,75	0,75	0,75	0,75	0,75	0,75	0,75	—	
	0,55	0,75	0,75	0,75	0,75	0,75	0,75	0,75	—	
	0,63	0,75	0,75	0,95	0,95	0,95	0,95	0,95	—	
	0,75	0,75	0,75	0,95	1,33	1,33	1,33	1,33	—	
	0,88	0,75	0,75	0,95	1,33	1,62	1,62	1,62	—	
	1,00	0,75	0,75	0,95	1,33	1,62	1,83	1,83	—	
	1,13	—	—	—	—	—	—	—	—	
	1,25	—	—	—	—	—	—	—	—	
	1,50	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,32	0,32	0,35	0,35	0,35	0,35	0,35	—	
	0,55	0,32	0,32	0,35	0,35	0,35	0,35	0,35	—	
	0,63	0,32	0,32	0,35	0,35	0,35	0,35	0,52	—	
	0,75	0,32	0,32	0,35	0,52	0,52	0,52	0,55	—	
	0,88	0,32	0,32	0,35	0,52	0,55	0,55	0,55	—	
	1,00	0,32	0,32	0,35	0,52	0,55	0,64	0,64	—	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (HS4) 4,2 x L
with hexagon head

Annex 17

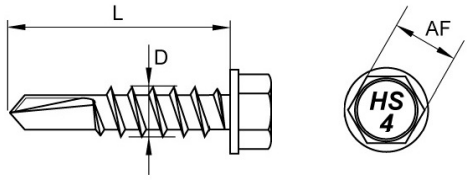
of European Technical Assessment ETA-13/0817

Materials
Fastener: stainless steel – 1.4006 – EN 10088-1
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: Σti ≤ 4,50 mm

Timber substructures

No performance assessed



L = 13 - 38 mm
D = 4,8 mm
AF = 8,0 mm

$t_{N,II}$ [mm]		1,50	2,00	3,00	4,00	5,00	6,00	8,00	10,00	Wood
$M_{t,nom}$		3 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,07	1,07	1,07	—	—	—	—	—	
	0,55	1,07	1,07	1,07	—	—	—	—	—	
	0,63	1,36	1,36	1,36	—	—	—	—	—	
	0,75	1,90	1,90	1,90	—	—	—	—	—	
	0,88	2,32	2,32	2,32	—	—	—	—	—	
	1,00	2,62	2,62	2,62	—	—	—	—	—	
	1,13	2,62	2,62	2,62	—	—	—	—	—	
	1,25	2,67	2,67	2,67	—	—	—	—	—	
	1,50	2,67	2,67	2,67	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,51	0,51	0,51	—	—	—	—	—	
	0,55	0,51	0,51	0,51	—	—	—	—	—	
	0,63	0,76	0,76	0,76	—	—	—	—	—	
	0,75	0,81	0,81	0,81	—	—	—	—	—	
	0,88	0,82	0,82	0,82	—	—	—	—	—	
	1,00	0,94	0,94	0,94	—	—	—	—	—	
	1,13	0,94	0,94	0,94	—	—	—	—	—	
	1,25	0,94	0,94	0,94	—	—	—	—	—	
	1,50	0,94	0,94	0,94	—	—	—	—	—	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (HS4) 4,8 x L
with hexagon head

Annex 18

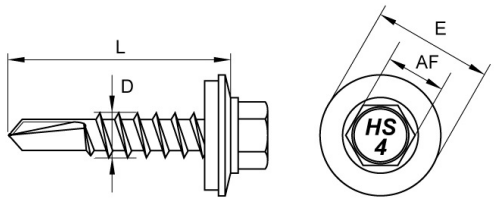
of European Technical Assessment ETA-13/0817

Materials
Fastener: stainless steel – 1.4006 – EN 10088-1
Washer: metallic washer made of stainless steel with EPDM sealing ring
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: Σti ≤ 4,50 mm

Timber substructures

No performance assessed



L = 13 - 38 mm
D = 4,8 mm
AF = 8,0 mm
E ≥ 14 mm

$t_{N,II}$ [mm]		1,50	2,00	3,00	4,00	5,00	6,00	8,00	10,00	Wood
$M_{t,nom}$		3 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,07	1,07	1,07	—	—	—	—	—	
	0,55	1,07	1,07	1,07	—	—	—	—	—	
	0,63	1,36	1,36	1,36	—	—	—	—	—	
	0,75	1,90	1,90	1,90	—	—	—	—	—	
	0,88	2,32	2,32	2,32	—	—	—	—	—	
	1,00	2,62	2,62	2,62	—	—	—	—	—	
	1,13	2,62	2,62	2,62	—	—	—	—	—	
	1,25	2,67	2,67	2,67	—	—	—	—	—	
	1,50	2,67	2,67	2,67	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,68	2,19	2,19	—	—	—	—	—	
	0,55	1,68	2,19	2,19	—	—	—	—	—	
	0,63	1,68	2,57	2,96	—	—	—	—	—	
	0,75	1,68	2,57	3,45	—	—	—	—	—	
	0,88	1,68	2,57	3,57	—	—	—	—	—	
	1,00	1,68	2,57	4,08	—	—	—	—	—	
	1,13	1,68	2,57	4,08	—	—	—	—	—	
	1,25	1,68	2,57	4,08	—	—	—	—	—	
	1,50	1,68	2,57	4,08	—	—	—	—	—	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (HS4) 4,8 x L
with hexagon head and stainless steel sealing washer ≥ ø14

Annex 19

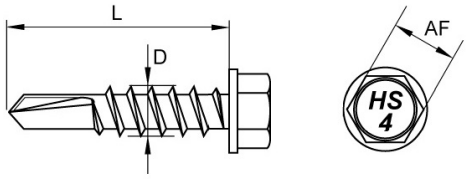
of European Technical Assessment ETA-13/0817

Materials
Fastener: stainless steel – 1.4006 – EN 10088-1
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: Σti ≤ 4,50 mm

Timber substructures

No performance assessed



L = 19 - 75 mm
D = 5,5 mm
AF = 8,0 mm

$t_{N,II}$ [mm]		1,50	2,00	3,00	4,00	5,00	6,00	8,00	10,00	Wood
$M_{t,nom}$		5 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,26	1,26	1,26	1,26	—	—	—	—	
	0,55	1,26	1,26	1,26	—	—	—	—	—	
	0,63	1,63	1,63	1,63	—	—	—	—	—	
	0,75	2,04	2,04	2,04	—	—	—	—	—	
	0,88	2,21	2,21	2,21	—	—	—	—	—	
	1,00	2,41	2,41	2,41	—	—	—	—	—	
	1,13	2,41	2,41	2,41	—	—	—	—	—	
	1,25	3,59	3,59	3,59	—	—	—	—	—	
	1,50	3,59	3,59	3,59	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,51	0,51	0,51	0,51	—	—	—	—	
	0,55	0,51	0,51	0,51	—	—	—	—	—	
	0,63	0,76	0,76	0,76	—	—	—	—	—	
	0,75	0,81	0,81	0,81	—	—	—	—	—	
	0,88	0,82	0,82	0,82	—	—	—	—	—	
	1,00	0,94	0,94	0,94	—	—	—	—	—	
	1,13	0,94	0,94	0,94	—	—	—	—	—	
	1,25	0,94	0,94	0,94	—	—	—	—	—	
	1,50	0,94	0,94	0,94	—	—	—	—	—	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (HS4) 5,5 x L
with hexagon head

Annex 20

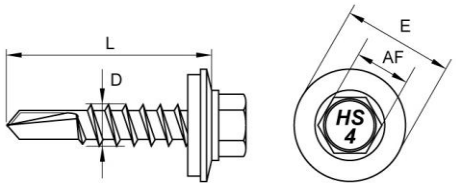
of European Technical Assessment ETA-13/0817

Materials
Fastener: stainless steel – 1.4006 – EN 10088-1
Washer: metallic washer made of stainless steel with EPDM sealing ring
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: Σti ≤ 4,50 mm

Timber substructures

No performance assessed



L = 19 - 75 mm
D = 5,5 mm
AF = 8,0 mm
E ≥ 14 mm

$t_{N,II}$ [mm]		1,50	2,00	3,00	4,00	5,00	6,00	8,00	10,00	Wood
$M_{t,nom}$		5 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,26	1,26	1,26	1,26	—	—	—	—	
	0,55	1,26	1,26	1,26	—	—	—	—	—	
	0,63	1,63	1,63	1,63	—	—	—	—	—	
	0,75	2,04	2,04	2,04	—	—	—	—	—	
	0,88	2,21	2,21	2,21	—	—	—	—	—	
	1,00	2,41	2,41	2,41	—	—	—	—	—	
	1,13	2,41	2,41	2,41	—	—	—	—	—	
	1,25	3,59	3,59	3,59	—	—	—	—	—	
	1,50	3,59	3,59	3,59	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,70	2,59	2,63	2,63	—	—	—	—	
	0,55	1,70	2,59	2,63	—	—	—	—	—	
	0,63	1,70	2,59	3,60	—	—	—	—	—	
	0,75	1,70	2,59	4,14	—	—	—	—	—	
	0,88	1,70	2,59	4,17	—	—	—	—	—	
	1,00	1,70	2,59	4,71	—	—	—	—	—	
	1,13	1,70	2,59	4,71	—	—	—	—	—	
	1,25	1,70	2,59	4,71	—	—	—	—	—	
	1,50	1,70	2,59	4,71	—	—	—	—	—	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (HS4) 5,5 x L
with hexagon head and sealing washer ≥ ø14

