

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

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ETA-10/0182
of 6 April 2018

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General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

Hilti S-MD; Hilti S-MP; Hilti S-MS

Product family
to which the construction product belongs

Fastening screws for metal members and sheeting

Manufacturer

Hilti AG
Feldkircherstraße 100
9494 Schaan
FÜRSTENTUM LIECHTENSTEIN

Manufacturing plant

Hilti AG, Plant 2855
Hilti AG, Plant 4330
Hilti AG, Plant 6522
Hilti AG, Plant 7855

This European Technical Assessment
contains

100 pages including 88 annexes which form an integral
part of this assessment

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No 305/2011, on the basis of

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Specific part

1 Technical description of the product

The fastening screws are self-drilling, self-piercing or self-tapping screws made of austenitic stainless steel or carbon steel with anticorrosion coating (listed in Table 1). The fastening screws are normally completed with sealing washers consisting of metal washer and EPDM-seal.

Table 1 – Fastening screws of the corresponding ETA and their field of application

Annex	Product	Component I	Component II	Description
6	Hilti S-MD 01 Z 4,2 x L Hilti S-MD 01 C 4,2 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Carbon steel, with hexagon head
7	Hilti S-MD 51 Z 4,2 x L Hilti S-MD 51 C 4,2 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Carbon steel, with hexagon head and sealing washer Ø16 mm
8	Hilti S-MD 01 Z 4,8 x L Hilti S-MD 01 C 4,8 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Carbon steel, with hexagon head
9	Hilti S-MD 01 LZ 4,8 x L Hilti S-MD 01 LC 4,8 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Carbon steel, with hexagon head
10	Hilti S-MD 51 Z 4,8 x L Hilti S-MD 51 C 4,8 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Carbon steel, with hexagon head and sealing washer Ø16 mm
11	Hilti S-MD 01 Z 5,5 x L Hilti S-MD 01 C 5,5 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Carbon steel, with hexagon head
12	Hilti S-MD 51 Z 5,5 x L Hilti S-MD 51 C 5,5 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Carbon steel, with hexagon head and sealing washer Ø16 mm
13	Hilti S-MD 01 Z 6,3 x L Hilti S-MD 01 C 6,3 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Carbon steel, with hexagon head
14	Hilti S-MD 51 Z 6,3 x L Hilti S-MD 51 C 6,3 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Carbon steel, with hexagon head and sealing washer Ø16 mm
15	Hilti S-MD 01 S 4,8 x L Hilti S-MD 01 SS 4,8 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Stainless steel, with hexagon head
16	Hilti S-MD 51 S 4,8 x L Hilti S-MD 51 SS 4,8 x L Hilti S-MD 61 S 4,8 x L Hilti S-MD 61 SS 4,8 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø16 mm and Ø19 mm

Table 1 – continued

Annex	Product	Component I	Component II	Description
17	Hilti S-MD 01 S 5,5 x L Hilti S-MD 01 SS 5,5 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Stainless steel, with hexagon head
18	Hilti S-MD 51 S 5,5 x L Hilti S-MD 51 SS 5,5 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø16 mm
19	Hilti S-MD 51 S 5,5 x L - 390 Hilti S-MD 51 SS 5,5 x L - 390	Steel ≥ S320GD	Steel ≥ S320GD ≥ S275	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø16 mm
20	Hilti S-MD 51 S 5,5 x L Hilti S-MD 51 SS 5,5 x L Hilti S-MD 61 S 5,5 x L Hilti S-MD 61 SS 5,5 x L Hilti S-MD 71 S 5,5 x L Hilti S-MD 71 SS 5,5 x L	Aluminium alloy $R_m \geq 185 \text{ N/mm}^2$	Steel ≥ S280GD Structural timber	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø16 mm, Ø19 mm and Ø22 mm
21	Hilti S-MD 01 LS 5,5 x L Hilti S-MD 01 LSS 5,5 x L	Steel ≥ S320GD	Steel ≥ S320GD ≥ S275	Self-drilling screw, Stainless steel, with hexagon head
22	Hilti S-MD 51 LS 5,5 x L Hilti S-MD 51 LSS 5,5 x L Hilti S-MD 61 LS 5,5 x L Hilti S-MD 61 LSS 5,5 x L Hilti S-MD 71 LS 5,5 x L Hilti S-MD 71 LSS 5,5 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø16 mm, Ø19 mm and Ø22 mm
23	Hilti S-MD 51 LS 5,5 x L - 390 Hilti S-MD 51 LSS 5,5 x L - 390 Hilti S-MD 61 LS 5,5 x L - 390 Hilti S-MD 61 LSS 5,5 x L - 390 Hilti S-MD 71 LS 5,5 x L - 390 Hilti S-MD 71 LSS 5,5 x L - 390	Steel ≥ S320GD	Steel ≥ S320GD ≥ S275	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø16 mm, Ø19 mm and Ø22 mm
24	Hilti S-MD 51 LS 5,5 x L Hilti S-MD 51 LSS 5,5 x L Hilti S-MD 61 LS 5,5 x L Hilti S-MD 61 LSS 5,5 x L Hilti S-MD 71 LS 5,5 x L Hilti S-MD 71 LSS 5,5 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø16 mm, Ø19 mm and Ø22 mm
25	Hilti S-MD 51 LS 5,5 x L - 390 Hilti S-MD 51 LSS 5,5 x L - 390 Hilti S-MD 61 LS 5,5 x L - 390 Hilti S-MD 61 LSS 5,5 x L - 390 Hilti S-MD 71 LS 5,5 x L - 390 Hilti S-MD 71 LSS 5,5 x L - 390	Steel ≥ S320GD	Steel ≥ S320GD ≥ S275	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø16 mm, Ø19 mm and Ø22 mm

Table 1 – continued

Annex	Product	Component I	Component II	Description
26	Hilti S-MD 41 LS 5,5 x L Hilti S-MD 41 LSS 5,5 x L Hilti S-MD 51 LS 5,5 x L Hilti S-MD 51 LSS 5,5 x L Hilti S-MD 61 LS 5,5 x L Hilti S-MD 61 LSS 5,5 x L Hilti S-MD 71 LS 5,5 x L Hilti S-MD 71 LSS 5,5 x L	Aluminium alloy $R_m \geq 185 \text{ N/mm}^2$	Steel $\geq \text{S280GD}$ $\geq \text{S235}$	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø14 mm, Ø16 mm, Ø19 mm and Ø22 mm
27	Hilti S-MD 41 LS 5,5 x L Hilti S-MD 41 LSS 5,5 x L Hilti S-MD 51 LS 5,5 x L Hilti S-MD 51 LSS 5,5 x L Hilti S-MD 61 LS 5,5 x L Hilti S-MD 61 LSS 5,5 x L Hilti S-MD 71 LS 5,5 x L Hilti S-MD 71 LSS 5,5 x L	Aluminium alloy $R_m \geq 185 \text{ N/mm}^2$	Aluminium alloy $R_m \geq 185 \text{ N/mm}^2$	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø14 mm, Ø16 mm, Ø19 mm and Ø22 mm
28	Hilti S-MD 41 LS 5,5 x L Hilti S-MD 41 LSS 5,5 x L Hilti S-MD 51 LS 5,5 x L Hilti S-MD 51 LSS 5,5 x L Hilti S-MD 61 LS 5,5 x L Hilti S-MD 61 LSS 5,5 x L Hilti S-MD 71 LS 5,5 x L Hilti S-MD 71 LSS 5,5 x L	Steel $\geq \text{S280GD}$	Aluminium alloy $R_m \geq 185 \text{ N/mm}^2$	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø14 mm, Ø16 mm, Ø19 mm and Ø22 mm
29	Hilti S-MD 03 Z 4,8 x L Hilti S-MD 03 C 4,8 x L	Steel $\geq \text{S280GD}$	Steel $\geq \text{S280GD}$ $\geq \text{S235}$	Self-drilling screw, Carbon steel, with hexagon head
30	Hilti S-MD 53 Z 4,8 x L Hilti S-MD 53 C 4,8 x L	Steel $\geq \text{S280GD}$	Steel $\geq \text{S280GD}$ $\geq \text{S235}$	Self-drilling screw, Carbon steel, with hexagon head and sealing washer Ø16 mm
31	Hilti S-MD 03 Z 5,5 x L Hilti S-MD 03 C 5,5 x L	Steel $\geq \text{S280GD}$	Steel $\geq \text{S280GD}$ $\geq \text{S235}$	Self-drilling screw, Carbon steel, with hexagon head
32	Hilti S-MD 23 Z 5,5 x L Hilti S-MD 23 C 5,5 x L	Steel $\geq \text{S280GD}$	Steel $\geq \text{S280GD}$ $\geq \text{S235}$	Self-drilling screw, Carbon steel, with hexagon head and pressed on flange
33	Hilti S-MD 53 Z 5,5 x L Hilti S-MD 53 C 5,5 x L	Steel $\geq \text{S280GD}$	Steel $\geq \text{S280GD}$ $\geq \text{S235}$	Self-drilling screw, Carbon steel, with hexagon head and sealing washer Ø16 mm
34	Hilti S-MD 03 Z 6,3 x L Hilti S-MD 03 C 6,3 x L	Steel $\geq \text{S280GD}$	Steel $\geq \text{S280GD}$ $\geq \text{S235}$	Self-drilling screw, Carbon steel, with hexagon head
35	Hilti S-MD 23 Z 6,3 x L Hilti S-MD 23 C 6,3 x L	Steel $\geq \text{S280GD}$	Steel $\geq \text{S280GD}$ $\geq \text{S235}$	Self-drilling screw, Carbon steel, with hexagon head and pressed on flange

Table 1 – continued

Annex	Product	Component I	Component II	Description
36	Hilti S-MD 53 Z 6,3 x L Hilti S-MD 53 C 6,3 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Carbon steel, with hexagon head and sealing washer Ø16 mm
37	Hilti S-MD 05 Z 5,5 x L Hilti S-MD 05 C 5,5 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Carbon steel, with hexagon head
38	Hilti S-MD 55 Z 5,5 x L Hilti S-MD 55 C 5,5 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Carbon steel, with hexagon head and sealing washer Ø16 mm
39	Hilti S-MD 05 GZ 5,5 x L Hilti S-MD 05 GC 5,5 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Carbon steel, with hexagon head
40	Hilti S-MD 55 GZ 5,5 x L Hilti S-MD 55 GC 5,5 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Carbon steel, with hexagon head and sealing washer Ø16 mm
41	Hilti S-MD 03 S 5,5 x L Hilti S-MD 03 SS 5,5 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Stainless steel, with hexagon head
42	Hilti S-MD 53 S 5,5 x L Hilti S-MD 53 SS 5,5 x L Hilti S-MD 63 S 5,5 x L Hilti S-MD 63 SS 5,5 x L Hilti S-MD 73 S 5,5 x L Hilti S-MD 73 SS 5,5 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø16 mm, Ø19 mm and Ø22 mm
43	Hilti S-MD 53 S 5,5 x L - 390 Hilti S-MD 53 SS 5,5 x L - 390 Hilti S-MD 63 S 5,5 x L - 390 Hilti S-MD 63 SS 5,5 x L - 390 Hilti S-MD 73 S 5,5 x L - 390 Hilti S-MD 73 SS 5,5 x L - 390	Steel ≥ S320GD	Steel ≥ S320GD ≥ S275	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø16 mm, Ø19 mm and Ø22 mm
44	Hilti S-MD 43 S 5,5 x L Hilti S-MD 43 SS 5,5 x L Hilti S-MD 53 S 5,5 x L Hilti S-MD 53 SS 5,5 x L Hilti S-MD 63 S 5,5 x L Hilti S-MD 63 SS 5,5 x L Hilti S-MD 73 S 5,5 x L Hilti S-MD 73 SS 5,5 x L	Aluminium alloy R _m ≥ 185 N/mm ²	Aluminium alloy R _m ≥ 185 N/mm ² Steel ≥ S280GD	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø14 mm, Ø16 mm, Ø19 mm and Ø22 mm
45	Hilti S-MD 43 S 5,5 x L Hilti S-MD 43 SS 5,5 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø14 mm
46	Hilti S-MD 43 S 5,5 x L - 390 Hilti S-MD 43 SS 5,5 x L - 390	Steel ≥ S320GD	Steel ≥ S320GD ≥ S275	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø14 mm

Table 1 – continued

Annex	Product	Component I	Component II	Description
47	Hilti S-MD 03 S 6,3 x L Hilti S-MD 03 SS 6,3 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Stainless steel, with hexagon head
48	Hilti S-MD 53 S 6,3 x L Hilti S-MD 53 SS 6,3 x L Hilti S-MD 63 S 6,3 x L Hilti S-MD 63 SS 6,3 x L Hilti S-MD 73 S 6,3 x L Hilti S-MD 73 SS 6,3 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø16 mm, Ø19 mm and Ø22 mm
49	Hilti S-MD 53 S 6,3 x L - 390 Hilti S-MD 53 SS 6,3 x L - 390 Hilti S-MD 63 S 6,3 x L - 390 Hilti S-MD 63 SS 6,3 x L - 390 Hilti S-MD 73 S 6,3 x L - 390 Hilti S-MD 73 SS 6,3 x L - 390	Steel ≥ S320GD	Steel ≥ S320GD ≥ S275	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø16 mm, Ø19 mm and Ø22 mm
50	Hilti S-MD 05 S 5,5 x L Hilti S-MD 05 SS 5,5 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Stainless steel, with hexagon head
51	Hilti S-MD 55 S 5,5 x L Hilti S-MD 55 SS 5,5 x L Hilti S-MD 65 S 5,5 x L Hilti S-MD 65 SS 5,5 x L Hilti S-MD 75 S 5,5 x L Hilti S-MD 75 SS 5,5 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø16 mm, Ø19 mm and Ø22 mm
52	Hilti S-MD 55 S 5,5 x L - 390 Hilti S-MD 55 SS 5,5 x L - 390 Hilti S-MD 65 S 5,5 x L - 390 Hilti S-MD 65 SS 5,5 x L - 390 Hilti S-MD 75 S 5,5 x L - 390 Hilti S-MD 75 SS 5,5 x L - 390	Steel ≥ S320GD	Steel ≥ S320GD ≥ S275	Self-drilling screw, Stainless steel, with hexagon head and sealing washer Ø16 mm, Ø19 mm and Ø22 mm
53	Hilti S-MS 01 Z 4,8 x L Hilti S-MS 01 C 4,8 x L	Steel ≥ S280GD	Steel ≥ S280GD	Self-piercing screw, Carbon steel, with hexagon head
54	Hilti S-MS 41 Z 4,8 x L Hilti S-MS 41 C 4,8 x L Hilti S-MS 51 Z 4,8 x L Hilti S-MS 51 C 4,8 x L	Steel ≥ S280GD	Steel ≥ S280GD	Self-piercing screw, Carbon steel, with hexagon head and sealing washer Ø14 mm and Ø16 mm
55	Hilti S-MS 41 Z 4,8 x L Hilti S-MS 41 C 4,8 x L Hilti S-MS 51 Z 4,8 x L Hilti S-MS 51 C 4,8 x L	Aluminium alloy $R_m \geq 215 \text{ N/mm}^2$	Aluminium alloy $R_m \geq 215 \text{ N/mm}^2$	Self-piercing screw, Carbon steel, with hexagon head and sealing washer Ø14 mm and Ø16 mm
56	Hilti S-MS 41 Z 4,8 x L Hilti S-MS 41 C 4,8 x L Hilti S-MS 51 Z 4,8 x L Hilti S-MS 51 C 4,8 x L	Aluminium alloy $R_m \geq 165 \text{ N/mm}^2$	Aluminium alloy $R_m \geq 165 \text{ N/mm}^2$	Self-piercing screw, Carbon steel, with hexagon head and sealing washer Ø14 mm and Ø16 mm
57	Hilti S-MS 41 Z 4,8 x L Hilti S-MS 41 C 4,8 x L Hilti S-MS 51 Z 4,8 x L Hilti S-MS 51 C 4,8 x L	Aluminium alloy $R_m \geq 215 \text{ N/mm}^2$	Steel ≥ S280GD	Self-piercing screw, Carbon steel, with hexagon head and sealing washer Ø14 mm and Ø16 mm

Table 1 – continued

Annex	Product	Component I	Component II	Description
58	Hilti S-MS 41 Z 4,8 x L Hilti S-MS 41 C 4,8 x L Hilti S-MS 51 Z 4,8 x L Hilti S-MS 51 C 4,8 x L	Aluminium alloy $R_m \geq 165 \text{ N/mm}^2$	Steel $\geq \text{S280GD}$	Self-piercing screw, Carbon steel, with hexagon head and sealing washer Ø14 mm and Ø16 mm
59	Hilti S-MS 01 S 4,8 x L Hilti S-MS 01 SS 4,8 x L	Steel $\geq \text{S280GD}$	Steel $\geq \text{S280GD}$	Self-piercing screw, Stainless steel, with hexagon head
60	Hilti S-MS 01 S 4,8 x L Hilti S-MS 01 SS 4,8 x L	Aluminium alloy $R_m \geq 215 \text{ N/mm}^2$	Aluminium alloy $R_m \geq 215 \text{ N/mm}^2$	Self-piercing screw, Stainless steel, with hexagon head
61	Hilti S-MS 01 S 4,8 x L Hilti S-MS 01 SS 4,8 x L	Aluminium alloy $R_m \geq 165 \text{ N/mm}^2$	Aluminium alloy $R_m \geq 165 \text{ N/mm}^2$	Self-piercing screw, Stainless steel, with hexagon head
62	Hilti S-MS 01 S 4,8 x L Hilti S-MS 01 SS 4,8 x L	Aluminium alloy $R_m \geq 215 \text{ N/mm}^2$	Steel $\geq \text{S280GD}$	Self-piercing screw, Stainless steel, with hexagon head
63	Hilti S-MS 01 S 4,8 x L Hilti S-MS 01 SS 4,8 x L	Aluminium alloy $R_m \geq 165 \text{ N/mm}^2$	Steel $\geq \text{S280GD}$	Self-piercing screw, Stainless steel, with hexagon head
64	Hilti S-MS 41 S 4,8 x L Hilti S-MS 41 SS 4,8 x L Hilti S-MS 41 S-A 4,8 x L Hilti S-MS 41 SS-A 4,8 x L Hilti S-MS 51 S 4,8 x L Hilti S-MS 51 SS 4,8 x L Hilti S-MS 51 S-A 4,8 x L Hilti S-MS 51 SS-A 4,8 x L	Steel $\geq \text{S280GD}$	Steel $\geq \text{S280GD}$	Self-piercing screw, Stainless steel, with hexagon head and sealing washer Ø14 mm and Ø16 mm
65	Hilti S-MS 41 S 4,8 x L Hilti S-MS 41 SS 4,8 x L Hilti S-MS 41 S-A 4,8 x L Hilti S-MS 41 SS-A 4,8 x L Hilti S-MS 51 S 4,8 x L Hilti S-MS 51 SS 4,8 x L Hilti S-MS 51 S-A 4,8 x L Hilti S-MS 51 SS-A 4,8 x L	Aluminium alloy $R_m \geq 215 \text{ N/mm}^2$	Aluminium alloy $R_m \geq 215 \text{ N/mm}^2$	Self-piercing screw, Stainless steel, with hexagon head and sealing washer Ø14 mm and Ø16 mm
66	Hilti S-MS 41 S 4,8 x L Hilti S-MS 41 SS 4,8 x L Hilti S-MS 41 S-A 4,8 x L Hilti S-MS 41 SS-A 4,8 x L Hilti S-MS 51 S 4,8 x L Hilti S-MS 51 SS 4,8 x L Hilti S-MS 51 S-A 4,8 x L Hilti S-MS 51 SS-A 4,8 x L	Aluminium alloy $R_m \geq 165 \text{ N/mm}^2$	Aluminium alloy $R_m \geq 165 \text{ N/mm}^2$	Self-piercing screw, Stainless steel, with hexagon head and sealing washer Ø14 mm and Ø16 mm
67	Hilti S-MS 41 S 4,8 x L Hilti S-MS 41 SS 4,8 x L Hilti S-MS 41 S-A 4,8 x L Hilti S-MS 41 SS-A 4,8 x L Hilti S-MS 51 S 4,8 x L Hilti S-MS 51 SS 4,8 x L Hilti S-MS 51 S-A 4,8 x L Hilti S-MS 51 SS-A 4,8 x L	Aluminium alloy $R_m \geq 215 \text{ N/mm}^2$	Steel $\geq \text{S280GD}$	Self-piercing screw, Stainless steel, with hexagon head and sealing washer Ø14 mm and Ø16 mm

Table 1 – continued

Annex	Product	Component I	Component II	Description
68	Hilti S-MS 41 S 4,8 x L Hilti S-MS 41 SS 4,8 x L Hilti S-MS 41 S-A 4,8 x L Hilti S-MS 41 SS-A 4,8 x L Hilti S-MS 51 S 4,8 x L Hilti S-MS 51 SS 4,8 x L Hilti S-MS 51 S-A 4,8 x L Hilti S-MS 51 SS-A 4,8 x L	Aluminium alloy $R_m \geq 165 \text{ N/mm}^2$	Steel $\geq \text{S280GD}$	Self-piercing screw, Stainless steel, with hexagon head and sealing washer Ø14 mm and Ø16 mm
69	Hilti S-MP 52 S 6,3 x L Hilti S-MP 52 SS 6,3 x L Hilti S-MP 62 S 6,3 x L Hilti S-MP 62 SS 6,3 x L Hilti S-MP 72 S 6,3 x L Hilti S-MP 72 SS 6,3 x L	Steel $\geq \text{S280GD}$	Steel $\geq \text{S280GD}$ $\geq \text{S235}$	Self-tapping screw, Stainless steel, with hexagon head and sealing washer Ø16 mm, Ø19 mm and Ø22 mm
70	Hilti S-MP 54 S 6,3 x L Hilti S-MP 54 SS 6,3 x L Hilti S-MP 64 S 6,3 x L Hilti S-MP 64 SS 6,3 x L Hilti S-MP 74 S 6,3 x L Hilti S-MP 74 SS 6,3 x L	Steel $\geq \text{S280GD}$	Steel $\geq \text{S280GD}$ $\geq \text{S235}$	Self-tapping screw, Stainless steel, with hexagon head and sealing washer Ø16 mm, Ø19 mm and Ø22 mm
71	Hilti S-MP 53 S 6,5 x L Hilti S-MP 53 SS 6,5 x L Hilti S-MP 63 S 6,5 x L Hilti S-MP 63 SS 6,5 x L Hilti S-MP 73 S 6,5 x L Hilti S-MP 73 SS 6,5 x L	Steel $\geq \text{S280GD}$	Steel $\geq \text{S280GD}$ $\geq \text{S235}$ Structural timber	Self-tapping screw, Stainless steel, with hexagon head and sealing washer Ø16 mm, Ø19 mm and Ø22 mm
72	Hilti S-MP 53 S 6,5 x L Hilti S-MP 53 SS 6,5 x L Hilti S-MP 63 S 6,5 x L Hilti S-MP 63 SS 6,5 x L Hilti S-MP 73 S 6,5 x L Hilti S-MP 73 SS 6,5 x L	Aluminium alloy $R_m \geq 185 \text{ N/mm}^2$	Steel $\geq \text{S280GD}$ Aluminium alloy $R_m \geq 185 \text{ N/mm}^2$ Structural timber	Self-tapping screw, Stainless steel, with hexagon head and sealing washer Ø16 mm, Ø19 mm and Ø22 mm
73	S-MD 31 PS 4,8 x L S-MD 31 PSS 4,8 x L	Steel $\geq \text{S280GD}$	Steel $\geq \text{S280GD}$ $\geq \text{S235}$ Structural timber	Self-drilling screw, Stainless steel, with pan head and sealing washer Ø12 mm
74	S-MD 31 PS 4,8 x L S-MD 31 PSS 4,8 x L	Aluminium alloy $R_m \geq 185 \text{ N/mm}^2$	Aluminium alloy $R_m \geq 185 \text{ N/mm}^2$ Structural timber	Self-drilling screw, Stainless steel, with pan head and sealing washer Ø12 mm
75	S-MD 31 PS 5,5 x L S-MD 31 PSS 5,5 x L	Steel $\geq \text{S280GD}$	Steel $\geq \text{S280GD}$ $\geq \text{S235}$	Self-drilling screw, Stainless steel, with pan head and sealing washer Ø12 mm
76	S-MD 31 PS 5,5 x L S-MD 31 PSS 5,5 x L	Aluminium alloy $R_m \geq 185 \text{ N/mm}^2$	Aluminium alloy $R_m \geq 185 \text{ N/mm}^2$	Self-drilling screw, Stainless steel, with pan head and sealing washer Ø12 mm
77	S-MD 31 PS 5,5 x L S-MD 31 PSS 5,5 x L	Aluminium alloy $R_m \geq 185 \text{ N/mm}^2$	Steel $\geq \text{S280GD}$ $\geq \text{S235}$	Self-drilling screw, Stainless steel, with pan head and sealing washer Ø12 mm

Table 1 – continued

Annex	Product	Component I	Component II	Description
78	S-MD 33 PS 5,5 x L S-MD 33 PSS 5,5 x L	Steel ≥ S280GD	Aluminium alloy $R_m \geq 185 \text{ N/mm}^2$	Self-drilling screw, Stainless steel, with pan head and sealing washer Ø12 mm
79	S-MD 33 PS 5,5 x L S-MD 33 PSS 5,5 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Stainless steel, with pan head and sealing washer Ø12 mm
80	S-MD 33 PS 5,5 x L S-MD 33 PSS 5,5 x L	Aluminium alloy $R_m \geq 185 \text{ N/mm}^2$	Aluminium alloy $R_m \geq 185 \text{ N/mm}^2$	Self-drilling screw, Stainless steel, with pan head and sealing washer Ø12 mm
81	S-MD 33 PS 5,5 x L S-MD 33 PSS 5,5 x L	Aluminium alloy $R_m \geq 185 \text{ N/mm}^2$	Steel ≥ S280GD ≥ S235	Self-drilling screw, Stainless steel, with pan head and sealing washer Ø12 mm
82	S-MD 35 PS 5,5 x L S-MD 35 PSS 5,5 x L	Steel ≥ S280GD	Steel ≥ S280GD ≥ S235	Self-drilling screw, Stainless steel, with pan head and sealing washer Ø12 mm
83	S-MD 35 PS 5,5 x L S-MD 35 PSS 5,5 x L	Aluminium alloy $R_m \geq 185 \text{ N/mm}^2$	Steel ≥ S280GD ≥ S235	Self-drilling screw, Stainless steel, with pan head and sealing washer Ø12 mm
84	Hilti S-MS 31 PS 4,8 x L Hilti S-MS 31 PSS 4,8 x L Hilti S-MS 31 PS-A 4,8 x L Hilti S-MS 31 PSS-A 4,8 x L	Steel ≥ S280GD	Steel ≥ S280GD	Self-piercing screw, Stainless steel, with pan head and sealing washer Ø12 mm
85	Hilti S-MS 31 PS 4,8 x L Hilti S-MS 31 PSS 4,8 x L Hilti S-MS 31 PS-A 4,8 x L Hilti S-MS 31 PSS-A 4,8 x L	Aluminium alloy $R_m \geq 215 \text{ N/mm}^2$	Aluminium alloy $R_m \geq 215 \text{ N/mm}^2$	Self-piercing screw, Stainless steel, with pan head and sealing washer Ø12 mm
86	Hilti S-MS 31 PS 4,8 x L Hilti S-MS 31 PSS 4,8 x L Hilti S-MS 31 PS-A 4,8 x L Hilti S-MS 31 PSS-A 4,8 x L	Aluminium alloy $R_m \geq 165 \text{ N/mm}^2$	Aluminium alloy $R_m \geq 165 \text{ N/mm}^2$	Self-piercing screw, Stainless steel, with pan head and sealing washer Ø12 mm
87	Hilti S-MS 31 PS 4,8 x L Hilti S-MS 31 PSS 4,8 x L Hilti S-MS 31 PS-A 4,8 x L Hilti S-MS 31 PSS-A 4,8 x L	Aluminium alloy $R_m \geq 215 \text{ N/mm}^2$	Steel ≥ S280GD	Self-piercing screw, Stainless steel, with pan head and sealing washer Ø12 mm
88	Hilti S-MS 31 PS 4,8 x L Hilti S-MS 31 PSS 4,8 x L Hilti S-MS 31 PS-A 4,8 x L Hilti S-MS 31 PSS-A 4,8 x L	Aluminium alloy $R_m \geq 165 \text{ N/mm}^2$	Steel ≥ S280GD	Self-piercing screw, Stainless steel, with pan head and sealing washer Ø12 mm

2 Specification of the intended use in accordance with the applicable European Assessment Document 330046-01-0602

The fastening screws are intended to be used for fastening metal sheeting to metal or timber substructures. 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 metal 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 $\geq C2$ corrosion according to the standard EN ISO 12944-2 are made of stainless steel. Furthermore the intended use comprises connections with predominantly static loads (e.g. wind loads, dead loads). The fastening screws are not intended for re-use.

The performances given in Section 3 are only valid if the fastening screws are used in compliance with the specifications and conditions given in Annex (1-88).

The verification and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the fastening screws of at least 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment**3.1 Mechanical resistance and stability (BWR 1)**

Essential characteristic	Performance
Shear Resistance of the Connection	see Annexes to this ETA
Tension Resistance of the Connection	see Annexes to this ETA
Design Resistance in case of combined Tension and Shear Forces (interaction)	see Annexes to this ETA
Check of Deformation Capacity in case of constraining forces due to temperature	No performance assessed
Durability	No performance assessed

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Performance Class A1

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

In accordance with EAD No. 330046-01-0602, the applicable European legal act is: Commission Decision 1998/214/EC, amended by 2001/596/EC.

The system to be applied is: 2+

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

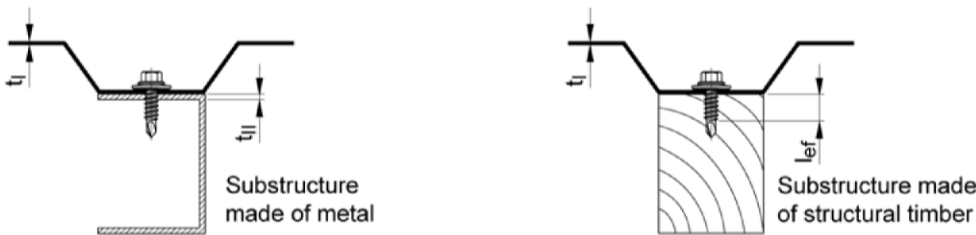
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 6 April 2018 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow
Head of Department

beglaubigt:
Schult

Examples of execution of a connection



Materials and dimensions

Design relevant materials and dimensions are indicated in the Annexes of the fastening screws:

Fastener	Material of the fastening screw
Washer	Material of the sealing washer
Component I	Material of the metal member or sheeting
Component II	Material of the substructure
t_I	Thickness of component I
t_{II}	Thickness of component II made of metal
l_{ef}	Effective screw-in length in component II made of structural timber (without drill point)
d_{dp}	Predrill diameter of component I and component II
$d_{dp,I}$	Predrill diameter of component I

The thickness t_{II} corresponds to the load-bearing screw-in length of the fastening screw in component II, if the load-bearing screw-in length does not cover the entire component thickness.

Performance characteristics

The design relevant performance characteristics of a connection are indicated in the Annexes of the fastening screws:

$N_{R,k}$	Characteristic value of tension resistance
$V_{R,k}$	Characteristic value of shear resistance

In some cases component-specific performance characteristics are indicated for an individual calculation of the design relevant performance characteristics of a connection:

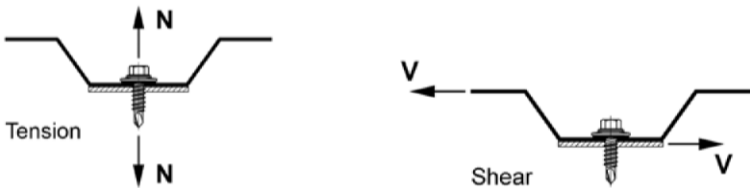
$N_{R,I,k}$	Characteristic value of pull-through resistance for component I
$N_{R,II,k}$	Characteristic value of pull-out resistance for component II
$V_{R,I,k}$	Characteristic value of hole bearing resistance for component I
$V_{R,II,k}$	Characteristic value of hole bearing resistance for component II
$M_{y,Rk}$	Characteristic value of yield moment of the fastening screw (for component II made of structural timber)
$f_{ax,k}$	Characteristic value of withdrawal strength for component II made of structural timber
$f_{h,k}$	Characteristic value of embedding strength for component II made of structural timber

Terms and explanations

Fastening screws for metal members and sheeting

Annex 1

Occurred loadings of a connection



Design values

The design values of tension and shear resistance of a connection have to be determined as follows:

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

$N_{R,d}$ Design value of tension resistance
 $V_{R,d}$ Design value of shear resistance
 γ_M Partial safety factor

The recommended partial safety factor γ_M is 1,33, provided no partial safety factor is given in national regulations or national Annexes to Eurocode 3.

Special conditions

If the component thickness t_I or t_{II} lies in between two indicated component thicknesses, the characteristic value may be calculated by linear interpolation.

For asymmetric components II made of metal (e.g. Z- or C-shaped profiles) with component thickness $t_{II} < 5$ mm, the characteristic value $N_{R,k}$ has to be reduced to 70%.

In case of combined loading by tension and shear forces the following interaction equation has to be taken into account:

$$\frac{N_{S,d}}{N_{R,d}} + \frac{V_{S,d}}{V_{R,d}} \leq 1,0$$

$N_{S,d}$ Design value of the applied tension forces
 $V_{S,d}$ Design value of the applied shear forces

Types of connection

For the types of connection (a, b, c, d) given in the Annexes of the fastening screws, it is not necessary to take into account the effect of constraints due to temperature. For other types of connection the effect of constraints have to be taken into account, unless they do not occur or are not significant (e.g. sufficient flexibility of the substructure).



Installation conditions

The installation is carried out according to manufacturer's instruction.
The load bearing screw-in length of the fastening screw specified by the manufacturer has to be taken into account.
The fastening screws have to be processed with suitable drill driver (e.g. cordless drill driver with depth stop). The use of impact wrench is not allowed.
The fastening screws have to be fixed rectangular to the surface of the component.
Component I and component II have to be in direct contact to each other. The use of compression resistant thermal insulation strips up to a thickness of 3 mm is allowed.

Design and installation

Fastening screws for metal members and sheeting

Annex 2

Component I made of perforated sheeting

For the calculation of the connection the characteristic values for the connection of unperforated sheets according to the relevant Annex and the characteristic values for the connection of perforated sheets according to Annex 4 or 5 are determined. The lower values are used for further calculations.

$$N_{R,k} = \min \left\{ \begin{array}{l} N_{R,I,k} \\ N_{R,k} \text{ or } N_{R,II,k} \end{array} \right. \qquad V_{R,k} = \min \left\{ \begin{array}{l} V_{R,I,k} \\ V_{R,k} \end{array} \right.$$

$N_{R,I,k}$ and $V_{R,I,k}$ are given in Annex 4 and 5.
 $N_{R,II,k}$, $N_{R,k}$ and $V_{R,k}$ are given in the Annex of the fastening screw.

Component I made of aluminium alloy

The characteristic value of tension resistance is given in the Annex of the fastening screw.
If not, the characteristic value of tension resistance can be determined as follows:

$$N_{R,k} = \min \left\{ \begin{array}{l} N_{R,I,k} \\ N_{R,II,k} \end{array} \right.$$

$N_{R,I,k}$ is determined according to EN 1999-1-4:2007 + AC:2009, equation (8.13).
 $N_{R,II,k}$ is given in the Annex of the fastening screw..