Annex 21

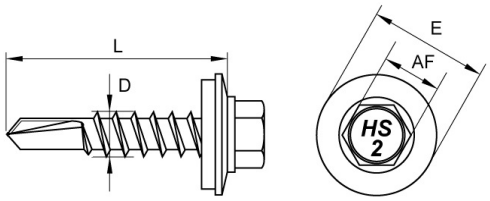
of European Technical Assessment ETA-13/0817

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

Drilling capacity: Σti ≤ 6,00 mm

Timber substructures

No performance assessed



L = 19 - 75 mm
D = 5,5 mm
AF = 8,0 mm
E ≥ 14 mm

$t_{N,II}$ [mm]		3,00	4,00	5,00	6,00	8,00	10,00	12,00	14,00	Wood
$M_{t,nom}$		5 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,26	1,26	1,26	—	—	—	—	—	
	0,55	1,26	1,26	1,26	—	—	—	—	—	
	0,63	1,63	1,63	1,63	—	—	—	—	—	
	0,75	2,04	2,04	2,04	—	—	—	—	—	
	0,88	2,21	2,21	2,21	—	—	—	—	—	
	1,00	2,41	2,41	2,41	—	—	—	—	—	
	1,13	—	—	—	—	—	—	—	—	
	1,25	—	—	—	—	—	—	—	—	
	1,50	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	2,63	2,63	2,63	—	—	—	—	—	
	0,55	2,63	2,63	2,63	—	—	—	—	—	
	0,63	3,07	3,07	3,07	—	—	—	—	—	
	0,75	3,07	3,07	3,07	—	—	—	—	—	
	0,88	3,07	3,07	3,07	—	—	—	—	—	
	1,00	3,07	3,07	3,07	—	—	—	—	—	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (HS2) 5,5-6 x L
with hexagon head and sealing washer ≥ ø14

Annex 22

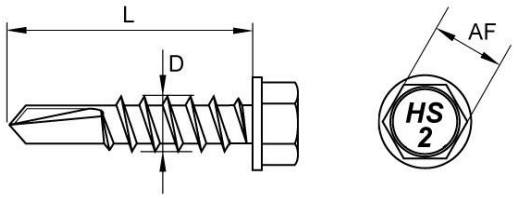
of European Technical Assessment ETA-13/0817

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

Drilling capacity: Σti ≤ 6,00 mm

Timber substructures

No performance assessed



L = 19 - 75 mm
D = 5,5 mm
AF = 8,0 mm

$t_{N,II}$ [mm]		2,00	3,00	4,00	5,00	6,00	8,00	10,00	12,00	Wood
$M_{t,nom}$		5 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,26	1,26	1,26	1,26	—	—	—	—	
	0,55	1,26	1,26	1,26	1,26	—	—	—	—	
	0,63	1,63	1,63	1,63	1,63	—	—	—	—	
	0,75	2,04	2,04	2,04	2,04	—	—	—	—	
	0,88	2,21	2,21	2,21	2,21	—	—	—	—	
	1,00	2,41	2,41	2,41	2,41	—	—	—	—	
	1,13	2,41	2,41	2,41	—	—	—	—	—	
	1,25	3,59	3,59	3,59	—	—	—	—	—	
	1,50	3,59	3,59	3,59	—	—	—	—	—	
	1,75	3,59	3,59	3,59	—	—	—	—	—	
	2,00	3,59	3,59	3,59	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,51	0,51	0,51	0,51	—	—	—	—	
	0,55	0,51	0,51	0,51	0,51	—	—	—	—	
	0,63	0,76	0,76	0,76	0,76	—	—	—	—	
	0,75	0,81	0,81	0,81	0,81	—	—	—	—	
	0,88	0,82	0,82	0,82	0,82	—	—	—	—	
	1,00	0,94	0,94	0,94	0,94	—	—	—	—	
	1,13	0,94	0,94	0,94	—	—	—	—	—	
	1,25	0,94	0,94	0,94	—	—	—	—	—	
	1,50	0,94	0,94	0,94	—	—	—	—	—	
	1,75	0,94	0,94	0,94	—	—	—	—	—	
	2,00	0,94	0,94	0,94	—	—	—	—	—	

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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (HS2) 5,5-6 x L
with hexagon head

Annex 23

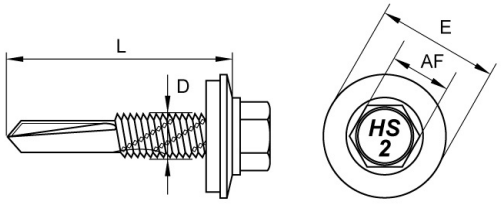
of European Technical Assessment ETA-13/0817

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

Drilling capacity: Σti ≤ 12,00 mm

Timber substructures

No performance assessed



L = 19 - 75 mm
D = 5,5 mm
AF = 8,0 mm
E ≥ 14 mm

$t_{N,II}$ [mm]		4,00	5,00	6,00	8,00	10,00	12,00	14,00	16,00	Wood
$M_{t,nom}$		5 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,26	1,26	1,26	1,26	1,26	—	—	—	
	0,55	1,26	1,26	1,26	1,26	1,26	—	—	—	
	0,63	1,63	1,63	1,63	1,63	1,63	—	—	—	
	0,75	2,04	2,04	2,04	2,04	2,04	—	—	—	
	0,88	2,21	2,21	2,21	2,21	2,21	—	—	—	
	1,00	2,41	2,41	2,41	2,41	2,41	—	—	—	
	1,13	2,41	2,41	2,41	2,41	2,41	—	—	—	
	1,25	3,59	3,59	3,59	3,59	3,59	—	—	—	
	1,50	3,59	3,59	3,59	3,59	3,59	—	—	—	
	1,75	3,59	3,59	3,59	3,59	3,59	—	—	—	
	2,00	3,59	3,59	3,59	3,59	3,59	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	2,63	2,63	2,63	2,63	2,63	—	—	—	
	0,55	2,63	2,63	2,63	2,63	2,63	—	—	—	
	0,63	3,60	3,60	3,60	3,60	3,60	—	—	—	
	0,75	4,14	4,14	4,14	4,14	4,14	—	—	—	
	0,88	4,17	4,17	4,17	4,17	4,17	—	—	—	
	1,00	4,71	4,71	4,71	4,71	4,71	—	—	—	
	1,13	4,71	4,71	4,71	4,71	4,71	—	—	—	
	1,25	4,71	4,71	4,71	4,71	4,71	—	—	—	
	1,50	4,71	4,71	4,71	4,71	4,71	—	—	—	
	1,75	4,71	4,71	4,71	4,71	4,71	—	—	—	
	2,00	4,71	4,71	4,71	4,71	4,71	—	—	—	

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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (HS2) 5,5-12 x L
with hexagon head and sealing washer ≥ ø14

Annex 24

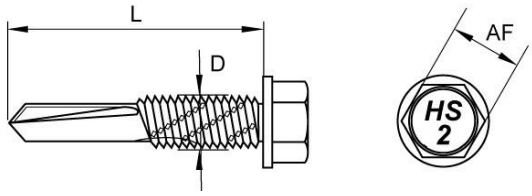
of European Technical Assessment ETA-13/0817

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

Drilling capacity: Σti ≤ 12,00 mm

Timber substructures

No performance assessed



L = 32 - 75 mm
D = 5,5 mm
AF = 8,0 mm

$t_{N,II}$ [mm]		4,00	5,00	6,00	8,00	10,00	12,00	14,00	16,00	Wood
$M_{t,nom}$		5 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,26	1,26	1,26	1,26	1,26	—	—	—	
	0,55	1,26	1,26	1,26	1,26	1,26	—	—	—	
	0,63	1,63	1,63	1,63	1,63	1,63	—	—	—	
	0,75	2,04	2,04	2,04	2,04	2,04	—	—	—	
	0,88	2,21	2,21	2,21	2,21	2,21	—	—	—	
	1,00	2,41	2,41	2,41	2,41	2,41	—	—	—	
	1,13	2,41	2,41	2,41	2,41	2,41	—	—	—	
	1,25	3,59	3,59	3,59	3,59	3,59	—	—	—	
	1,50	3,59	3,59	3,59	3,59	3,59	—	—	—	
	1,75	3,59	3,59	3,59	3,59	3,59	—	—	—	
	2,00	3,59	3,59	3,59	3,59	3,59	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,51	0,51	0,51	0,51	0,51	—	—	—	
	0,55	0,51	0,51	0,51	0,51	0,51	—	—	—	
	0,63	0,76	0,76	0,76	0,76	0,76	—	—	—	
	0,75	0,81	0,81	0,81	0,81	0,81	—	—	—	
	0,88	0,82	0,82	0,82	0,82	0,82	—	—	—	
	1,00	0,94	0,94	0,94	0,94	0,94	—	—	—	
	1,13	0,94	0,94	0,94	0,94	0,94	—	—	—	
	1,25	0,94	0,94	0,94	0,94	0,94	—	—	—	
	1,50	0,94	0,94	0,94	0,94	0,94	—	—	—	
	1,75	0,94	0,94	0,94	0,94	0,94	—	—	—	
	2,00	0,94	0,94	0,94	0,94	0,94	—	—	—	