Component II made of timber

The characteristic values of tension and shear resistance for other k_{mod} or p_k as indicated in the Annex of the fastening screw can be determined as follows:

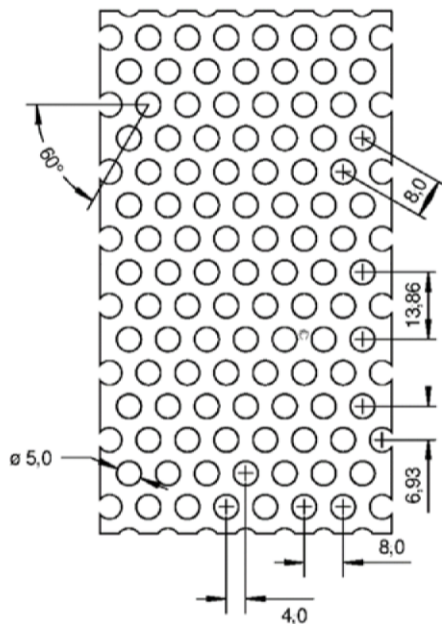
$$N_{R,k} = \min \left\{ \begin{array}{l} N_{R,I,k} \\ N_{R,II,k} * k_{mod} \end{array} \right. \qquad V_{R,k} = \min \left\{ \begin{array}{l} V_{R,I,k} \\ V_{R,II,k} * k_{mod} \end{array} \right.$$

$N_{R,I,k}$ and $V_{R,I,k}$ are given in the annex of the fastening screw.
 $N_{R,II,k}$ is determined according to EN 1995-1-1:2004 + A1:2008, equation (8.40a), with $f_{ax,k}$ given in the Annex of the fastening screw.
 $V_{R,II,k}$ is determined according to EN 1995-1-1:2004 + A1:2008, equation (8.9), with $M_{y,Rk}$ given in the Annex of the fastening screw.

Additional provisions

Fastening screws for metal members and sheeting

Annex 3



**Fastening
screws:**

Self tapping screws from Ø 6,3 mm to Ø 6,5 mm
and

Self drilling screws from Ø 5,5 mm to Ø 6,3 mm

Materials:

Fastener: Stainless steel – EN 10088 or similar

Washer: Stainless steel – EN 10088
with EPDM sealing washer

Component I: S280GD to S450GD – EN 10346

Component II: According to Annex of the fastening screw

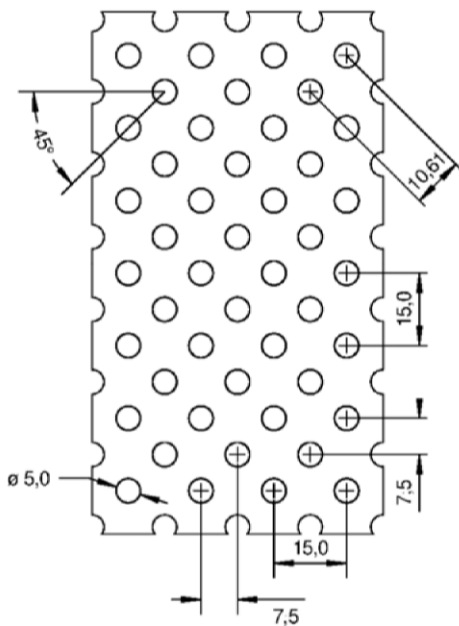
Sheet Ø washer	Perforated sheets S280GD with $R_{m,min} = 360 \text{ N/mm}^2$				Perforated sheets S320GD with $R_{m,min} = 390 \text{ N/mm}^2$				Perforated sheets $\geq \text{S350GD}$ with $R_{m,min} \geq 420 \text{ N/mm}^2$			
	16 mm	19 mm	22 mm	25 mm	16 mm	19 mm	22 mm	25 mm	16 mm	19 mm	22 mm	25 mm
$V_{R,i,k}$ [kN] for t_i [mm]	0,50	---	---	---	---	---	---	---	---	---	---	---
	0,55	---	---	---	---	---	---	---	---	---	---	---
	0,63	---	---	---	---	---	---	---	---	---	---	---
	0,75	2,16	2,22	2,24	2,38	2,34	2,40	2,44	2,58	2,54	2,60	2,78
	0,88	2,56	2,64	2,64	2,78	2,78	2,86	2,86	3,02	3,00	3,10	3,26
	1,00	2,92	3,04	3,02	3,16	3,16	3,30	3,26	3,42	3,42	3,65	3,68
	1,13	3,32	3,48	3,42	3,56	3,60	3,76	3,70	3,86	3,88	4,10	4,16
	1,25	3,70	3,88	3,80	3,94	4,00	4,20	4,10	4,26	4,32	4,54	4,60
	1,50	4,46	4,74	4,56	4,72	4,84	5,12	4,96	5,10	5,22	5,54	5,50
$N_{R,i,k}$ [kN] for t_i [mm]	0,50	---	---	---	---	---	---	---	---	---	---	---
	0,55	---	---	---	---	---	---	---	---	---	---	---
	0,63	---	---	---	---	---	---	---	---	---	---	---
	0,75	1,40	1,94	2,14	2,22	1,52	2,08	3,32	2,42	1,64	2,26	2,50
	0,88	1,82	2,34	2,62	2,70	1,96	2,54	2,82	2,92	2,12	2,74	3,04
	1,00	2,24	2,74	3,06	3,14	2,44	2,96	3,32	3,42	2,62	3,20	3,58
	1,13	2,74	3,18	3,58	3,64	2,98	3,44	3,88	3,96	3,20	3,70	4,18
	1,25	3,24	3,58	4,08	4,12	3,52	3,88	4,40	4,46	3,78	4,18	4,76
	1,50	4,36	4,46	5,12	5,12	4,74	4,84	5,56	5,56	5,10	5,22	5,98

The characteristic values $N_{R,k}$ and $V_{R,k}$ can be determined according to Annex 3.
The thickness t_i shall be at least 1,00 mm if component I is exposed to wind loads.

Steel sheeting with hole pattern I

Fastening screws for perforated steel sheeting

Annex 4



**Fastening
screws:**

Self tapping screws from Ø 6,3 mm to Ø 6,5 mm
and

Self drilling screws from Ø 5,5 mm to Ø 6,3 mm

Materials:

Fastener: Stainless steel – EN 10088 or similar

Washer: Stainless steel – EN 10088
with EPDM sealing washer

Component I: S280GD to S450GD – EN 10346

Component II: According to Annex of the fastening screw

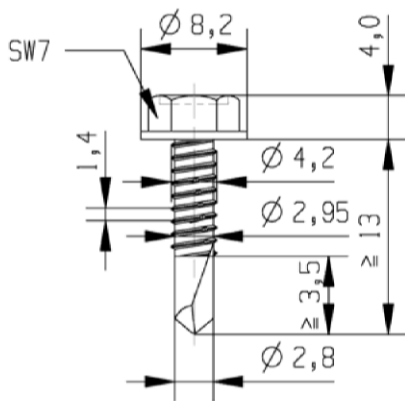
Sheet		Perforated sheets S280GD with $R_{m,min} = 360 \text{ N/mm}^2$				Perforated sheets S320GD with $R_{m,min} = 390 \text{ N/mm}^2$				Perforated sheets $\geq \text{S350GD}$ with $R_{m,min} \geq 420 \text{ N/mm}^2$			
Ø washer		16 mm	19 mm	22 mm	25 mm	16 mm	19 mm	22 mm	25 mm	16 mm	19 mm	22 mm	25 mm
$V_{R,i,k}$ [kN] for t_i [mm]	0,50	---	---	---	---	---	---	---	---	---	---	---	---
	0,55	---	---	---	---	---	---	---	---	---	---	---	---
	0,63	---	---	---	---	---	---	---	---	---	---	---	---
	0,75	2,38	2,52	2,84	2,76	2,58	2,73	3,08	2,99	2,78	2,94	3,31	3,22
	0,88	3,02	3,12	3,42	3,32	3,27	3,38	3,70	3,60	3,52	3,64	3,99	3,87
	1,00	3,56	3,70	3,84	3,84	3,86	4,01	4,16	4,16	4,15	4,31	4,48	4,48
	1,13	4,14	4,26	4,40	4,40	4,48	4,61	4,77	4,77	4,83	4,97	5,13	5,13
	1,25	4,68	4,84	4,92	4,94	5,07	5,24	5,33	5,35	5,46	5,64	5,74	5,76
	1,50	5,76	6,04	5,90	6,10	6,24	6,54	6,39	6,61	6,72	7,04	6,88	7,11
$N_{R,i,k}$ [kN] for t_i [mm]	0,50	---	---	---	---	---	---	---	---	---	---	---	---
	0,55	---	---	---	---	---	---	---	---	---	---	---	---
	0,63	---	---	---	---	---	---	---	---	---	---	---	---
	0,75	2,86	3,16	3,24	3,14	3,10	3,42	3,51	3,40	3,33	3,68	3,78	3,66
	0,88	3,40	3,72	3,76	3,70	3,68	4,03	4,07	4,01	3,96	4,34	4,38	4,31
	1,00	3,90	4,28	4,28	4,20	4,22	4,64	4,64	4,55	4,55	4,99	4,99	4,90
	1,13	4,44	4,86	4,88	4,72	4,81	5,26	5,29	5,11	5,18	5,67	5,69	5,50
	1,25	4,94	5,42	5,42	5,26	5,35	5,87	5,87	5,70	5,76	6,32	6,32	6,13
	1,50	6,00	6,60	6,60	6,38	6,50	7,15	7,15	6,91	7,00	7,70	7,70	7,44

The characteristic values $N_{R,k}$ and $V_{R,k}$ can be determined according to Annex 3.
The thickness t_i shall be at least 1,00 mm if component I is exposed to wind loads.

Steel sheeting with hole pattern II

Fastening screws for perforated steel sheeting

Annex 5



Material:

Fastener: carbon steel, case hardened
and galvanized or coated

Washer: none

Component I: S280GD, S320GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD - EN 10346

Drilling capacity: $\Sigma t \leq 2,50 \text{ mm}$

Timber substructures:

no performance determined

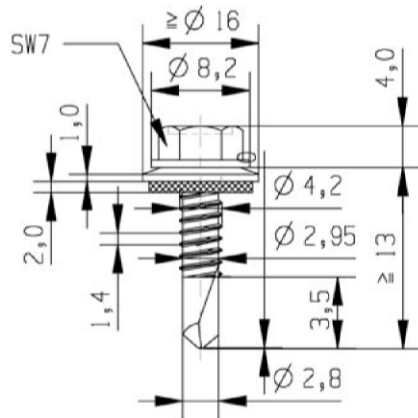
t_l [mm]	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,50	2,00	2,50	2,60	2,60 ac	2,60 ac	2,60 a	—
0,75	1,70	2,10	2,60	3,00	3,60	4,00	4,00	—
0,88	1,80	2,20	2,80	3,30	4,00	4,50	4,50	—
1,00	1,90	2,40	3,00	3,60	4,30	5,00	5,00	—
1,13	1,90	2,40	3,00	3,60	4,30	5,00	—	—
1,25	1,90	2,40	3,00	3,60	4,30	5,00	—	—
1,50	1,90	2,40	3,00	3,60	—	—	—	—
1,75	1,90	2,40	—	—	—	—	—	—
2,00	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	0,90	1,20	1,40	1,40	1,40 ac	1,40 ac	1,40 a	—
0,75	0,90	1,20	1,40	1,70	1,90	2,00	2,00	—
0,88	0,90	1,20	1,40	1,70	1,90	2,20	2,70	—
1,00	0,90	1,20	1,40	1,70	1,90	2,20	2,80	—
1,13	0,90	1,20	1,40	1,70	1,90	2,20	—	—
1,25	0,90	1,20	1,40	1,70	1,90	2,20	—	—
1,50	0,90	1,20	1,40	1,70	—	—	—	—
1,75	0,90	1,20	—	—	—	—	—	—
2,00	—	—	—	—	—	—	—	—
$M_{t, \text{nom}}$ [Nm]	$\Sigma t \leq 1,25 \text{ mm}: 2 \text{ Nm}$				$\Sigma t > 1,25 \text{ mm}: 4 \text{ Nm}$			

No additional regulations.

Self drilling screw

Hilti S-MD 01 Z 4,2 x L
Hilti S-MD 01 C 4,2 x L
with hexagon head

Annex 6



Material:

Fastener: carbon steel, case hardened
and galvanized or coated

Washer: carbon steel, galvanized or coated
stainless Steel (1.4301) - EN 10088

Component I: S280GD, S320GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD - EN 10346

Drilling capacity: $\Sigma t \leq 2,50 \text{ mm}$

Timber substructures:

no performance determined

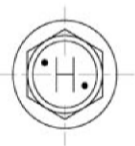
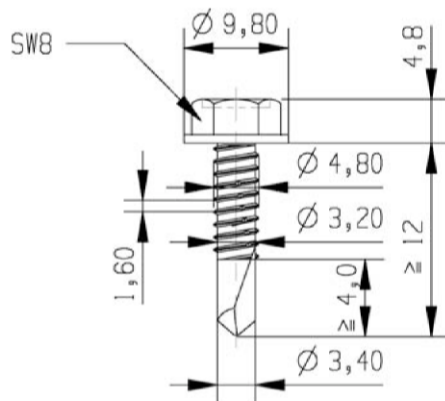
t_i [mm]	0,63	0,75	0,88	t_{II} [mm]		1,00	1,13	1,25	1,50	2,00
$V_{R,k}$ [kN]										
0,50	—	—	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—	—	—
0,63	1,40	1,80	2,40	3,00	3,10	ac	3,10	ac	3,10	a
0,75	1,40	1,80	2,40	3,00	3,60	—	3,60	a	3,60	a
0,88	1,40	1,80	2,40	3,00	3,70	—	4,00	—	4,00	—
1,00	1,40	1,80	2,40	3,00	3,70	—	4,40	—	4,40	—
1,13	1,40	1,80	2,40	3,00	3,70	—	4,40	—	—	—
1,25	1,40	1,80	2,40	3,00	3,70	—	4,40	—	—	—
1,50	1,40	1,80	2,40	3,00	—	—	—	—	—	—
1,75	1,40	1,80	—	—	—	—	—	—	—	—
2,00	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN]										
0,50	0,49	0,65	0,76	0,92	1,03	ac	1,19	ac	1,40	a
0,55	0,61	0,82	0,95	1,16	1,30	ac	1,50	ac	1,77	a
0,63	0,90	1,20	1,40	1,70	1,90	ac	2,20	ac	2,60	a
0,75	0,90	1,20	1,40	1,70	1,90	—	2,20	a	2,80	a
0,88	0,90	1,20	1,40	1,70	1,90	—	2,20	—	2,80	—
1,00	0,90	1,20	1,40	1,70	1,90	—	2,20	—	2,80	—
1,13	0,90	1,20	1,40	1,70	1,90	—	2,20	—	—	—
1,25	0,90	1,20	1,40	1,70	1,90	—	2,20	—	—	—
1,50	0,90	1,20	1,40	1,70	—	—	—	—	—	—
1,75	0,90	1,20	—	—	—	—	—	—	—	—
2,00	—	—	—	—	—	—	—	—	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 1,25 \text{ mm}: 2 \text{ Nm}$					$\Sigma t > 1,25 \text{ mm}: 4 \text{ Nm}$				

No additional regulations.

Self drilling screw

Hilti S-MD 51 Z 4,2 x L
Hilti S-MD 51 C 4,2 x L
with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 7



Material:

Fastener: carbon steel, case hardened
and galvanized or coated

Washer: none

Component I: S280GD, S320GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD - EN 10346

Drilling capacity: $\Sigma t \leq 2,75 \text{ mm}$

Timber substructures:

no performance determined

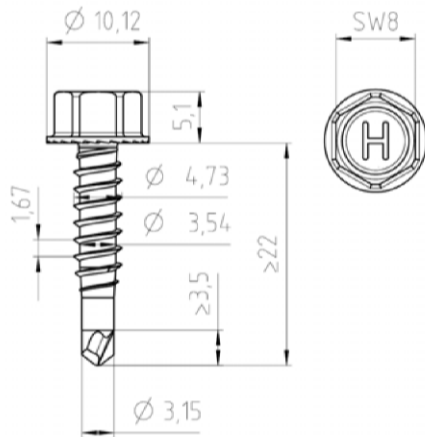
t_i [mm]	t_{ii} [mm]															
	0,63		0,75		0,88		1,00		1,13		1,25		1,50		2,00	
$V_{R,k}$ [kN]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	1,40	—	1,80	—	2,10	—	2,40	—	2,70	—	3,00	ac	3,60	ac	3,60 ac
	0,75	1,40	—	1,90	—	2,30	—	2,70	—	3,10	—	3,50	—	4,40	—	4,40 a
	0,88	1,40	—	1,90	—	2,40	—	2,90	—	3,30	—	3,90	—	5,10	—	—
	1,00	1,40	—	1,90	—	2,40	—	3,00	—	3,60	—	4,30	—	5,80	—	—
	1,13	1,40	—	1,90	—	2,40	—	3,00	—	3,60	—	4,30	—	5,80	—	—
	1,25	1,40	—	1,90	—	2,40	—	3,00	—	3,60	—	4,30	—	5,80	—	—
	1,50	1,40	—	2,00	—	2,70	—	3,50	—	4,40	—	5,40	—	—	—	—
	1,75	1,40	—	2,00	—	2,70	—	3,50	—	—	—	—	—	—	—	—
	2,00	1,40	—	2,00	—	—	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	0,80	—	1,00	—	1,30	—	1,40	—	1,40	—	1,40	ac	1,40	ac	1,40 ac
	0,75	0,80	—	1,00	—	1,30	—	1,50	—	1,80	—	2,00	—	2,00	—	2,00 a
	0,88	0,80	—	1,00	—	1,30	—	1,50	—	1,80	—	2,10	—	2,70	—	—
	1,00	0,80	—	1,00	—	1,30	—	1,50	—	1,80	—	2,10	—	2,70	—	—
	1,13	0,80	—	1,00	—	1,30	—	1,50	—	1,80	—	2,10	—	2,70	—	—
	1,25	0,80	—	1,00	—	1,30	—	1,50	—	1,80	—	2,10	—	2,70	—	—
	1,50	0,80	—	1,00	—	1,30	—	1,50	—	1,80	—	2,10	—	—	—	—
	1,75	0,80	—	1,00	—	1,30	—	1,50	—	—	—	—	—	—	—	—
	2,00	0,80	—	1,00	—	—	—	—	—	—	—	—	—	—	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 1,25$ mm: 2 Nm								$\Sigma t > 1,25$ mm: 5 Nm							

No additional regulations.

Self drilling screw

Hilti S-MD 01 Z 4,8 x L
Hilti S-MD 01 C 4,8 x L
with hexagon head

Annex 8



Material:

Fastener: carbon steel, case hardened
and galvanized or coated

Washer: none

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235, S275, S355 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 2,75 \text{ mm}$

Timber substructures:

no performance determined

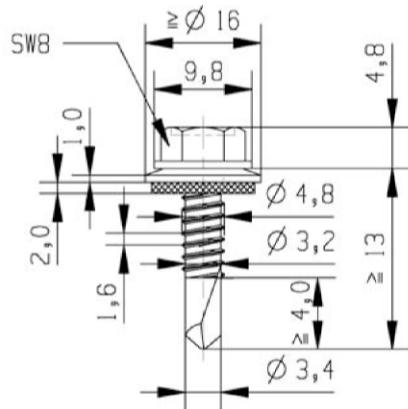
t_i [mm]	0,40	0,50	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00
$V_{R,k}$ [kN]	0,40	0,68	0,68	0,68	0,68	0,68	0,68	0,68	0,68	0,68
	0,50	0,68	1,03	1,03	1,03	1,03	1,03	1,03	1,03	1,03
	0,55	0,68	1,03	1,23	1,23	1,23	1,23	1,23	1,23	1,23
	0,63	0,68	1,03	1,55	1,55	1,55	1,55	1,55	1,55	1,55
	0,75	0,68	1,03	1,55	2,03	2,03	2,03	2,03	2,03	2,03
	0,88	0,68	1,03	1,55	2,03	2,38	2,38	2,38	2,38	—
	1,00	0,68	1,03	1,55	2,03	2,38	2,71	2,71	2,71	—
	1,13	0,68	1,03	1,55	2,03	2,38	2,71	2,71	2,71	—
	1,25	0,68	1,03	1,55	2,03	2,38	2,71	2,71	2,71	—
	1,50	0,68	1,03	1,55	2,03	2,38	2,71	2,71	—	—
	1,75	0,68	1,03	1,55	2,03	2,38	2,71	—	—	—
	2,00	0,68	1,03	1,55	2,03	—	—	—	—	—
$N_{R,k}$ [kN]	0,40	0,46	0,70	0,77	1,04	1,04	1,04	1,04	1,04	1,04
	0,50	0,46	0,70	0,77	1,11	1,25	1,25	1,25	1,25	1,25
	0,55	0,46	0,70	0,77	1,11	1,33	1,33	1,33	1,33	1,33
	0,63	0,46	0,70	0,77	1,11	1,40	1,40	1,40	1,40	1,40
	0,75	0,46	0,70	0,77	1,11	1,40	1,69	2,00	2,00	2,00
	0,88	0,46	0,70	0,77	1,11	1,40	1,69	2,10	2,48	2,70
	1,00	0,46	0,70	0,77	1,11	1,40	1,69	2,10	2,48	2,70
	1,13	0,46	0,70	0,77	1,11	1,40	1,69	2,10	2,48	2,70
	1,25	0,46	0,70	0,77	1,11	1,40	1,69	2,10	2,48	2,70
	1,50	0,46	0,70	0,77	1,11	1,40	1,69	2,10	2,48	—
	1,75	0,46	0,70	0,77	1,11	1,40	1,69	—	—	—
	2,00	0,46	0,70	0,77	1,11	—	—	—	—	—
$M_{t,nom}$ [Nm]										

No additional regulations.

Self drilling screw

Hilti S-MD 01 LZ 4,8 x L
Hilti S-MD 01 LC 4,8 x L
with hexagon head

Annex 9



Material:

Fastener: carbon steel, case hardened
and galvanized or coated

Washer: carbon steel, galvanized or coated
stainless Steel (1.4301) - EN 10088

Component I: S280GD, S320GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD - EN 10346

Drilling capacity: $\Sigma t \leq 2,75 \text{ mm}$

Timber substructures:

no performance determined

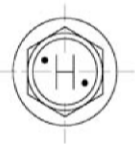
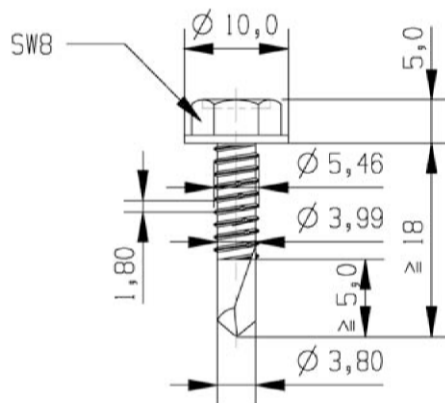
t_i [mm]	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,30	1,80	2,30	2,90	2,90 ac	2,90 ac	2,90 ac	2,90 ac
0,75	1,30	1,80	2,30	2,90	3,51	3,70 ac	3,70 ac	3,70 a
0,88	1,30	1,80	2,30	2,90	3,51	4,10	4,80 a	—
1,00	1,30	1,80	2,30	2,90	3,51	4,10	5,60	—
1,13	1,30	1,80	2,30	2,90	3,51	4,10	5,60	—
1,25	1,30	1,80	2,30	2,90	3,51	4,10	5,60	—
1,50	1,30	1,90	2,70	3,60	4,70	5,90	—	—
1,75	1,30	1,90	2,70	3,60	—	—	—	—
2,00	1,30	1,90	—	—	—	—	—	—
$N_{R,k}$ [kN]								
0,50	0,43	0,54	0,70	0,81	0,97 ac	1,13 ac	1,40 ac	1,40 ac
0,55	0,55	0,68	0,89	1,02	1,23 ac	1,43 ac	1,77 ac	1,77 ac
0,63	0,80	1,00	1,30	1,50	1,80 ac	2,10 ac	2,60 ac	2,60 ac
0,75	0,80	1,00	1,30	1,50	1,80	2,10 ac	2,70 ac	2,70 a
0,88	0,80	1,00	1,30	1,50	1,80	2,10	2,70 a	—
1,00	0,80	1,00	1,30	1,50	1,80	2,10	2,70	—
1,13	0,80	1,00	1,30	1,50	1,80	2,10	2,70	—
1,25	0,80	1,00	1,30	1,50	1,80	2,10	2,70	—
1,50	0,80	1,00	1,30	1,50	1,80	2,10	—	—
1,75	0,80	1,00	1,30	1,50	—	—	—	—
2,00	0,80	1,00	—	—	—	—	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 1,25 \text{ mm}: 2 \text{ Nm}$				$\Sigma t > 1,25 \text{ mm}: 5 \text{ Nm}$			

No additional regulations.

Self drilling screw

Hilti S-MD 51 Z 4,8 x L
Hilti S-MD 51 C 4,8 x L
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 10



Material:

Fastener: carbon steel, case hardened and galvanized or coated

Washer: none

Component I: S280GD, S320GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD - EN 10346

Drilling capacity: $\Sigma t \leq 3,00 \text{ mm}$

Timber substructures:

no performance determined

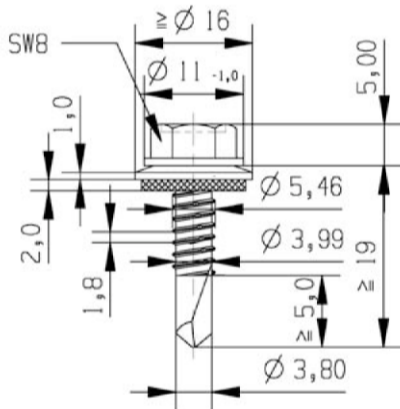
t_1 [mm]	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,50	1,80	2,00	2,10	2,30	2,40	2,60	2,60
0,75	1,60	2,00	2,50	2,90	3,40	3,80	3,80	3,80
0,88	1,70	2,10	2,60	3,00	3,50	4,00	4,50	5,10
1,00	1,90	2,30	2,80	3,20	3,70	4,20	5,20	5,20
1,13	2,70	3,10	3,60	3,90	4,40	5,10	5,90	—
1,25	3,50	3,90	4,30	4,60	5,00	6,00	6,60	—
1,50	3,50	3,90	4,30	4,60	5,60	6,00	6,60	—
1,75	3,50	3,90	4,30	4,60	5,60	6,00	—	—
2,00	3,50	3,90	4,30	4,60	—	—	—	—
$N_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	0,90	1,20	1,50	1,70	1,70	1,70	1,70	1,70
0,75	0,90	1,20	1,50	1,80	2,10	2,30	2,30	2,30
0,88	0,90	1,20	1,50	1,80	2,10	2,40	2,90	2,90
1,00	0,90	1,20	1,50	1,80	2,10	2,40	3,10	3,50
1,13	0,90	1,20	1,50	1,80	2,10	2,40	3,10	—
1,25	0,90	1,20	1,50	1,80	2,10	2,40	3,10	—
1,50	0,90	1,20	1,50	1,80	2,10	2,40	3,10	—
1,75	0,90	1,20	1,50	1,80	2,10	2,40	—	—
2,00	0,90	1,20	1,50	1,80	—	—	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 1,25 \text{ mm}: 3 \text{ Nm}$				$\Sigma t > 1,25 \text{ mm}: 6 \text{ Nm}$			

No additional regulations.

Self drilling screw

Hilti S-MD 01 Z 5,5 x L
Hilti S-MD 01 C 5,5 x L
with hexagon head

Annex 11



Material:

Fastener: carbon steel, case hardened
and galvanized or coated

Washer: carbon steel, galvanized or coated
stainless Steel (1.4301) - EN 10088

Component I: S280GD, S320GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD - EN 10346

Drilling capacity: $\Sigma t \leq 3,00 \text{ mm}$

Timber substructures:

no performance determined

t_i [mm]	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00
t_{II} [mm]	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00
$V_{R,k}$ [kN]	0,50	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—
	0,63	1,30	1,70	2,30	2,90	3,20	3,20	3,20
	0,75	1,30	1,70	2,30	2,90	3,60	4,00	4,00
	0,88	1,30	1,70	2,30	2,90	3,60	4,20	4,80
	1,00	1,30	1,70	2,30	2,90	3,60	4,20	5,60
	1,13	1,60	2,00	2,60	3,20	3,80	4,40	5,80
	1,25	1,60	2,00	2,60	3,50	4,10	4,70	6,00
	1,50	1,60	2,00	2,60	4,60	5,10	5,50	6,50
	1,75	1,60	2,00	2,60	4,60	5,10	5,50	—
	2,00	1,60	2,00	2,60	4,60	—	—	—
$N_{R,k}$ [kN]	0,50	0,49	0,65	0,81	0,97	1,13	1,30	1,67
	0,55	0,61	0,82	1,02	1,23	1,43	1,64	2,11
	0,63	0,90	1,20	1,50	1,80	2,10	2,40	3,10
	0,75	0,90	1,20	1,50	1,80	2,10	2,40	3,10
	0,88	0,90	1,20	1,50	1,80	2,10	2,40	3,10
	1,00	0,90	1,20	1,50	1,80	2,10	2,40	3,10
	1,13	0,90	1,20	1,50	1,80	2,10	2,40	3,10
	1,25	0,90	1,20	1,50	1,80	2,10	2,40	3,10
	1,50	0,90	1,20	1,50	1,80	2,10	2,40	3,10
	1,75	0,90	1,20	1,50	1,80	2,10	2,40	—
	2,00	0,90	1,20	1,50	1,80	—	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 1,25 \text{ mm}: 3 \text{ Nm}$				$\Sigma t > 1,25 \text{ mm}: 6 \text{ Nm}$			

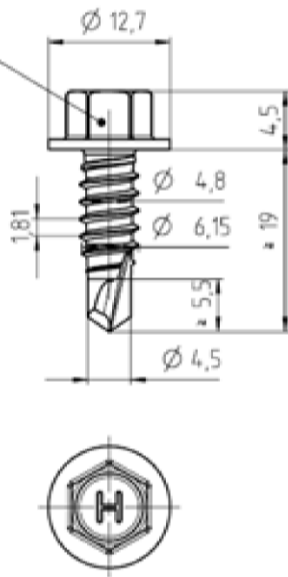
No additional regulations.

Self drilling screw

Hilti S-MD 51 Z 5,5 x L
Hilti S-MD 51 C 5,5 x L
with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 12

SW3/8" und SW8



Material:

Fastener: carbon steel, case hardened
and galvanized or coated

Washer: none

Component I: S280GD, S320GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD - EN 10346

Drilling capacity: $\Sigma t \leq 3,00 \text{ mm}$

Timber substructures:

no performance determined

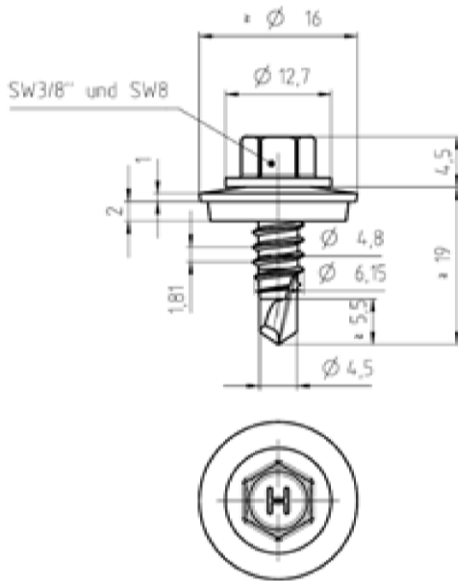
t_i [mm]	t_{ii} [mm]																
	0,63		0,75		0,88		1,00		1,13		1,25		1,50		2,00		
$V_{R,k}$ [kN]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	0,63	1,50	—	2,00	—	2,50	—	2,90	—	3,50	—	3,70	ac	3,70	ac	3,70	ac
	0,75	1,90	—	2,30	—	2,80	—	3,30	—	3,80	—	4,30	—	4,80	ac	4,80	ac
	0,88	2,00	—	2,40	—	2,90	—	3,30	—	3,80	—	4,30	—	5,10	—	6,00	a
	1,00	2,10	—	2,50	—	3,00	—	3,40	—	3,90	—	4,40	—	5,40	—	7,20	—
	1,13	2,10	—	2,50	—	3,10	—	3,60	—	4,20	—	4,80	—	6,00	—	—	—
	1,25	2,10	—	2,60	—	3,30	—	3,90	—	4,60	—	5,20	—	6,70	—	—	—
	1,50	2,10	—	2,60	—	3,30	—	3,90	—	4,60	—	5,20	—	6,70	—	—	—
	1,75	2,10	—	2,60	—	3,30	—	3,90	—	4,60	—	5,20	—	—	—	—	—
	2,00	2,10	—	2,60	—	3,30	—	3,90	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	0,90	—	1,20	—	1,50	—	1,80	—	1,90	—	1,90	ac	1,90	ac	1,90	ac
	0,75	0,90	—	1,20	—	1,50	—	1,80	—	2,10	—	2,40	—	2,40	ac	2,40	ac
	0,88	0,90	—	1,20	—	1,50	—	1,80	—	2,10	—	2,40	—	3,10	—	3,40	a
	1,00	0,90	—	1,20	—	1,50	—	1,80	—	2,10	—	2,40	—	3,10	—	4,30	—
	1,13	0,90	—	1,20	—	1,50	—	1,80	—	2,10	—	2,40	—	3,10	—	—	—
	1,25	0,90	—	1,20	—	1,50	—	1,80	—	2,10	—	2,40	—	3,10	—	—	—
	1,50	0,90	—	1,20	—	1,50	—	1,80	—	2,10	—	2,40	—	3,10	—	—	—
	1,75	0,90	—	1,20	—	1,50	—	1,80	—	2,10	—	2,40	—	—	—	—	—
	2,00	0,90	—	1,20	—	1,50	—	1,80	—	—	—	—	—	—	—	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 1,25 \text{ mm}: 4 \text{ Nm}$												$\Sigma t > 1,25 \text{ mm}: 8 \text{ Nm}$				

No additional regulations.

Self drilling screw

Hilti S-MD 01 Z 6,3 x L
Hilti S-MD 01 C 6,3 x L
with hexagon head

Annex 13



Material:

Fastener: carbon steel, case hardened
and galvanized or coated

Washer: carbon steel, galvanized or coated
stainless Steel (1.4301) - EN 10088

Component I: S280GD, S320GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD - EN 10346

Drilling capacity: $\Sigma t \leq 3,00 \text{ mm}$

Timber substructures:

no performance determined

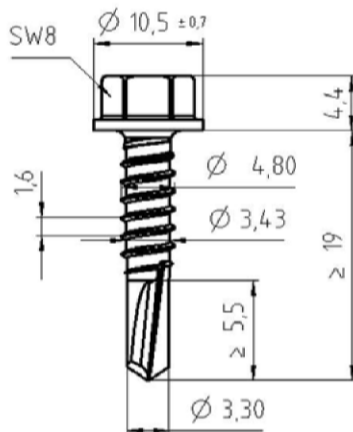
t_f [mm]	t_{fi} [mm]																
	0,63		0,75		0,88		1,00		1,13		1,25		1,50		2,00		
$V_{R,k}$ [kN]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	0,63	1,60	—	2,10	—	2,70	—	3,30	—	3,30	ac	3,30	ac	3,30	ac	3,30	ac
	0,75	1,60	—	2,10	—	2,70	—	3,30	—	4,10	—	4,20	ac	4,20	ac	4,20	a
	0,88	1,70	—	2,20	—	2,80	—	3,40	—	4,10	—	4,40	—	5,20	ac	5,20	a
	1,00	1,80	—	2,40	—	3,00	—	3,50	—	4,10	—	4,60	—	5,80	—	6,30	a
	1,13	1,80	—	2,40	—	3,00	—	3,50	—	4,20	—	4,80	—	6,20	—	—	—
	1,25	1,80	—	2,40	—	3,00	—	3,60	—	4,20	—	5,00	—	6,50	—	—	—
	1,50	2,00	—	2,60	—	3,30	—	4,00	—	4,80	—	5,50	—	7,20	—	—	—
	1,75	2,00	—	2,60	—	3,30	—	4,00	—	4,80	—	5,50	—	—	—	—	—
	2,00	2,00	—	2,60	—	3,30	—	4,00	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN]	0,50	0,49	—	0,65	—	0,81	—	0,97	—	1,13	ac	1,30	ac	1,67	ac	1,73	ac
	0,55	0,61	—	0,82	—	1,02	—	1,23	—	1,43	ac	1,64	ac	2,11	ac	2,18	ac
	0,63	0,90	—	1,20	—	1,50	—	1,80	—	2,10	ac	2,40	ac	3,10	ac	3,20	ac
	0,75	0,90	—	1,20	—	1,50	—	1,80	—	2,10	—	2,40	ac	3,10	ac	4,00	a
	0,88	0,90	—	1,20	—	1,50	—	1,80	—	2,10	—	2,40	—	3,10	ac	4,60	a
	1,00	0,90	—	1,20	—	1,50	—	1,80	—	2,10	—	2,40	—	3,10	—	4,60	a
	1,13	0,90	—	1,20	—	1,50	—	1,80	—	2,10	—	2,40	—	3,10	—	—	—
	1,25	0,90	—	1,20	—	1,50	—	1,80	—	2,10	—	2,40	—	3,10	—	—	—
	1,50	0,90	—	1,20	—	1,50	—	1,80	—	2,10	—	2,40	—	3,10	—	—	—
	1,75	0,90	—	1,20	—	1,50	—	1,80	—	2,10	—	2,40	—	—	—	—	—
	2,00	0,90	—	1,20	—	1,50	—	1,80	—	—	—	—	—	—	—	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 1,25$ mm: 4 Nm								$\Sigma t > 1,25$ mm: 8 Nm								

No additional regulations.