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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS (HS2) 5,5-12 x L
with hexagon head

Annex 25

of European Technical Assessment ETA-13/0817

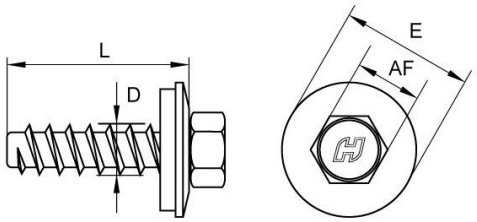
Materials

Fastener:	carbon steel – SAE 1022, quenched, tempered and galvanized (≥ 12 µm), with or without additional coating PROTECT
Washer:	metallic washer made of zinc-coated carbon steel or stainless steel with EPDM sealing ring
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346

Drilling capacity: -

Timber substructures

No performance assessed



L = 19 - 100 mm
D = 6,3 mm
AF = 10,0 mm
E ≥ 19 mm

$t_{N,II}$ [mm]		3,00	4,00	5,00	6,00	8,00	10,00	12,00	14,00	Wood
Drill ø		5,30			5,50	5,70				
$M_{t,nom}$		4,5 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,39	1,39	1,39	1,39	1,39	1,39	1,39	1,39	
	0,55	1,39	1,39	1,39	1,39	1,39	1,39	1,39	1,39	
	0,63	2,16	2,16	2,16	2,16	2,16	2,16	2,16	2,16	
	0,75	2,43	2,43	2,43	2,43	2,43	2,43	2,43	2,43	
	0,88	2,70	2,70	2,70	2,70	2,70	2,70	2,70	2,70	
	1,00	3,06	3,06	3,06	3,06	3,06	3,06	3,06	3,06	
	1,13	3,06	3,06	3,06	3,06	3,06	3,06	3,06	3,06	
	1,25	3,96	3,96	3,96	3,96	3,96	3,96	3,96	3,96	
	1,50	3,96	3,96	3,96	3,96	3,96	3,96	3,96	3,96	
	1,75	3,96	3,96	3,96	3,96	3,96	3,96	3,96	3,96	
	2,00	3,96	3,96	3,96	3,96	3,96	3,96	3,96	3,96	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	3,22	3,22	3,22	3,22	3,22	3,22	3,22	3,22	
	0,55	3,22	3,22	3,22	3,22	3,22	3,22	3,22	3,22	
	0,63	3,94	3,94	3,94	3,94	3,94	3,94	3,94	3,94	
	0,75	4,41	4,41	4,41	4,41	4,41	4,41	4,41	4,41	
	0,88	5,66	5,66	5,66	5,66	5,66	5,66	5,66	5,66	
	1,00	5,66	6,32	6,32	6,32	6,32	6,32	6,32	6,32	
	1,13	5,66	6,32	6,32	6,32	6,32	6,32	6,32	6,32	
	1,25	5,66	6,32	6,32	6,32	6,32	6,32	6,32	6,32	
	1,50	5,66	6,32	6,32	6,32	6,32	6,32	6,32	6,32	
	1,75	5,66	6,32	6,32	6,32	6,32	6,32	6,32	6,32	
	2,00	5,66	6,32	6,32	6,32	6,32	6,32	6,32	6,32	

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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS TB (H) 6,3 x L and WKS TB (H) PROTECT 6,3 x L
with hexagon head and sealing washer ≥ ø19

Annex 26

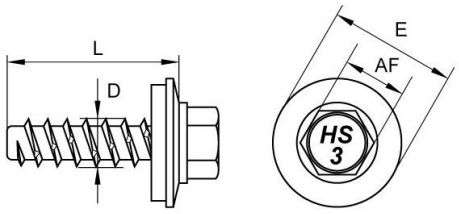
of European Technical Assessment ETA-13/0817

Materials
Fastener: stainless steel – 1.4301 – EN 10088-1
Washer: metallic washer made of stainless steel with EPDM sealing ring
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: -

Timber substructures

No performance assessed



L = 19 - 100 mm
D = 6,3 mm
AF = 10,0 mm
E ≥ 19 mm

$t_{N,II}$ [mm]		3,00	4,00	5,00	6,00	8,00	10,00	12,00	14,00	Wood
Drill ø		5,30			5,50	5,70				
$M_{t,nom}$		4,5 Nm								—
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,39	1,39	1,39	1,39	1,39	1,39	1,39	1,39	
	0,55	1,39	1,39	1,39	1,39	1,39	1,39	1,39	1,39	
	0,63	2,16	2,16	2,16	2,16	2,16	2,16	2,16	2,16	
	0,75	2,43	2,43	2,43	2,43	2,43	2,43	2,43	2,43	
	0,88	2,70	2,70	2,70	2,70	2,70	2,70	2,70	2,70	
	1,00	3,06	3,06	3,06	3,06	3,06	3,06	3,06	3,06	
	1,13	3,06	3,06	3,06	3,06	3,06	3,06	3,06	3,06	
	1,25	3,96	3,96	3,96	3,96	3,96	3,96	3,96	3,96	
	1,50	3,96	3,96	3,96	3,96	3,96	3,96	3,96	3,96	
	1,75	3,96	3,96	3,96	3,96	3,96	3,96	3,96	3,96	
	2,00	3,96	3,96	3,96	3,96	3,96	3,96	3,96	3,96	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	3,22	3,22	3,22	3,22	3,22	3,22	3,22	3,22	
	0,55	3,22	3,22	3,22	3,22	3,22	3,22	3,22	3,22	
	0,63	3,94	3,94	3,94	3,94	3,94	3,94	3,94	3,94	
	0,75	4,41	4,41	4,41	4,41	4,41	4,41	4,41	4,41	
	0,88	5,66	5,66	5,66	5,66	5,66	5,66	5,66	5,66	
	1,00	5,66	6,32	6,32	6,32	6,32	6,32	6,32	6,32	
	1,13	5,66	6,32	6,32	6,32	6,32	6,32	6,32	6,32	
	1,25	5,66	6,32	6,32	6,32	6,32	6,32	6,32	6,32	
	1,50	5,66	6,32	6,32	6,32	6,32	6,32	6,32	6,32	
	1,75	5,66	6,32	6,32	6,32	6,32	6,32	6,32	6,32	
	2,00	5,66	6,32	6,32	6,32	6,32	6,32	6,32	6,32	

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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKS TB (HS3) 6,3 x L
with hexagon head and sealing washer ≥ ø19

Annex 27

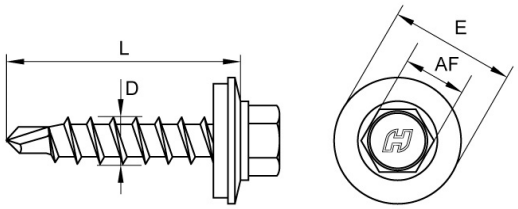
of European Technical Assessment ETA-13/0817

Materials
Fastener: carbon steel – SAE1022, quenched, tempered and galvanized (≥ 12 µm)
Washer: metallic washer made of aluminum with EPDM sealing ring
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346 or structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}25$ mm

Timber substructures
For timber substructures performance assessed with

$M_{y,Rk}$ = 4,390 Nm
$f_{ax,k}$ = 12,321 N/mm² for $l_{ef} \geq 20$ mm
$f_{ax,k}$ = 15,523 N/mm² for $l_{ef} \geq 27$ mm



L = 19 - 100 mm
D = 4,8 mm
AF = 8,0 mm
E ≥ 14 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								l_{ef} [mm]		
										20	27	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88*	—	*bearing resistance of component I **bearing resistance of component II
	0,55	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88*	—	
	0,63	0,88	0,88	1,27	1,27	1,27	1,27	1,27	1,27	0,91**	—	
	0,75	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	0,88	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	1,00	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	1,13	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	1,25	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,54	1,29*	2,13**	*bearing resistance of component II **bearing resistance of component I
	0,55	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,54	1,29*	2,13**	
	0,63	0,54	0,54	0,69	0,69	0,69	0,69	0,69	0,69	1,29*	2,13**	
	0,75	0,54	0,54	0,69	0,77	0,77	0,77	0,77	0,77	1,29*	2,13**	
	0,88	0,54	0,54	0,69	0,77	0,97	0,97	0,97	0,97	1,29*	2,13**	
	1,00	0,54	0,54	0,69	0,77	0,97	1,46	1,46	1,46	1,29*	2,13**	
	1,13	0,54	0,54	0,69	0,77	0,97	1,46	1,46	1,46	1,29*	2,13**	
	1,25	0,54	0,54	0,69	0,77	0,97	1,46	1,46	1,82	1,29*	2,13**	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKF (H) 4,8 × L
with hexagon head and sealing washer ≥ Ø14 mm

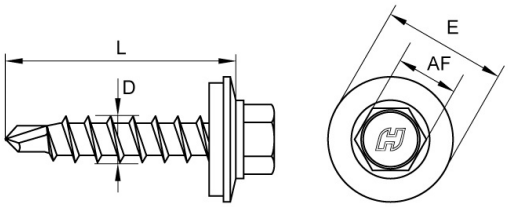
Annex 28
of European Technical Assessment ETA-13/0817