Self drilling screw

Hilti S-MD 51 Z 6,3 x L
Hilti S-MD 51 C 6,3 x L
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 14



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: none

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235, S275, S355 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

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

Timber substructures:

no performance determined

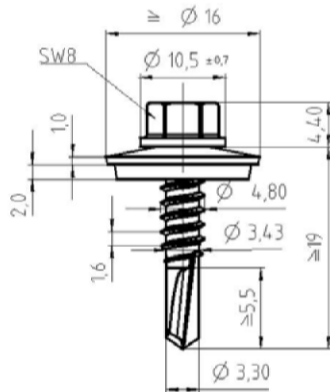
t_i [mm]	0,63	0,75	0,88	t_{II} [mm]		1,00	1,13	1,25	1,50	2,00
$V_{R,k}$ [kN]										
0,50	—	—	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—	—	—
0,63	1,00	1,50	1,80	2,00	a	2,00	a	2,00	a	—
0,75	1,00	1,80	2,10	2,40	—	2,40	a	2,40	a	—
0,88	1,20	1,90	2,30	2,80	—	2,80	—	—	—	—
1,00	1,40	2,10	2,60	3,10	—	—	—	—	—	—
1,13	1,40	2,10	2,60	—	—	—	—	—	—	—
1,25	1,40	2,10	—	—	—	—	—	—	—	—
1,50	—	—	—	—	—	—	—	—	—	—
1,75	—	—	—	—	—	—	—	—	—	—
2,00	—	—	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN]										
0,50	—	—	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—	—	—
0,63	0,80	1,00	1,20	1,40	a	1,70	a	1,70	a	—
0,75	0,80	1,00	1,20	1,40	—	1,70	a	2,00	a	—
0,88	0,80	1,00	1,20	1,40	—	1,70	—	—	—	—
1,00	0,80	1,00	1,20	1,40	—	—	—	—	—	—
1,13	0,80	1,00	1,20	—	—	—	—	—	—	—
1,25	0,80	1,00	—	—	—	—	—	—	—	—
1,50	—	—	—	—	—	—	—	—	—	—
1,75	—	—	—	—	—	—	—	—	—	—
2,00	—	—	—	—	—	—	—	—	—	—
$M_{t,nom}$ [Nm]	5 Nm									

No additional regulations.

Self drilling screw

Hilti S-MD 01 S 4,8 x L
Hilti S-MD 01 SS 4,8 x L
with hexagon head

Annex 15



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD - EN 10346

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

Timber substructures:

no performance determined

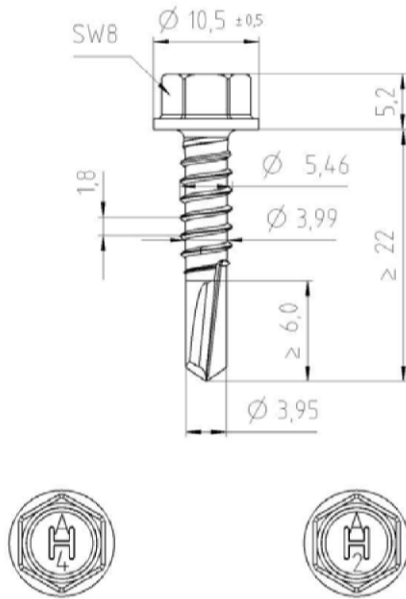
t_i [mm]	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,00	1,50	1,80	2,00	2,00	2,00	—	—
0,75	1,00	1,80	2,10	2,40	2,40	2,40	—	—
0,88	1,20	1,90	2,30	2,80	2,80	—	—	—
1,00	1,40	2,10	2,60	3,10	—	—	—	—
1,13	1,40	2,10	2,60	—	—	—	—	—
1,25	1,40	2,10	—	—	—	—	—	—
1,50	—	—	—	—	—	—	—	—
1,75	—	—	—	—	—	—	—	—
2,00	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN]								
0,50	0,43	0,54	0,65	0,76	0,92	1,08	—	—
0,55	0,55	0,68	0,82	0,95	1,16	1,36	—	—
0,63	0,80	1,00	1,20	1,40	1,70	2,00	—	—
0,75	0,80	1,00	1,20	1,40	1,70	2,00	—	—
0,88	0,80	1,00	1,20	1,40	1,70	—	—	—
1,00	0,80	1,00	1,20	1,40	—	—	—	—
1,13	0,80	1,00	1,20	—	—	—	—	—
1,25	0,80	1,00	—	—	—	—	—	—
1,50	—	—	—	—	—	—	—	—
1,75	—	—	—	—	—	—	—	—
2,00	—	—	—	—	—	—	—	—
$M_{t,nom}$ [Nm]	5 Nm							

If both components I and II are made of S320GD or S350GD the grey highlighted values may be increased by 8,0%.

Self drilling screw

Hilti S-MD 51 S 4,8 x L
Hilti S-MD 51 SS 4,8 x L
Hilti S-MD 61 S 4,8 x L
Hilti S-MD 61 SS 4,8 x L
with hexagon head and sealing washer $\geq \text{Ø}16 \text{ mm}$

Annex 16



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: none

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235, S275, S355 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 3,00 \text{ mm}$

Timber substructures:

no performance determined

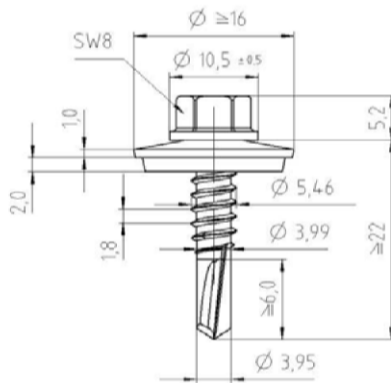
t_i [mm]	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00
t_{ii} [mm]	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,00	1,30	1,70	2,00	2,40	2,80 ac	3,00 ac	3,00 a
0,75	1,30	1,80	2,10	2,40	2,70	3,00	3,80	3,80 a
0,88	1,30	1,80	2,10	2,70	2,70	3,00	3,80	4,50
1,00	1,30	1,80	2,40	3,00	3,00	3,00	3,80	5,20
1,13	1,30	1,80	2,40	3,40	3,40	3,40	4,40	—
1,25	1,40	1,80	2,80	3,80	3,90	4,10	5,00	—
1,50	1,40	1,80	2,80	3,80	3,90	4,70	5,00	—
1,75	—	—	—	—	—	—	—	—
2,00	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	0,70	0,90	1,10	1,40	1,70	1,70 ac	1,70 ac	1,70 a
0,75	0,70	0,90	1,10	1,40	1,70	1,90	2,30	2,30 a
0,88	0,70	0,90	1,10	1,40	1,70	1,90	2,50	2,90
1,00	0,70	0,90	1,10	1,40	1,70	1,90	2,50	3,50
1,13	0,70	0,90	1,10	1,40	1,70	1,90	2,50	—
1,25	0,70	0,90	1,10	1,40	1,70	1,90	2,50	—
1,50	0,70	0,90	1,10	1,40	1,70	1,90	2,50	—
1,75	—	—	—	—	—	—	—	—
2,00	—	—	—	—	—	—	—	—
$M_{t,nom}$ [Nm]	5 Nm							

No additional regulations.

Self drilling screw

Hilti S-MD 01 S 5,5 x L
Hilti S-MD 01 SS 5,5 x L
with hexagon head

Annex 17



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 3,00 \text{ mm}$

Timber substructures:

no performance determined

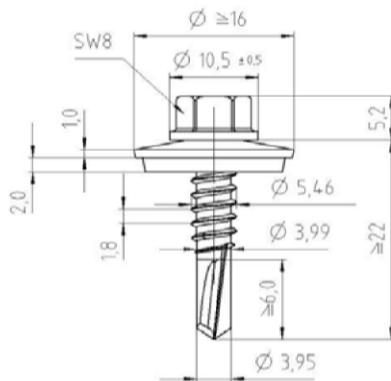
t_i [mm]	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,00	1,30	1,70	2,00	2,40	2,80 ac	3,00 ac	3,00 a
0,75	1,30	1,80	2,10	2,40	2,70	3,00	3,80	3,80 a
0,88	1,30	1,80	2,10	2,70	2,70	3,00	3,80	4,50
1,00	1,30	1,80	2,40	3,00	3,00	3,00	3,80	5,20
1,13	1,30	1,80	2,40	3,40	3,40	3,40	4,40	—
1,25	1,40	1,80	2,80	3,80	3,90	4,10	5,00	—
1,50	1,40	1,80	2,80	3,80	3,90	4,70	5,00	—
1,75	1,40	1,80	2,80	3,80	3,90	4,70	—	—
2,00	1,40	1,80	2,80	3,80	—	—	—	—
$N_{R,k}$ [kN]								
0,50	0,38	0,49	0,59	0,76	0,92	1,03 ac	1,24 ac	1,24 a
0,55	0,48	0,61	0,75	0,95	1,16	1,30 ac	1,57 ac	1,57 a
0,63	0,70	0,90	1,10	1,40	1,70	1,90 ac	2,30 ac	2,30 a
0,75	0,70	0,90	1,10	1,40	1,70	1,90	2,50	3,30 a
0,88	0,70	0,90	1,10	1,40	1,70	1,90	2,50	3,70
1,00	0,70	0,90	1,10	1,40	1,70	1,90	2,50	3,70
1,13	0,70	0,90	1,10	1,40	1,70	1,90	2,50	—
1,25	0,70	0,90	1,10	1,40	1,70	1,90	2,50	—
1,50	0,70	0,90	1,10	1,40	1,70	1,90	2,50	—
1,75	0,70	0,90	1,10	1,40	1,70	1,90	—	—
2,00	0,70	0,90	1,10	1,40	—	—	—	—
$M_{t,nom}$ [Nm]	5 Nm							

No additional regulations.

Self drilling screw

Hilti S-MD 51 S 5,5 x L
Hilti S-MD 51 SS 5,5 x L
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 18



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S320GD, S350GD - EN 10346

Component II: S275 - EN 10025-1
S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 3,00 \text{ mm}$

Timber substructures:

no performance determined

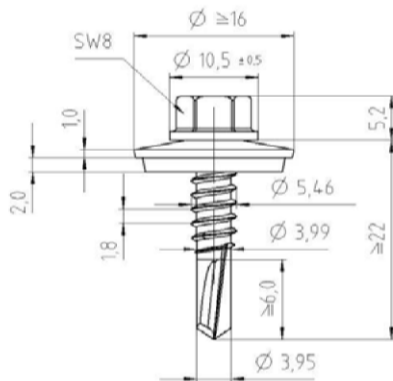
t_i [mm]	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2,00
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,10	1,40	1,80	2,20	2,60	3,00 ac	3,30 ac	3,30 a
0,75	1,40	1,90	2,20	2,60	2,90	3,10	4,20	4,20 a
0,88	1,40	1,90	2,20	2,90	2,90	3,10	4,20	4,80
1,00	1,40	1,90	2,50	3,20	3,20	3,20	4,20	5,50
1,13	1,50	1,90	2,50	3,60	3,60	3,60	4,80	—
1,25	1,50	1,90	3,00	4,00	4,20	4,40	5,40	—
1,50	1,50	1,90	3,00	4,00	4,20	5,10	5,40	—
1,75	1,50	1,90	3,00	4,00	4,20	5,10	—	—
2,00	1,50	1,90	3,00	4,00	—	—	—	—
$N_{R,k}$ [kN]								
0,50	0,38	0,54	0,70	0,86	0,97	1,13 ac	1,46 ac	1,46 a
0,55	0,48	0,68	0,89	1,09	1,23	1,43 ac	1,84 ac	1,84 a
0,63	0,70	1,00	1,30	1,60	1,80	2,10 ac	2,70 ac	2,70 a
0,75	0,70	1,00	1,30	1,60	1,80	2,10	2,80	3,80 a
0,88	0,70	1,00	1,30	1,60	1,80	2,10	2,80	4,10
1,00	0,70	1,00	1,30	1,60	1,80	2,10	2,80	4,10
1,13	0,70	1,00	1,30	1,60	1,80	2,10	2,80	—
1,25	0,70	1,00	1,30	1,60	1,80	2,10	2,80	—
1,50	0,70	1,00	1,30	1,60	1,80	2,10	2,80	—
1,75	0,70	1,00	1,30	1,60	1,80	2,10	—	—
2,00	0,70	1,00	1,30	1,60	—	—	—	—
$M_{t,nom}$ [Nm]	5 Nm							

No additional regulations.

Self drilling screw

Hilti S-MD 51 S 5,5 x L - 390
Hilti S-MD 51 SS 5,5 x L - 390
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 19



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: aluminium alloy with $R_{m,min} = 185 \text{ N/mm}^2$ - EN 573 S280GD, S320GD, S350GD - EN 10346

Component II: Structural timber - EN 14081

Drilling capacity: $\Sigma t_i \leq 3,00 \text{ mm}$

Timber substructures:

performance determined with

$M_{y,Rk} = 6,310 \text{ Nm}$
 $f_{ax,k} = 7,856 \text{ N/mm}^2$ for $l_{ef} \geq 22,0 \text{ mm}$

EN AWxxxx - EN 485 / EN 573					SxxxGD - EN 10346			
	$t_i [\text{mm}]$	$R_{m,min} =$			$t_i [\text{mm}]$	$R_{m,min} =$		
		185 N/mm ²	195 N/mm ²	215 N/mm ²		360 N/mm ²	390 N/mm ²	420 N/mm ²
$V_{i,Rk} [\text{kN}]$	0,50	0,87	0,94	1,08	0,40	1,29	1,42	1,53
	0,60	1,12	1,20	1,35	0,50	1,68	1,80	1,92
	0,70	1,36	1,44	1,59	0,55	1,89	2,01	2,11
	0,80	1,58	1,66	1,82	0,63	2,06	2,17	2,25
	0,90	1,77	1,85	1,99	0,75	2,30	2,30	2,30
	1,00	1,94	2,01	2,15	0,88	2,30	2,30	2,30
	1,10	2,07	2,14	2,26	1,00	2,30	2,30	2,30
	1,20	2,19	2,25	2,28	1,13	2,30	2,30	2,30
	1,30	2,28	2,28	2,28	1,25	2,30	2,30	2,30
$N_{i,Rk} [\text{kN}]$	0,50	0,48	0,51	0,56	0,40	—	—	—
	0,60	0,58	0,61	0,67	0,50	1,24	1,34	1,34
	0,70	0,67	0,71	0,78	0,55	1,57	1,70	1,70
	0,80	0,77	0,81	0,89	0,63	2,30	2,48	2,48
	0,90	0,87	0,91	1,01	0,75	3,30	3,56	3,56
	1,00	0,96	1,01	1,12	0,88	3,70	4,00	4,00
	1,10	1,06	1,12	1,23	1,00	3,70	4,00	4,00
	1,20	1,15	1,22	1,34	1,13	3,70	4,00	4,00
	1,30	1,25	1,32	1,45	1,25	3,70	4,00	4,00
$M_{t,nom} [\text{Nm}]$								

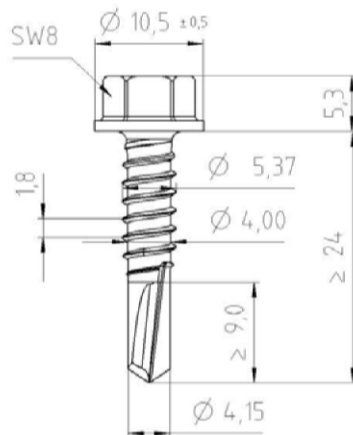
The grey highlighted values $N_{R,k}$ may be increased by 9.0% when using the types "S-MD 6x" and by 17.3% when using the types "S-MD 7x".

The values listed above in dependence on the screw-in length l_{ef} are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_a = 350 \text{ kg/m}^3$). For other combinations of k_{mod} and timber strength grades see Annex 3.

Self drilling screw

Hilti S-MD 51 S 5,5 x L / Hilti S-MD 51 SS 5,5 x L
Hilti S-MD 61 S 5,5 x L / Hilti S-MD 61 SS 5,5 x L
Hilti S-MD 71 S 5,5 x L / Hilti S-MD 71 SS 5,5 x L
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 20



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: none

Component I: S320GD, S350GD - EN 10346

Component II: S275, S355 - EN 10025-1
S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 4,00 \text{ mm}$

Timber substructures:

no performance determined

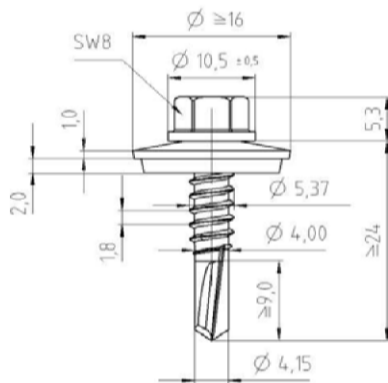
t_i [mm]	0,63	0,75	0,88	1,00	1,13	1,25	1,50	1,75
t_{ii} [mm]								
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,08	1,46	1,71	1,95	2,16	2,38	2,38	2,38
0,75	1,42	1,61	1,99	1,99	2,18	2,38	2,38	2,38
0,88	1,45	1,86	2,28	2,28	2,33	2,38	2,38	2,38
1,00	1,48	1,86	2,28	2,95	2,95	2,95	2,95	2,95
1,13	1,51	1,86	2,28	2,95	3,64	3,64	3,64	3,64
1,25	1,53	1,86	2,28	2,95	3,64	4,34	4,34	4,34
1,50	1,53	1,86	2,28	2,95	3,64	4,34	4,34	4,34
1,75	1,53	1,86	2,28	2,95	3,64	4,34	4,34	4,34
2,00	1,53	1,86	2,28	2,95	3,64	4,34	4,34	4,34
$N_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	0,50	0,72	1,04	1,35	1,70	1,70	1,70	1,70
0,75	0,50	0,72	1,04	1,35	1,71	2,07	2,07	2,07
0,88	0,50	0,72	1,04	1,35	1,71	2,07	2,07	2,07
1,00	0,50	0,72	1,04	1,35	1,71	2,07	2,07	2,07
1,13	0,50	0,72	1,04	1,35	1,71	2,07	2,07	2,07
1,25	0,50	0,72	1,04	1,35	1,71	2,07	2,07	2,07
1,50	0,50	0,72	1,04	1,35	1,71	2,07	2,07	2,07
1,75	0,50	0,72	1,04	1,35	1,71	2,07	2,07	2,07
2,00	0,50	0,72	1,04	1,35	1,71	2,07	2,07	2,07
$M_{t,nom}$ [Nm]	5 Nm							

No additional regulations.

Self drilling screw

Hilti S-MD 01 LS 5,5 x L
Hilti S-MD 01 LSS 5,5 x L
with hexagon head

Annex 21



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 4,00 \text{ mm}$

Timber substructures:

no performance determined

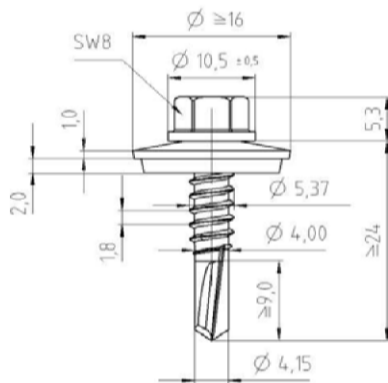
t_i [mm]	t_{II} [mm]							
	2 x 0,63	2 x 0,75	2 x 0,88	2 x 1,00	2 x 1,13	2 x 1,25	2 x 1,50	2 x 1,75
$V_{R,k}$ [kN]	0,50	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—
	0,63	2,20	2,70	2,70	2,70	2,90	3,10	3,10
	0,75	2,40	3,10	3,10	3,10	3,30	3,60	3,60
	0,88	2,70	3,10	3,10	3,10	3,50	4,00	4,00
	1,00	3,10	3,20	3,20	3,20	3,80	4,40	4,40
	1,13	3,40	3,40	3,80	4,20	4,50	4,90	—
	1,25	3,70	3,70	4,40	5,10	5,30	5,40	—
	1,50	3,70	3,70	4,40	5,10	5,30	5,40	—
	1,75	3,70	3,70	4,40	5,10	—	—	—
	2,00	3,70	3,70	4,40	5,10	—	—	—
$N_{R,k}$ [kN]	0,50	1,03	1,13	1,24	1,24	1,24	1,24	—
	0,55	1,30	1,43	1,57	1,57	1,57	1,57	—
	0,63	1,90	2,10	2,30	2,30	2,30	2,30	—
	0,75	1,90	2,10	2,40	2,80	3,30	3,30	—
	0,88	1,90	2,10	2,40	2,80	3,30	3,80	4,30
	1,00	1,90	2,10	2,40	2,80	3,30	3,80	4,80
	1,13	1,90	2,10	2,40	2,80	3,30	3,80	—
	1,25	1,90	2,10	2,40	2,80	3,30	3,80	—
	1,50	1,90	2,10	2,40	2,80	3,30	3,80	—
	1,75	1,90	2,10	2,40	2,80	—	—	—
	2,00	1,90	2,10	2,40	2,80	—	—	—
$M_{t,nom}$ [Nm]	5 Nm							

No additional regulations.

Self drilling screw

Hilti S-MD 51 LS 5,5 x L / Hilti S-MD 51 LSS 5,5 x L
Hilti S-MD 61 LS 5,5 x L / Hilti S-MD 61 LSS 5,5 x L
Hilti S-MD 71 LS 5,5 x L / Hilti S-MD 71 LSS 5,5 x L
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 22



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S320GD, S350GD - EN 10346

Component II: S275 - EN 10025-1
S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 4,00 \text{ mm}$

Timber substructures:

no performance determined

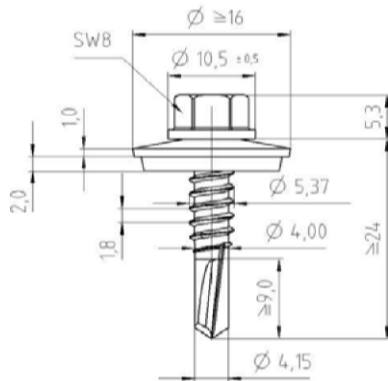
t_i [mm]	2 x 0,63	2 x 0,75	2 x 0,88	2 x 1,00	2 x 1,13	2 x 1,25	2 x 1,50	2 x 1,75
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	2,40	2,90	2,90	2,90	3,10	3,30	3,30	—
0,75	2,60	3,30	3,30	3,30	3,60	3,90	3,90	—
0,88	3,00	3,00	3,30	3,30	3,80	4,30	4,30	—
1,00	3,30	3,50	3,50	3,50	4,10	4,70	4,70	—
1,13	3,70	3,70	4,10	4,50	4,90	5,30	—	—
1,25	4,00	4,00	4,80	5,50	5,70	5,90	—	—
1,50	4,00	4,00	4,80	5,50	5,70	5,90	—	—
1,75	4,00	4,00	4,80	5,50	—	—	—	—
2,00	4,00	4,00	4,80	5,50	—	—	—	—
$N_{R,k}$ [kN]								
0,50	1,08	1,19	1,40	1,46	1,46	1,46	1,46	—
0,55	1,36	1,50	1,77	1,84	1,84	1,84	1,84	—
0,63	2,00	2,20	2,60	2,70	2,70	2,70	2,70	—
0,75	2,00	2,20	2,60	3,10	3,70	3,80	3,80	—
0,88	2,00	2,20	2,60	3,10	3,70	4,30	4,80	—
1,00	2,00	2,20	2,60	3,10	3,70	4,30	4,80	—
1,13	2,00	2,20	2,60	3,10	3,70	4,30	—	—
1,25	2,00	2,20	2,60	3,10	3,70	4,30	—	—
1,50	2,00	2,20	2,60	3,10	3,70	4,30	—	—
1,75	2,00	2,20	2,60	3,10	—	—	—	—
2,00	2,00	2,20	2,60	3,10	—	—	—	—
$M_{t,nom}$ [Nm]	5 Nm							

No additional regulations.

Self drilling screw

Hilti S-MD 51 LS 5,5 x L - 390 / Hilti S-MD 51 LSS 5,5 x L - 390
Hilti S-MD 61 LS 5,5 x L - 390 / Hilti S-MD 61 LSS 5,5 x L - 390
Hilti S-MD 71 LS 5,5 x L - 390 / Hilti S-MD 71 LSS 5,5 x L - 390
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 23



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 4,00 \text{ mm}$

Timber substructures:

no performance determined

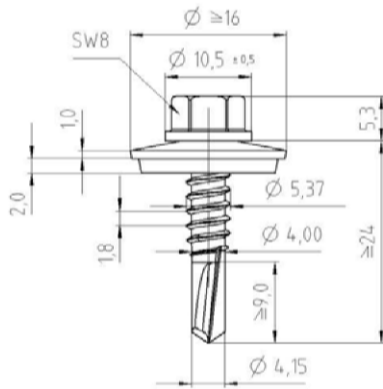
t_i [mm]	0,63	0,75	0,88	1,00	1,13	1,25	1,50	1,75
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	0,99	1,35	1,58	1,80	2,00	2,20	2,20	2,20
0,75	1,31	1,48	1,84	1,84	2,02	2,20	2,20	2,20
0,88	1,34	1,72	2,10	2,10	2,15	2,20	2,20	2,20
1,00	1,36	1,72	2,10	2,72	2,72	2,72	2,72	2,72
1,13	1,39	1,72	2,10	2,72	3,36	3,36	3,36	3,36
1,25	1,41	1,72	2,10	2,72	3,36	4,00	4,00	4,00
1,50	1,41	1,72	2,10	2,72	3,36	4,00	4,00	4,00
1,75	1,41	1,72	2,10	2,72	3,36	4,00	4,00	4,00
2,00	1,41	1,72	2,10	2,72	3,36	4,00	4,00	4,00
$N_{R,k}$ [kN]								
0,50	0,46	0,67	0,96	1,24	1,24	1,24	1,24	1,24
0,55	0,46	0,67	0,96	1,25	1,57	1,57	1,57	1,57
0,63	0,46	0,67	0,96	1,25	1,59	1,92	1,92	1,92
0,75	0,46	0,67	0,96	1,25	1,59	1,92	1,92	1,92
0,88	0,46	0,67	0,96	1,25	1,59	1,92	1,92	1,92
1,00	0,46	0,67	0,96	1,25	1,59	1,92	1,92	1,92
1,13	0,46	0,67	0,96	1,25	1,59	1,92	1,92	1,92
1,25	0,46	0,67	0,96	1,25	1,59	1,92	1,92	1,92
1,50	0,46	0,67	0,96	1,25	1,59	1,92	1,92	1,92
1,75	0,46	0,67	0,96	1,25	1,59	1,92	1,92	1,92
2,00	0,46	0,67	0,96	1,25	1,59	1,92	1,92	1,92
$M_{t,nom}$ [Nm]	5 Nm							

No additional regulations.

Self drilling screw

Hilti S-MD 51 LS 5,5 x L / Hilti S-MD 51 LSS 5,5 x L
Hilti S-MD 61 LS 5,5 x L / Hilti S-MD 61 LSS 5,5 x L
Hilti S-MD 71 LS 5,5 x L / Hilti S-MD 71 LSS 5,5 x L
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 24



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S320GD, S350GD - EN 10346

Component II: S275 - EN 10025-1
S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 4,00 \text{ mm}$

Timber substructures:

no performance determined

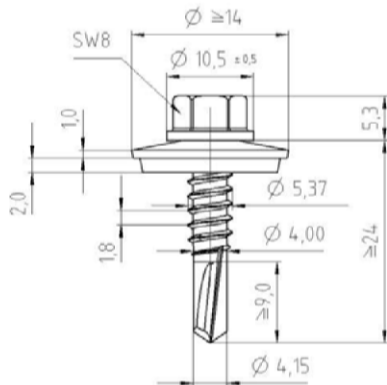
t_i [mm]	0,63	0,75	0,88	1,00	1,13	1,25	1,50	1,75
t_{ii} [mm]	0,63	0,75	0,88	1,00	1,13	1,25	1,50	1,75
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,08	1,46	1,71	1,95	2,16	2,38	2,38	2,38
0,75	1,42	1,61	1,99	1,99	2,18	2,38	2,38	2,38
0,88	1,45	1,86	2,28	2,28	2,33	2,38	2,38	2,38
1,00	1,48	1,86	2,28	2,95	2,95	2,95	2,95	2,95
1,13	1,51	1,86	2,28	2,95	3,64	3,64	3,64	3,64
1,25	1,53	1,86	2,28	2,95	3,64	4,34	4,34	4,34
1,50	1,53	1,86	2,28	2,95	3,64	4,34	4,34	4,34
1,75	1,53	1,86	2,28	2,95	3,64	4,34	4,34	4,34
2,00	1,53	1,86	2,28	2,95	3,64	4,34	4,34	4,34
$N_{R,k}$ [kN]								
0,50	0,50	0,72	1,04	1,35	1,46	1,46	1,46	1,46
0,55	0,50	0,72	1,04	1,35	1,71	1,84	1,84	1,84
0,63	0,50	0,72	1,04	1,35	1,71	2,07	2,07	2,07
0,75	0,50	0,72	1,04	1,35	1,71	2,07	2,07	2,07
0,88	0,50	0,72	1,04	1,35	1,71	2,07	2,07	2,07
1,00	0,50	0,72	1,04	1,35	1,71	2,07	2,07	2,07
1,13	0,50	0,72	1,04	1,35	1,71	2,07	2,07	2,07
1,25	0,50	0,72	1,04	1,35	1,71	2,07	2,07	2,07
1,50	0,50	0,72	1,04	1,35	1,71	2,07	2,07	2,07
1,75	0,50	0,72	1,04	1,35	1,71	2,07	2,07	2,07
2,00	0,50	0,72	1,04	1,35	1,71	2,07	2,07	2,07
$M_{t,nom}$ [Nm]	5 Nm							

No additional regulations.

Self drilling screw

Hilti S-MD 51 LS 5,5 x L - 390 / Hilti S-MD 51 LSS 5,5 x L - 390
Hilti S-MD 61 LS 5,5 x L - 390 / Hilti S-MD 61 LSS 5,5 x L - 390
Hilti S-MD 71 LS 5,5 x L - 390 / Hilti S-MD 71 LSS 5,5 x L - 390
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 25



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: aluminium alloy with $R_{m,min} = 185 \text{ N/mm}^2$ - EN 573

Component II: S235 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 4,00 \text{ mm}$

Timber substructures:

no performance determined

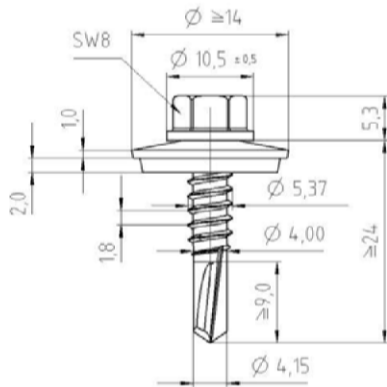
$t_i [\text{mm}]$	0,63	0,75	0,88	1,00	1,13	1,25	1,50	$t_{ii} [\text{mm}]$						
	0,63	0,75	0,88	1,00	1,13	1,25	1,50	2 x 0,63	2 x 0,75	2 x 0,88	2 x 1,00	2 x 1,13	2 x 1,25	2 x 1,50
$V_{R,k} [\text{kN}]$	0,50	0,83	0,84	0,85	0,86	0,87	0,87	0,89	0,74	0,90	1,07	1,23	1,23	1,24
	0,60	0,92	0,94	0,97	1,01	1,01	1,02	1,04	0,86	1,03	1,20	1,36	1,37	1,38
	0,70	0,99	1,04	1,10	1,16	1,16	1,17	1,19	0,98	1,15	1,33	1,50	1,50	1,51
	0,80	1,07	1,14	1,23	1,31	1,32	1,33	1,34	1,11	1,29	1,47	1,64	1,64	1,65
	1,00	1,22	1,35	1,49	1,62	1,62	1,63	1,65	1,37	1,55	1,74	1,92	1,92	1,93
	1,20	1,35	1,47	1,60	1,73	1,79	1,84	1,95	1,39	1,57	1,75	1,93	2,00	2,06
	1,30	1,41	1,53	1,66	1,79	1,87	1,94	2,10	1,40	1,58	1,76	1,93	2,04	2,13
	1,50	1,52	1,65	1,78	1,90	2,03	2,15	2,41	1,43	1,60	1,78	1,95	2,11	2,27
	1,60	1,57	1,68	1,79	1,90	2,03	2,15	2,41	—	—	—	—	—	—
	1,80	1,66	1,74	1,82	1,90	2,03	2,15	2,41	—	—	—	—	—	—
	2,00	1,74	1,79	1,85	1,90	2,03	2,15	2,41	—	—	—	—	—	—
$N_{R,k} [\text{kN}]$	0,50	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45
	0,60	0,46	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,54
	0,70	0,46	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63
	0,80	0,46	0,67	0,72	0,72	0,72	0,72	0,72	0,72	0,72	0,72	0,72	0,72	0,72
	1,00	0,46	0,67	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90
	1,20	0,46	0,67	0,96	1,08	1,08	1,08	1,08	1,08	1,08	1,08	1,08	1,08	—
	1,30	0,46	0,67	0,96	1,17	1,17	1,17	1,17	1,17	1,17	1,17	1,17	1,17	—
	1,50	0,46	0,67	0,96	1,25	1,35	1,35	1,35	1,35	1,35	1,35	1,35	1,35	—
	1,60	0,46	0,67	0,96	1,25	1,35	1,35	1,35	—	—	—	—	—	—
	1,80	0,46	0,67	0,96	1,25	1,35	1,35	1,35	—	—	—	—	—	—
	2,00	0,46	0,67	0,96	1,25	1,35	1,35	1,35	—	—	—	—	—	—
$M_{t,nom} [\text{Nm}]$														

The grey highlighted values $N_{R,k}$ may be increased by 6.9% when using the types "S-MD 5x", by 16.5% when using the types "S-MD 6x" and 25.4% when using the types "S-MD 7x".

Self drilling screw

Hilti S-MD 41 LS 5,5 x L / Hilti S-MD 41 LSS 5,5 x L
Hilti S-MD 51 LS 5,5 x L / Hilti S-MD 51 LSS 5,5 x L
Hilti S-MD 61 LS 5,5 x L / Hilti S-MD 61 LSS 5,5 x L
Hilti S-MD 71 LS 5,5 x L / Hilti S-MD 71 LSS 5,5 x L
with hexagon head and sealing washer $\geq \text{Ø}14 \text{ mm}$

Annex 26



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: aluminium alloy with $R_{m,min} = 185 \text{ N/mm}^2$ - EN 573

Component II: aluminium alloy with $R_{m,min} = 185 \text{ N/mm}^2$ - EN 573

Drilling capacity: $\Sigma t_i \leq 4,00 \text{ mm}$

Timber substructures:

no performance determined

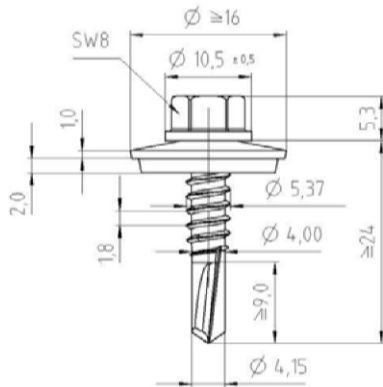
t_i [mm]	0,50	0,60	0,70	0,80	0,90	t_{II} [mm]	1,00	1,20	1,40	1,60	1,80	2,00
$V_{R,k}$ [kN]	—	—	—	—	—	—	—	—	—	—	—	—
0,50	—	—	—	—	—	—	—	—	—	—	—	—
0,60	—	—	—	—	—	—	—	—	—	—	—	—
0,70	—	—	—	—	—	—	—	—	—	—	—	—
0,80	—	—	—	—	—	—	—	—	—	—	—	—
0,90	—	—	—	—	—	—	—	—	—	—	—	—
1,00	—	—	—	—	—	1,16	1,16	1,16	1,16	1,16	1,16	1,16
1,20	—	—	—	—	—	1,16	1,71	1,71	1,71	1,71	1,71	1,71
1,40	—	—	—	—	—	1,16	1,71	2,22	2,22	2,22	2,22	2,22
1,60	—	—	—	—	—	1,16	1,71	2,22	2,69	2,69	2,69	2,69
1,80	—	—	—	—	—	1,16	1,71	2,22	2,69	3,11	3,11	3,11
2,00	—	—	—	—	—	1,16	1,71	2,22	2,69	3,11	3,49	3,49
$N_{R,k}$ [kN]	0,17	0,27	0,37	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45
0,50	0,17	0,27	0,37	0,48	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,54
0,60	0,17	0,27	0,37	0,48	0,58	0,63	0,63	0,63	0,63	0,63	0,63	0,63
0,70	0,17	0,27	0,37	0,48	0,58	0,69	0,72	0,72	0,72	0,72	0,72	0,72
0,80	0,17	0,27	0,37	0,48	0,58	0,69	0,81	0,81	0,81	0,81	0,81	0,81
0,90	0,17	0,27	0,37	0,48	0,58	0,69	0,90	0,90	0,90	0,90	0,90	0,90
1,00	0,17	0,27	0,37	0,48	0,58	0,69	0,90	1,08	1,08	1,08	1,08	1,08
1,20	0,17	0,27	0,37	0,48	0,58	0,69	0,90	1,10	1,21	1,21	1,21	1,21
1,40	0,17	0,27	0,37	0,48	0,58	0,69	0,90	1,10	1,21	1,21	1,21	1,21
1,60	0,17	0,27	0,37	0,48	0,58	0,69	0,90	1,10	1,21	1,21	1,21	1,21
1,80	0,17	0,27	0,37	0,48	0,58	0,69	0,90	1,10	1,21	1,21	1,21	1,21
2,00	0,17	0,27	0,37	0,48	0,58	0,69	0,90	1,10	1,21	1,21	1,21	1,21
$M_{t,nom}$ [Nm]												

The grey highlighted values $N_{R,k}$ may be increased by 6.9% when using the types "S-MD 5x", by 16.5% when using the types "S-MD 6x" and 25.4% when using the types "S-MD 7x".

Self drilling screw

Hilti S-MD 41 LS 5,5 x L / Hilti S-MD 41 LSS 5,5 x L
Hilti S-MD 51 LS 5,5 x L / Hilti S-MD 51 LSS 5,5 x L
Hilti S-MD 61 LS 5,5 x L / Hilti S-MD 61 LSS 5,5 x L
Hilti S-MD 71 LS 5,5 x L / Hilti S-MD 71 LSS 5,5 x L
with hexagon head and sealing washer $\geq \varnothing 14 \text{ mm}$

Annex 27



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: aluminium alloy with $R_{m,min} = 185 \text{ N/mm}^2$ - EN 573

Drilling capacity: $\Sigma t_i \leq 4,00 \text{ mm}$

Timber substructures:

no performance determined

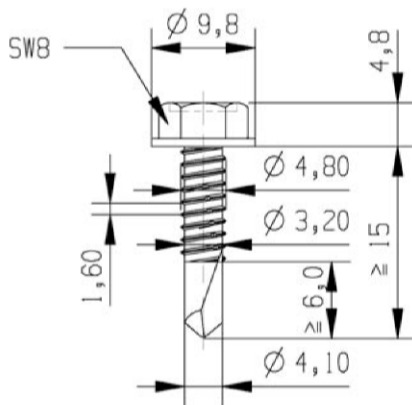
$t_i [\text{mm}]$	1,00	1,20	1,40	$t_{II} [\text{mm}]$ 1,60	1,80	2,00	3,00
$V_{R,k} [\text{kN}]$							
0,50	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—
0,63	1,12	1,32	1,51	1,71	1,91	2,10	2,59
0,75	1,16	1,38	1,60	1,83	2,04	2,26	2,63
0,88	1,20	1,45	1,70	1,94	2,19	2,43	2,68
1,00	1,24	1,51	1,79	2,06	2,33	2,60	2,72
1,13	1,28	1,58	1,88	2,18	2,47	2,77	—
1,25	1,32	1,64	1,96	2,29	2,60	2,92	—
1,50	1,40	1,77	2,15	2,52	2,89	3,26	—
1,75	1,48	1,90	2,32	2,74	3,16	3,58	—
2,00	1,56	2,03	2,51	2,98	3,45	3,92	—
$N_{R,k} [\text{kN}]$							
0,50	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—
0,63	0,69	0,90	1,10	1,21	1,21	1,21	1,21
0,75	0,69	0,90	1,10	1,21	1,21	1,21	1,21
0,88	0,69	0,90	1,10	1,21	1,21	1,21	1,21
1,00	0,69	0,90	1,10	1,21	1,21	1,21	1,21
1,13	0,69	0,90	1,10	1,21	1,21	1,21	—
1,25	0,69	0,90	1,10	1,21	1,21	1,21	—
1,50	0,69	0,90	1,10	1,21	1,21	1,21	—
1,75	0,69	0,90	1,10	1,21	1,21	1,21	—
2,00	0,69	0,90	1,10	1,21	1,21	1,21	—
$M_{t,nom} [\text{Nm}]$							

No additional regulations.

Self drilling screw

Hilti S-MD 51 LS 5,5 x L / Hilti S-MD 51 LSS 5,5 x L
Hilti S-MD 61 LS 5,5 x L / Hilti S-MD 61 LSS 5,5 x L
Hilti S-MD 71 LS 5,5 x L / Hilti S-MD 71 LSS 5,5 x L
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 28



Material:

Fastener: carbon steel, case hardened and galvanized or coated

Washer: none

Component I: S280GD, S320GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD - EN 10346

Drilling capacity: $\Sigma t \leq 6,00 \text{ mm}$

Timber substructures:

no performance determined

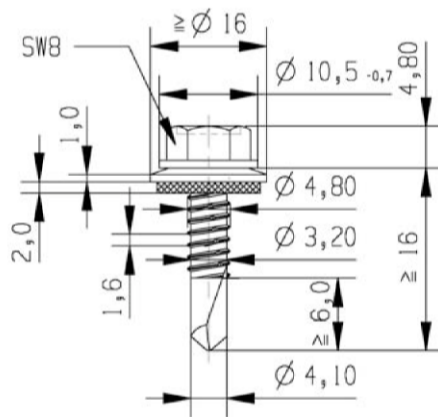
t_i [mm]	1,00	1,50	2,00	3,00	4,00	5,00	6,00	—
t_{II} [mm]	1,00	1,50	2,00	3,00	4,00	5,00	6,00	—
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,74	2,30	2,70	2,70	2,70	2,70	—	—
0,75	2,17	2,30	3,00	3,80	3,80	3,80	—	—
0,88	2,34	2,60	3,50	4,90	4,90	4,90	—	—
1,00	2,49	2,90	4,00	6,00	6,00	6,00	—	—
1,13	2,49	3,50	4,60	6,60	6,60	—	—	—
1,25	2,49	4,10	5,20	7,10	7,10	—	—	—
1,50	2,49	5,20	6,00	7,30	7,30	—	—	—
1,75	2,49	5,20	6,00	7,30	7,30	—	—	—
2,00	2,49	5,20	6,00	7,30	7,30	—	—	—
$N_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,24	1,60	1,60	1,60	1,60	1,60	—	—
0,75	1,24	1,60	2,20	2,20	2,20	2,20	—	—
0,88	1,24	1,60	2,40	3,00	3,00	3,00	—	—
1,00	1,24	1,60	2,40	3,90	3,90	3,90	—	—
1,13	1,24	1,60	2,40	4,10	4,10	—	—	—
1,25	1,24	1,60	2,40	4,10	4,10	—	—	—
1,50	1,24	1,60	2,40	4,10	4,10	—	—	—
1,75	1,24	1,60	2,40	4,10	4,10	—	—	—
2,00	1,24	1,60	2,40	4,10	4,10	—	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 2,15 \text{ mm}: 2 \text{ Nm}$				$\Sigma t > 2,15 \text{ mm}: 6 \text{ Nm}$			

No additional regulations.

Self drilling screw

Hilti S-MD 03 Z 4,8 x L
Hilti S-MD 03 C 4,8 x L
with hexagon head

Annex 29



Material:

Fastener: carbon steel, case hardened
and galvanized or coated

Washer: carbon steel, galvanized or coated
stainless Steel (1.4301) - EN 10088

Component I: S280GD, S320GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD - EN 10346

Drilling capacity: $\Sigma t \leq 6,00$ mm

Timber substructures:

no performance determined

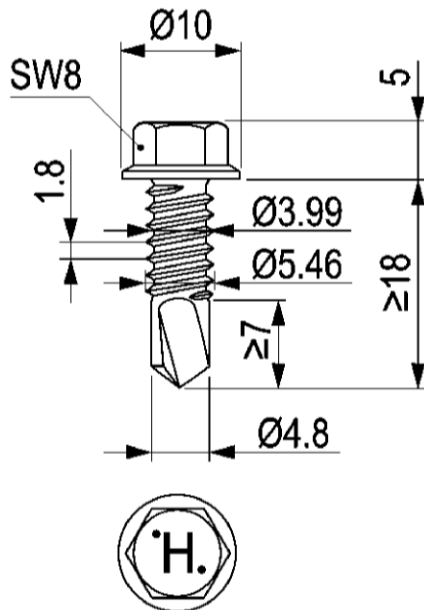
t_i [mm]	1,50	2,00	3,00	4,00	5,00	6,00	—	—
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	2,40	ac	2,70	ac	2,70	ac	—	—
0,75	3,00	—	3,50	ac	3,90	ac	—	—
0,88	3,40	—	4,10	—	5,40	—	—	—
1,00	3,70	—	4,70	—	6,60	—	—	—
1,13	4,00	—	5,00	—	6,70	—	—	—
1,25	4,40	—	5,30	—	6,80	—	—	—
1,50	4,90	—	5,60	—	6,90	—	—	—
1,75	4,90	—	5,60	—	6,90	—	—	—
2,00	4,90	—	5,60	—	6,90	—	—	—
$N_{R,k}$ [kN]								
0,50	0,92	ac	1,40	ac	1,40	ac	—	—
0,55	1,16	ac	1,77	ac	1,77	ac	—	—
0,63	1,70	ac	2,60	ac	2,60	ac	—	—
0,75	1,70	—	2,70	ac	3,30	ac	—	—
0,88	1,70	—	2,70	—	4,20	—	—	—
1,00	1,70	—	2,70	—	5,00	—	—	—
1,13	1,70	—	2,70	—	5,20	—	—	—
1,25	1,70	—	2,70	—	5,20	—	—	—
1,50	1,70	—	2,70	—	5,20	—	—	—
1,75	1,70	—	2,70	—	5,20	—	—	—
2,00	1,70	—	2,70	—	5,20	—	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 2,15$ mm: 2 Nm					$\Sigma t > 2,15$ mm: 6 Nm		

No additional regulations.

Self drilling screw

Hilti S-MD 53 Z 4,8 x L
Hilti S-MD 53 C 4,8 x L
with hexagon head and sealing washer $\geq \varnothing 16$ mm

Annex 30



Material:

Fastener: carbon steel, case hardened
and galvanized or coated

Washer: none

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235, S275, S355 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t \leq 6,00 \text{ mm}$

Timber substructures:

no performance determined

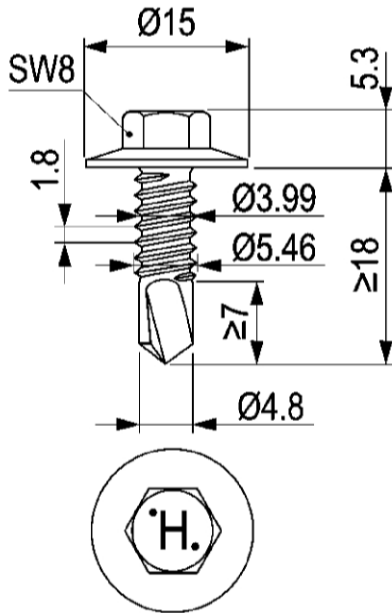
t_i [mm]	1,00	1,50	2,00	2,50	3,00	4,00	5,00	6,00
t_{II} [mm]	1,00	1,50	2,00	2,50	3,00	4,00	5,00	6,00
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,88	1,88	2,60	2,60	2,60	2,60	2,60	—
0,75	2,06	2,06	3,70	3,70	3,70	3,70	3,70	—
0,88	2,13	2,13	4,50	4,50	5,00	5,00	5,00	—
1,00	2,20	2,20	4,50	4,50	6,50	6,50	6,50	—
1,13	2,20	2,76	4,90	4,90	7,00	7,90	—	—
1,25	2,20	3,28	5,30	5,30	7,40	9,30	—	—
1,50	2,20	4,36	6,20	6,20	8,30	9,50	—	—
1,75	2,20	4,36	6,20	6,20	8,30	9,50	—	—
2,00	2,20	4,36	7,80	7,80	9,40	9,50	—	—
$N_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,07	1,70	1,70	1,70	1,70	1,70	1,70	—
0,75	1,07	2,20	2,20	2,20	2,20	2,20	2,20	—
0,88	1,07	2,28	2,90	2,90	2,90	2,90	2,90	—
1,00	1,07	2,28	3,09	3,50	3,50	3,50	3,50	—
1,13	1,07	2,28	3,09	4,30	4,30	4,30	—	—
1,25	1,07	2,28	3,09	4,35	5,10	5,10	—	—
1,50	1,07	2,28	3,09	4,35	5,61	6,90	—	—
1,75	1,07	2,28	3,09	4,35	5,61	6,90	—	—
2,00	1,07	2,28	3,09	4,35	5,61	6,90	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 3,00 \text{ mm}: 7 \text{ Nm}$				$\Sigma t > 3,00 \text{ mm}: 8 \text{ Nm}$			

No additional regulations.

Self drilling screw

Hilti S-MD 03 Z 5,5 x L
Hilti S-MD 03 C 5,5 x L
with hexagon head

Annex 31



Material:

Fastener: carbon steel, case hardened
and galvanized or coated

Washer: none

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235, S275, S355 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t \leq 6,00 \text{ mm}$

Timber substructures:

no performance determined

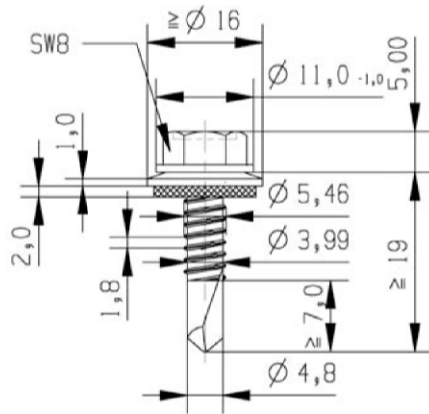
t_i [mm]	1,00	1,50	2,00	2,50	3,00	4,00	5,00	6,00
t_{II} [mm]	1,00	1,50	2,00	2,50	3,00	4,00	5,00	6,00
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,88	1,88	2,60	2,60	2,60	2,60	2,60	2,60
0,75	2,06	2,06	3,70	3,70	3,70	3,70	3,70	3,70
0,88	2,13	2,13	4,50	4,50	5,00	5,00	5,00	5,00
1,00	2,20	2,20	4,50	4,50	6,50	6,50	6,50	6,50
1,13	2,20	2,76	4,90	4,90	7,00	7,90	—	—
1,25	2,20	3,28	5,30	5,30	7,40	9,30	—	—
1,50	2,20	4,36	6,20	6,20	8,30	9,50	—	—
1,75	2,20	4,36	6,20	6,20	8,30	9,50	—	—
2,00	2,20	4,36	7,80	7,80	9,40	9,50	—	—
$N_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,07	2,28	2,61	3,11	3,11	3,11	3,11	3,11
0,75	1,07	2,28	2,61	3,75	4,61	4,61	4,61	4,61
0,88	1,07	2,28	2,61	3,75	4,90	6,25	6,25	6,25
1,00	1,07	2,28	2,61	3,75	4,90	6,25	6,25	6,25
1,13	1,07	2,28	2,61	3,75	4,90	6,25	—	—
1,25	1,07	2,28	2,61	3,75	4,90	6,25	—	—
1,50	1,07	2,28	2,61	3,75	4,90	6,25	—	—
1,75	1,07	2,28	2,61	3,75	4,90	6,25	—	—
2,00	1,07	2,28	2,61	3,75	4,90	6,25	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 3,00 \text{ mm}: 7 \text{ Nm}$				$\Sigma t > 3,00 \text{ mm}: 8 \text{ Nm}$			

No additional regulations.

Self drilling screw

Hilti S-MD 23 Z 5,5 x L
Hilti S-MD 23 C 5,5 x L
with hexagon head

Annex 32



Material:

Fastener: carbon steel, case hardened
and galvanized or coated

Washer: carbon steel, galvanized or coated
stainless Steel (1.4301) - EN 10088

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235, S275, S355 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t \leq 6,00$ mm

Timber substructures:

no performance determined

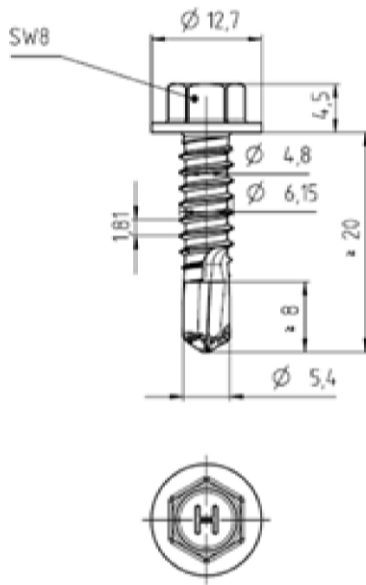
t_i [mm]	1,50	2,00	2,50	3,00	4,00	5,00	6,00	—
t_{II} [mm]	1,50	2,00	2,50	3,00	4,00	5,00	6,00	—
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	—	3,10 ac	3,10 ac	3,10 ac	3,10 abcd	3,10 abcd	—	—
0,75	—	3,80 ac	3,80 ac	3,80 ac	3,80 ac	3,80 ac	—	—
0,88	—	4,60 —	4,60 —	4,60 ac	4,60 ac	4,60 ac	—	—
1,00	—	5,30 —	5,30 —	5,40 —	5,40 a	5,40 a	—	—
1,13	—	5,30 —	5,30 —	6,20 —	6,20 —	—	—	—
1,25	—	5,30 —	5,30 —	7,60 —	9,50 —	—	—	—
1,50	—	6,10 —	6,10 —	9,10 —	9,50 —	—	—	—
1,75	—	6,10 —	6,10 —	9,10 —	9,50 —	—	—	—
2,00	—	7,80 —	7,80 —	9,70 —	9,50 —	—	—	—
$N_{R,k}$ [kN]								
0,50	—	1,73 ac	1,73 ac	1,73 abcd	1,73 —	1,73 —	—	—
0,55	—	2,18 ac	2,18 ac	2,18 abcd	2,18 —	2,18 —	—	—
0,63	—	3,09 ac	3,20 ac	3,20 abcd	3,20 —	3,20 —	—	—
0,75	—	3,09 ac	3,90 ac	3,90 ac	3,90 —	3,90 —	—	—
0,88	—	3,09 —	4,35 ac	4,80 a	4,80 —	4,80 —	—	—
1,00	—	3,09 —	4,35 —	5,60 a	5,60 —	5,60 —	—	—
1,13	—	3,09 —	4,35 —	5,61 —	6,50 —	—	—	—
1,25	—	3,09 —	4,35 —	5,61 —	7,20 —	—	—	—
1,50	—	3,09 —	4,35 —	5,61 —	7,20 —	—	—	—
1,75	—	3,09 —	4,35 —	5,61 —	7,20 —	—	—	—
2,00	—	3,09 —	4,35 —	5,61 —	7,20 —	—	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 3,00$ mm: 7 Nm				$\Sigma t > 3,00$ mm: 8 Nm			

No additional regulations.

Self drilling screw

Hilti S-MD 53 Z 5,5 x L
Hilti S-MD 53 C 5,5 x L
with hexagon head and sealing washer $\geq \varnothing 16$ mm

Annex 33



Material:

Fastener: carbon steel, case hardened
and galvanized or coated

Washer: none

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235, S275, S355 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t \leq 6,00 \text{ mm}$

Timber substructures:

no performance determined

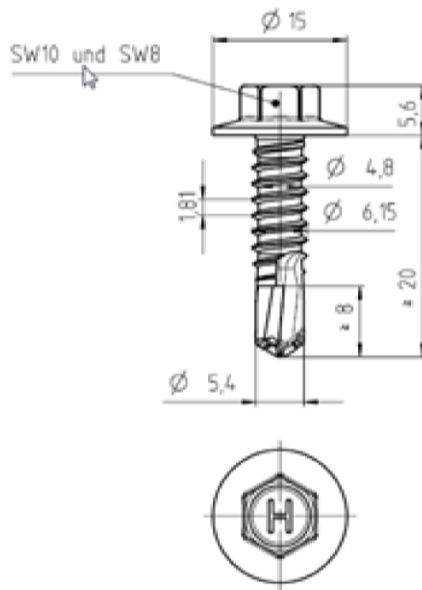
t_i [mm]	1,00	1,50	2,00	2,50	3,00	4,00	5,00	6,00
t_{II} [mm]	1,00	1,50	2,00	2,50	3,00	4,00	5,00	6,00
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,92	1,92	3,10	ac	3,10	abcd	3,10	abcd
0,75	2,07	2,07	4,20	ac	4,20	abcd	4,20	abcd
0,88	2,35	2,35	5,40	ac	5,40	ac	5,40	abcd
1,00	2,60	2,60	5,60	—	6,60	ac	6,60	ac
1,13	2,60	3,16	5,70	—	7,80	—	8,00	ac
1,25	2,60	3,68	5,90	—	9,00	—	9,56	ac
1,50	2,60	4,75	7,00	—	9,70	—	10,00	—
1,75	2,60	4,75	7,00	—	9,70	—	10,00	—
2,00	2,60	4,75	7,00	—	9,70	—	10,00	—
$N_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,23	1,90	1,90	ac	1,90	abcd	1,90	abcd
0,75	1,23	2,46	2,60	ac	2,60	abcd	2,60	abcd
0,88	1,23	2,46	3,21	ac	3,40	ac	3,40	abcd
1,00	1,23	2,46	3,21	—	4,30	ac	4,30	ac
1,13	1,23	2,46	3,21	—	4,62	—	5,30	ac
1,25	1,23	2,46	3,21	—	4,62	—	6,03	—
1,50	1,23	2,46	3,21	—	4,62	—	6,90	—
1,75	1,23	2,46	3,21	—	4,62	—	6,90	—
2,00	1,23	2,46	3,21	—	4,62	—	7,20	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 3,00 \text{ mm}: 7 \text{ Nm}$				$\Sigma t > 3,00 \text{ mm}: 8 \text{ Nm}$			

No additional regulations.

Self drilling screw

Hilti S-MD 03 Z 6,3 x L
Hilti S-MD 03 C 6,3 x L
with hexagon head

Annex 34



Material:

Fastener: carbon steel, case hardened
and galvanized or coated

Washer: none

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235, S275, S355 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t \leq 6,00 \text{ mm}$

Timber substructures:

no performance determined

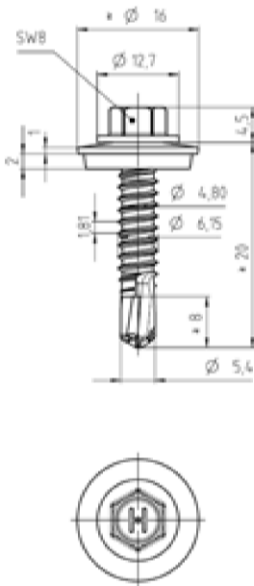
t_f [mm]	1,00	1,50	2,00	2,50	3,00	4,00	5,00	6,00
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,92	1,92	3,10	3,10	3,10	3,10	3,10	3,10
0,75	2,07	2,07	4,20	4,20	4,20	4,20	4,20	4,20
0,88	2,35	2,35	5,40	5,40	5,40	5,40	5,40	5,40
1,00	2,60	2,60	5,60	5,60	6,60	6,60	6,60	6,60
1,13	2,60	3,16	5,70	5,70	7,80	8,00	—	—
1,25	2,60	3,68	5,90	5,90	9,00	9,56	—	—
1,50	2,60	4,75	7,00	7,00	9,70	10,00	—	—
1,75	2,60	4,75	7,00	7,00	9,70	10,00	—	—
2,00	2,60	4,75	7,00	7,00	9,70	10,00	—	—
$N_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,23	2,01	2,01	2,01	2,01	2,01	2,01	2,01
0,75	1,23	2,29	2,29	2,29	2,29	2,29	2,29	2,29
0,88	1,23	2,46	2,92	2,92	2,92	2,92	2,92	2,92
1,00	1,23	2,46	3,21	3,78	3,78	3,78	3,78	3,78
1,13	1,23	2,46	3,21	4,62	5,04	5,04	—	—
1,25	1,23	2,46	3,21	4,62	6,03	6,49	—	—
1,50	1,23	2,46	3,21	4,62	6,03	6,90	—	—
1,75	1,23	2,46	3,21	4,62	6,03	7,20	—	—
2,00	1,23	2,46	3,21	4,62	6,03	7,20	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 3,00 \text{ mm}: 7 \text{ Nm}$				$\Sigma t > 3,00 \text{ mm}: 8 \text{ Nm}$			

No additional regulations.

Self drilling screw

Hilti S-MD 23 Z 6,3 x L
Hilti S-MD 23 C 6,3 x L
with hexagon head

Annex 35



Material:

Fastener: carbon steel, case hardened
and galvanized or coated

Washer: carbon steel, galvanized or coated
stainless Steel (1.4301) - EN 10088

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235, S275, S355 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t \leq 6,00 \text{ mm}$

Timber substructures:

no performance determined

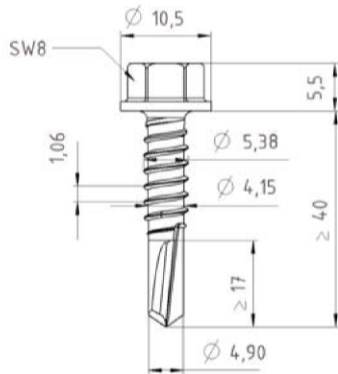
t _i [mm]	t _{ti} [mm]															
	1,50		2,00		2,50		3,00		4,00		5,00		6,00		—	
V _{R,k} [kN]	0,50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	—	—	3,00	ac	3,00	ac	3,00	abcd	3,00	abcd	3,00	abcd	—	—	—
	0,75	—	—	3,80	ac	3,80	ac	3,80	abcd	3,80	abcd	3,80	abcd	—	—	—
	0,88	—	—	4,80	—	4,80	—	4,80	ac	4,80	abc	4,80	abc	—	—	—
	1,00	—	—	5,10	—	5,10	—	5,70	ac	5,70	ac	5,70	ac	—	—	—
	1,13	—	—	5,50	—	5,50	—	6,80	ac	6,80	a	—	—	—	—	—
	1,25	—	—	6,10	—	6,10	—	7,90	ac	7,90	a	—	—	—	—	—
	1,50	—	—	6,40	—	6,40	—	9,00	—	10,00	a	—	—	—	—	—
	1,75	—	—	6,40	—	6,40	—	9,00	—	10,00	—	—	—	—	—	—
2,00	—	—	7,80	—	7,80	—	9,40	—	10,00	—	—	—	—	—	—	
N _{R,k} [kN]	0,50	—	—	1,78	ac	1,78	abcd	1,78	abcd	1,78	abcd	1,78	abcd	—	—	—
	0,55	—	—	2,25	ac	2,25	abcd	2,25	abcd	2,25	abcd	2,25	abcd	—	—	—
	0,63	—	—	3,21	ac	3,30	ac	3,30	abcd	3,30	abcd	3,30	abcd	—	—	—
	0,75	—	—	3,21	ac	4,00	ac	4,00	abcd	4,00	abcd	4,00	abcd	—	—	—
	0,88	—	—	3,21	—	4,62	—	4,80	ac	4,80	abc	4,80	abc	—	—	—
	1,00	—	—	3,21	—	4,62	—	5,60	ac	5,60	ac	5,60	ac	—	—	—
	1,13	—	—	3,21	—	4,62	—	6,03	ac	6,40	a	—	—	—	—	—
	1,25	—	—	3,21	—	4,62	—	6,03	ac	7,20	a	—	—	—	—	—
	1,50	—	—	3,21	—	4,62	—	6,03	—	7,20	a	—	—	—	—	—
	1,75	—	—	3,21	—	4,62	—	6,03	—	7,20	—	—	—	—	—	—
	2,00	—	—	3,21	—	4,62	—	6,03	—	7,20	—	—	—	—	—	—
M _{t,nom} [Nm]	Σt ≤ 3,00 mm: 7 Nm										Σt > 3,00 mm: 8 Nm					

No additional regulations.

Self drilling screw

Hilti S-MD 53 Z 6,3 x L
Hilti S-MD 53 C 6,3 x L
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 36



Material:

Fastener: carbon steel, case hardened
and galvanized or coated

Washer: none

Component I: S280GD, S320GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 15,00$ mm

Timber substructures:

no performance determined

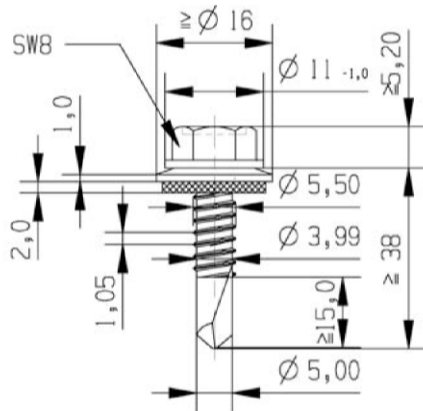
t_i [mm]	2,00	3,00	4,00	5,00	6,00	> 6,0	—	—
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	—	—	2,70 abcd	2,70 abcd	2,70 abcd	2,70 abcd	—	—
0,75	—	—	3,40 abcd	3,40 abcd	3,40 abcd	3,40 abcd	—	—
0,88	—	—	4,20 ac	4,20 ac	4,20 ac	4,20 ac	—	—
1,00	—	—	4,90 ac	4,90 ac	4,90 ac	4,90 ac	—	—
1,13	—	—	5,70 ac	5,70 ac	5,70 ac	5,70 ac	—	—
1,25	—	—	6,50 —	6,50 —	6,50 —	6,50 —	—	—
1,50	—	—	7,60 —	7,60 —	7,60 —	7,60 —	—	—
1,75	—	—	7,60 —	7,60 —	7,60 —	7,60 —	—	—
2,00	—	—	7,60 —	7,60 —	7,60 —	7,60 —	—	—
$N_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	—	—	1,50 abcd	1,50 abcd	1,50 abcd	1,50 abcd	—	—
0,75	—	—	1,80 abcd	1,80 abcd	1,80 abcd	1,80 abcd	—	—
0,88	—	—	2,10 ac	2,10 ac	2,10 ac	2,10 ac	—	—
1,00	—	—	2,40 ac	2,40 ac	2,40 ac	2,40 ac	—	—
1,13	—	—	2,70 ac	2,70 ac	2,70 ac	2,70 ac	—	—
1,25	—	—	3,00 —	3,00 —	3,00 —	3,00 —	—	—
1,50	—	—	3,60 —	3,60 —	3,60 —	3,60 —	—	—
1,75	—	—	3,60 —	3,60 —	3,60 —	3,60 —	—	—
2,00	—	—	4,80 —	4,80 —	4,80 —	4,80 —	—	—
$M_{t,nom}$ [Nm]	5 Nm							

No additional regulations.

Self drilling screw

Hilti S-MD 05 Z 5,5 x L
Hilti S-MD 05 C 5,5 x L
with hexagon head

Annex 37



Material:

Fastener: carbon steel, case hardened
and galvanized or coated

Washer: carbon steel, galvanized or coated
stainless Steel (1.4301) - EN 10088

Component I: S280GD, S320GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 15,00 \text{ mm}$

Timber substructures:

no performance determined

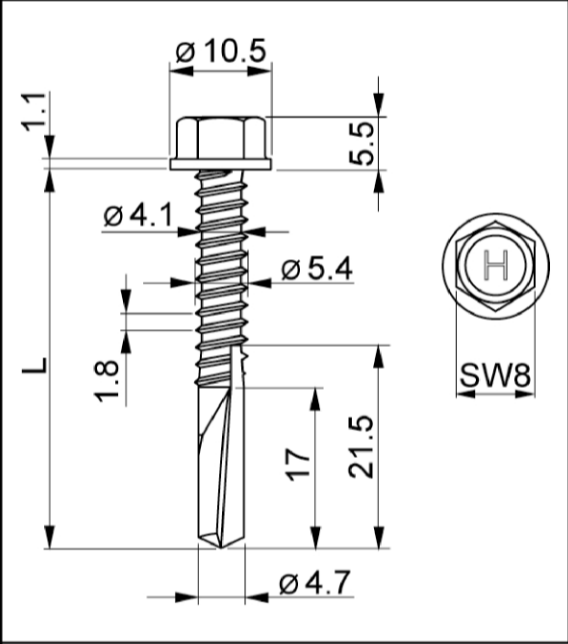
t_i [mm]	2,00	3,00	4,00	5,00	6,00	> 6,0	—	—
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	—	—	3,30 abcd	3,30 abcd	3,30 abcd	3,30 abcd	—	—
0,75	—	—	3,90 ac	3,90 ac	3,90 abcd	3,90 abcd	—	—
0,88	—	—	4,40 ac	4,40 ac	4,40 abcd	4,40 abcd	—	—
1,00	—	—	4,90 ac	4,90 ac	4,90 ac	4,90 ac	—	—
1,13	—	—	5,40 —	5,40 ac	5,40 ac	5,40 ac	—	—
1,25	—	—	7,30 —	7,30 ac	7,30 ac	7,30 ac	—	—
1,50	—	—	7,90 —	7,90 —	7,90 —	7,90 —	—	—
1,75	—	—	7,90 —	7,90 —	7,90 —	7,90 —	—	—
2,00	—	—	9,10 —	9,10 —	9,10 —	9,10 —	—	—
$N_{R,k}$ [kN]								
0,50	—	—	1,57 abcd	1,57 abcd	1,57 abcd	1,57 abcd	—	—
0,55	—	—	1,98 abcd	1,98 abcd	1,98 abcd	1,98 abcd	—	—
0,63	—	—	2,90 abcd	2,90 abcd	2,90 abcd	2,90 abcd	—	—
0,75	—	—	3,20 ac	3,20 ac	3,20 abcd	3,20 abcd	—	—
0,88	—	—	3,40 ac	3,40 ac	3,40 abcd	3,40 abcd	—	—
1,00	—	—	3,60 ac	3,60 ac	3,60 ac	3,60 ac	—	—
1,13	—	—	3,80 —	3,80 ac	3,80 ac	3,80 ac	—	—
1,25	—	—	4,00 —	4,00 ac	4,00 ac	4,00 ac	—	—
1,50	—	—	4,30 —	4,30 —	4,30 —	4,30 —	—	—
1,75	—	—	4,30 —	4,30 —	4,30 —	4,30 —	—	—
2,00	—	—	4,90 —	4,90 —	4,90 —	4,90 —	—	—
$M_{t,nom}$ [Nm]	5 Nm							

No additional regulations.