Materials
Fastener: carbon steel – SAE1022, quenched, tempered and galvanized (≥ 12 µm)
Washer: metallic washer made of coated carbon steel or stainless steel with EPDM sealing ring
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346 or structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}25$ mm

Timber substructures
For timber substructures performance assessed with

$M_{y,Rk}$ = 4,390 Nm
$f_{ax,k}$ = 12,321 N/mm² for $l_{ef} \geq 20$ mm
$f_{ax,k}$ = 15,523 N/mm² for $l_{ef} \geq 27$ mm



L = 19 - 100 mm
D = 4,8 mm
AF = 8,0 mm
E ≥ 14 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								l_{ef} [mm]		
										20	27	
$V_{R,K}$ [kN] for $t_{N,I}$ [mm]	0,50	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88*	—	*bearing resistance of component I **bearing resistance of component II
	0,55	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88*	—	
	0,63	0,88	0,88	1,27	1,27	1,27	1,27	1,27	1,27	0,91**	—	
	0,75	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	0,88	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	1,00	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	1,13	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	1,25	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,K}$ [kN] for $t_{N,I}$ [mm]	0,50	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,54	1,29*	2,19*	*bearing resistance of component II
	0,55	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,54	1,29*	2,19*	
	0,63	0,54	0,54	0,69	0,69	0,69	0,69	0,69	0,69	1,29*	2,19*	
	0,75	0,54	0,54	0,69	0,77	0,77	0,77	0,77	0,77	1,29*	2,19*	
	0,88	0,54	0,54	0,69	0,77	0,97	0,97	0,97	0,97	1,29*	2,19*	
	1,00	0,54	0,54	0,69	0,77	0,97	1,46	1,46	1,46	1,29*	2,19*	
	1,13	0,54	0,54	0,69	0,77	0,97	1,46	1,46	1,46	1,29*	2,19*	
	1,25	0,54	0,54	0,69	0,77	0,97	1,46	1,46	1,82	1,29*	2,19*	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKF (H) 4,8 × L
with hexagon head and sealing washer ≥ Ø14 mm

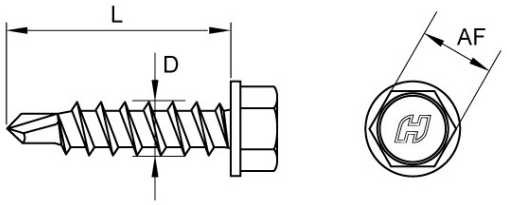
Annex 29
of European Technical Assessment ETA-13/0817

Materials
Fastener: carbon steel – SAE1022
quenched, tempered and galvanized (≥ 12 µm)
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346
or structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}25$ mm

Timber substructures
For timber substructures performance assessed with

$M_{y,Rk}$ = 4,390 Nm
$f_{ax,k}$ = 12,321 N/mm² for $l_{ef} \geq 20$ mm
$f_{ax,k}$ = 15,523 N/mm² for $l_{ef} \geq 27$ mm



L = 19 - 75 mm
D = 4,8 mm
AF = 8,0 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								l_{ef} [mm]		
										20	27	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88*	—	*bearing resistance of component I **bearing resistance of component II
	0,55	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88*	—	
	0,63	0,88	0,88	1,27	1,27	1,27	1,27	1,27	1,27	0,91**	—	
	0,75	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	0,88	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	1,00	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	1,13	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	1,25	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	bearing resistance of component I
	0,55	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	
	0,63	0,45	0,45	0,69	0,69	0,69	0,69	0,69	0,69	0,84	0,84	
	0,75	0,45	0,45	0,69	0,77	0,77	0,77	0,77	0,77	0,84	0,84	
	0,88	0,45	0,45	0,69	0,77	0,84	0,84	0,84	0,84	0,84	0,84	
	1,00	0,45	0,45	0,69	0,77	0,84	0,84	0,84	0,84	0,84	0,84	
	1,13	0,45	0,45	0,69	0,77	0,84	0,84	0,84	0,84	0,84	0,84	
	1,25	0,45	0,45	0,69	0,77	0,84	0,84	0,84	0,84	0,84	0,84	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKF (H-GW) 4,8 × L
with hexagon head

Annex 30

of European Technical Assessment ETA-13/0817

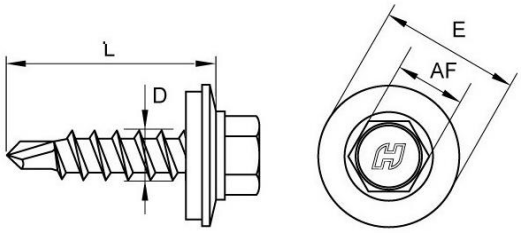
Materials

Fastener:	carbon steel – SAE1022 quenched, tempered and galvanized (≥ 12 µm)
Washer:	metallic washer made of coated carbon steel with EPDM sealing ring
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346 or structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}25$ mm

Timber substructures
For timber substructures performance assessed with

$M_{y,Rk}$ = 4,390 Nm
$f_{ax,k}$ = 12,321 N/mm² for $l_{ef} \geq 20$ mm
$f_{ax,k}$ = 15,523 N/mm² for $l_{ef} \geq 27$ mm



L = 19 - 100 mm
D = 4,8 mm
AF = 8,0 mm
E ≥ 14 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								l_{ef} [mm]		
										20	27	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88*	—	*bearing resistance of component I **bearing resistance of component II
	0,55	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88	0,88*	—	
	0,63	0,88	0,88	1,27	1,27	1,27	1,27	1,27	1,27	0,91**	—	
	0,75	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	0,88	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	1,00	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	1,13	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	1,25	0,88	0,88	1,27	1,40	1,40	1,40	1,40	1,40	0,91**	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,45	0,45	bearing resistance of component I
	0,55	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,45	0,45	
	0,63	0,54	0,54	0,69	0,69	0,69	0,69	0,69	0,69	0,84	0,84	
	0,75	0,54	0,54	0,69	0,77	0,77	0,77	0,77	0,77	0,84	0,84	
	0,88	0,54	0,54	0,69	0,77	0,97	0,97	0,97	0,97	0,84	0,84	
	1,00	0,54	0,54	0,69	0,77	0,97	1,46	1,46	1,46	0,84	0,84	
	1,13	0,54	0,54	0,69	0,77	0,97	1,46	1,46	1,46	0,84	0,84	
	1,25	0,54	0,54	0,69	0,77	0,97	1,46	1,46	1,82	0,84	0,84	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKF (H-GW) 4,8 × L
with hexagon head and sealing washer ≥ Ø14 mm

Annex 31

of European Technical Assessment ETA-13/0817

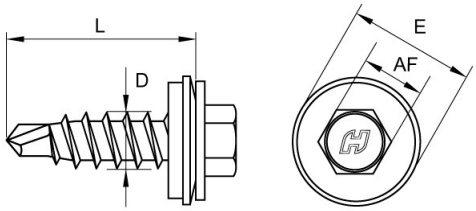
Materials

Fastener:	carbon steel – SAE1022 quenched, tempered and galvanized (≥ 12 µm), with or without additional coating PROTECT
Washer:	metallic washer made of coated carbon steel or stainless steel with EPDM sealing ring
Component I:	S280GD, S320GD or S350GD – EN 10346
Component II:	S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}50$ mm

Timber substructures

no performance assessed



L = 19 - 90 mm
D = 6,3 mm
AF = 8,0 mm
E ≥ 16 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50	Wood
$M_{t,nom}$		4 Nm									
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	
	0,55	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	
	0,63	1,24	1,24	2,16	2,16	2,16	2,16	2,16	2,16	2,16	
	0,75	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	0,88	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,00	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,13	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,25	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,50	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,75	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	
	0,55	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	
	0,63	0,45	0,45	0,73	0,73	0,73	0,73	0,73	0,73	0,73	
	0,75	0,45	0,45	0,73	0,83	0,83	0,83	0,83	0,83	0,83	
	0,88	0,45	0,45	0,73	0,83	1,16	1,16	1,16	1,16	1,16	
	1,00	0,45	0,45	0,73	0,83	1,16	1,81	1,81	1,81	1,81	
	1,13	0,45	0,45	0,73	0,83	1,16	1,81	1,81	1,81	1,81	
	1,25	0,45	0,45	0,73	0,83	1,16	1,81	1,81	2,25	2,25	
	1,50	0,45	0,45	0,73	0,83	1,16	1,81	1,81	2,25	2,90	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKF (H) 6,3 × L and WKF (H) PROTECT 6,3 × L
with hexagon head and sealing washer ≥ Ø16 mm

Annex 32

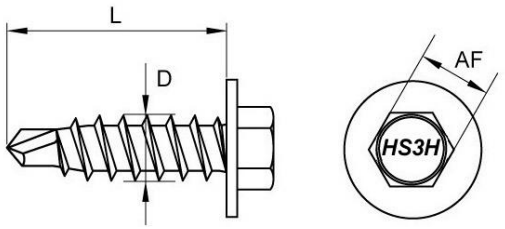
of European Technical Assessment ETA-13/0817

Materials
Fastener: stainless steel – 1.4301 – EN 10088-1
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}50$ mm