Self drilling screw

Hilti S-MD 55 Z 5,5 x L
Hilti S-MD 55 C 5,5 x L
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 38

	<u>Material:</u> Fastener: carbon steel, case hardened and galvanized or coated Washer: none Component I: S280GD, S320GD - EN 10346 Component II: S235 - EN 10025-1 S280GD, S320GD - EN 10346 <u>Drilling capacity:</u> $\Sigma t_i \leq 15,00 \text{ mm}$ <u>Timber substructures:</u> no performance determined
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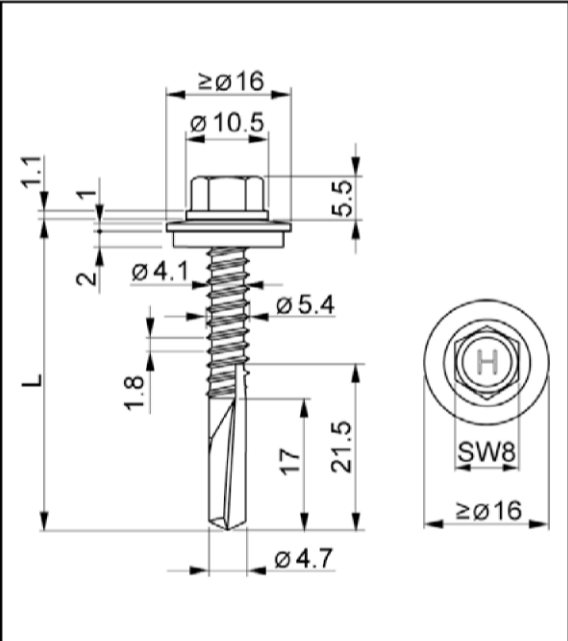
t_i [mm]	2,00	3,00	4,00	6,00	8,00	10,0	12,0	$\geq 14,0$
$V_{R,k}$ [kN]	0,50	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—
	0,63	—	2,49	2,49	2,49	2,49	2,49	2,49
	0,75	—	3,04	3,04	3,04	3,04	3,04	3,04
	0,88	—	3,87	3,87	3,87	3,87	3,87	3,87
	1,00	—	4,91	4,91	4,91	4,91	4,91	4,91
	1,13	—	6,24	6,24	6,24	6,24	6,24	—
	1,25	—	7,69	7,69	7,69	7,69	7,69	—
	1,50	—	7,69	7,69	7,69	7,69	7,69	—
	1,75	—	7,69	7,69	7,69	7,69	7,69	—
	2,00	—	7,69	7,69	7,69	7,69	7,69	—
$N_{R,k}$ [kN]	0,50	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—
	0,63	—	2,50	2,50	2,50	2,50	2,50	2,50
	0,75	—	2,99	2,99	2,99	2,99	2,99	2,99
	0,88	—	3,50	3,50	3,50	3,50	3,50	3,50
	1,00	—	3,99	3,99	3,99	3,99	3,99	3,99
	1,13	—	4,50	4,50	4,50	4,50	4,50	—
	1,25	—	4,97	4,97	4,97	4,97	4,97	—
	1,50	—	5,99	5,99	5,99	5,99	5,99	—
	1,75	—	6,95	6,95	6,95	6,95	6,95	—
	2,00	—	7,96	7,96	7,96	7,96	7,96	—
$M_{t,nom}$ [Nm]	5 Nm							

No additional regulations.

Self drilling screw

Hilti S-MD 05 GZ 5,5 x L
Hilti S-MD 05 GC 5,5 x L
with hexagon head

Annex 39

	<u>Material:</u> Fastener: carbon steel, case hardened and galvanized or coated Washer: carbon steel, galvanized or coated stainless Steel (1.4301) - EN 10088 Component I: S280GD, S320GD - EN 10346 Component II: S235 - EN 10025-1 S280GD, S320GD - EN 10346 <u>Drilling capacity:</u> $\Sigma t \leq 15,00 \text{ mm}$ <u>Timber substructures:</u> no performance determined
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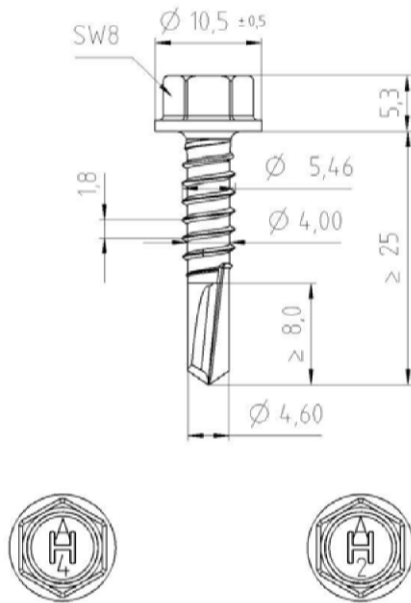
t_f [mm]	2,00	3,00	4,00	6,00	8,00	10,0	12,0	$\geq 14,0$
$V_{R,k}$ [kN]	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN]	—	—	—	—	—	—	—	—
$M_{t,nom}$ [Nm]	—	—	—	—	—	—	—	—
t_f [mm]	2,00	3,00	4,00	6,00	8,00	10,0	12,0	$\geq 14,0$
$V_{R,k}$ [kN]	—	—	2,49	2,49	2,49	2,49	2,49	2,49
$N_{R,k}$ [kN]	—	—	3,04	3,04	3,04	3,04	3,04	3,04
$M_{t,nom}$ [Nm]	—	—	3,87	3,87	3,87	3,87	3,87	3,87
$V_{R,k}$ [kN]	—	—	4,91	4,91	4,91	4,91	4,91	4,91
$N_{R,k}$ [kN]	—	—	6,24	6,24	6,24	6,24	6,24	—
$M_{t,nom}$ [Nm]	—	—	7,69	7,69	7,69	7,69	7,69	—
$V_{R,k}$ [kN]	—	—	7,69	7,69	7,69	7,69	7,69	—
$N_{R,k}$ [kN]	—	—	7,69	7,69	7,69	7,69	7,69	—
$M_{t,nom}$ [Nm]	—	—	7,69	7,69	7,69	7,69	7,69	—
$V_{R,k}$ [kN]	—	—	7,69	7,69	7,69	7,69	7,69	—
$N_{R,k}$ [kN]	—	—	7,69	7,69	7,69	7,69	7,69	—
$M_{t,nom}$ [Nm]	—	—	7,69	7,69	7,69	7,69	7,69	—
$V_{R,k}$ [kN]	—	—	7,69	7,69	7,69	7,69	7,69	—
$N_{R,k}$ [kN]	—	—	7,69	7,69	7,69	7,69	7,69	—
$M_{t,nom}$ [Nm]	—	—	7,69	7,69	7,69	7,69	7,69	—
$V_{R,k}$ [kN]	—	—	7,69	7,69	7,69	7,69	7,69	—
$N_{R,k}$ [kN]	—	—	7,69	7,69	7,69	7,69	7,69	—
$M_{t,nom}$ [Nm]	—	—	7,69	7,69	7,69	7,69	7,69	—
$V_{R,k}$ [kN]	—	—	7,69	7,69	7,69	7,69	7,69	—
$N_{R,k}$ [kN]	—	—	7,69	7,69	7,69	7,69	7,69	—
$M_{t,nom}$ [Nm]	—	—	7,69	7,69	7,69	7,69	7,69	—
$V_{R,k}$ [kN]	—	—	7,69	7,69	7,69	7,69	7,69	—
$N_{R,k}$ [kN]	—	—	7,69	7,69	7,69	7,69	7,69	—
$M_{t,nom}$ [Nm]	—	—	7,69	7,69	7,69	7,69	7,69	—

No additional regulations.

Self drilling screw

Hilti S-MD 55 GZ 5,5 x L
Hilti S-MD 55 GC 5,5 x L
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 40



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: none

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235, S275, S355 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t \leq 6,00 \text{ mm}$

Timber substructures:

no performance determined

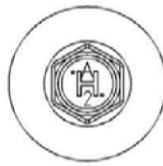
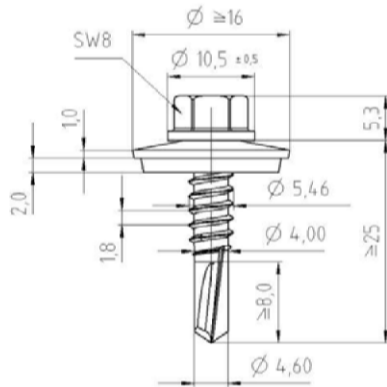
t_i [mm]	1,50	2,00	2,50	3,00	4,00	6,00	—	—
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	2,10	ac	2,60	ac	3,40	ac	—	—
0,75	2,50	ac	3,00	ac	4,00	ac	—	—
0,88	2,70	—	3,40	ac	4,60	ac	—	—
1,00	2,90	—	4,80	ac	5,20	ac	—	—
1,13	3,30	—	5,10	—	6,00	—	—	—
1,25	3,60	—	5,30	—	6,80	—	—	—
1,50	4,40	—	5,90	—	7,20	—	—	—
1,75	4,40	—	5,90	—	7,20	—	—	—
2,00	5,40	—	6,50	—	7,20	—	—	—
$N_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,70	ac	1,70	ac	1,70	ac	—	—
0,75	1,70	ac	2,20	ac	2,20	ac	—	—
0,88	1,70	—	2,60	ac	2,90	ac	—	—
1,00	1,70	—	2,60	ac	3,50	ac	—	—
1,13	1,70	—	2,60	—	4,30	—	—	—
1,25	1,70	—	2,60	—	4,60	—	—	—
1,50	1,70	—	2,60	—	4,60	—	—	—
1,75	1,70	—	2,60	—	4,60	—	—	—
2,00	1,70	—	2,60	—	4,60	—	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 3,00 \text{ mm}: 2 \text{ Nm}$					$\Sigma t > 3,00 \text{ mm}: 5 \text{ Nm}$		

No additional regulations.

Self drilling screw

Hilti S-MD 03 S 5,5 x L
Hilti S-MD 03 SS 5,5 x L
with hexagon head

Annex 41



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235, S275, S355 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t \leq 6,00 \text{ mm}$

Timber substructures:

no performance determined

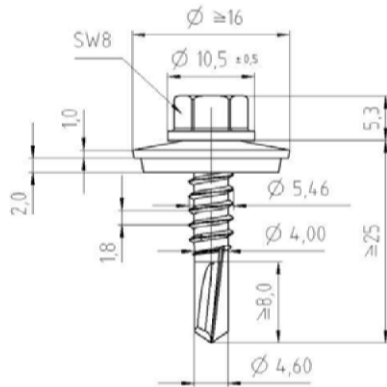
t_i [mm]	t_{II} [mm]									
	1,50	2,00	2,50	3,00	4,00	6,00	—	—	—	—
$V_{R,k}$ [kN]	0,50	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—
	0,63	2,10 ac	2,60 ac	3,00 ac	3,40 ac	3,40 ac	—	—	—	—
	0,75	2,50 ac	3,00 ac	3,50 ac	4,00 ac	4,00 ac	—	—	—	—
	0,88	2,70 —	3,40 ac	4,00 ac	4,60 ac	4,60 a	—	—	—	—
	1,00	2,90 —	4,80 ac	5,00 ac	5,20 ac	5,20 a	—	—	—	—
	1,13	3,30 —	5,10 —	5,40 —	6,00 —	6,00 —	—	—	—	—
	1,25	3,60 —	5,30 —	5,80 —	6,80 —	6,80 —	—	—	—	—
	1,50	4,40 —	5,90 —	6,60 —	7,20 —	7,20 —	—	—	—	—
	1,75	4,40 —	5,90 —	6,60 —	7,20 —	7,20 —	—	—	—	—
	2,00	5,40 —	6,50 —	6,60 —	7,20 —	7,20 —	—	—	—	—
$N_{R,k}$ [kN]	0,50	0,92 ac	1,35 ac	1,35 ac	1,35 ac	1,35 ac	—	—	—	—
	0,55	1,16 ac	1,71 ac	1,71 ac	1,71 ac	1,71 ac	—	—	—	—
	0,63	1,70 ac	2,50 ac	2,50 ac	2,50 ac	2,50 ac	—	—	—	—
	0,75	1,70 ac	2,60 ac	3,30 ac	3,30 ac	3,30 ac	—	—	—	—
	0,88	1,70 —	2,60 ac	3,60 ac	4,10 ac	4,10 a	—	—	—	—
	1,00	1,70 —	2,60 ac	3,60 ac	4,60 ac	4,70 a	—	—	—	—
	1,13	1,70 —	2,60 —	3,60 —	4,60 —	5,40 —	—	—	—	—
	1,25	1,70 —	2,60 —	3,60 —	4,60 —	5,90 —	—	—	—	—
	1,50	1,70 —	2,60 —	3,60 —	4,60 —	6,00 —	—	—	—	—
	1,75	1,70 —	2,60 —	3,60 —	4,60 —	6,00 —	—	—	—	—
	2,00	1,70 —	2,60 —	3,60 —	4,60 —	6,00 —	—	—	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 3,00 \text{ mm}: 2 \text{ Nm}$					$\Sigma t > 3,00 \text{ mm}: 5 \text{ Nm}$				

No additional regulations.

Self drilling screw

Hilti S-MD 53 S 5,5 x L / Hilti S-MD 53 SS 5,5 x L
Hilti S-MD 63 S 5,5 x L / Hilti S-MD 63 SS 5,5 x L
Hilti S-MD 73 S 5,5 x L / Hilti S-MD 73 SS 5,5 x L
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 42



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S320GD, S350GD - EN 10346

Component II: S275, S355 - EN 10025-1
S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t \leq 6,00 \text{ mm}$

Timber substructures:

no performance determined

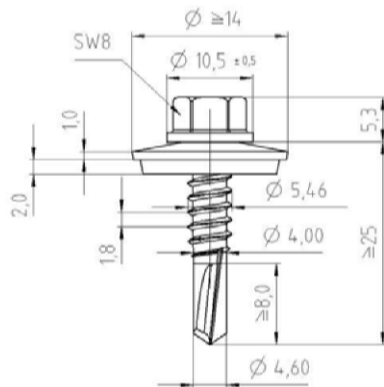
t_i [mm]	1,50	2,00	2,50	3,00	4,00	6,00	—	—
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	2,30	ac	2,80	ac	3,70	ac	—	—
0,75	2,70	ac	3,20	ac	4,30	ac	—	—
0,88	2,90	—	3,60	ac	4,30	ac	—	—
1,00	3,20	—	5,20	ac	5,00	a	—	—
1,13	3,60	—	5,40	—	5,70	a	—	—
1,25	3,90	—	5,40	—	6,50	—	—	—
1,50	4,80	—	6,20	—	7,40	—	—	—
1,75	4,80	—	7,00	—	7,80	—	—	—
2,00	5,90	—	7,00	—	7,80	—	—	—
$N_{R,k}$ [kN]								
0,50	1,03	ac	1,51	ac	1,51	ac	—	—
0,55	1,30	ac	1,91	ac	1,91	ac	—	—
0,63	1,90	ac	2,80	ac	2,80	ac	—	—
0,75	1,90	ac	2,80	ac	2,80	ac	—	—
0,88	1,90	—	2,90	ac	3,60	a	—	—
1,00	1,90	—	2,90	ac	4,40	a	—	—
1,13	1,90	—	4,00	—	5,10	—	—	—
1,25	1,90	—	4,00	—	5,10	—	—	—
1,50	1,90	—	4,00	—	5,80	—	—	—
1,75	1,90	—	4,00	—	6,30	—	—	—
2,00	1,90	—	4,00	—	6,60	—	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 3,00 \text{ mm}: 2 \text{ Nm}$					$\Sigma t > 3,00 \text{ mm}: 5 \text{ Nm}$		

No additional regulations.

Self drilling screw

Hilti S-MD 53 S 5,5 x L - 390 / Hilti S-MD 53 SS 5,5 x L - 390
Hilti S-MD 63 S 5,5 x L - 390 / Hilti S-MD 63 SS 5,5 x L - 390
Hilti S-MD 73 S 5,5 x L - 390 / Hilti S-MD 73 SS 5,5 x L - 390
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 43



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: aluminium alloy with $R_{m,min} = 185 \text{ N/mm}^2$ - EN 573

Component II: aluminium alloy with $R_{m,min} = 185 \text{ N/mm}^2$ - EN 573
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 6,00 \text{ mm}$

Timber substructures:

no performance determined

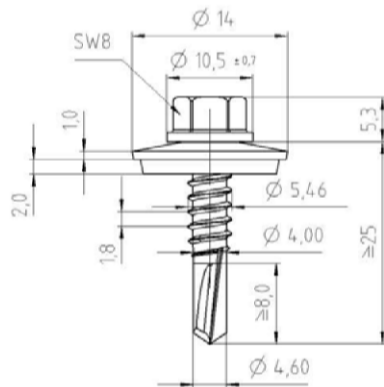
t_i [mm]	$t_{II,St}$ [mm]						$t_{II,Al}$ [mm]					
	1,50	1,75	2,00	2,50	3,00	4,00	1,50	1,70	2,00	2,50	3,00	4,00
$V_{R,k}$ [kN]	0,50	1,20	1,20	1,20	1,20	1,20	0,82	0,82	0,82	0,82	0,82	0,82
	0,60	1,28	1,28	1,28	1,28	1,28	0,94	0,94	0,94	0,94	0,94	0,94
	0,70	1,36	1,36	1,36	1,36	1,36	1,05	1,05	1,05	1,05	1,05	1,05
	0,80	1,46	1,46	1,46	1,46	1,46	1,17	1,17	1,17	1,17	1,17	1,17
	0,90	1,57	1,57	1,57	1,57	1,57	1,27	1,27	1,27	1,27	1,27	1,27
	1,00	1,68	1,73	1,78	1,88	1,98	1,37	1,40	1,45	1,53	1,61	1,61
	1,20	1,93	1,93	1,93	1,93	1,98	1,55	1,55	1,55	1,55	1,61	1,61
	1,40	2,22	2,22	2,22	2,22	2,22	1,70	1,70	1,70	1,70	1,70	1,70
	1,60	2,54	2,54	2,54	2,54	2,54	1,83	1,83	1,83	1,83	1,83	1,83
	1,80	2,90	2,90	2,90	2,90	2,90	1,93	1,93	1,93	1,93	1,93	1,93
	2,00	3,28	3,28	3,28	3,28	3,28	2,00	2,00	2,00	2,00	2,00	3,05
$N_{R,k}$ [kN]	0,50	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45
	0,60	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,54	0,54
	0,70	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,63
	0,80	0,72	0,72	0,72	0,72	0,72	0,72	0,72	0,72	0,72	0,72	0,72
	0,90	0,81	0,81	0,81	0,81	0,81	0,81	0,81	0,81	0,81	0,81	0,81
	1,00	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90	0,90
	1,20	1,08	1,08	1,08	1,08	1,08	0,98	1,08	1,08	1,08	1,08	1,08
	1,40	1,26	1,26	1,26	1,26	1,26	0,98	1,26	1,26	1,26	1,26	1,26
	1,60	1,35	1,35	1,35	1,35	1,35	0,98	1,26	1,35	1,35	1,35	1,35
	1,80	1,35	1,35	1,35	1,35	1,35	0,98	1,26	1,35	1,35	1,35	1,35
	2,00	1,35	1,35	1,35	1,35	1,35	0,98	1,26	1,35	1,35	1,35	1,35
$M_{t,nom}$ [Nm]												

The grey highlighted values $N_{R,k}$ may be increased by 6.9% when using the types "S-MD 5x", by 16.5% when using the types "S-MD 6x" and 25.4% when using the types "S-MD 7x".

Self drilling screw

Hilti S-MD 43 S 5,5 x L / Hilti S-MD 43 SS 5,5 x L
Hilti S-MD 53 S 5,5 x L / Hilti S-MD 53 SS 5,5 x L
Hilti S-MD 63 S 5,5 x L / Hilti S-MD 63 SS 5,5 x L
Hilti S-MD 73 S 5,5 x L / Hilti S-MD 73 SS 5,5 x L
with hexagon head and sealing washer $\geq \varnothing 14 \text{ mm}$

Annex 44



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235, S275, S355 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t \leq 6,00 \text{ mm}$

Timber substructures:

no performance determined

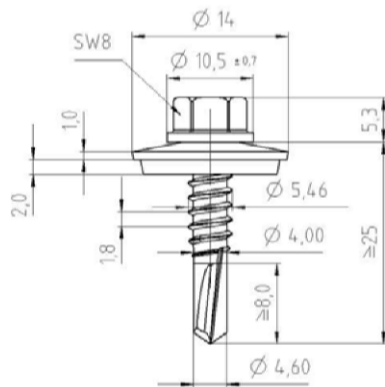
t_i [mm]	1,50	2,00	2,50	3,00	4,00	6,00	—	—
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	2,50	2,50	2,60	2,70	2,70	—	—	—
0,75	2,80	2,80	2,80	2,80	3,70	—	—	—
0,88	3,00	3,00	3,00	3,00	3,70	—	—	—
1,00	3,30	3,70	4,30	4,90	4,90	—	—	—
1,13	3,50	3,90	4,60	5,30	5,30	—	—	—
1,25	3,80	4,10	4,90	5,80	5,80	—	—	—
1,50	3,80	5,30	5,60	5,90	6,40	—	—	—
1,75	3,80	5,30	5,60	5,90	6,40	—	—	—
2,00	5,60	5,60	5,60	5,90	6,40	—	—	—
$N_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,90	2,30	2,30	2,30	2,30	—	—	—
0,75	1,90	2,50	3,20	3,20	3,20	—	—	—
0,88	1,90	2,50	3,30	4,10	4,10	—	—	—
1,00	1,90	2,50	3,30	4,20	4,90	—	—	—
1,13	1,90	2,50	3,30	4,20	5,60	—	—	—
1,25	1,90	2,50	3,30	4,20	5,60	—	—	—
1,50	1,90	2,50	3,30	4,20	5,60	—	—	—
1,75	1,90	2,50	3,30	4,20	5,60	—	—	—
2,00	1,90	2,50	3,30	4,20	5,60	—	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 3,00 \text{ mm}: 2 \text{ Nm}$					$\Sigma t > 3,00 \text{ mm}: 5 \text{ Nm}$		

No additional regulations.

Self drilling screw

Hilti S-MD 43 S 5,5 x L
Hilti S-MD 43 SS 5,5 x L
with hexagon head and sealing washer $\geq \varnothing 14 \text{ mm}$

Annex 45



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S320GD, S350GD - EN 10346

Component II: S275, S355 - EN 10025-1
S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t \leq 6,00 \text{ mm}$

Timber substructures:

no performance determined

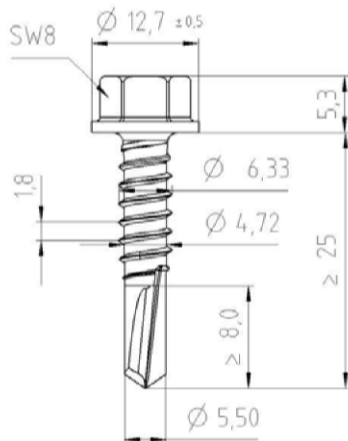
t_i [mm]	1,50	2,00	2,50	3,00	4,00	6,00	—	—
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	2,70	2,70	2,80	2,90	2,90	—	—	—
0,75	3,00	3,00	3,30	3,70	3,70	—	—	—
0,88	3,30	3,30	3,90	4,50	4,50	—	—	—
1,00	3,50	4,00	4,70	5,30	5,30	—	—	—
1,13	3,80	4,20	5,00	5,80	5,80	—	—	—
1,25	4,10	4,40	5,30	6,30	6,30	—	—	—
1,50	4,80	5,70	6,10	6,40	7,00	—	—	—
1,75	4,80	5,70	6,10	6,40	7,00	—	—	—
2,00	6,10	6,10	6,10	6,40	7,00	—	—	—
$N_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	2,10	2,60	2,60	2,60	2,60	—	—	—
0,75	2,10	2,80	3,60	3,60	3,60	—	—	—
0,88	2,10	2,80	3,70	4,50	4,50	—	—	—
1,00	2,10	2,80	3,70	4,70	5,30	—	—	—
1,13	2,10	2,80	3,70	4,70	6,10	—	—	—
1,25	2,10	2,80	3,70	4,70	6,40	—	—	—
1,50	2,10	2,80	3,70	4,70	6,40	—	—	—
1,75	2,10	2,80	3,70	4,70	6,40	—	—	—
2,00	2,10	2,80	3,70	4,70	6,40	—	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 3,00 \text{ mm}: 2 \text{ Nm}$					$\Sigma t > 3,00 \text{ mm}: 5 \text{ Nm}$		

No additional regulations.

Self drilling screw

Hilti S-MD 43 S 5,5 x L - 390
Hilti S-MD 43 SS 5,5 x L - 390
with hexagon head and sealing washer $\geq \varnothing 14 \text{ mm}$

Annex 46



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: none

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235, S275, S355 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t \leq 6,00 \text{ mm}$

Timber substructures:

no performance determined

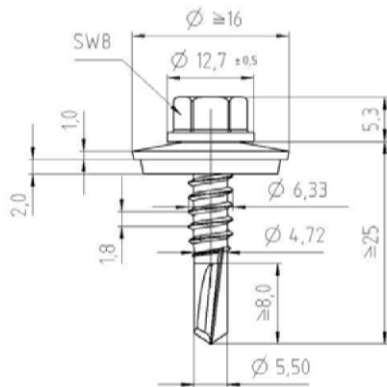
t_i [mm]	1,50	2,00	2,50	3,00	4,00	6,00	—	—
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	2,20	2,50 ac	2,80 ac	3,00 ac	3,00 ac	—	—	—
0,75	2,70	3,20 ac	3,60 ac	4,10 ac	4,10 ac	—	—	—
0,88	3,00	3,70 ac	4,50 ac	5,30 ac	5,30 ac	—	—	—
1,00	3,30	4,00 ac	5,20 ac	6,40 ac	6,40 ac	—	—	—
1,13	3,70	4,70	5,70	6,70	6,70	—	—	—
1,25	4,10	5,10	6,00	6,90	6,90	—	—	—
1,50	5,00	6,30	6,90	7,50	8,10	—	—	—
1,75	5,00	6,30	6,90	7,50	8,10	—	—	—
2,00	6,70	6,70	6,90	7,50	8,10	—	—	—
$N_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,40	1,90 ac	1,90 ac	1,90 ac	1,90 ac	—	—	—
0,75	1,40	2,60 ac	2,60 ac	2,60 ac	2,60 ac	—	—	—
0,88	1,40	2,70 ac	3,40 ac	3,40 ac	3,40 ac	—	—	—
1,00	1,40	2,70 ac	4,00 ac	4,30 ac	4,30 ac	—	—	—
1,13	1,40	2,70	4,00	5,30	5,30	—	—	—
1,25	1,40	2,70	4,00	5,40	6,40	—	—	—
1,50	1,40	2,70	4,00	5,40	6,90	—	—	—
1,75	1,40	2,70	4,00	5,40	6,90	—	—	—
2,00	1,40	2,70	4,00	5,40	7,20	—	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 3,00 \text{ mm}: 2 \text{ Nm}$					$\Sigma t > 3,00 \text{ mm}: 5 \text{ Nm}$		

No additional regulations.

Self drilling screw

Hilti S-MD 03 S 6,3 x L
Hilti S-MD 03 SS 6,3 x L
with hexagon head

Annex 47



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235, S275, S355 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t \leq 6,00 \text{ mm}$

Timber substructures:

no performance determined

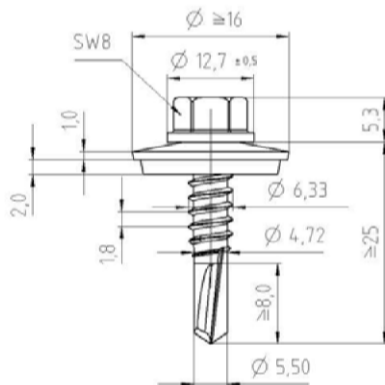
t_i [mm]	1,50	2,00	2,50	3,00	4,00	6,00	—	—
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	2,20	2,50 ac	2,80 ac	3,00 ac	3,00 ac	—	—	—
0,75	2,70	3,20 ac	3,60 ac	4,10 ac	4,10 ac	—	—	—
0,88	3,00	3,70 ac	4,50 ac	5,30 ac	5,30 ac	—	—	—
1,00	3,30	4,00 ac	5,20 ac	6,40 ac	6,40 ac	—	—	—
1,13	3,70	4,70 —	5,70 —	6,70 —	6,70 —	—	—	—
1,25	4,10	5,10 —	6,00 —	6,90 —	6,90 —	—	—	—
1,50	5,00	6,30 —	6,90 —	7,50 —	8,10 —	—	—	—
1,75	5,00	6,30 —	6,90 —	7,50 —	8,10 —	—	—	—
2,00	6,70	6,70 —	6,90 —	7,50 —	8,10 —	—	—	—
$N_{R,k}$ [kN]								
0,50	0,76	1,46 ac	1,62 ac	1,62 ac	1,62 ac	—	—	—
0,55	0,95	1,84 ac	2,05 ac	2,05 ac	2,05 ac	—	—	—
0,63	1,40	2,70 ac	3,00 ac	3,00 ac	3,00 ac	—	—	—
0,75	1,40	2,70 ac	3,90 ac	3,90 ac	3,90 ac	—	—	—
0,88	1,40	2,70 ac	4,00 ac	4,80 ac	4,80 ac	—	—	—
1,00	1,40	2,70 ac	4,00 ac	5,40 ac	5,60 ac	—	—	—
1,13	1,40	2,70 —	4,00 —	5,40 —	6,20 —	—	—	—
1,25	1,40	2,70 —	4,00 —	5,40 —	6,80 —	—	—	—
1,50	1,40	2,70 —	4,00 —	5,40 —	7,20 —	—	—	—
1,75	1,40	2,70 —	4,00 —	5,40 —	7,20 —	—	—	—
2,00	1,40	2,70 —	4,00 —	5,40 —	7,20 —	—	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 3,00 \text{ mm}: 2 \text{ Nm}$					$\Sigma t > 3,00 \text{ mm}: 5 \text{ Nm}$		

No additional regulations.

Self drilling screw

Hilti S-MD 53 S 6,3 x L / Hilti S-MD 53 SS 6,3 x L
Hilti S-MD 63 S 6,3 x L / Hilti S-MD 63 SS 6,3 x L
Hilti S-MD 73 S 6,3 x L / Hilti S-MD 73 SS 6,3 x L
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 48



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S320GD, S350GD - EN 10346

Component II: S275, S355 - EN 10025-1
S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t \leq 6,00$ mm

Timber substructures:

no performance determined

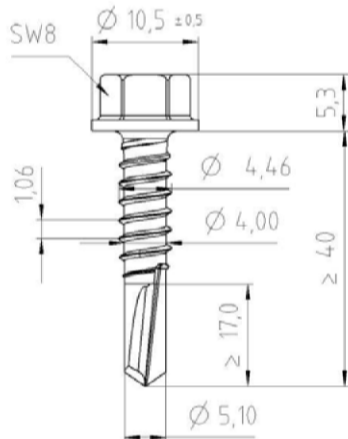
t_i [mm]	1,50	2,00	2,50	3,00	4,00	6,00	—	—
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	2,40	2,70	3,00	3,30	3,30	—	—	—
0,75	2,90	3,40	3,90	4,50	4,50	—	—	—
0,88	3,20	4,10	4,90	5,70	5,70	—	—	—
1,00	3,50	4,30	5,60	6,90	6,90	—	—	—
1,13	4,00	5,10	6,20	7,20	7,20	—	—	—
1,25	4,50	5,50	6,50	7,50	7,50	—	—	—
1,50	5,40	6,80	7,40	8,10	8,80	—	—	—
1,75	5,40	6,80	7,40	8,10	8,80	—	—	—
2,00	7,20	7,20	7,40	8,10	8,80	—	—	—
$N_{R,k}$ [kN]								
0,50	0,92	1,67	1,84	1,84	1,84	—	—	—
0,55	1,16	2,11	2,32	2,32	2,32	—	—	—
0,63	1,70	3,10	3,40	3,40	3,40	—	—	—
0,75	1,70	3,10	4,30	4,30	4,30	—	—	—
0,88	1,70	3,10	4,50	5,20	5,20	—	—	—
1,00	1,70	3,10	4,50	6,00	6,00	—	—	—
1,13	1,70	3,10	4,50	6,00	6,60	—	—	—
1,25	1,70	3,10	4,50	6,00	7,20	—	—	—
1,50	1,70	3,10	4,50	6,00	7,90	—	—	—
1,75	1,70	3,10	4,50	6,00	7,90	—	—	—
2,00	1,70	3,10	4,50	6,00	7,90	—	—	—
$M_{t,nom}$ [Nm]	$\Sigma t \leq 3,00$ mm: 2 Nm					$\Sigma t > 3,00$ mm: 5 Nm		

No additional regulations.

Self drilling screw

Hilti S-MD 53 S 6,3 x L - 390 / Hilti S-MD 53 SS 6,3 x L - 390
Hilti S-MD 63 S 6,3 x L - 390 / Hilti S-MD 63 SS 6,3 x L - 390
Hilti S-MD 73 S 6,3 x L - 390 / Hilti S-MD 73 SS 6,3 x L - 390
with hexagon head and sealing washer $\geq \varnothing 16$ mm

Annex 49



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: none

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235, S275, S355 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 12,00$ mm

Timber substructures:

no performance determined

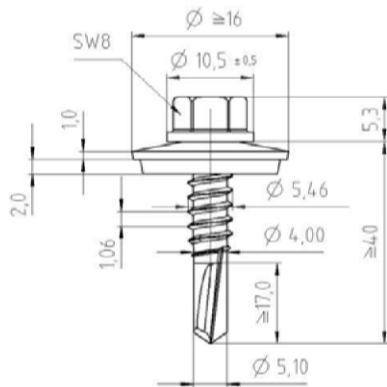
t_i [mm]	4,00	5,00	6,00	8,00	10,00	—	—	—
t_{ii} [mm]	4,00	5,00	6,00	8,00	10,00	—	—	—
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	2,70 ac	2,70 ac	2,70 abcd	2,70 abcd	2,70 abcd	—	—	—
0,75	2,90 ac	2,90 ac	2,90 abcd	2,90 abcd	2,90 abcd	—	—	—
0,88	3,50 ac	3,50 ac	3,50 ac	3,50 ac	3,50 ac	—	—	—
1,00	4,00 ac	4,00 ac	4,00 ac	4,00 ac	4,00 ac	—	—	—
1,13	5,00 —	5,00 —	5,00 ac	5,00 ac	5,00 ac	—	—	—
1,25	6,00 —	6,00 —	6,00 ac	6,00 ac	6,00 a	—	—	—
1,50	6,00 —	6,20 —	6,50 ac	6,50 ac	6,50 a	—	—	—
1,75	6,00 —	6,20 —	6,50 —	6,50 —	6,50 —	—	—	—
2,00	6,00 —	6,40 —	6,90 —	6,90 —	6,90 —	—	—	—
$N_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	1,50 ac	1,50 ac	1,50 abcd	1,50 abcd	1,50 abcd	—	—	—
0,75	1,80 ac	1,80 ac	1,80 abcd	1,80 abcd	1,80 abcd	—	—	—
0,88	2,10 ac	2,10 ac	2,10 ac	2,10 ac	2,10 ac	—	—	—
1,00	2,40 ac	2,40 ac	2,40 ac	2,40 ac	2,40 ac	—	—	—
1,13	2,70 —	2,70 —	2,70 ac	2,70 ac	2,70 ac	—	—	—
1,25	3,00 —	3,00 —	3,00 ac	3,00 ac	3,00 a	—	—	—
1,50	3,60 —	3,60 —	3,60 ac	3,60 ac	3,60 a	—	—	—
1,75	4,20 —	4,20 —	4,20 —	4,20 —	4,20 —	—	—	—
2,00	4,80 —	4,80 —	4,80 —	4,80 —	4,80 —	—	—	—
$M_{t,nom}$ [Nm]	5 Nm							

No additional regulations.

Self drilling screw

Hilti S-MD 05 S 5,5 x L
Hilti S-MD 05 SS 5,5 x L
with hexagon head

Annex 50



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t \leq 12,00$ mm

Timber substructures:

no performance determined

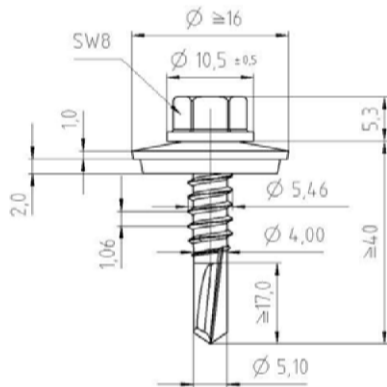
t_i [mm]	4,00	5,00	6,00	8,00	10,00	—	—	—
t_{II} [mm]	4,00	5,00	6,00	8,00	10,00	—	—	—
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	2,70 ac	2,70 ac	2,70 abcd	2,70 abcd	2,70 abcd	—	—	—
0,75	2,90 ac	2,90 ac	2,90 abcd	2,90 abcd	2,90 abcd	—	—	—
0,88	3,50 ac	3,50 ac	3,50 ac	3,50 ac	3,50 ac	—	—	—
1,00	4,00 ac	4,00 ac	4,00 ac	4,00 ac	4,00 ac	—	—	—
1,13	5,00 —	5,00 —	5,00 ac	5,00 ac	5,00 ac	—	—	—
1,25	6,00 —	6,00 —	6,00 ac	6,00 ac	6,00 a	—	—	—
1,50	6,00 —	6,20 —	6,50 ac	6,50 ac	6,50 a	—	—	—
1,75	6,00 —	6,20 —	6,50 —	6,50 —	6,50 —	—	—	—
2,00	6,00 —	6,40 —	6,90 —	6,90 —	6,90 —	—	—	—
$N_{R,k}$ [kN]								
0,50	1,35 ac	1,35 ac	1,35 abcd	1,35 abcd	1,35 abcd	—	—	—
0,55	1,71 ac	1,71 ac	1,71 abcd	1,71 abcd	1,71 abcd	—	—	—
0,63	2,50 ac	2,50 ac	2,50 abcd	2,50 abcd	2,50 abcd	—	—	—
0,75	3,30 ac	3,30 ac	3,30 abcd	3,30 abcd	3,30 abcd	—	—	—
0,88	4,10 ac	4,10 ac	4,10 ac	4,10 ac	4,10 ac	—	—	—
1,00	4,70 ac	4,70 ac	4,70 ac	4,70 ac	4,70 ac	—	—	—
1,13	5,40 —	5,40 —	5,40 ac	5,40 ac	5,40 ac	—	—	—
1,25	5,90 —	5,90 —	5,90 ac	5,90 ac	5,90 a	—	—	—
1,50	6,90 —	6,90 —	6,90 ac	6,90 ac	6,90 a	—	—	—
1,75	6,90 —	6,90 —	6,90 —	6,90 —	6,90 —	—	—	—
2,00	8,00 —	8,00 —	8,00 —	8,00 —	8,00 —	—	—	—
$M_{t,nom}$ [Nm]	5 Nm							

No additional regulations.

Self drilling screw

Hilti S-MD 55 S 5,5 x L / Hilti S-MD 55 SS 5,5 x L
Hilti S-MD 65 S 5,5 x L / Hilti S-MD 65 SS 5,5 x L
Hilti S-MD 75 S 5,5 x L / Hilti S-MD 75 SS 5,5 x L
with hexagon head and sealing washer $\geq \varnothing 16$ mm

Annex 51



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S320GD, S350GD - EN 10346

Component II: S275 - EN 10025-1
S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t \leq 12,00$ mm

Timber substructures:

no performance determined

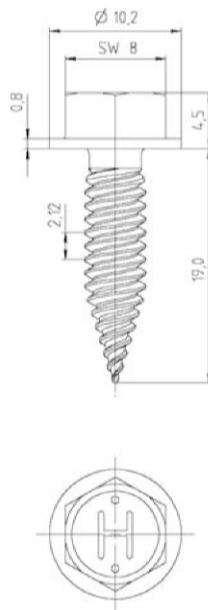
t_i [mm]	4,00	5,00	6,00	8,00	10,00	—	—	—
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	2,70 ac	2,70 ac	2,70 abcd	2,70 abcd	2,70 abcd	—	—	—
0,75	3,10 ac	3,10 ac	3,10 abcd	3,10 abcd	3,10 abcd	—	—	—
0,88	3,60 ac	3,60 ac	3,60 ac	3,60 ac	3,60 ac	—	—	—
1,00	4,10 ac	4,10 ac	4,10 ac	4,10 ac	4,10 ac	—	—	—
1,13	5,10 —	5,10 —	5,10 ac	5,10 ac	5,10 ac	—	—	—
1,25	6,10 —	6,10 —	6,10 ac	6,10 ac	6,10 ac	—	—	—
1,50	6,10 —	6,40 —	6,60 ac	6,60 ac	6,60 a	—	—	—
1,75	6,10 —	6,40 —	6,60 —	6,60 —	6,60 —	—	—	—
2,00	6,10 —	6,40 —	6,60 —	6,60 —	6,60 —	—	—	—
$N_{R,k}$ [kN]								
0,50	1,51 ac	1,51 ac	1,51 abcd	1,51 abcd	1,51 abcd	—	—	—
0,55	1,91 ac	1,91 ac	1,91 abcd	1,91 abcd	1,91 abcd	—	—	—
0,63	2,80 ac	2,80 ac	2,80 abcd	2,80 abcd	2,80 abcd	—	—	—
0,75	3,60 ac	3,60 ac	3,60 abcd	3,60 abcd	3,60 abcd	—	—	—
0,88	4,40 ac	4,40 ac	4,40 ac	4,40 ac	4,40 ac	—	—	—
1,00	5,10 ac	5,10 ac	5,10 ac	5,10 ac	5,10 ac	—	—	—
1,13	5,80 —	5,80 —	5,80 ac	5,80 ac	5,80 ac	—	—	—
1,25	6,30 —	6,30 —	6,30 ac	6,30 ac	6,30 ac	—	—	—
1,50	7,20 —	7,20 —	7,20 ac	7,20 ac	7,20 a	—	—	—
1,75	7,20 —	7,20 —	7,20 —	7,20 —	7,20 —	—	—	—
2,00	8,20 —	8,20 —	8,20 —	8,20 —	8,20 —	—	—	—
$M_{t,nom}$ [Nm]	5 Nm							

No additional regulations.

Self drilling screw

Hilti S-MD 55 S 5,5 x L - 390 / Hilti S-MD 55 SS 5,5 x L - 390
Hilti S-MD 65 S 5,5 x L - 390 / Hilti S-MD 65 SS 5,5 x L - 390
Hilti S-MD 75 S 5,5 x L - 390 / Hilti S-MD 75 SS 5,5 x L - 390
with hexagon head and sealing washer $\geq \varnothing 16$ mm

Annex 52



Material:

Fastener: carbon steel, case hardened
and galvanized or coated

Washer: none

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S280GD, S320GD, S350GD - EN 10346

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

Timber substructures:

no performance determined

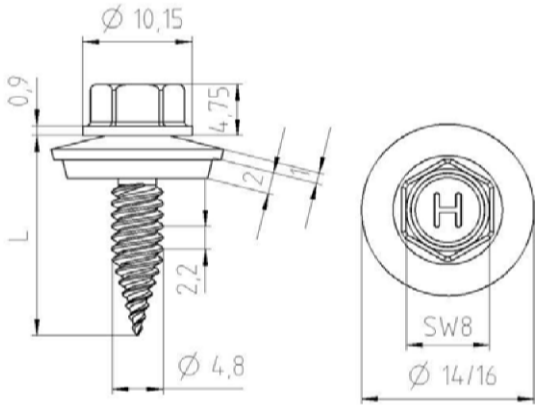
t_i [mm]	0,50	0,55	0,63	0,75	0,88	1,00	1,13	1,25
$V_{R,k}$ [kN]	0,50	1,29	1,37	1,51	1,71	1,71	1,71	1,71
0,55	1,29	1,54	1,65	1,82	1,82	1,82	1,82	2,05
0,63	1,29	1,54	1,80	2,00	2,00	2,00	2,00	2,59
0,75	1,29	1,54	1,80	2,27	2,27	2,27	2,84	3,40
0,88	1,29	1,54	1,80	2,27	2,96	2,96	2,96	3,40
1,00	1,29	1,54	1,80	2,27	2,96	3,64	3,64	3,64
1,13	1,29	1,54	1,80	2,27	2,96	3,64	3,87	3,87
1,25	1,29	1,54	1,80	2,27	2,96	3,64	3,87	4,10
1,50	1,29	1,54	1,80	2,27	2,96	3,64	—	—
1,75	1,29	1,54	1,80	2,27	—	—	—	—
2,00	1,29	—	—	—	—	—	—	—
$N_{R,k}$ [kN]	0,50	0,76	0,87	1,04	1,29	1,56	1,82	1,93
0,55	0,76	0,87	1,04	1,29	1,56	1,82	2,09	2,25
0,63	0,76	0,87	1,04	1,29	1,56	1,82	2,09	2,34
0,75	0,76	0,87	1,04	1,29	1,56	1,82	2,09	2,34
0,88	0,76	0,87	1,04	1,29	1,56	1,82	2,09	2,34
1,00	0,76	0,87	1,04	1,29	1,56	1,82	2,09	2,34
1,13	0,76	0,87	1,04	1,29	1,56	1,82	2,09	2,34
1,25	0,76	0,87	1,04	1,29	1,56	1,82	2,09	2,34
1,50	0,76	0,87	1,04	1,29	1,56	1,82	—	—
1,75	0,76	0,87	1,04	1,29	—	—	—	—
2,00	0,76	—	—	—	—	—	—	—
$M_{t,nom}$ [Nm]								

No additional regulations.

Self piercing screw

Hilti S-MS 01 Z 4,8 x 20
Hilti S-MS 01 C 4,8 x 20
with hexagon head

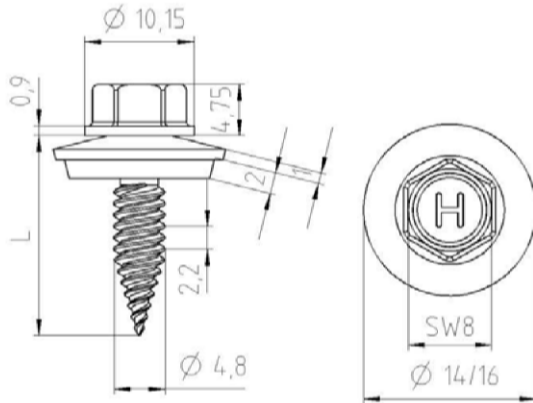
Annex 53

	<u>Material:</u> Fastener: carbon steel, case hardened and galvanized or coated Washer: carbon steel, galvanized Component I: S280GD, S320GD, S350GD - EN 10346 Component II: S280GD, S320GD, S350GD - EN 10346 <u>Drilling capacity:</u> $\Sigma t_i \leq 2,50 \text{ mm}$ <u>Timber substructures:</u> no performance determined
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t_i [mm]		t_{II} [mm]											
		0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,25				
$V_{R,k}$ [kN]	0,40	0,81	—	0,87	—	0,90	—	0,95	—	1,03	ac	1,03	ac
	0,50	0,81	—	1,01	—	1,01	—	1,02	—	1,03	ac	1,03	ac
	0,55	0,81	—	1,01	—	1,26	—	1,26	—	1,26	—	1,26	—
	0,63	0,81	—	1,01	—	1,26	—	1,66	—	1,66	—	1,66	—
	0,75	0,81	—	1,01	—	1,26	—	1,66	—	2,26	—	2,26	—
	0,88	0,81	—	1,01	—	1,26	—	1,66	—	2,26	—	2,77	—
	1,00	0,81	—	1,01	—	1,26	—	1,66	—	2,26	—	2,77	—
	1,25	0,81	—	1,01	—	1,26	—	1,66	—	2,26	—	2,77	—
$N_{R,k}$ [kN]	0,40	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,43	—
	0,50	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—
	0,55	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—
	0,63	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—
	0,75	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—
	0,88	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—
	1,00	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—
	1,25	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—
$M_{t,nom}$ [Nm]													

If both components I and II are made of S320GD or S350GD the grey highlighted values may be increased by 8,0%.

Self piercing screw Hilti S-MS 41 Z 4,8 x L Hilti S-MS 41 C 4,8 x L Hilti S-MS 51 Z 4,8 x L Hilti S-MS 51 C 4,8 x L with hexagon head and sealing washer $\geq \varnothing 14 \text{ mm}$	Annex 54
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Material:

Fastener: carbon steel, case hardened and galvanized or coated

Washer: carbon steel, galvanized

Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ - EN 573

Component II: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ - EN 573

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

Timber substructures:

no performance determined

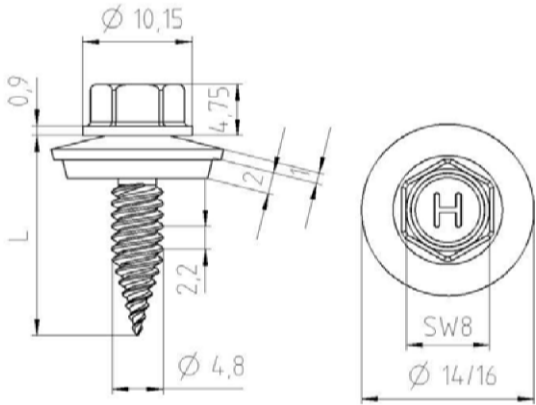
t _i [mm]		t _{II} [mm]											
		0,50		0,60		0,70		0,80		1,00		1,20	
V _{I,R,k} [kN]	0,50	0,71	—	0,71	—	0,71	—	0,71	—	0,71	—	0,71	—
	0,60	0,71	—	0,92	—	0,92	—	0,92	—	0,92	—	0,92	—
	0,70	0,71	—	0,92	—	1,14	—	1,14	—	1,14	—	1,14	—
	0,80	0,71	—	0,92	—	1,14	—	1,35	—	1,35	—	1,35	—
	1,00	0,71	—	0,92	—	1,14	—	1,35	—	1,88	—	1,88	—
	1,20	0,71	—	0,92	—	1,14	—	1,35	—	1,88	—	2,28	—
N _{I,R,k} [kN]	0,50	0,35	—	0,42 ^{a)}	—	0,42 ^{a)}	—	0,42 ^{a)}	—	0,42 ^{a)}	—	0,42 ^{a)}	—
	0,60	0,35	—	0,49	—	0,50 ^{a)}	—	0,50 ^{a)}	—	0,50 ^{a)}	—	0,50 ^{a)}	—
	0,70	0,35	—	0,49	—	0,59 ^{a)}	—	0,59 ^{a)}	—	0,59 ^{a)}	—	0,59 ^{a)}	—
	0,80	0,35	—	0,49	—	0,63	—	0,67 ^{a)}	—	0,67 ^{a)}	—	0,67 ^{a)}	—
	1,00	0,35	—	0,49	—	0,63	—	0,77	—	0,84	—	0,84 ^{a)}	—
	1,20	0,35	—	0,49	—	0,63	—	0,77	—	1,00	—	1,00 ^{a)}	—
M _{t,nom} [Nm]													

The with ^{a)} subscribed values $N_{R,k}$ have been determined according to EN 1999-1-4:2007 section 8.3.3.1 with $\alpha_E = \alpha_L = 1,0$. The value should be reduced according to EN 1999-1-4:2007 table 8.3.
The grey highlighted values $N_{R,k}$ may be increased by 6,9% when using the type „S-MS 5x“.

Self piercing screw

Hilti S-MS 41 Z 4,8 x L
Hilti S-MS 41 C 4,8 x L
Hilti S-MS 51 Z 4,8 x L
Hilti S-MS 51 C 4,8 x L
with hexagon head and sealing washer $\geq \varnothing 14 \text{ mm}$

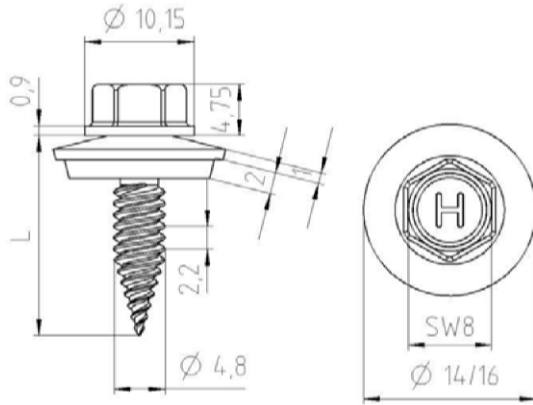
Annex 55

	<u>Material:</u> Fastener: carbon steel, case hardened and galvanized or coated Washer: carbon steel, galvanized Component I: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ - EN 573 Component II: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ - EN 573 <u>Drilling capacity:</u> $\Sigma t_i \leq 2,50 \text{ mm}$ <u>Timber substructures:</u> no performance determined
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t _i [mm]		t _{II} [mm]							
		0,50	0,60	0,70	0,80	1,00	1,20		
V _{I,R,k} [kN]	0,50	0,55	—	0,55	—	0,55	—	0,55	—
	0,60	0,55	—	0,71	—	0,71	—	0,71	—
	0,70	0,55	—	0,71	—	0,88	—	0,88	—
	0,80	0,55	—	0,71	—	0,88	—	1,04	—
	1,00	0,55	—	0,71	—	0,88	—	1,44	—
	1,20	0,55	—	0,71	—	0,88	—	1,44	—
N _{I,R,k} [kN]	0,50	0,27	—	0,32 ^{a)}	—	0,32 ^{a)}	—	0,32 ^{a)}	—
	0,60	0,27	—	0,38	—	0,39 ^{a)}	—	0,39 ^{a)}	—
	0,70	0,27	—	0,38	—	0,45 ^{a)}	—	0,45 ^{a)}	—
	0,80	0,27	—	0,38	—	0,48	—	0,51 ^{a)}	—
	1,00	0,27	—	0,38	—	0,48	—	0,59	—
	1,20	0,27	—	0,38	—	0,48	—	0,59	—
M _{t,nom} [Nm]									

The with ^{a)} subscribed values $N_{R,k}$ have been determined according to EN 1999-1-4:2007 section 8.3.3.1 with $\alpha_E = \alpha_L = 1,0$. The value should be reduced according to EN 1999-1-4:2007 table 8.3.
The grey highlighted values $N_{R,k}$ may be increased by 6,9% when using the type „S-MS 5x“.

Self piercing screw Hilti S-MS 41 Z 4,8 x L Hilti S-MS 41 C 4,8 x L Hilti S-MS 51 Z 4,8 x L Hilti S-MS 51 C 4,8 x L with hexagon head and sealing washer $\geq \varnothing 14 \text{ mm}$	Annex 56
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Material:

Fastener: carbon steel, case hardened
and galvanized or coated

Washer: carbon steel, galvanized

Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ - EN 573

Component II: S280GD, S320GD, S350GD - EN 10346

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

Timber substructures:

no performance determined

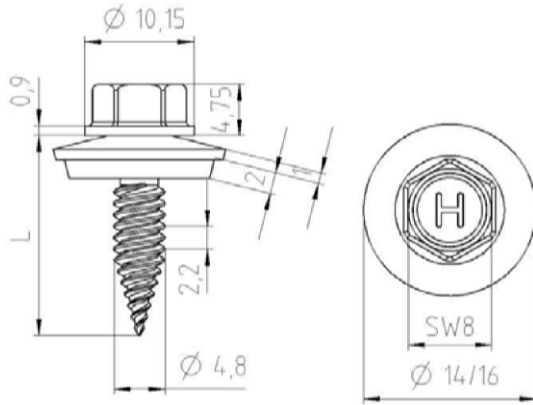
t_i [mm]		t_{II} [mm]							
		0,50	0,55	0,63	0,75	0,88	1,00	1,25	
$V_{IR,k}$ [kN]	0,50	0,71	—	0,71	—	0,71	—	0,71	—
	0,60	0,71	—	0,71	—	0,92	—	0,92	—
	0,70	0,71	—	0,71	—	0,92	—	1,14	—
	0,80	0,71	—	0,71	—	0,92	—	1,14	—
	1,00	0,71	—	0,71	—	0,92	—	1,35	—
	1,20	0,71	—	0,71	—	0,92	—	1,35	—
$N_{IR,k}$ [kN]	0,50	0,42 ^{a)}	—	0,42 ^{a)}	—	0,42 ^{a)}	—	0,42 ^{a)}	—
	0,60	0,50 ^{a)}	—	0,50 ^{a)}	—	0,50 ^{a)}	—	0,50 ^{a)}	—
	0,70	0,59 ^{a)}	—	0,59 ^{a)}	—	0,59 ^{a)}	—	0,59 ^{a)}	—
	0,80	0,67 ^{a)}	—	0,67 ^{a)}	—	0,67 ^{a)}	—	0,67 ^{a)}	—
	1,00	0,76	—	0,84	—	0,84 ^{a)}	—	0,84 ^{a)}	—
	1,20	0,76	—	0,86	—	1,00 ^{a)}	—	1,00 ^{a)}	—
$M_{t,nom}$ [Nm]									

The with ^{a)} subscribed values $N_{R,k}$ have been determined according to EN 1999-1-4:2007 section 8.3.3.1 with $\alpha_E = \alpha_L = 1,0$. The value should be reduced according to EN 1999-1-4:2007 table 8.3.
The grey highlighted values $N_{R,k}$ may be increased by 6,9% when using the type „S-MS 5x“.

Self piercing screw

Hilti S-MS 41 Z 4,8 x L
Hilti S-MS 41 C 4,8 x L
Hilti S-MS 51 Z 4,8 x L
Hilti S-MS 51 C 4,8 x L
with hexagon head and sealing washer $\geq \varnothing 14 \text{ mm}$

Annex 57



Material:

Fastener: carbon steel, case hardened and galvanized or coated

Washer: carbon steel, galvanized

Component I: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ - EN 573

Component II: S280GD, S320GD, S350GD - EN 10346

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

Timber substructures:

no performance determined

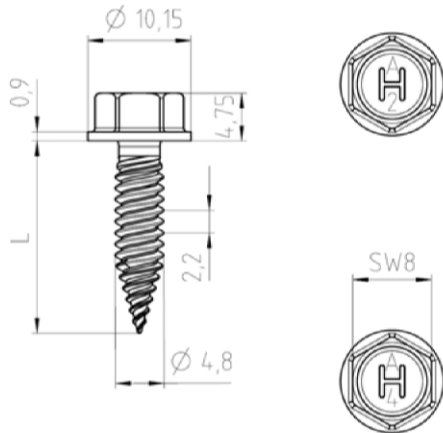
t_i [mm]		t_{II} [mm]							
		0,50	0,55	0,63	0,75	0,88	1,00	1,25	
$V_{IR,k}$ [kN]	0,50	0,55	—	0,55	—	0,55	—	0,55	—
	0,60	0,55	—	0,55	—	0,71	—	0,71	—
	0,70	0,55	—	0,55	—	0,71	—	0,88	—
	0,80	0,55	—	0,55	—	0,71	—	0,88	—
	1,00	0,55	—	0,55	—	0,71	—	0,88	—
	1,20	0,55	—	0,55	—	0,71	—	0,88	—
$N_{IR,k}$ [kN]	0,50	0,32 ^{a)}	—	0,32 ^{a)}	—	0,32 ^{a)}	—	0,32 ^{a)}	—
	0,60	0,39 ^{a)}	—	0,39 ^{a)}	—	0,39 ^{a)}	—	0,39 ^{a)}	—
	0,70	0,45 ^{a)}	—	0,45 ^{a)}	—	0,45 ^{a)}	—	0,45 ^{a)}	—
	0,80	0,51 ^{a)}	—	0,51 ^{a)}	—	0,51 ^{a)}	—	0,51 ^{a)}	—
	1,00	0,64 ^{a)}	—	0,64 ^{a)}	—	0,64 ^{a)}	—	0,64 ^{a)}	—
	1,20	0,76 ^{a)}	—	0,77 ^{a)}	—	0,77 ^{a)}	—	0,77 ^{a)}	—
$M_{t,nom}$ [Nm]									

The with ^{a)} subscribed values $N_{R,k}$ have been determined according to EN 1999-1-4:2007 section 8.3.3.1 with $\alpha_E = \alpha_L = 1,0$. The value should be reduced according to EN 1999-1-4:2007 table 8.3.
The grey highlighted values $N_{R,k}$ may be increased by 6,9% when using the type „S-MS 5x“.

Self piercing screw

Hilti S-MS 41 Z 4,8 x L
Hilti S-MS 41 C 4,8 x L
Hilti S-MS 51 Z 4,8 x L
Hilti S-MS 51 C 4,8 x L
with hexagon head and sealing washer $\geq \varnothing 14 \text{ mm}$

Annex 58



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: none

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S280GD, S320GD, S350GD - EN 10346

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

Timber substructures:

no performance determined

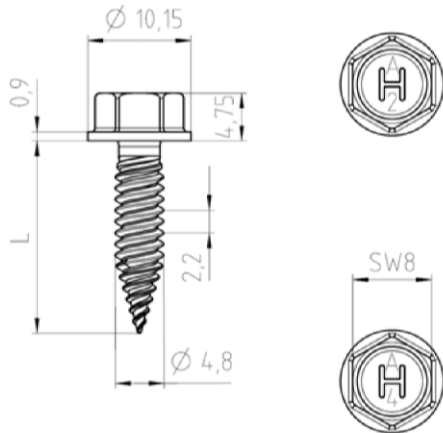
t_i [mm]		t_{ii} [mm]											
		0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,25				
$V_{R,k}$ [kN]	0,40	0,78	—	0,91	—	0,98	—	1,09	—	1,25	ac	1,25	ac
	0,50	0,78	—	1,00	—	1,05	—	1,13	—	1,25	ac	1,25	ac
	0,55	0,78	—	1,00	—	1,30	—	1,30	—	1,30	—	1,30	—
	0,63	0,78	—	1,00	—	1,30	—	1,78	—	1,78	—	1,78	—
	0,75	0,78	—	1,00	—	1,30	—	1,78	—	2,50	—	2,50	—
	0,88	0,78	—	1,00	—	1,30	—	1,78	—	2,50	—	3,47	—
	1,00	0,78	—	1,00	—	1,30	—	1,78	—	2,50	—	3,47	—
	1,25	0,78	—	1,00	—	1,30	—	1,78	—	2,50	—	3,47	—
$N_{R,k}$ [kN]	0,40	0,46	—	0,76	—	0,77	—	0,77	—	0,77	—	0,77	—
	0,50	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,34	—
	0,55	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,53	—
	0,63	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—
	0,75	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—
	0,88	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—
	1,00	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—
	1,25	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—
$M_{t,nom}$ [Nm]													

If both components I and II are made of S320GD or S350GD the grey highlighted values may be increased by 8,0%.

Self piercing screw

Hilti S-MS 01 S 4,8 x L
Hilti S-MS 01 SS 4,8 x L
with hexagon head

Annex 59



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: none

Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ - EN 573

Component II: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ - EN 573

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

Timber substructures:

no performance determined

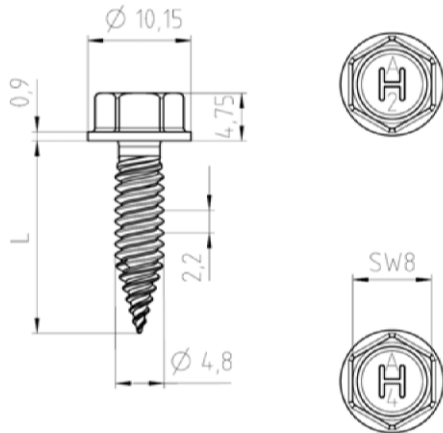
t_i [mm]		t_{II} [mm]					
		0,50	0,60	0,70	0,80	1,00	1,20
$V_{R,k}$ [kN]	0,50	1,32	—	1,32	—	1,32	—
	0,60	1,32	—	1,37	—	1,37	—
	0,70	1,32	—	1,37	—	1,41	—
	0,80	1,32	—	1,37	—	1,41	—
	1,00	1,32	—	1,37	—	1,46	—
	1,20	1,32	—	1,37	—	2,25	—
$N_{R,II,k}$ [kN]		0,35	—	0,49	—	0,63	—
$M_{t,nom}$ [Nm]		0,35	—	0,49	—	0,63	—

Pull-through of component I according to the recommendations of the aluminum profile producers.

Self piercing screw

Hilti S-MS 01 S 4,8 x L
Hilti S-MS 01 SS 4,8 x L
with hexagon head

Annex 60



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: none

Component I: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ - EN 573

Component II: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ - EN 573

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

Timber substructures:

no performance determined

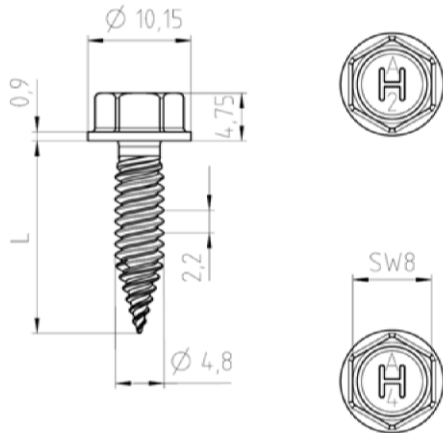
t_i [mm]		t_{II} [mm]					
		0,50	0,60	0,70	0,80	1,00	1,20
$V_{R,k}$ [kN]	0,50	1,01	—	1,01	—	1,01	—
	0,60	1,01	—	1,05	—	1,05	—
	0,70	1,01	—	1,05	—	1,08	—
	0,80	1,01	—	1,05	—	1,08	—
	1,00	1,01	—	1,05	—	1,12	—
	1,20	1,01	—	1,05	—	1,12	—
$N_{R,II,k}$ [kN]		0,27	—	0,38	—	0,48	—
$M_{t,nom}$ [Nm]		0,27	—	0,38	—	0,48	—

Pull-through of component I according to the recommendations of the aluminum profile producers.

Self piercing screw

Hilti S-MS 01 S 4,8 x L
Hilti S-MS 01 SS 4,8 x L
with hexagon head

Annex 61



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: none

Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ - EN 573

Component II: S280GD, S320GD, S350GD - EN 10346

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

Timber substructures:

no performance determined

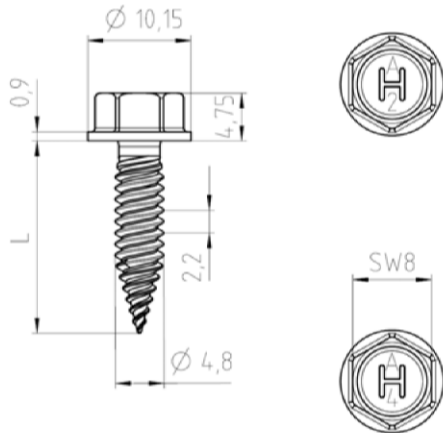
t_i [mm]	0,50	0,55	0,63	t_{II} [mm]	0,75	0,88	1,00	1,25
$V_{IR,k}$ [kN]								
0,50	1,32	—	1,32	—	1,32	—	1,32	—
0,60	1,32	—	1,32	—	1,37	—	1,37	—
0,70	1,32	—	1,32	—	1,37	—	1,41	—
0,80	1,32	—	1,32	—	1,41	—	1,46	—
1,00	1,32	—	1,32	—	1,41	—	1,46	—
1,20	1,32	—	1,32	—	1,41	—	2,25	—
$N_{R,II,k}$ [kN]	0,76	—	0,86	—	1,27	—	1,60	—
$M_{t,nom}$ [Nm]								

Pull-through of component I according to the recommendations of the aluminum profile producers.

Self piercing screw

Hilti S-MS 01 S 4,8 x L
Hilti S-MS 01 SS 4,8 x L
with hexagon head

Annex 62



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: none

Component I: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ - EN 573

Component II: S280GD, S320GD, S350GD - EN 10346

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

Timber substructures:

no performance determined

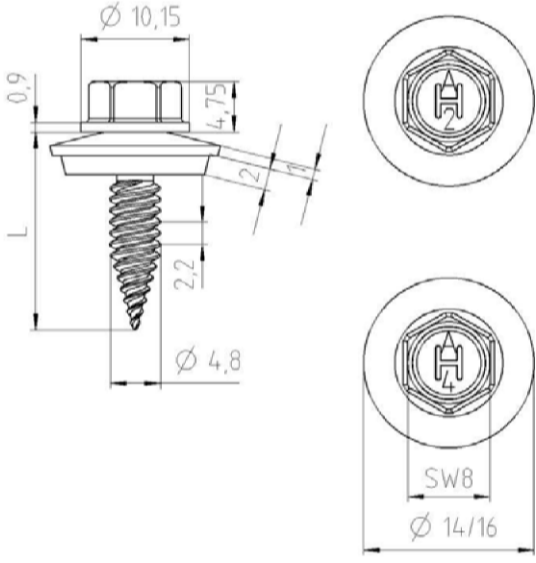
t_i [mm]	0,50	0,55	0,63	t_{II} [mm]	0,75	0,88	1,00	1,25
$V_{IR,k}$ [kN]	0,50	1,01 —	1,01 —	1,01 —	1,01 —	1,01 —	1,01 —	1,01 —
	0,60	1,01 —	1,01 —	1,05 —	1,05 —	1,05 —	1,05 —	1,05 —
	0,70	1,01 —	1,01 —	1,05 —	1,08 —	1,08 —	1,08 —	1,08 —
	0,80	1,01 —	1,01 —	1,05 —	1,08 —	1,12 —	1,12 —	1,12 —
	1,00	1,01 —	1,01 —	1,05 —	1,08 —	1,12 —	1,72 —	1,72 —
	1,20	1,01 —	1,01 —	1,05 —	1,08 —	1,12 —	1,72 —	2,03 —
$N_{R,II,k}$ [kN]	0,76 —	0,86 —	1,03 —	1,27 —	1,60 —	1,90 —	2,49 —	—
$M_{t,nom}$ [Nm]								

Pull-through of component I according to the recommendations of the aluminum profile producers.