Timber substructures

no performance assessed



L = 19 - 75 mm
D = 6,3 mm
AF = 8,0 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50	Wood
$M_{t,nom}$		4 Nm									
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	
	0,55	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	
	0,63	1,24	1,24	2,16	2,16	2,16	2,16	2,16	2,16	2,16	
	0,75	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	0,88	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,00	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,13	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,25	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,50	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,75	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	
	0,55	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	
	0,63	0,45	0,45	0,73	0,73	0,73	0,73	0,73	0,73	0,73	
	0,75	0,45	0,45	0,73	0,83	0,83	0,83	0,83	0,83	0,83	
	0,88	0,45	0,45	0,73	0,83	0,94	0,94	0,94	0,94	0,94	
	1,00	0,45	0,45	0,73	0,83	0,94	0,94	0,94	0,94	0,94	
	1,13	0,45	0,45	0,73	0,83	0,94	0,94	0,94	0,94	0,94	
	1,25	0,45	0,45	0,73	0,83	0,94	0,94	0,94	0,94	0,94	
	1,50	0,45	0,45	0,73	0,83	0,94	0,94	0,94	0,94	0,94	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKF (HS3H-GW) 6,3 × L
with hexagon head

Annex 33

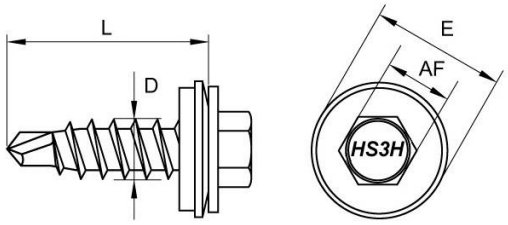
of European Technical Assessment ETA-13/0817

Materials
Fastener: stainless steel – 1.4301 – EN 10088-1
Washer: metallic washer made of stainless steel with EPDM sealing ring
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}50$ mm

Timber substructures

no performance assessed



L = 19 - 75 mm
D = 6,3 mm
AF = 8,0 mm
E ≥ 16 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50	Wood
$M_{t,nom}$		4 Nm									
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	
	0,55	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	
	0,63	1,24	1,24	2,16	2,16	2,16	2,16	2,16	2,16	2,16	
	0,75	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	0,88	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,00	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,13	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,25	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,50	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,75	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	
	0,55	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	
	0,63	0,45	0,45	0,73	0,73	0,73	0,73	0,73	0,73	0,73	
	0,75	0,45	0,45	0,73	0,83	0,83	0,83	0,83	0,83	0,83	
	0,88	0,45	0,45	0,73	0,83	1,16	1,16	1,16	1,16	1,16	
	1,00	0,45	0,45	0,73	0,83	1,16	1,81	1,81	1,81	1,81	
	1,13	0,45	0,45	0,73	0,83	1,16	1,81	1,81	1,81	1,81	
	1,25	0,45	0,45	0,73	0,83	1,16	1,81	1,81	2,25	2,25	
	1,50	0,45	0,45	0,73	0,83	1,16	1,81	1,81	2,25	2,90	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKF (HS3H) 6,3 × L
with hexagon head and sealing washer ≥ Ø16 mm

Annex 34

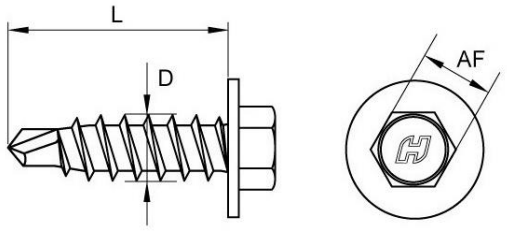
of European Technical Assessment ETA-13/0817

Materials
Fastener: carbon steel – SAE1022
quenched, tempered and galvanized (≥ 12 µm)
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}50$ mm

Timber substructures

no performance assessed



L = 19 - 75 mm
D = 6,3 mm
AF = 8,0 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	1,50	Wood
$M_{t,nom}$		4 Nm									
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	
	0,55	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	
	0,63	1,24	1,24	2,16	2,16	2,16	2,16	2,16	2,16	2,16	
	0,75	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	0,88	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,00	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,13	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,25	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,50	1,24	1,24	2,16	2,52	2,52	2,52	2,52	2,52	2,52	
	1,75	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	
	0,55	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	
	0,63	0,45	0,45	0,73	0,73	0,73	0,73	0,73	0,73	0,73	
	0,75	0,45	0,45	0,73	0,83	0,83	0,83	0,83	0,83	0,83	
	0,88	0,45	0,45	0,73	0,83	0,94	0,94	0,94	0,94	0,94	
	1,00	0,45	0,45	0,73	0,83	0,94	0,94	0,94	0,94	0,94	
	1,13	0,45	0,45	0,73	0,83	0,94	0,94	0,94	0,94	0,94	
	1,25	0,45	0,45	0,73	0,83	0,94	0,94	0,94	0,94	0,94	
	1,50	0,45	0,45	0,73	0,83	0,94	0,94	0,94	0,94	0,94	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKF (H-GW) 6,3 × L and WKF (H-GW) PROTECT 6,3
with hexagon head

Annex 35

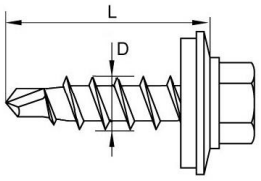
of European Technical Assessment ETA-13/0817

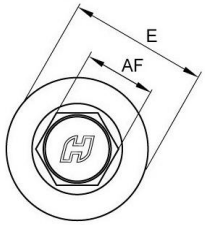
Materials
Fastener: carbon steel – SAE1022
quenched, tempered and galvanized (≥ 12 µm)
Washer: metallic washer made of aluminum with
EPDM sealing ring
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346
or structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}25$ mm

Timber substructures
For timber substructures performance assessed with

$M_{y,Rk}$ = 9,660 Nm
$f_{ax,k}$ = 7,362 N/mm² for $l_{ef} \geq 20$ mm
$f_{ax,k}$ = 17,289 N/mm² for $l_{ef} \geq 27$ mm





L = 19 - 75 mm
D = 6,5 mm
AF = 10,0 mm
E ≥ 16 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	Wood class ≥ C24		
$M_{t,nom}$		4 Nm								l_{ef} [mm]		
										20	27	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,49	1,49	1,49	1,49	1,49	1,49	1,49	1,49	1,49*	—	*bearing resistance of component I **bearing resistance of component II
	0,55	1,49	1,49	1,49	1,49	1,49	1,49	1,49	1,49	1,49*	—	
	0,63	1,49	1,49	2,37	2,37	2,37	2,37	2,37	2,37	1,61**	—	
	0,75	1,49	1,49	2,37	2,78	2,78	2,78	2,78	2,78	1,61**	—	
	0,88	1,49	1,49	2,37	2,78	2,78	2,78	2,78	2,78	1,61**	—	
	1,00	1,49	1,49	2,37	2,78	2,78	2,78	2,78	2,78	1,61**	—	
	1,13	1,49	1,49	2,37	2,78	2,78	2,78	2,78	2,78	1,61**	—	
	1,25	1,49	1,49	2,37	2,78	2,78	2,78	2,78	2,78	1,61**	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,62	0,62	0,62	0,62	0,62	0,62	0,62	0,62	0,77*	2,22**	*bearing resistance of component II **bearing resistance of component I
	0,55	0,62	0,62	0,62	0,62	0,62	0,62	0,62	0,62	0,77*	2,22**	
	0,63	0,62	0,62	0,79	0,79	0,79	0,79	0,79	0,79	0,77*	2,44*	
	0,75	0,62	0,62	0,79	0,86	0,86	0,86	0,86	0,86	0,77*	2,44*	
	0,88	0,62	0,62	0,79	0,86	1,09	1,09	1,09	1,09	0,77*	2,44*	
	1,00	0,62	0,62	0,79	0,86	1,09	1,77	1,77	1,77	0,77*	2,44*	
	1,13	0,62	0,62	0,79	0,86	1,09	1,77	1,77	1,77	0,77*	2,44*	
	1,25	0,62	0,62	0,79	0,86	1,09	1,77	1,77	2,17	0,77*	2,44*	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKF (H) 6,5 × L
with hexagon head and sealing washer ≥ Ø16 mm

Annex 36

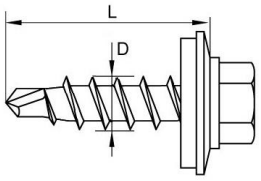
of European Technical Assessment ETA-13/0817

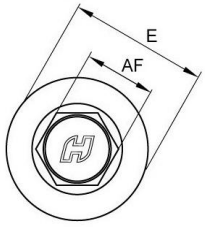
Materials
Fastener: carbon steel – SAE1022
quenched, tempered and galvanized (≥ 12 µm)
Washer: metallic washer made of coated carbon steel with EPDM sealing ring
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346 or structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}25$ mm

Timber substructures
For timber substructures performance assessed with

$M_{y,Rk}$ = 9,660 Nm
$f_{ax,k}$ = 7,362 N/mm² for $l_{ef} \geq 20$ mm
$f_{ax,k}$ = 17,289 N/mm² for $l_{ef} \geq 27$ mm