Self piercing screw

Hilti S-MS 01 S 4,8 x L
Hilti S-MS 01 SS 4,8 x L
with hexagon head

Annex 63

	Material: Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088 Washer: aluminium alloy EN AW-5052 - EN 485 stainless Steel (1.4301) - EN 10088 Component I: S280GD, S320GD, S350GD - EN 10346 Component II: S280GD, S320GD, S350GD - EN 10346 Drilling capacity: $\Sigma t \leq 2,50 \text{ mm}$ Timber substructures: no performance determined
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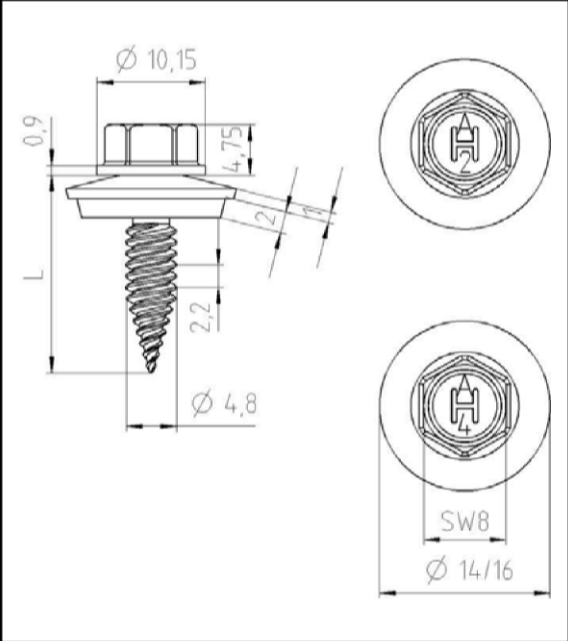
t_i [mm]		t_{II} [mm]											
		0,40	0,50	0,55	0,63	0,75	0,88	1,00	1,25				
$V_{R,k}$ [kN]	0,40	0,81	—	0,87	—	0,90	—	0,95	—	1,03	ac	1,03	ac
	0,50	0,81	—	1,01	—	1,01	—	1,02	—	1,03	ac	1,03	ac
	0,55	0,81	—	1,01	—	1,26	—	1,26	—	1,26	—	1,26	—
	0,63	0,81	—	1,01	—	1,26	—	1,66	—	1,66	—	1,66	—
	0,75	0,81	—	1,01	—	1,26	—	1,66	—	2,26	—	2,26	—
	0,88	0,81	—	1,01	—	1,26	—	1,66	—	2,26	—	2,77	—
	1,00	0,81	—	1,01	—	1,26	—	1,66	—	2,26	—	2,77	—
	1,25	0,81	—	1,01	—	1,26	—	1,66	—	2,26	—	2,77	—
$N_{R,k}$ [kN]	0,40	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,43	—
	0,50	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—
	0,55	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—
	0,63	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—
	0,75	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—
	0,88	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—
	1,00	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—
	1,25	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—
$M_{t,nom}$ [Nm]													

If both components I and II are made of S320GD or S350GD the grey highlighted values may be increased by 8,0%.

Self piercing screw

Hilti S-MS 41 S 4,8 x L / Hilti S-MS 41 SS 4,8 x L
Hilti S-MS 41 S-A 4,8 x L / Hilti S-MS 41 SS-A 4,8 x L
Hilti S-MS 51 S 4,8 x L / Hilti S-MS 51 SS 4,8 x L
Hilti S-MS 51 S-A 4,8 x L / Hilti S-MS 51 SS-A 4,8 x L
with hexagon head and sealing washer $\geq \varnothing 14 \text{ mm}$

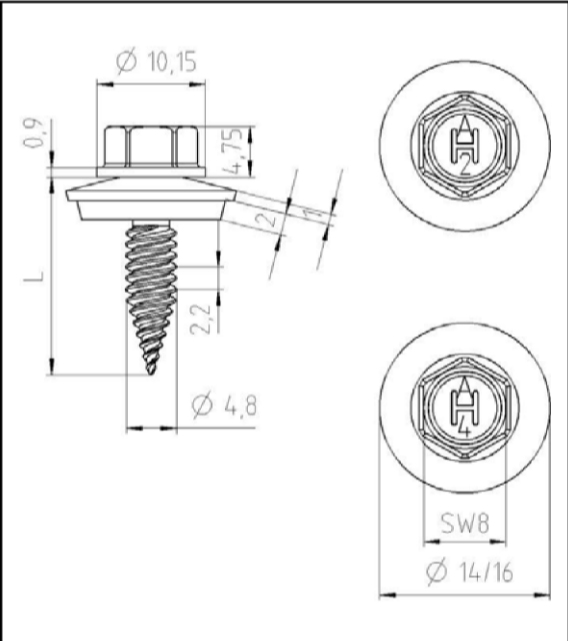
Annex 64

	Material: Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088 Washer: aluminium alloy EN AW-5052 - EN 485 stainless Steel (1.4301) - EN 10088 Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ - EN 573 Component II: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ - EN 573 Drilling capacity: $\Sigma t_i \leq 2,50 \text{ mm}$ Timber substructures: no performance determined
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t_i [mm]		t_{II} [mm]					
		0,50	0,60	0,70	0,80	1,00	1,20
$V_{i,R,k}$ [kN]	0,50	0,71	—	0,71	—	0,71	—
	0,60	0,71	—	0,92	—	0,92	—
	0,70	0,71	—	0,92	—	1,14	—
	0,80	0,71	—	0,92	—	1,14	—
	1,00	0,71	—	0,92	—	1,35	—
	1,20	0,71	—	0,92	—	1,35	—
$N_{i,R,k}$ [kN]	0,50	0,35	—	0,42 ^{a)}	—	0,42 ^{a)}	—
	0,60	0,35	—	0,49	—	0,50 ^{a)}	—
	0,70	0,35	—	0,49	—	0,59 ^{a)}	—
	0,80	0,35	—	0,49	—	0,59 ^{a)}	—
	1,00	0,35	—	0,49	—	0,67 ^{a)}	—
	1,20	0,35	—	0,49	—	0,67 ^{a)}	—
$M_{t,nom}$ [Nm]							

The with ^{a)} subscribed values $N_{R,k}$ have been determined according to EN 1999-1-4:2007 section 8.3.3.1 with $\alpha_E = \alpha_L = 1,0$. The value should be reduced according to EN 1999-1-4:2007 table 8.3.
The grey highlighted values $N_{R,k}$ may be increased by 6,9% when using the type „S-MS 5x“.

Self piercing screw	
Hilti S-MS 41 S 4,8 x L / Hilti S-MS 41 SS 4,8 x L Hilti S-MS 41 S-A 4,8 x L / Hilti S-MS 41 SS-A 4,8 x L Hilti S-MS 51 S 4,8 x L / Hilti S-MS 51 SS 4,8 x L Hilti S-MS 51 S-A 4,8 x L / Hilti S-MS 51 SS-A 4,8 x L with hexagon head and sealing washer $\geq \text{Ø}14 \text{ mm}$	Annex 65

	Material: Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088 Washer: aluminium alloy EN AW-5052 - EN 485 stainless Steel (1.4301) - EN 10088 Component I: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ - EN 573 Component II: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ - EN 573 Drilling capacity: $\Sigma t_i \leq 2,50 \text{ mm}$ Timber substructures: no performance determined
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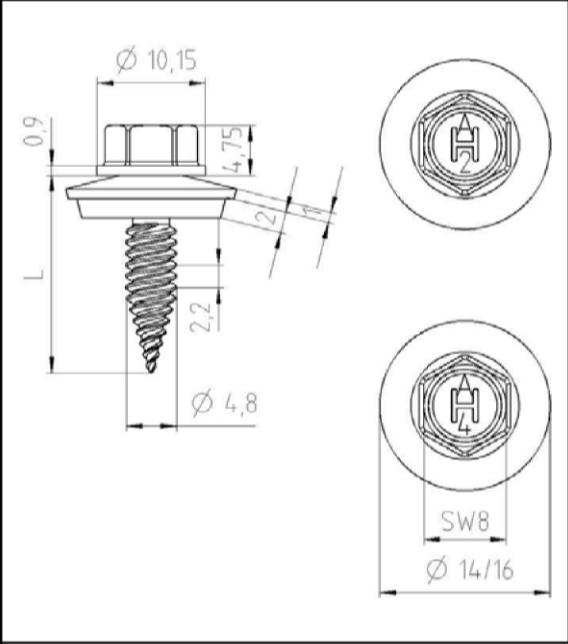
t_i [mm]		t_{II} [mm]					
		0,50	0,60	0,70	0,80	1,00	1,20
$V_{i,R,k}$ [kN]	0,50	0,55	—	0,55	—	0,55	—
	0,60	0,55	—	0,71	—	0,71	—
	0,70	0,55	—	0,71	—	0,88	—
	0,80	0,55	—	0,71	—	0,88	—
	1,00	0,55	—	0,71	—	1,04	—
	1,20	0,55	—	0,71	—	1,04	—
$N_{i,R,k}$ [kN]	0,50	0,27	—	0,32 ^{a)}	—	0,32 ^{a)}	—
	0,60	0,27	—	0,38	—	0,39 ^{a)}	—
	0,70	0,27	—	0,38	—	0,45 ^{a)}	—
	0,80	0,27	—	0,38	—	0,45 ^{a)}	—
	1,00	0,27	—	0,38	—	0,51 ^{a)}	—
	1,20	0,27	—	0,38	—	0,51 ^{a)}	—
$M_{t,nom}$ [Nm]		0,27	—	0,38	—	0,59	—

The with ^{a)} subscribed values $N_{R,k}$ have been determined according to EN 1999-1-4:2007 section 8.3.3.1 with $\alpha_E = \alpha_L = 1,0$. The value should be reduced according to EN 1999-1-4:2007 table 8.3.
The grey highlighted values $N_{R,k}$ may be increased by 6,9% when using the type „S-MS 5x“.

Self piercing screw

Hilti S-MS 41 S 4,8 x L / Hilti S-MS 41 SS 4,8 x L
Hilti S-MS 41 S-A 4,8 x L / Hilti S-MS 41 SS-A 4,8 x L
Hilti S-MS 51 S 4,8 x L / Hilti S-MS 51 SS 4,8 x L
Hilti S-MS 51 S-A 4,8 x L / Hilti S-MS 51 SS-A 4,8 x L
with hexagon head and sealing washer $\geq \text{Ø}14 \text{ mm}$

Annex 66

	Material: Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088 Washer: aluminium alloy EN AW-5052 - EN 485 stainless Steel (1.4301) - EN 10088 Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ - EN 573 Component II: S280GD, S320GD, S350GD - EN 10346 Drilling capacity: $\Sigma t \leq 2,50 \text{ mm}$ Timber substructures: no performance determined
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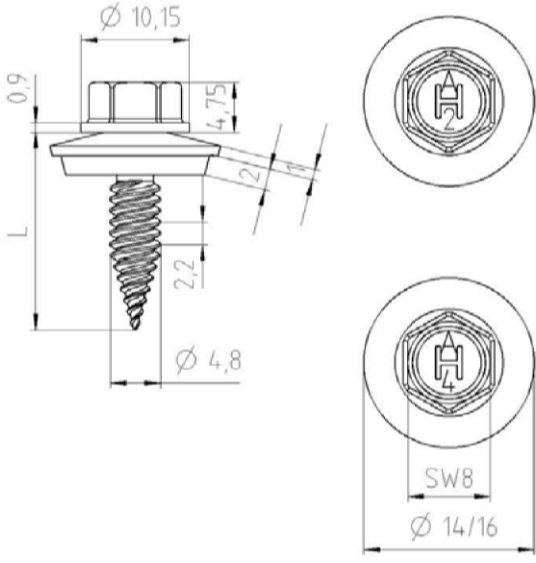
t_i [mm]		t_{II} [mm]							
		0,50	0,55	0,63	0,75	0,88	1,00	1,25	
$V_{IR,k}$ [kN]	0,50	0,71	—	0,71	—	0,71	—	0,71	—
	0,60	0,71	—	0,71	—	0,92	—	0,92	—
	0,70	0,71	—	0,71	—	0,92	—	1,14	—
	0,80	0,71	—	0,71	—	0,92	—	1,14	—
	1,00	0,71	—	0,71	—	0,92	—	1,35	—
	1,20	0,71	—	0,71	—	0,92	—	1,35	—
$N_{IR,k}$ [kN]	0,50	0,42 ^{a)}	—	0,42 ^{a)}	—	0,42 ^{a)}	—	0,42 ^{a)}	—
	0,60	0,50 ^{a)}	—	0,50 ^{a)}	—	0,50 ^{a)}	—	0,50 ^{a)}	—
	0,70	0,59 ^{a)}	—	0,59 ^{a)}	—	0,59 ^{a)}	—	0,59 ^{a)}	—
	0,80	0,67 ^{a)}	—	0,67 ^{a)}	—	0,67 ^{a)}	—	0,67 ^{a)}	—
	1,00	0,76	—	0,84	—	0,84 ^{a)}	—	0,84 ^{a)}	—
	1,20	0,76	—	0,86	—	1,00 ^{a)}	—	1,00 ^{a)}	—
$M_{t,nom}$ [Nm]									

The with ^{a)} subscribed values $N_{R,k}$ have been determined according to EN 1999-1-4:2007 section 8.3.3.1 with $\alpha_E = \alpha_L = 1,0$. The value should be reduced according to EN 1999-1-4:2007 table 8.3.
The grey highlighted values $N_{R,k}$ may be increased by 6,9% when using the type „S-MS 5x“.

Self piercing screw

Hilti S-MS 41 S 4,8 x L / Hilti S-MS 41 SS 4,8 x L
Hilti S-MS 41 S-A 4,8 x L / Hilti S-MS 41 SS-A 4,8 x L
Hilti S-MS 51 S 4,8 x L / Hilti S-MS 51 SS 4,8 x L
Hilti S-MS 51 S-A 4,8 x L / Hilti S-MS 51 SS-A 4,8 x L
with hexagon head and sealing washer $\geq \text{Ø}14 \text{ mm}$

Annex 67

	Material: Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088 Washer: aluminium alloy EN AW-5052 - EN 485 stainless Steel (1.4301) - EN 10088 Component I: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ - EN 573 Component II: S280GD, S320GD, S350GD - EN 10346 Drilling capacity: $\Sigma t_i \leq 2,50 \text{ mm}$ Timber substructures: no performance determined
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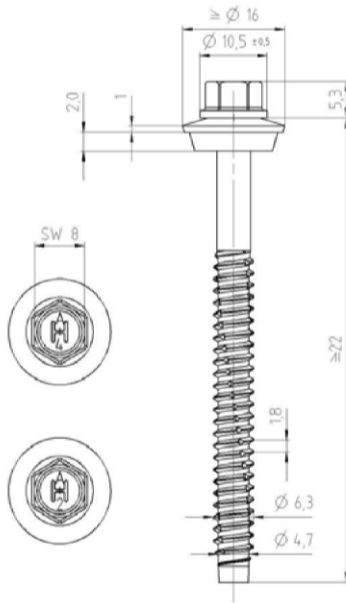
t_i [mm]		t_{II} [mm]							
		0,50	0,55	0,63	0,75	0,88	1,00	1,25	
$V_{IR,k}$ [kN]	0,50	0,55	—	0,55	—	0,55	—	0,55	—
	0,60	0,55	—	0,55	—	0,71	—	0,71	—
	0,70	0,55	—	0,55	—	0,71	—	0,88	—
	0,80	0,55	—	0,55	—	0,71	—	0,88	—
	1,00	0,55	—	0,55	—	0,71	—	1,04	—
	1,20	0,55	—	0,55	—	0,71	—	1,04	—
$N_{IR,k}$ [kN]	0,50	0,32 ^{a)}	—	0,32 ^{a)}	—	0,32 ^{a)}	—	0,32 ^{a)}	—
	0,60	0,39 ^{a)}	—	0,39 ^{a)}	—	0,39 ^{a)}	—	0,39 ^{a)}	—
	0,70	0,45 ^{a)}	—	0,45 ^{a)}	—	0,45 ^{a)}	—	0,45 ^{a)}	—
	0,80	0,51 ^{a)}	—	0,51 ^{a)}	—	0,51 ^{a)}	—	0,51 ^{a)}	—
	1,00	0,64 ^{a)}	—	0,64 ^{a)}	—	0,64 ^{a)}	—	0,64 ^{a)}	—
	1,20	0,76 ^{a)}	—	0,77 ^{a)}	—	0,77 ^{a)}	—	0,77 ^{a)}	—
$M_{t,nom}$ [Nm]									

The with ^{a)} subscribed values $N_{R,k}$ have been determined according to EN 1999-1-4:2007 section 8.3.3.1 with $\alpha_E = \alpha_L = 1,0$. The value should be reduced according to EN 1999-1-4:2007 table 8.3.
The grey highlighted values $N_{R,k}$ may be increased by 6,9% when using the type „S-MS 5x“.

Self piercing screw

Hilti S-MS 41 S 4,8 x L / Hilti S-MS 41 SS 4,8 x L
Hilti S-MS 41 S-A 4,8 x L / Hilti S-MS 41 SS-A 4,8 x L
Hilti S-MS 51 S 4,8 x L / Hilti S-MS 51 SS 4,8 x L
Hilti S-MS 51 S-A 4,8 x L / Hilti S-MS 51 SS-A 4,8 x L
with hexagon head and sealing washer $\geq \text{Ø}14 \text{ mm}$

Annex 68



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD - EN 10346

Predrill diameter: see Table below

Timber substructures:

no performance determined

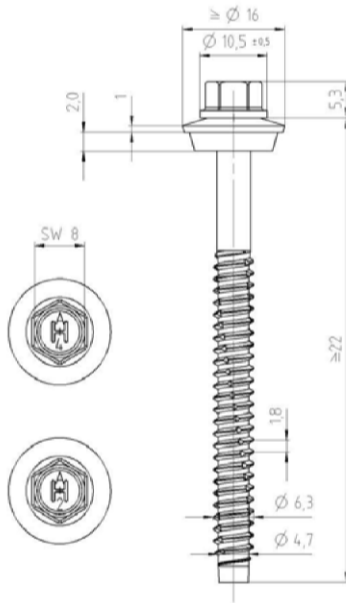
t_f [mm]	1,25	1,50	2,00	3,00	4,00	6,00	$\geq 7,00$	—
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	2,50	ac	2,70	ac	2,90	abcd	3,00	abcd
0,75	2,60	ac	3,10	ac	3,30	ac	3,60	ac
0,88	2,80	ac	3,20	ac	3,80	ac	4,10	ac
1,00	3,20	—	3,60	ac	4,10	ac	4,80	ac
1,13	3,40	—	4,00	—	4,60	ac	5,40	ac
1,25	3,60	—	4,20	—	5,00	ac	6,10	ac
1,50	3,70	—	4,40	—	5,70	—	6,80	—
1,75	3,70	—	4,70	—	6,20	—	7,60	—
2,00	5,00	—	6,30	—	7,90	—	8,30	—
$N_{R,k}$ [kN]								
0,50	0,97	ac	1,35	ac	1,51	abcd	1,51	abcd
0,55	1,23	ac	1,71	ac	1,91	abcd	1,91	abcd
0,63	1,80	ac	2,50	ac	2,80	abcd	2,80	abcd
0,75	2,00	ac	2,60	ac	3,10	ac	3,60	ac
0,88	2,00	ac	2,70	ac	3,30	ac	3,80	ac
1,00	2,00	—	2,70	ac	3,40	ac	4,00	ac
1,13	2,00	—	2,70	—	3,60	ac	4,40	ac
1,25	2,00	—	2,70	—	3,60	ac	4,80	ac
1,50	2,00	—	2,70	—	3,60	—	5,60	—
1,75	2,00	—	2,70	—	3,60	—	5,80	—
2,00	2,00	—	2,70	—	3,60	—	6,00	—
$M_{t,nom}$ [Nm]	5 Nm							
d_{pd} [mm]	$t_{fl} \leq 1,50$ mm $d_{pd} = \varnothing 5,0$ mm		$1,50$ mm $< t_{fl} \leq 4,0$ mm $d_{pd} = \varnothing 5,3$ mm		$4,0$ mm $< t_{fl} < 7,0$ mm $d_{pd} = \varnothing 5,5$ mm		$t_{fl} \geq 7,0$ mm $d_{pd} = \varnothing 5,7$ mm	

No additional regulations.

Self tapping screw

Hilti S-MP 52 S 6,3 x L / Hilti S-MP 52 SS 6,3 x L
Hilti S-MP 62 S 6,3 x L / Hilti S-MP 62 SS 6,3 x L
Hilti S-MP 72 S 6,3 x L / Hilti S-MP 72 SS 6,3 x L
with hexagon head and sealing washer $\geq \varnothing 16$ mm

Annex 69



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235, S275, S355 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Predrill diameter: see Table below

Timber substructures:

no performance determined

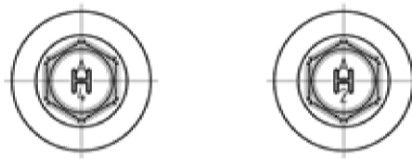
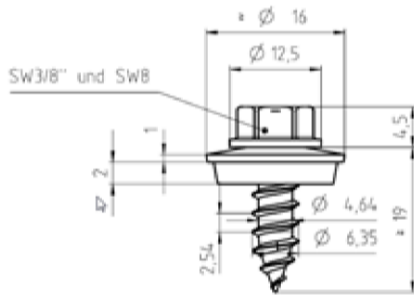
t_f [mm]	t_{fl} [mm]																
	1,25		1,50		2,00		3,00		4,00		6,00		$\geq 7,00$		—		
$V_{R,k}$ [kN]	0,50	1,65	ac	1,72	ac	1,78	abcd	1,78	abcd	1,78	abcd	1,78	abcd	1,78	abcd	—	—
	0,55	2,08	ac	2,21	ac	2,34	abcd	2,34	abcd	2,34	abcd	2,34	abcd	2,34	abcd	—	—
	0,63	2,50	ac	2,70	ac	2,90	abcd	3,00	abcd	3,10	abcd	3,10	abcd	3,10	abcd	—	—
	0,75	2,60	ac	3,10	ac	3,30	ac	3,60	ac	3,70	abcd	3,70	abcd	3,70	abcd	—	—
	0,88	2,80	ac	3,20	ac	3,80	ac	4,10	ac	4,30	ac	4,40	ac	4,40	ac	—	—
	1,00	3,20	—	3,60	ac	4,10	ac	4,80	ac	4,90	ac	5,10	ac	5,10	ac	—	—
	1,13	3,40	—	4,00	—	4,60	ac	5,40	ac	5,60	ac	5,80	ac	5,80	ac	—	—
	1,25	3,60	—	4,20	—	5,00	ac	6,10	ac	6,30	ac	6,50	ac	6,50	ac	—	—
	1,50	3,70	—	4,40	—	5,70	—	6,80	—	7,10	—	7,30	—	7,30	—	—	—
	1,75	3,70	—	4,70	—	6,20	—	7,60	—	7,70	—	8,10	—	8,10	—	—	—
2,00	5,00	—	6,30	—	7,90	—	8,30	—	8,40	—	9,40	—	9,40	—	—	—	
$N_{R,k}$ [kN]	0,50	0,97	ac	1,35	ac	1,51	abcd	1,51	abcd	1,51	abcd	1,51	abcd	1,51	abcd	—	—
	0,55	1,23	ac	1,71	ac	1,91	abcd	1,91	abcd	1,91	abcd	1,91	abcd	1,91	abcd	—	—
	0,63	1,80	ac	2,50	ac	2,80	abcd	2,80	abcd	2,80	abcd	2,80	abcd	2,80	abcd	—	—
	0,75	2,00	ac	2,60	ac	3,10	ac	3,60	ac	3,60	abcd	3,60	abcd	3,60	abcd	—	—
	0,88	2,00	ac	2,70	ac	3,30	ac	3,80	ac	3,80	ac	3,80	ac	3,80	ac	—	—
	1,00	2,00	—	2,70	ac	3,40	ac	4,00	ac	4,00	ac	4,00	ac	4,00	ac	—	—
	1,13	2,00	—	2,70	—	3,60	ac	4,40	ac	4,40	ac	4,40	ac	4,40	ac	—	—
	1,25	2,00	—	2,70	—	3,60	ac	4,80	ac	4,90	ac	4,90	ac	4,90	ac	—	—
	1,50	2,00	—	2,70	—	3,60	—	5,60	—	5,90	—	5,90	—	5,90	—	—	—
	1,75	2,00	—	2,70	—	3,60	—	5,80	—	6,90	—	7,10	—	7,10	—	—	—
2,00	2,00	—	2,70	—	3,60	—	6,00	—	7,30	—	7,60	—	7,60	—	—	—	
$M_{t,nom}$ [Nm]	5 Nm																
d_{pd} [mm]	$t_{fl} \leq 1,50$ mm				$1,50 \text{ mm} < t_{fl} \leq 4,0$ mm				$4,0 \text{ mm} < t_{fl} < 7,0$ mm				$t_{fl} \geq 7,0$ mm				
	$d_{pd} = \varnothing 5,0$ mm				$d_{pd} = \varnothing 5,3$ mm				$d_{pd} = \varnothing 5,5$ mm				$d_{pd} = \varnothing 5,7$ mm				

No additional regulations.

Self tapping screw

Hilti S-MP 54 S 6,3 x L / Hilti S-MP 54 SS 6,3 x L
Hilti S-MP 64 S 6,3 x L / Hilti S-MP 64 SS 6,3 x L
Hilti S-MP 74 S 6,3 x L / Hilti S-MP 74 SS 6,3 x L
with hexagon head and sealing washer $\geq \varnothing 16$ mm

Annex 70



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD - EN 10346
Structural timber - EN 14081

Predrill diameter: see Table below

Timber substructures:

performance determined with

$M_{y,Rk} = 9,742 \text{ Nm}$

$f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 26,0 \text{ mm}$

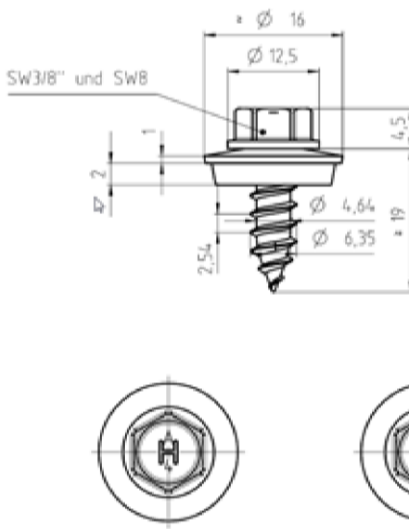
t_i [mm]	0,63 mm $\leq t_{ij} \leq 3,00$ mm										$V_{i,R,k}$ $N_{i,R,k}$
	0,63	0,75	0,88	1,00	1,13	1,25	1,50	$\geq 2,00$			
$V_{R,k}$ [kN]	0,50	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—
	0,63	1,30	1,50	1,80	2,00	ac	2,30	ac	2,50	ac	2,90
	0,75	1,40	1,60	1,90	2,20	ac	2,50	ac	2,60	ac	3,50
	0,88	1,50	1,70	2,00	2,30	ac	2,60	ac	2,80	ac	3,70
	1,00	1,50	1,80	2,10	2,50	—	2,80	—	3,10	—	3,90
	1,13	1,60	1,80	2,20	2,60	—	2,90	—	3,20	—	4,00
	1,25	1,60	1,90	2,30	2,70	—	3,00	—	3,30	—	4,10
	1,50	1,60	1,90	2,40	2,80	—	3,20	—	3,50	—	4,30
	1,75	1,60	1,90	2,40	2,80	—	3,20	—	3,50	—	4,30
	2,00	1,60	1,90	2,40	2,80	—	3,20	—	3,50	—	4,30
$N_{R,k}$ [kN]	0,50	0,49	0,59	0,70	0,76	ac	0,86	ac	0,97	ac	1,19
	0,55	0,61	0,75	0,89	0,95	ac	1,09	ac	1,23	ac	1,50
	0,63	0,90	1,10	1,30	1,40	ac	1,60	ac	1,80	ac	2,20
	0,75	0,90	1,10	1,30	1,40	ac	1,60	ac	1,80	ac	2,80
	0,88	0,90	1,10	1,30	1,40	ac	1,60	ac	1,80	ac	3,50
	1,00	0,90	1,10	1,30	1,40	—	1,60	—	1,80	—	3,60
	1,13	1,00	1,20	1,40	1,50	—	1,70	—	1,90	—	3,60
	1,25	1,00	1,20	1,40	1,50	—	1,70	—	1,90	—	3,60
	1,50	1,00	1,20	1,40	1,50	—	1,70	—	1,90	—	3,60
	1,75	1,00	1,20	1,40	1,50	—	1,70	—	1,90	—	3,60
	2,00	1,00	1,20	1,40	1,50	—	1,70	—	1,90	—	3,60
$M_{t,nom}$ [Nm]	3 Nm					5 Nm					
d_{pd} [mm]	$t_{ij} \leq 0,75 \text{ mm}$ $d_{pd} = \varnothing 4,0 \text{ mm}$		$0,75 \text{ mm} < t_{ij} \leq 1,50 \text{ mm}$ $d_{pd} = \varnothing 4,5 \text{ mm}$				$t_{ij} \geq 1,50 \text{ mm}$ $d_{pd} = \varnothing 5,0 \text{ mm}$				

The values listed above in dependence on the screw-in length l_{ef} are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_a = 350 \text{ kg/m}^3$). For other combinations of k_{mod} and timber strength grades see Annex 3.

Self tapping screw

Hilti S-MP 53 S 6,5 x L / Hilti S-MP 53 SS 6,5 x L
Hilti S-MP 63 S 6,5 x L / Hilti S-MP 63 SS 6,5 x L
Hilti S-MP 73 S 6,5 x L / Hilti S-MP 73 SS 6,5 x L
with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$

Annex 71

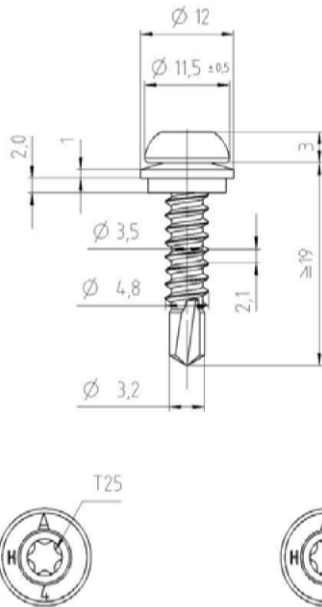
		Material:	
		Fastener:	stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088
		Washer:	stainless steel (1.4301) - EN 10088
		Component I:	aluminium alloy with $R_{m,min} = 185 \text{ N/mm}^2$ - EN 573
		Component II:	aluminium alloy with $R_{m,min} = 185 \text{ N/mm}^2$ - EN 573 S280GD, S320GD, S350GD - EN 10346 Structural timber - EN 14081
		Predrill diameter:	see Table below
		Timber substructures:	performance determined with
		$M_{y,Rk} =$	9,742 Nm
		$f_{ax,k} =$	8,575 N/mm ² for $l_{ef} \geq 26,0 \text{ mm}$

t_i [mm]	$0,63 \text{ mm} \leq t_{i,St} \leq 3,00 \text{ mm}$						$t_{i,Al}$ [mm]							$V_{I,R,k}$ $N_{I,R,k}$
	0,63	0,75	0,88	1,00	1,50	$\geq 2,00$	0,50	0,60	0,80	1,00	1,50	$\geq 2,00$		
$V_{R,k}$ [kN]	0,50	1,23	1,23	1,23	1,23	1,23	—	—	—	—	—	—	—	1,23
	0,60	1,30	1,30	1,30	1,30	1,30	—	—	—	—	—	—	—	1,30
	0,70	1,38	1,38	1,38	1,38	1,38	—	—	—	—	—	—	—	1,38
	0,80	1,48	1,48	1,48	1,48	1,48	0,50	0,50	0,50	0,50	0,50	0,50	0,50	1,48
	0,90	1,59	1,59	1,59	1,59	1,59	0,50	0,50	0,50	0,50	0,50	0,50	0,50	1,59
	1,00	1,72	1,79	1,87	1,94	1,94	0,50	0,71	1,15	1,59	1,59	1,59	1,59	1,94
	1,10	1,86	1,86	1,87	1,94	1,94	0,50	0,71	1,15	1,59	1,59	1,59	1,59	1,94
	1,20	2,02	2,02	2,02	2,02	2,02	0,50	0,71	1,15	1,59	1,59	1,59	1,59	2,02
	1,30	2,02	2,02	2,02	2,02	2,02	0,50	0,71	1,15	1,59	1,59	1,59	1,59	2,02
	1,90	2,02	2,02	2,02	2,02	2,02	0,50	0,71	1,15	1,59	1,59	1,59	1,59	2,02
2,00	2,02	2,02	2,02	2,02	2,02	4,04	0,50	0,71	1,15	1,59	1,59	3,26	4,04	
$N_{R,k}$ [kN]	0,50	0,48	0,48	0,48	0,48	0,48	0,16	0,21	0,32	0,45	0,48	0,48	0,48	0,48
	0,60	0,58	0,58	0,58	0,58	0,58	0,16	0,21	0,32	0,45	0,58	0,58	0,58	0,58
	0,70	0,67	0,67	0,67	0,67	0,67	0,16	0,21	0,32	0,45	0,67	0,67	0,67	0,67
	0,80	0,77	0,77	0,77	0,77	0,77	0,16	0,21	0,32	0,45	0,77	0,77	0,77	0,77
	0,90	0,87	0,87	0,87	0,87	0,87	0,16	0,21	0,32	0,45	0,82	0,87	0,87	0,87
	1,00	0,96	0,96	0,96	0,96	0,96	0,16	0,21	0,32	0,45	0,82	0,96	0,96	0,96
	1,10	1,00	1,06	1,06	1,06	1,06	0,16	0,21	0,32	0,45	0,82	1,06	1,06	1,06
	1,20	1,00	1,15	1,15	1,15	1,15	0,16	0,21	0,32	0,45	0,82	1,15	1,15	1,15
	1,30	1,00	1,20	1,25	1,25	1,25	0,16	0,21	0,32	0,45	0,82	1,25	1,25	1,25
	1,90	1,00	1,20	1,40	1,44	1,44	0,16	0,21	0,32	0,45	0,82	1,27	1,44	1,44
2,00	1,00	1,20	1,40	1,44	1,44	1,44	0,16	0,21	0,32	0,45	0,82	1,27	1,44	1,44
$M_{t,nom}$ [Nm]	3 Nm					5 Nm								
d_{pd} [mm]	$t_{N,II} \leq 0,75 \text{ mm}$ $d_p = \varnothing 4,0 \text{ mm}$					$0,75 \text{ mm} < t_{N,II} \leq 1,50 \text{ mm}$ $d_p = \varnothing 4,5 \text{ mm}$					$t_{N,II} \geq 1,50 \text{ mm}$ $d_p = \varnothing 5,0 \text{ mm}$			

The grey highlighted values $N_{R,k}$ may be increased by 9.0% when using the types "S-MP 6x" and by 17.3% when using the types "S-MP 7x".

The values listed above in dependence on the screw-in length l_{ef} are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_a = 350 \text{ kg/m}^3$). For other combinations of k_{mod} and timber strength grades see Annex 3.