L = 19 - 75 mm
D = 6,5 mm
AF = 10,0 mm
E ≥ 16 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	Wood class ≥ C24		
$M_{t,nom}$		4 Nm								l_{ef} [mm]		
										20	27	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,49	1,49	1,49	1,49	1,49	1,49	1,49	1,49	1,49*	—	*bearing resistance of component I **bearing resistance of component II
	0,55	1,49	1,49	1,49	1,49	1,49	1,49	1,49	1,49	1,49*	—	
	0,63	1,49	1,49	2,37	2,37	2,37	2,37	2,37	2,37	1,61**	—	
	0,75	1,49	1,49	2,37	2,78	2,78	2,78	2,78	2,78	1,61**	—	
	0,88	1,49	1,49	2,37	2,78	2,78	2,78	2,78	2,78	1,61**	—	
	1,00	1,49	1,49	2,37	2,78	2,78	2,78	2,78	2,78	1,61**	—	
	1,13	1,49	1,49	2,37	2,78	2,78	2,78	2,78	2,78	1,61**	—	
	1,25	1,49	1,49	2,37	2,78	2,78	2,78	2,78	2,78	1,61**	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,62	0,62	0,62	0,62	0,62	0,62	0,62	0,62	0,77*	2,44*	*bearing resistance of component II
	0,55	0,62	0,62	0,62	0,62	0,62	0,62	0,62	0,62	0,77*	2,44*	
	0,63	0,62	0,62	0,79	0,79	0,79	0,79	0,79	0,79	0,77*	2,44*	
	0,75	0,62	0,62	0,79	0,86	0,86	0,86	0,86	0,86	0,77*	2,44*	
	0,88	0,62	0,62	0,79	0,86	1,09	1,09	1,09	1,09	0,77*	2,44*	
	1,00	0,62	0,62	0,79	0,86	1,09	1,77	1,77	1,77	0,77*	2,44*	
	1,13	0,62	0,62	0,79	0,86	1,09	1,77	1,77	1,77	0,77*	2,44*	
	1,25	0,62	0,62	0,79	0,86	1,09	1,77	1,77	2,17	0,77*	2,44*	
	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%

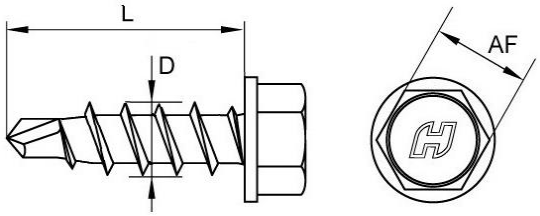
WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKF (H) 6,5 × L
with hexagon head and sealing washer ≥ Ø16 mm

Annex 37

of European Technical Assessment ETA-13/0817

Materials
Fastener: carbon steel – SAE1022
quenched, tempered and galvanized (≥ 12 µm)
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346
or structural timber – EN 14081



L = 19 - 75 mm
D = 6,5 mm
AF = 10,0 mm

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}25$ mm

Timber substructures
For timber substructures performance assessed with

$M_{y,Rk}$ = 9,660 Nm
$f_{ax,k}$ = 7,362 N/mm² for $l_{ef} \geq 20$ mm
$f_{ax,k}$ = 17,289 N/mm² for $l_{ef} \geq 27$ mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	Wood class ≥ C24		
$M_{t,nom}$		4 Nm								l_{ef} [mm] 20	l_{ef} [mm] 27	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,49	1,49	1,49	1,49	1,49	1,49	1,49	1,49	1,49*	—	*bearing resistance of component I **bearing resistance of component II
	0,55	1,49	1,49	1,49	1,49	1,49	1,49	1,49	1,49	1,49*	—	
	0,63	1,49	1,49	2,37	2,37	2,37	2,37	2,37	2,37	1,61**	—	
	0,75	1,49	1,49	2,37	2,78	2,78	2,78	2,78	2,78	1,61**	—	
	0,88	1,49	1,49	2,37	2,78	2,78	2,78	2,78	2,78	1,61**	—	
	1,00	1,49	1,49	2,37	2,78	2,78	2,78	2,78	2,78	1,61**	—	
	1,13	1,49	1,49	2,37	2,78	2,78	2,78	2,78	2,78	1,61**	—	
	1,25	1,49	1,49	2,37	2,78	2,78	2,78	2,78	2,78	1,61**	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,52	0,52	0,52	0,62	0,62	0,62	0,62	0,62	0,52*	0,52*	*bearing resistance of component I **bearing resistance of component II
	0,55	0,52	0,52	0,52	0,62	0,62	0,62	0,62	0,62	0,52*	0,52*	
	0,63	0,52	0,52	0,79	0,79	0,79	0,79	0,79	0,79	0,77**	0,94*	
	0,75	0,52	0,52	0,79	0,86	0,86	0,86	0,86	0,86	0,77**	0,94*	
	0,88	0,52	0,52	0,79	0,86	0,94	0,94	0,94	0,94	0,77**	0,94*	
	1,00	0,52	0,52	0,79	0,86	0,94	0,94	0,94	0,94	0,77**	0,94*	
	1,13	0,52	0,52	0,79	0,86	0,94	0,94	0,94	0,94	0,77**	0,94*	
	1,25	0,52	0,52	0,79	0,86	0,94	0,94	0,94	0,94	0,77**	0,94*	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKF (H-GW) 6,5 × L
with hexagon head

Annex 38

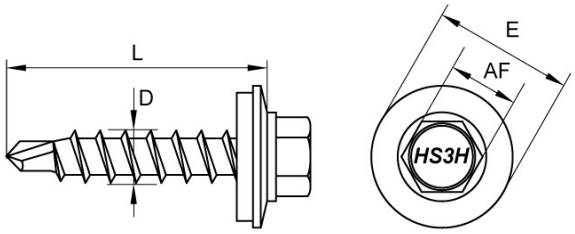
of European Technical Assessment ETA-13/0817

Materials
Fastener: stainless steel – 1.4301 – EN 10088-1
Washer: metallic washer made of stainless steel with EPDM sealing ring
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346 or structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}25$ mm

Timber substructures
For timber substructures performance assessed with

$M_{y,Rk}$ = 3,370 Nm
$f_{ax,k}$ = 10,976 N/mm² for $l_{ef} \geq 20$ mm
$f_{ax,k}$ = 14,312 N/mm² for $l_{ef} \geq 27$ mm



L = 19 - 75 mm
D = 4,8 mm
AF = 8,0 mm
E ≥ 14 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								l_{ef} [mm]		
										20	27	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57*	—	*bearing resistance of component I **bearing resistance of component II
	0,55	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57*	—	
	0,63	0,57	0,57	1,12	1,12	1,12	1,12	1,12	1,12	0,91**	—	
	0,75	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	0,88	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,00	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,13	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,25	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,41	1,15	2,00	bearing resistance of component II
	0,55	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,41	1,15	2,00	
	0,63	0,41	0,41	0,53	0,53	0,53	0,53	0,53	0,53	1,15	2,00	
	0,75	0,41	0,41	0,53	0,68	0,68	0,68	0,68	0,68	1,15	2,00	
	0,88	0,41	0,41	0,53	0,68	0,88	0,88	0,88	0,88	1,15	2,00	
	1,00	0,41	0,41	0,53	0,68	0,88	1,41	1,41	1,41	1,15	2,00	
	1,13	0,41	0,41	0,53	0,68	0,88	1,41	1,41	1,41	1,15	2,00	
	1,25	0,41	0,41	0,53	0,68	0,88	1,41	1,41	1,76	1,15	2,00	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKF (HS3H) 4,8 × L
with hexagon head and sealing washer ≥ Ø14 mm

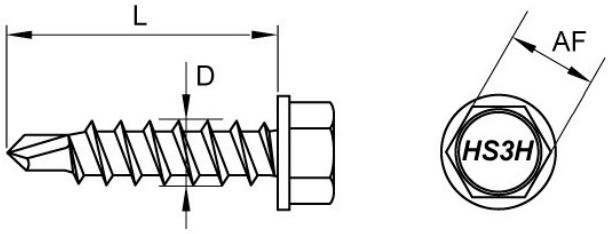
Annex 39
of European Technical Assessment ETA-13/0817

Materials
Fastener: stainless steel – 1.4301 – EN 10088-1
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346 or structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}25$ mm

Timber substructures
For timber substructures performance assessed with

$M_{y,Rk}$ = 3,370 Nm
$f_{ax,k}$ = 10,976 N/mm² for $l_{ef} \geq 20$ mm
$f_{ax,k}$ = 14,312 N/mm² for $l_{ef} \geq 27$ mm



L = 19 - 75 mm
D = 4,8 mm
AF = 8,0 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								l_{ef} [mm] 20	l_{ef} [mm] 27	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57*	—	*bearing resistance of component I **bearing resistance of component II
	0,55	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57*	—	
	0,63	0,57	0,57	1,12	1,12	1,12	1,12	1,12	1,12	0,91**	—	
	0,75	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	0,88	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,00	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,13	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,25	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,45	0,45	bearing resistance of component I
	0,55	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,45	0,45	
	0,63	0,41	0,41	0,53	0,53	0,53	0,53	0,53	0,53	0,84	0,84	
	0,75	0,41	0,41	0,53	0,68	0,68	0,68	0,68	0,68	0,84	0,84	
	0,88	0,41	0,41	0,53	0,68	0,84	0,84	0,84	0,84	0,84	0,84	
	1,00	0,41	0,41	0,53	0,68	0,84	0,84	0,84	0,84	0,84	0,84	
	1,13	0,41	0,41	0,53	0,68	0,84	0,84	0,84	0,84	0,84	0,84	
	1,25	0,41	0,41	0,53	0,68	0,84	0,84	0,84	0,84	0,84	0,84	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKF (HS3H-GW) 4,8 × L
with hexagon head

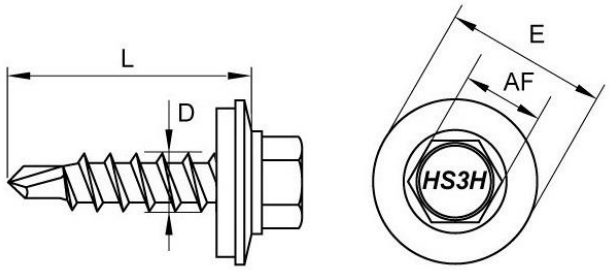
Annex 40
of European Technical Assessment ETA-13/0817

Materials
Fastener: stainless steel – 1.4301 – EN 10088-1
Washer: metallic washer made of stainless steel with EPDM sealing ring
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346 or structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}25$ mm

Timber substructures
For timber substructures performance assessed with

$M_{y,Rk}$ = 3,370 Nm
$f_{ax,k}$ = 10,976 N/mm² for $l_{ef} \geq 20$ mm
$f_{ax,k}$ = 14,312 N/mm² for $l_{ef} \geq 27$ mm



L = 19 - 75 mm
D = 4,8 mm
AF = 8,0 mm
E ≥ 14 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								l_{ef} [mm]		
										20	27	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57*	—	*bearing resistance of component I **bearing resistance of component II
	0,55	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57*	—	
	0,63	0,57	0,57	1,12	1,12	1,12	1,12	1,12	1,12	0,91**	—	
	0,75	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	0,88	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,00	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,13	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,25	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,45	0,45	bearing resistance of component I
	0,55	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,45	0,45	
	0,63	0,41	0,41	0,53	0,53	0,53	0,53	0,53	0,53	0,84	0,84	
	0,75	0,41	0,41	0,53	0,68	0,68	0,68	0,68	0,68	0,84	0,84	
	0,88	0,41	0,41	0,53	0,68	0,84	0,84	0,84	0,84	0,84	0,84	
	1,00	0,41	0,41	0,53	0,68	0,84	0,84	0,84	0,84	0,84	0,84	
	1,13	0,41	0,41	0,53	0,68	0,84	0,84	0,84	0,84	0,84	0,84	
	1,25	0,41	0,41	0,53	0,68	0,84	0,84	0,84	0,84	0,84	0,84	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKF (HS3H-GW) 4,8 × L
with hexagon head and sealing washer ≥ Ø14 mm

Annex 41

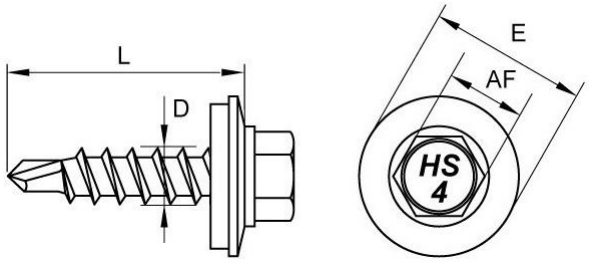
of European Technical Assessment ETA-13/0817

Materials
Fastener: stainless steel – 1.4006 – EN 10088-1
Washer: metallic washer made of stainless steel with EPDM sealing ring
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}25$ mm

Timber substructures
For timber substructures performance assessed with

$M_{y,Rk}$ = 3,370 Nm
$f_{ax,k}$ = 9,554 N/mm² for $l_{ef} \geq 20$ mm
$f_{ax,k}$ = 10,244 N/mm² for $l_{ef} \geq 27$ mm



L = 19 - 75 mm
D = 4,8 mm
AF = 8,0 mm
E ≥ 14 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								l_{ef} [mm]		
										20	27	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57*	—	*bearing resistance of component I **bearing resistance of component II
	0,55	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57*	—	
	0,63	0,57	0,57	1,12	1,12	1,12	1,12	1,12	1,12	0,91**	—	
	0,75	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	0,88	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,00	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,13	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,25	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,41	1,00	1,44	bearing resistance of component II
	0,55	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,41	1,00	1,44	
	0,63	0,41	0,41	0,53	0,53	0,53	0,53	0,53	0,53	1,00	1,44	
	0,75	0,41	0,41	0,53	0,68	0,68	0,68	0,68	0,68	1,00	1,44	
	0,88	0,41	0,41	0,53	0,68	0,88	0,84	0,84	0,84	1,00	1,44	
	1,00	0,41	0,41	0,53	0,68	0,88	1,41	1,41	1,41	1,00	1,44	
	1,13	0,41	0,41	0,53	0,68	0,88	1,41	1,41	1,41	1,00	1,44	
	1,25	0,41	0,41	0,53	0,68	0,88	1,41	1,41	1,76	1,00	1,44	
	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%

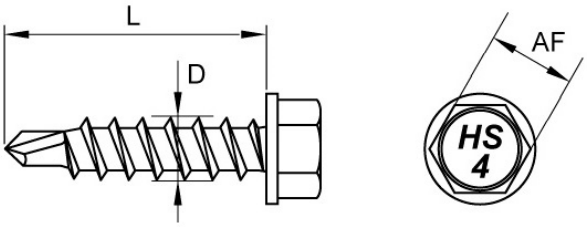
WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKF (HS4) 4,8 × L
with hexagon head and sealing washer ≥ Ø14 mm

Annex 42

of European Technical Assessment ETA-13/0817

Materials
Fastener: stainless steel – 1.4006 – EN 10088-1
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: structural timber – EN 14081



Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}25$ mm

L = 19 - 75 mm
D = 4,8 mm
AF = 8,0 mm

Timber substructures
For timber substructures performance assessed with

$M_{y,Rk}$ = 3,370 Nm
$f_{ax,k}$ = 9,554 N/mm² for $l_{ef} \geq 20$ mm
$f_{ax,k}$ = 10,244 N/mm² for $l_{ef} \geq 27$ mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								l_{ef} [mm]		
										20	27	
$V_{R,K}$ [kN] for $t_{N,I}$ [mm]	0,50	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57*	—	*bearing resistance of component I **bearing resistance of component II
	0,55	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57*	—	
	0,63	0,57	0,57	1,12	1,12	1,12	1,12	1,12	1,12	0,91**	—	
	0,75	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	0,88	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,00	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,13	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,25	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,K}$ [kN] for $t_{N,I}$ [mm]	0,50	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,45	0,45	bearing resistance of component I
	0,55	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,45	0,45	
	0,63	0,41	0,41	0,53	0,53	0,53	0,53	0,53	0,53	0,84	0,84	
	0,75	0,41	0,41	0,53	0,68	0,68	0,68	0,68	0,68	0,84	0,84	
	0,88	0,41	0,41	0,53	0,68	0,84	0,84	0,84	0,84	0,84	0,84	
	1,00	0,41	0,41	0,53	0,68	0,84	0,84	0,84	0,84	0,84	0,84	
	1,13	0,41	0,41	0,53	0,68	0,84	0,84	0,84	0,84	0,84	0,84	
	1,25	0,41	0,41	0,53	0,68	0,84	0,84	0,84	0,84	0,84	0,84	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKF (HS4-GW) 4,8 × L
with hexagon head

Annex 43

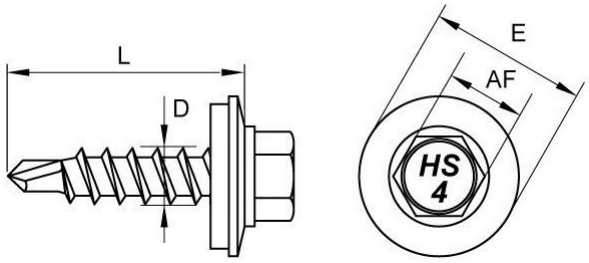
of European Technical Assessment ETA-13/0817

Materials
Fastener: stainless steel – 1.4006 – EN 10088-1
Washer: metallic washer made of stainless steel with EPDM sealing ring
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: structural timber – EN 14081

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}25$ mm

Timber substructures
For timber substructures performance assessed with

$M_{y,Rk}$ = 3,370 Nm
$f_{ax,k}$ = 9,554 N/mm² for $l_{ef} \geq 20$ mm
$f_{ax,k}$ = 10,244 N/mm² for $l_{ef} \geq 27$ mm



L = 19 - 75 mm
D = 4,8 mm
AF = 8,0 mm
E ≥ 14 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	Wood class ≥ C24		
$M_{t,nom}$		3 Nm								l_{ef} [mm]		
										20	27	
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57*	—	*bearing resistance of component I **bearing resistance of component II
	0,55	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57	0,57*	—	
	0,63	0,57	0,57	1,12	1,12	1,12	1,12	1,12	1,12	0,91**	—	
	0,75	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	0,88	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,00	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,13	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,25	0,57	0,57	1,12	1,15	1,15	1,15	1,15	1,15	0,91**	—	
	1,50	—	—	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,45	0,45	bearing resistance of component I
	0,55	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,41	0,45	0,45	
	0,63	0,41	0,41	0,53	0,53	0,53	0,53	0,53	0,53	0,84	0,84	
	0,75	0,41	0,41	0,53	0,68	0,68	0,68	0,68	0,68	0,84	0,84	
	0,88	0,41	0,41	0,53	0,68	0,88	0,84	0,84	0,84	0,84	0,84	
	1,00	0,41	0,41	0,53	0,68	0,88	1,41	1,41	1,41	0,84	0,84	
	1,13	0,41	0,41	0,53	0,68	0,88	1,41	1,41	1,41	0,84	0,84	
	1,25	0,41	0,41	0,53	0,68	0,88	1,41	1,41	1,76	0,84	0,84	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKF (HS4-GW) 4,8 × L
with hexagon head and sealing washer ≥ Ø14 mm

Annex 44

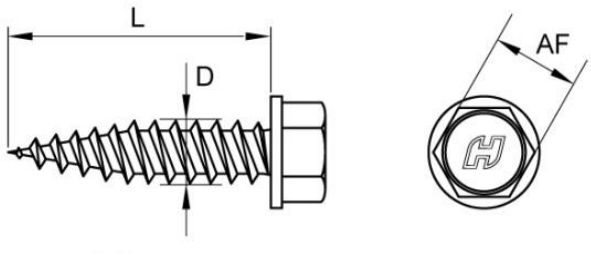
of European Technical Assessment ETA-13/0817

Materials
Fastener: carbon steel – SAE 1022
quenched, tempered and galvanized (≥ 12 µm)
Component I: S280GD, S320GD or S350GD – EN 10346
Component II: S280GD, S320GD or S350GD – EN 10346

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}00$ mm

Timber substructures

No performance assessed



L = 19 - 75 mm
D = 4,8 mm
AF = 8,0 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	Wood
$M_{t,nom}$		3 Nm								
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,24	1,24	1,24	1,24	1,24	1,24	—	—	
	0,55	1,24	1,24	1,24	1,24	1,24	1,24	—	—	
	0,63	1,24	1,24	2,16	2,16	2,16	2,16	—	—	
	0,75	1,24	1,24	2,16	2,52	2,52	2,52	—	—	
	0,88	1,24	1,24	2,16	2,52	2,52	2,52	—	—	
	1,00	1,24	1,24	2,16	2,52	2,52	2,52	—	—	
	1,13	—	—	—	—	—	—	—	—	
	1,25	—	—	—	—	—	—	—	—	
	1,50	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,52	0,52	0,52	0,52	0,52	0,52	—	—	
	0,55	0,52	0,52	0,52	0,52	0,52	0,52	—	—	
	0,63	0,52	0,52	0,78	0,78	0,78	0,78	—	—	
	0,75	0,52	0,52	0,78	0,88	0,88	0,88	—	—	
	0,88	0,52	0,52	0,78	0,88	1,11	1,11	—	—	
	1,00	0,52	0,52	0,78	0,88	1,11	1,45	—	—	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKFT (H-GW) 4,8 × L
with hexagon head

Annex 45

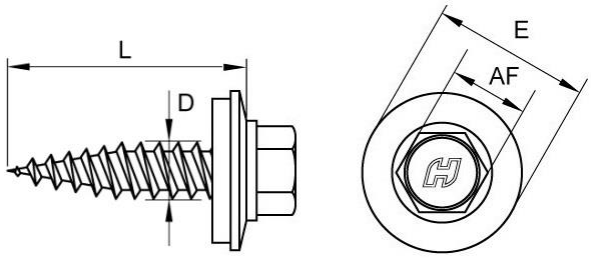
of European Technical Assessment ETA-13/0817

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

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}00$ mm

Timber substructures

No performance assessed



L = 19 - 75 mm
D = 4,8 mm
AF = 8,0 mm
E ≥ 14 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	Wood
$M_{t,nom}$		3 Nm								
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,24	1,24	1,24	1,24	1,24	1,24	—	—	
	0,55	1,24	1,24	1,24	1,24	1,24	1,24	—	—	
	0,63	1,24	1,24	2,16	2,16	2,16	2,16	—	—	
	0,75	1,24	1,24	2,16	2,52	2,52	2,52	—	—	
	0,88	1,24	1,24	2,16	2,52	2,52	2,52	—	—	
	1,00	1,24	1,24	2,16	2,52	2,52	2,52	—	—	
	1,13	—	—	—	—	—	—	—	—	
	1,25	—	—	—	—	—	—	—	—	
	1,50	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,80	0,80	0,80	0,80	0,80	0,80	—	—	
	0,55	0,80	0,80	0,80	0,80	0,80	0,80	—	—	
	0,63	0,80	0,80	1,22	1,22	1,22	1,22	—	—	
	0,75	0,80	0,80	1,22	1,43	1,43	1,43	—	—	
	0,88	0,80	0,80	1,22	1,43	1,63	1,63	—	—	
	1,00	0,80	0,80	1,22	1,43	1,63	2,14	—	—	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKFT (H) 4,8 × L
with hexagon head and sealing washer ≥ Ø14 mm

Annex 46

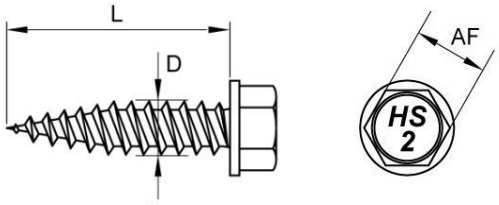
of European Technical Assessment ETA-13/0817

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

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}00$ mm

Timber substructures

No performance assessed



L = 19 - 75 mm
D = 4,8 mm
AF = 8,0 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	Wood
$M_{t,nom}$		3 Nm								
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,24	1,24	1,24	1,24	1,24	1,24	—	—	
	0,55	1,24	1,24	1,24	1,24	1,24	1,24	—	—	
	0,63	1,24	1,24	2,16	2,16	2,16	2,16	—	—	
	0,75	1,24	1,24	2,16	2,52	2,52	2,52	—	—	
	0,88	1,24	1,24	2,16	2,52	2,52	2,52	—	—	
	1,00	1,24	1,24	2,16	2,52	2,52	2,52	—	—	
	1,13	—	—	—	—	—	—	—	—	
	1,25	—	—	—	—	—	—	—	—	
	1,50	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,52	0,52	0,52	0,52	0,52	0,52	—	—	
	0,55	0,52	0,52	0,52	0,52	0,52	0,52	—	—	
	0,63	0,52	0,52	0,78	0,78	0,78	0,78	—	—	
	0,75	0,52	0,52	0,78	0,88	0,88	0,88	—	—	
	0,88	0,52	0,52	0,78	0,88	1,11	1,11	—	—	
	1,00	0,52	0,52	0,78	0,88	1,11	1,45	—	—	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKFT (HS2) 4,8 × L
with hexagon head

Annex 47

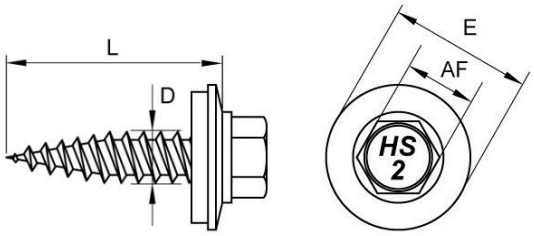
of European Technical Assessment ETA-13/0817

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

Drilling capacity: $\Sigma t_i \leq 2 \times 1{,}00$ mm

Timber substructures

No performance assessed



L = 19 - 75 mm
D = 4,8 mm
AF = 8,0 mm
E ≥ 14 mm

$t_{N,II}$ [mm]		0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25	Wood
$M_{t,nom}$		3 Nm								
$V_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	1,24	1,24	1,24	1,24	1,24	1,24	—	—	
	0,55	1,24	1,24	1,24	1,24	1,24	1,24	—	—	
	0,63	1,24	1,24	2,16	2,16	2,16	2,16	—	—	
	0,75	1,24	1,24	2,16	2,52	2,52	2,52	—	—	
	0,88	1,24	1,24	2,16	2,52	2,52	2,52	—	—	
	1,00	1,24	1,24	2,16	2,52	2,52	2,52	—	—	
	1,13	—	—	—	—	—	—	—	—	
	1,25	—	—	—	—	—	—	—	—	
	1,50	—	—	—	—	—	—	—	—	
	1,75	—	—	—	—	—	—	—	—	
	2,00	—	—	—	—	—	—	—	—	
$N_{R,k}$ [kN] for $t_{N,I}$ [mm]	0,50	0,80	0,80	0,80	0,80	0,80	0,80	—	—	
	0,55	0,80	0,80	0,80	0,80	0,80	0,80	—	—	
	0,63	0,80	0,80	1,22	1,22	1,22	1,22	—	—	
	0,75	0,80	0,80	1,22	1,43	1,43	1,43	—	—	
	0,88	0,80	0,80	1,22	1,43	1,63	1,63	—	—	
	1,00	0,80	0,80	1,22	1,43	1,63	2,14	—	—	
	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%

WKS, WKF, WKFT
Fastening screws for metal members and sheeting

WKFT (HS2) 4,8 × L
with hexagon head and sealing washer ≥ Ø14 mm

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

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

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

WKS, WKF, WKFT **Fastening screws for metal members and sheeting**	**Annex 49** of European Technical Assessment ETA-13/0817
Determination of design values	