Self tapping screw		Annex 72
Hilti S-MP 53 S 6,5 x L / Hilti S-MP 53 SS 6,5 x L Hilti S-MP 63 S 6,5 x L / Hilti S-MP 63 SS 6,5 x L Hilti S-MP 73 S 6,5 x L / Hilti S-MP 73 SS 6,5 x L with hexagon head and sealing washer $\geq \varnothing 16 \text{ mm}$		



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346
Structural timber - EN 14081

Drilling capacity: $\Sigma t_i \leq 2,75 \text{ mm}$

Timber substructures:

performance determined with

$M_{y,Rk} = 4,429 \text{ Nm}$
 $f_{ax,k} = 8,575 \text{ N/mm}^2$ for $l_{ef} \geq 20,0 \text{ mm}$

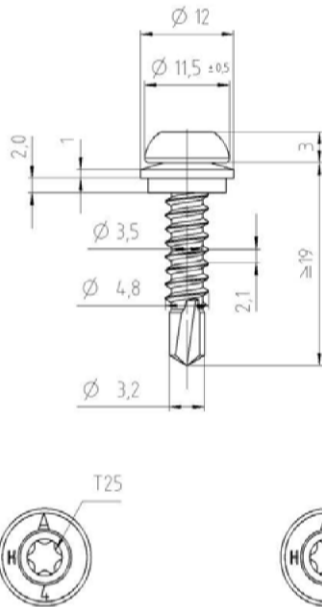
t_i [mm]	0,50	0,55	0,63	0,75	0,88	t_{II} [mm]	1,00	1,13	1,25	1,50	1,75	2,00	$V_{I,Rk}$ $N_{I,Rk}$
$V_{R,k}$ [kN]	0,50	—	—	—	—	—	—	—	—	—	—	—	1,36
	0,55	—	—	—	—	—	—	—	—	—	—	—	2,22
	0,63	—	—	1,12	1,12	1,12	1,12	1,12	1,12	1,12	1,12	1,12	2,22
	0,75	—	—	1,12	1,31	1,31	1,31	1,31	1,31	1,31	1,31	1,31	2,22
	0,88	—	—	1,12	1,31	1,92	1,92	1,92	1,92	1,92	1,92	—	2,22
	1,00	—	—	1,12	1,31	1,92	2,53	2,53	2,53	2,53	2,53	—	2,22
	1,13	—	—	1,12	1,31	1,92	2,53	2,53	2,53	2,53	—	—	2,22
	1,25	—	—	1,12	1,31	1,92	2,53	2,53	2,53	2,53	—	—	2,22
	1,50	—	—	1,12	1,31	1,92	2,53	2,53	2,53	—	—	—	2,22
	1,75	—	—	1,12	1,31	1,92	2,53	—	—	—	—	—	2,22
	2,00	—	—	1,12	1,31	—	—	—	—	—	—	—	2,22
$N_{R,k}$ [kN]	0,50	—	—	—	—	—	—	—	—	—	—	—	2,34
	0,55	—	—	—	—	—	—	—	—	—	—	—	2,34
	0,63	—	—	0,59	0,87	1,12	1,37	1,37	1,37	1,37	1,37	1,37	2,34
	0,75	—	—	0,59	0,87	1,12	1,37	1,37	1,37	1,37	1,37	1,37	2,34
	0,88	—	—	0,59	0,87	1,12	1,37	1,37	1,37	1,37	1,37	—	2,34
	1,00	—	—	0,59	0,87	1,12	1,37	1,37	1,37	1,37	1,37	—	2,34
	1,13	—	—	0,59	0,87	1,12	1,37	1,37	1,37	1,37	—	—	2,34
	1,25	—	—	0,59	0,87	1,12	1,37	1,37	1,37	1,37	—	—	2,34
	1,50	—	—	0,59	0,87	1,12	1,37	1,37	1,37	—	—	—	2,34
	1,75	—	—	0,59	0,87	1,12	1,37	—	—	—	—	—	2,34
	2,00	—	—	0,59	0,87	—	—	—	—	—	—	—	2,34
$M_{t,nom}$ [Nm]													

The values listed above in dependence on the screw-in length l_{ef} are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_a = 350 \text{ kg/m}^3$). For other combinations of k_{mod} and timber strength grades see Annex 3.

Self drilling screw

Hilti S-MD 31 PS 4,8 x L
Hilti S-MD 31 PSS 4,8 x L
with round head with Torx® drive system and sealing washer $\varnothing 12 \text{ mm}$

Annex 73



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: aluminium alloy with $R_{m,min} = 185 \text{ N/mm}^2$ - EN 573

Component II: aluminium alloy with $R_{m,min} = 185 \text{ N/mm}^2$ - EN 573
Structural timber - EN 14081

Drilling capacity: $\Sigma t_i \leq 2,75 \text{ mm}$

Timber substructures:

performance determined with

$$M_{y,Rk} = 4,429 \text{ Nm}$$

$$f_{ax,k} = 8,575 \text{ N/mm}^2 \quad \text{for} \quad l_{ef} \geq 20,0 \text{ mm}$$

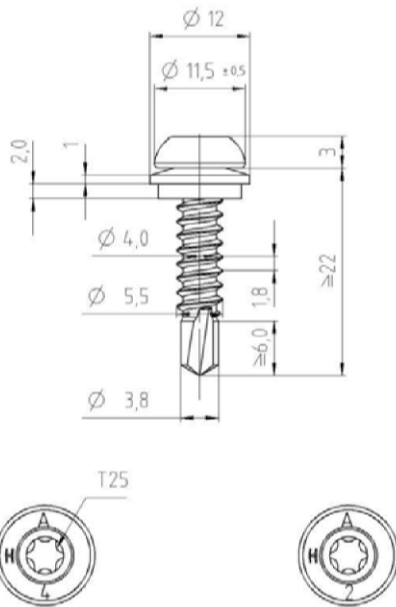
t_i [mm]	0,50	0,60	0,70	0,80	0,90	1,00	1,10	1,20	1,30	1,40	1,50	$V_{I,Rk}$ $N_{I,Rk}$
$V_{R,k}$ [kN]	0,31	0,31	0,31	0,31	0,31	0,31	0,31	0,31	0,31	0,31	0,31	0,79
0,60	0,31	0,42	0,42	0,42	0,42	0,42	0,42	0,42	0,42	0,42	0,42	0,93
0,70	0,31	0,42	0,53	0,53	0,53	0,53	0,53	0,53	0,53	0,53	0,53	1,06
0,80	0,31	0,42	0,53	0,70	0,70	0,70	0,70	0,70	0,70	0,70	0,70	1,28
0,90	0,31	0,42	0,53	0,70	0,88	0,88	0,88	0,88	0,88	0,88	0,88	1,49
1,00	0,31	0,42	0,53	0,70	0,88	1,05	1,05	1,05	1,05	1,05	1,05	1,71
1,10	0,31	0,42	0,53	0,70	0,88	1,05	1,05	1,05	1,05	1,05	1,05	1,71
1,20	0,31	0,42	0,53	0,70	0,88	1,05	1,05	1,05	1,05	1,05	1,05	1,71
1,30	0,31	0,42	0,53	0,70	0,88	1,05	1,05	1,05	1,05	1,05	—	1,71
1,40	0,31	0,42	0,53	0,70	0,88	1,05	1,05	1,05	1,05	—	—	1,71
1,50	0,31	0,42	0,53	0,70	0,88	1,05	1,05	1,05	—	—	—	1,71
$N_{R,k}$ [kN]	0,17	0,26	0,35	0,46	0,55	0,61	0,61	0,61	0,61	0,61	0,61	0,61
0,60	0,17	0,26	0,35	0,46	0,55	0,61	0,70	0,70	0,70	0,70	0,70	0,70
0,70	0,17	0,26	0,35	0,46	0,55	0,61	0,73	0,82	0,83	0,83	0,83	0,83
0,80	0,17	0,26	0,35	0,46	0,55	0,61	0,73	0,82	0,91	0,99	0,99	0,99
0,90	0,17	0,26	0,35	0,46	0,55	0,61	0,73	0,82	0,91	1,00	1,05	1,19
1,00	0,17	0,26	0,35	0,46	0,55	0,61	0,73	0,82	0,91	1,00	1,05	1,42
1,10	0,17	0,26	0,35	0,46	0,55	0,61	0,73	0,82	0,91	1,00	1,05	1,70
1,20	0,17	0,26	0,35	0,46	0,55	0,61	0,73	0,82	0,91	1,00	1,05	2,02
1,30	0,17	0,26	0,35	0,46	0,55	0,61	0,73	0,82	0,91	1,00	—	2,02
1,40	0,17	0,26	0,35	0,46	0,55	0,61	0,73	0,82	0,91	—	—	2,02
1,50	0,17	0,26	0,35	0,46	0,55	0,61	0,73	0,82	—	—	—	2,02
$M_{t,nom}$ [Nm]												

The values listed above in dependence on the screw-in length l_{ef} are valid for $k_{mod} = 0,90$ and timber strength grade C24 ($\rho_a = 350 \text{ kg/m}^3$). For other combinations of k_{mod} and timber strength grades see Annex 3.

Self drilling screw

Hilti S-MD 31 PS 4,8 x L
Hilti S-MD 31 PSS 4,8 x L
with round head with Torx® drive system and sealing washer Ø12 mm

Annex 74



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 3,00 \text{ mm}$

Timber substructures:

no performance determined

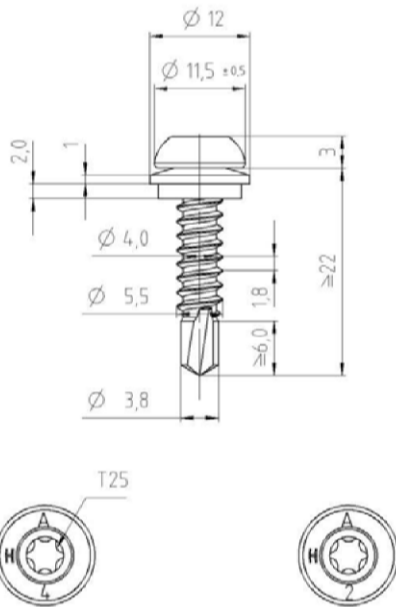
t_i [mm]	t_{II} [mm]												
	0,63	0,75	0,88	1,00	1,13	1,25	1,50	1,75	2 x 0,63	2 x 0,75	2 x 0,88	2 x 1,00	2 x 1,13
$V_{R,k}$ [kN]	0,50	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	1,13	1,38	1,38	1,38	1,38	1,38	1,38	2,04	2,04	2,04	2,04	2,04
	0,75	1,21	1,74	1,74	1,74	1,74	1,74	1,74	2,04	2,41	2,41	2,41	—
	0,88	1,21	1,74	2,19	2,19	2,19	2,19	2,19	2,04	2,41	2,41	2,41	—
	1,00	1,21	1,74	2,19	2,63	2,63	2,63	2,63	2,04	2,41	2,41	3,07	—
	1,13	1,21	1,74	2,19	2,63	2,63	2,63	2,63	2,04	2,41	2,41	—	—
	1,25	1,21	1,74	2,19	2,63	2,63	2,63	2,63	2,04	2,41	—	—	—
	1,50	1,21	1,74	2,19	2,63	2,63	2,63	2,63	2,04	2,41	—	—	—
	1,75	1,21	1,74	2,19	2,63	2,63	2,63	—	—	—	—	—	—
	2,00	1,21	1,74	2,19	2,63	—	—	—	—	—	—	—	—
$N_{R,k}$ [kN]	0,50	—	—	—	—	—	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—	—	—	—	—	—
	0,63	0,66	0,89	1,14	1,39	1,66	1,91	1,91	1,37	2,15	2,34	2,34	2,34
	0,75	0,66	0,89	1,14	1,39	1,66	1,91	1,91	1,37	2,15	2,34	2,34	—
	0,88	0,66	0,89	1,14	1,39	1,66	1,91	1,91	1,37	2,15	2,34	2,34	—
	1,00	0,66	0,89	1,14	1,39	1,66	1,91	1,91	1,37	2,15	2,34	2,34	—
	1,13	0,66	0,89	1,14	1,39	1,66	1,91	1,91	1,37	2,15	2,34	—	—
	1,25	0,66	0,89	1,14	1,39	1,66	1,91	1,91	1,37	2,15	—	—	—
	1,50	0,66	0,89	1,14	1,39	1,66	1,91	1,91	1,37	2,15	—	—	—
	1,75	0,66	0,89	1,14	1,39	1,66	1,91	—	—	—	—	—	—
	2,00	0,66	0,89	1,14	1,39	—	—	—	—	—	—	—	—
$M_{t,nom}$ [Nm]													

No additional regulations.

Self drilling screw

Hilti S-MD 31 PS 5,5 x L
Hilti S-MD 31 PSS 5,5 x L
with round head with Torx® drive system and sealing washer Ø12 mm

Annex 75



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: aluminium alloy with $R_{m,min} = 185 \text{ N/mm}^2$ - EN 573

Component II: aluminium alloy with $R_{m,min} = 185 \text{ N/mm}^2$ - EN 573

Drilling capacity: $\Sigma t_i \leq 3,00 \text{ mm}$

Timber substructures:

no performance determined

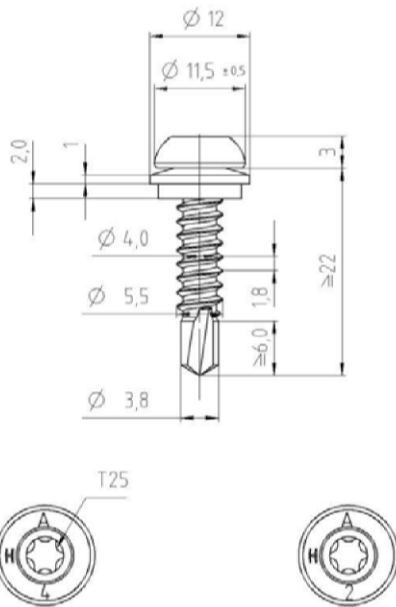
t_i [mm]	t_{ii} [mm]							
	0,50	0,60	0,70	0,80	0,90	1,00	1,50	2,00
$V_{R,k}$ [kN]	0,50	0,35	0,48	0,60	0,60	0,60	0,60	0,60
	0,60	0,37	0,48	0,60	0,60	0,60	0,60	0,60
	0,70	0,39	0,50	0,60	0,60	0,60	0,60	0,60
	0,80	0,39	0,50	0,60	0,80	0,80	0,80	0,80
	0,90	0,39	0,50	0,60	0,80	1,00	1,00	1,00
	1,00	0,39	0,50	0,60	0,80	1,00	1,20	1,20
	1,10	0,39	0,50	0,60	0,80	1,00	1,20	—
	1,20	0,39	0,50	0,60	0,80	1,00	1,20	—
	1,30	0,39	0,50	0,60	0,80	1,00	1,20	—
	1,40	0,39	0,50	0,60	0,80	1,00	1,20	—
	1,50	0,39	0,50	0,60	0,80	1,00	1,20	—
$N_{R,k}$ [kN]	0,50	0,23	0,31	0,39	0,53	0,61	0,61	0,61
	0,60	0,23	0,31	0,39	0,53	0,64	0,69	0,70
	0,70	0,23	0,31	0,39	0,53	0,64	0,69	0,83
	0,80	0,23	0,31	0,39	0,53	0,64	0,69	0,99
	0,90	0,23	0,31	0,39	0,53	0,64	0,69	1,19
	1,00	0,23	0,31	0,39	0,53	0,64	0,69	1,25
	1,10	0,23	0,31	0,39	0,53	0,64	0,69	1,25
	1,20	0,23	0,31	0,39	0,53	0,64	0,69	1,25
	1,30	0,23	0,31	0,39	0,53	0,64	0,69	1,25
	1,40	0,23	0,31	0,39	0,53	0,64	0,69	1,25
	1,50	0,23	0,31	0,39	0,53	0,64	0,69	1,25
$M_{t,nom}$ [Nm]								

No additional regulations.

Self drilling screw

Hilti S-MD 31 PS 5,5 x L
Hilti S-MD 31 PSS 5,5 x L
with round head with Torx® drive system and sealing washer Ø12 mm

Annex 76



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: aluminium alloy with $R_{m,min} = 185 \text{ N/mm}^2$ - EN 573

Component II: S235 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 3,00 \text{ mm}$

Timber substructures:

no performance determined

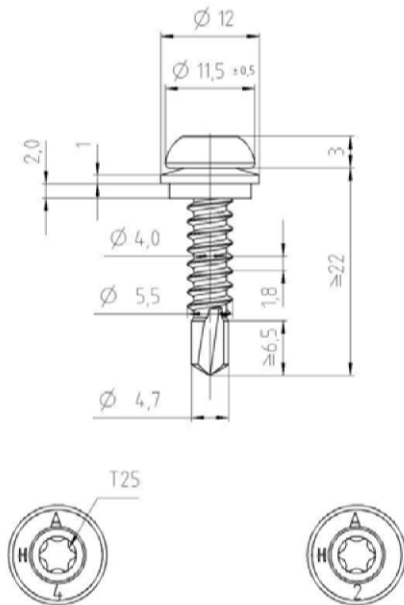
t_i [mm]	0,63	0,75	0,88	1,00	1,13	1,25	1,50	1,75	t_{II} [mm]	2 x 0,63	2 x 0,75	2 x 0,88	2 x 1,00	2 x 1,13
$V_{R,k}$ [kN]	0,50	—	—	—	—	—	—	—	0,94	0,94	0,94	0,94	0,94	0,94
	0,55	—	—	—	—	—	—	—	0,94	0,94	0,94	0,94	0,94	0,94
	0,63	—	—	—	—	—	—	—	0,94	1,21	1,21	1,21	1,21	1,21
	0,75	—	—	—	—	—	—	—	0,94	1,21	1,21	1,21	1,21	—
	0,88	—	—	—	—	—	—	—	0,94	1,21	1,21	1,21	1,21	—
	1,00	—	—	—	—	—	—	—	0,94	1,21	1,21	1,21	1,21	—
	1,13	—	—	—	—	—	—	—	0,94	1,21	1,21	—	—	—
	1,25	—	—	—	—	—	—	—	0,94	1,21	1,21	—	—	—
	1,50	—	—	—	—	—	—	—	0,94	1,21	—	—	—	—
	1,75	—	—	—	—	—	—	—	0,94	1,21	—	—	—	—
	2,00	—	—	—	—	—	—	—	0,94	1,21	—	—	—	—
$N_{R,k}$ [kN]	0,50	0,42	0,42	0,42	0,42	0,42	0,42	0,42	0,61	0,61	0,61	0,61	0,61	0,61
	0,55	0,46	0,46	0,46	0,46	0,46	0,46	0,46	0,70	0,70	0,70	0,70	0,70	0,70
	0,63	0,53	0,53	0,53	0,53	0,53	0,53	0,53	0,83	0,83	0,83	0,83	0,83	0,83
	0,75	0,63	0,63	0,63	0,63	0,63	0,63	0,63	0,99	0,99	0,99	0,99	0,99	—
	0,88	0,66	0,73	0,73	0,73	0,73	0,73	0,73	1,19	1,19	1,19	1,19	1,19	—
	1,00	0,66	0,83	0,83	0,83	0,83	0,83	0,83	1,37	1,42	1,42	1,42	1,42	—
	1,13	0,66	0,89	0,94	0,94	0,94	0,94	0,94	1,37	1,70	1,70	—	—	—
	1,25	0,66	0,89	1,04	1,04	1,04	1,04	1,04	1,37	2,02	2,02	—	—	—
	1,50	0,66	0,89	1,14	1,25	1,25	1,25	—	1,37	2,02	—	—	—	—
	1,75	0,66	0,89	1,14	1,25	1,25	—	—	1,37	2,02	—	—	—	—
	2,00	0,66	0,89	1,14	1,25	—	—	—	1,37	2,02	—	—	—	—
$M_{t,nom}$ [Nm]														

No additional regulations.

Self drilling screw

Hilti S-MD 31 PS 5,5 x L
Hilti S-MD 31 PSS 5,5 x L
with round head with Torx® drive system and sealing washer Ø12 mm

Annex 77



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: aluminium alloy with $R_{m,min} = 185 \text{ N/mm}^2$ - EN 573

Drilling capacity: $\Sigma t_i \leq 5,50 \text{ mm}$

Timber substructures:

no performance determined

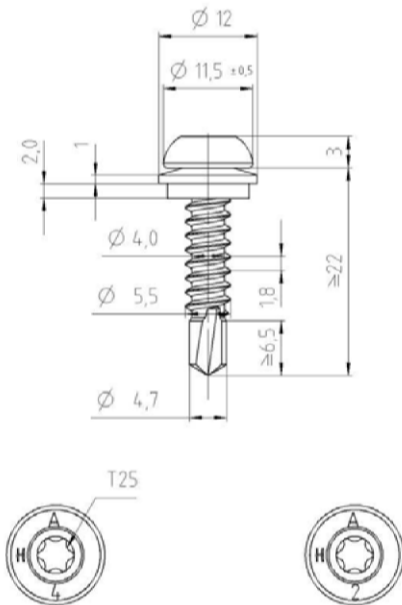
t_i [mm]	t_{II} [mm]							
	1,00	1,50	2,00	2,50	3,00	4,00	5,00	—
$V_{R,k}$ [kN]	0,50	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—
	0,63	1,10	1,10	1,10	1,10	1,10	—	—
	0,75	1,28	1,46	1,46	1,46	1,46	—	—
	0,88	1,32	1,73	1,73	1,73	1,73	—	—
	1,00	1,36	1,99	1,99	1,99	1,99	—	—
	1,13	1,36	1,99	1,99	1,99	1,99	—	—
	1,25	1,36	1,99	1,99	1,99	1,99	—	—
	1,50	1,36	1,99	1,99	1,99	1,99	—	—
	1,75	1,36	1,99	1,99	1,99	—	—	—
	2,00	1,36	1,99	1,99	1,99	1,99	—	—
$N_{R,k}$ [kN]	0,50	—	—	—	—	—	—	—
	0,55	—	—	—	—	—	—	—
	0,63	0,34	0,78	1,17	1,66	2,34	2,34	—
	0,75	0,34	0,78	1,17	1,66	2,34	2,34	—
	0,88	0,34	0,78	1,17	1,66	2,34	2,34	—
	1,00	0,34	0,78	1,17	1,66	2,34	2,34	—
	1,13	0,34	0,78	1,17	1,66	2,34	2,34	—
	1,25	0,34	0,78	1,17	1,66	2,34	2,34	—
	1,50	0,34	0,78	1,17	1,66	2,34	2,34	—
	1,75	0,34	0,78	1,17	1,66	2,34	—	—
	2,00	0,34	0,78	1,17	1,66	2,34	—	—
$M_{t, nom}$ [Nm]								

No additional regulations.

Self drilling screw

Hilti S-MD 33 PS 5,5 x L
Hilti S-MD 33 PSS 5,5 x L
with round head with Torx® drive system and sealing washer Ø12 mm

Annex 78



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 5,50 \text{ mm}$

Timber substructures:

no performance determined

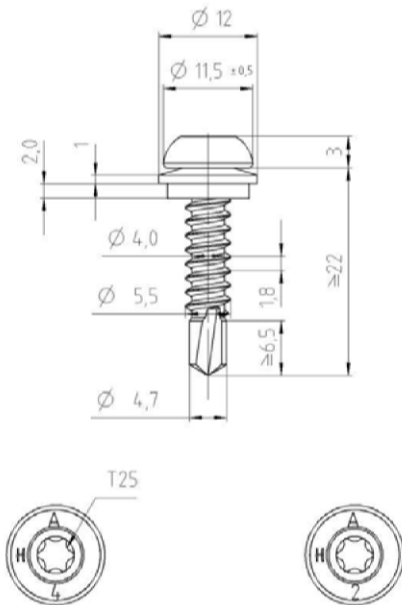
t_i [mm]	t_{ii} [mm]							
	0,75	0,88	1,00	1,25	2 x 0,75	2 x 0,88	2 x 1,00	2 x 1,25
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	—	—	—	—	—	—	—	—
0,75	1,29	1,29	1,29	1,29	2,05	2,05	2,05	2,05
0,88	1,29	1,81	1,81	1,81	2,05	2,56	2,56	2,56
1,00	1,29	1,81	2,32	2,32	2,05	2,56	3,07	3,07
1,13	1,29	1,81	2,32	2,32	2,05	2,56	3,07	3,07
1,25	1,29	1,81	2,32	2,32	2,05	2,56	3,07	3,07
1,50	1,29	1,81	2,32	2,32	2,05	2,56	3,07	3,07
1,75	1,29	1,81	2,32	2,32	2,05	2,56	3,07	3,07
2,00	1,29	1,81	2,32	2,32	2,05	2,56	3,07	3,07
$N_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	0,45	0,65	0,85	1,08	0,97	1,24	1,51	1,91
0,75	0,45	0,65	0,85	1,08	0,97	1,24	1,51	1,91
0,88	0,45	0,65	0,85	1,08	0,97	1,24	1,51	1,91
1,00	0,45	0,65	0,85	1,08	0,97	1,24	1,51	1,91
1,13	0,45	0,65	0,85	1,08	0,97	1,24	1,51	1,91
1,25	0,45	0,65	0,85	1,08	0,97	1,24	1,51	1,91
1,50	0,45	0,65	0,85	1,08	0,97	1,24	1,51	1,91
1,75	0,45	0,65	0,85	1,08	0,97	1,24	1,51	1,91
2,00	0,45	0,65	0,85	1,08	0,97	1,24	1,51	1,91
$M_{t,nom}$ [Nm]								

No additional regulations.

Self drilling screw

Hilti S-MD 33 PS 5,5 x L
Hilti S-MD 33 PSS 5,5 x L
with round head with Torx® drive system and sealing washer Ø12 mm

Annex 79



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: aluminium alloy with $R_{m,min} = 185 \text{ N/mm}^2$ - EN 573

Component II: aluminium alloy with $R_{m,min} = 185 \text{ N/mm}^2$ - EN 573

Drilling capacity: $\Sigma t_i \leq 5,50 \text{ mm}$

Timber substructures:

no performance determined

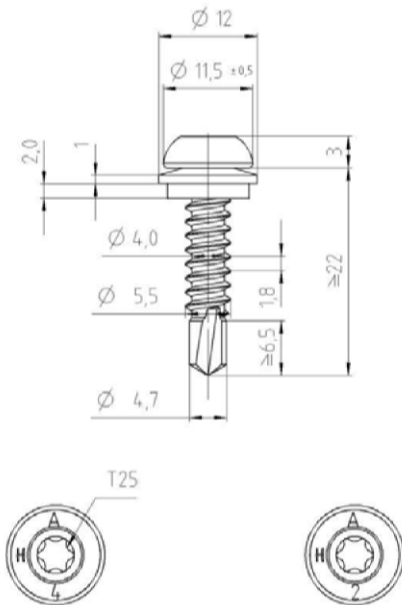
t_i [mm]	t_{II} [mm]							
	1,00	1,50	2,00	2,50	3,00	4,00	5,00	—
$V_{R,k}$ [kN]	0,50	0,56	0,79	0,79	0,79	0,79	0,79	—
	0,60	0,65	0,91	0,91	0,91	0,91	—	—
	0,70	0,74	1,03	1,03	1,03	1,03	—	—
	0,80	0,85	1,10	1,10	1,10	1,10	—	—
	0,90	0,96	1,18	1,18	1,18	1,18	—	—
	1,00	1,07	1,25	1,25	1,25	1,25	—	—
	1,10	1,07	1,25	1,25	1,25	1,25	—	—
	1,20	1,07	1,25	1,25	1,25	1,25	—	—
	1,30	1,07	1,25	1,25	1,25	1,25	—	—
	1,40	1,07	1,25	1,25	1,25	1,25	—	—
	1,50	1,07	1,25	1,25	1,25	1,25	—	—
$N_{R,k}$ [kN]	0,50	0,34	0,61	0,61	0,61	0,61	0,61	—
	0,60	0,34	0,70	0,70	0,70	0,70	—	—
	0,70	0,34	0,78	0,83	0,83	0,83	—	—
	0,80	0,34	0,78	0,99	0,99	0,99	—	—
	0,90	0,34	0,78	1,17	1,19	1,19	—	—
	1,00	0,34	0,78	1,17	1,42	1,42	—	—
	1,10	0,34	0,78	1,17	1,66	1,70	—	—
	1,20	0,34	0,78	1,17	1,66	2,02	—	—
	1,30	0,34	0,78	1,17	1,66	2,02	—	—
	1,40	0,34	0,78	1,17	1,66	2,02	—	—
	1,50	0,34	0,78	1,17	1,66	2,02	—	—
$M_{t,nom}$ [Nm]								

No additional regulations.

Self drilling screw

Hilti S-MD 33 PS 5,5 x L
Hilti S-MD 33 PSS 5,5 x L
with round head with Torx® drive system and sealing washer Ø12 mm

Annex 80



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: aluminium alloy with $R_{m,min} = 185 \text{ N/mm}^2$ - EN 573

Component II: S235 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 5,50 \text{ mm}$

Timber substructures:

no performance determined

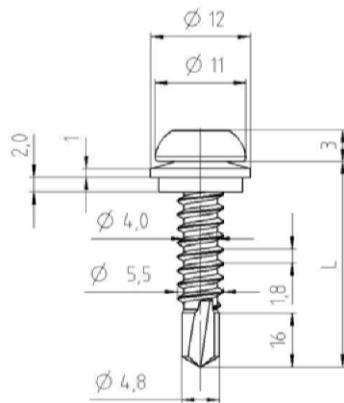
t_i [mm]	t_{II} [mm]							
	0,75	0,88	1,00	1,25	2 x 0,75	2 x 0,88	2 x 1,00	2 x 1,25
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,60	—	—	—	—	—	—	—	—
0,70	0,99	0,99	0,99	0,99	1,18	1,18	1,18	1,18
0,80	0,99	0,99	0,99	0,99	1,18	1,18	1,18	1,18
0,90	0,99	0,99	0,99	0,99	1,18	1,18	1,18	1,18
1,00	0,99	0,99	1,31	1,31	1,18	1,18	1,18	1,18
1,10	0,99	0,99	1,31	1,31	1,18	1,18	1,18	1,18
1,20	0,99	0,99	1,31	1,31	1,18	1,18	1,18	1,18
1,30	0,99	0,99	1,31	1,31	1,18	1,18	1,18	1,18
1,40	0,99	0,99	1,31	1,31	1,18	1,18	1,18	1,18
1,50	0,99	0,99	1,31	1,31	1,18	1,18	1,18	1,18
$N_{R,k}$ [kN]								
0,50	0,45	0,61	0,61	0,61	0,61	0,61	0,61	0,61
0,60	0,45	0,65	0,70	0,70	0,70	0,70	0,70	0,70
0,70	0,45	0,65	0,83	0,83	0,83	0,83	0,83	0,83
0,80	0,45	0,65	0,85	0,99	0,97	0,99	0,99	0,99
0,90	0,45	0,65	0,85	1,08	0,97	1,19	1,19	1,19
1,00	0,45	0,65	0,85	1,08	0,97	1,24	1,42	1,42
1,10	0,45	0,65	0,85	1,08	0,97	1,24	1,51	1,70
1,20	0,45	0,65	0,85	1,08	0,97	1,24	1,51	1,91
1,30	0,45	0,65	0,85	1,08	0,97	1,24	1,51	1,91
1,40	0,45	0,65	0,85	1,08	0,97	1,24	1,51	1,91
1,50	0,45	0,65	0,85	1,08	0,97	1,24	1,51	1,91
$M_{t,nom}$ [Nm]								

No additional regulations.

Self drilling screw

Hilti S-MD 33 PS 5,5 x L
Hilti S-MD 33 PSS 5,5 x L
with round head with Torx® drive system and sealing washer Ø12 mm

Annex 81



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: S280GD, S320GD, S350GD - EN 10346

Component II: S235 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 12,50$ mm

Timber substructures:

no performance determined

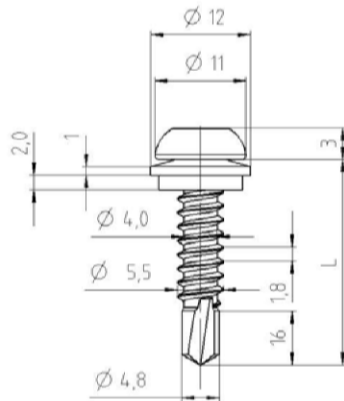
t_i [mm]	4,00	5,00	6,00	8,00	10,0	—	—	—
$V_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	2,69	2,93	3,16	3,16	3,16	—	—	—
0,75	2,95	3,11	3,27	3,27	3,27	—	—	—
0,88	3,46	3,73	4,01	4,01	4,01	—	—	—
1,00	3,97	4,36	4,74	4,74	4,74	—	—	—
1,13	4,97	5,16	5,35	5,35	5,35	—	—	—
1,25	5,97	5,97	5,97	5,97	5,97	—	—	—
1,50	5,97	6,23	6,49	6,49	6,49	—	—	—
1,75	5,97	6,33	6,69	6,69	6,69	—	—	—
2,00	5,97	6,43	6,89	6,89	6,89	—	—	—
$N_{R,k}$ [kN]								
0,50	—	—	—	—	—	—	—	—
0,55	—	—	—	—	—	—	—	—
0,63	2,34	2,34	2,34	2,34	2,34	—	—	—
0,75	2,34	2,34	2,34	2,34	2,34	—	—	—
0,88	2,34	2,34	2,34	2,34	2,34	—	—	—
1,00	2,34	2,34	2,34	2,34	2,34	—	—	—
1,13	2,34	2,34	2,34	2,34	2,34	—	—	—
1,25	2,34	2,34	2,34	2,34	2,34	—	—	—
1,50	2,34	2,34	2,34	2,34	2,34	—	—	—
1,75	2,34	2,34	2,34	2,34	2,34	—	—	—
2,00	2,34	2,34	2,34	2,34	2,34	—	—	—
$M_{t,nom}$ [Nm]								

No additional regulations.

Self drilling screw

Hilti S-MD 35 PS 5,5 x L
Hilti S-MD 35 PSS 5,5 x L
with round head with Torx® drive system and sealing washer Ø12 mm

Annex 82



Material:

Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088

Washer: stainless steel (1.4301) - EN 10088

Component I: aluminium alloy with $R_{m,min} = 185 \text{ N/mm}^2$ - EN 573

Component II: S235 - EN 10025-1
S280GD, S320GD, S350GD - EN 10346

Drilling capacity: $\Sigma t_i \leq 12,50 \text{ mm}$

Timber substructures:

no performance determined

t_i [mm]	4,00	5,00	6,00	8,00	10,0	—	—	—
$V_{R,k}$ [kN]	1,03	1,03	1,03	1,03	1,03	—	—	—
0,60	1,27	1,27	1,27	1,27	1,27	—	—	—
0,70	1,51	1,51	1,51	1,51	1,51	—	—	—
0,80	1,79	1,79	1,79	1,79	1,79	—	—	—
0,90	2,07	2,07	2,07	2,07	2,07	—	—	—
1,00	2,35	2,35	2,35	2,35	2,35	—	—	—
1,10	2,35	2,35	2,35	2,35	2,35	—	—	—
1,20	2,35	2,35	2,35	2,35	2,35	—	—	—
1,30	2,35	2,35	2,35	2,35	2,35	—	—	—
1,40	2,35	2,35	2,35	2,35	2,35	—	—	—
1,50	2,35	2,35	2,35	2,35	2,35	—	—	—
$N_{R,k}$ [kN]	0,61	0,61	0,61	0,61	0,61	—	—	—
0,60	0,70	0,70	0,70	0,70	0,70	—	—	—
0,70	0,83	0,83	0,83	0,83	0,83	—	—	—
0,80	0,99	0,99	0,99	0,99	0,99	—	—	—
0,90	1,19	1,19	1,19	1,19	1,19	—	—	—
1,00	1,42	1,42	1,42	1,42	1,42	—	—	—
1,10	1,70	1,70	1,70	1,70	1,70	—	—	—
1,20	2,02	2,02	2,02	2,02	2,02	—	—	—
1,30	2,02	2,02	2,02	2,02	2,02	—	—	—
1,40	2,02	2,02	2,02	2,02	2,02	—	—	—
1,50	2,02	2,02	2,02	2,02	2,02	—	—	—
$M_{t,nom}$ [Nm]								

No additional regulations.

Self drilling screw

Hilti S-MD 35 PS 5,5 x L
Hilti S-MD 35 PSS 5,5 x L
with round head with Torx® drive system and sealing washer Ø12 mm

Annex 83

	<u>Material:</u> Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088 Washer: aluminium alloy EN AW-5052 - EN 485 stainless Steel (1.4301) - EN 10088 Component I: S280GD, S320GD, S350GD - EN 10346 Component II: S280GD, S320GD, S350GD - EN 10346 <u>Drilling capacity:</u> $\Sigma t \leq 2,50 \text{ mm}$ <u>Timber substructures:</u> no performance determined
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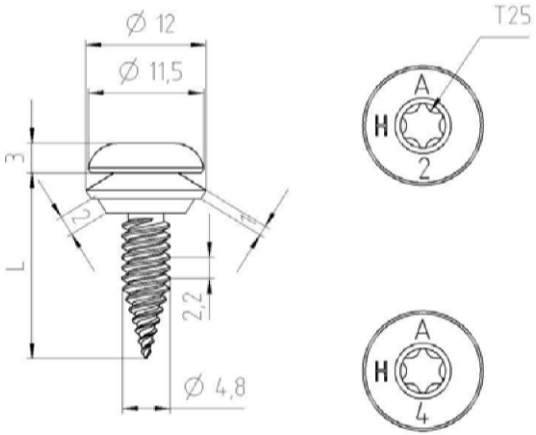
t _i [mm]		t _{ii} [mm]															
		0,40		0,50		0,55		0,63		0,75		0,88		1,00		1,25	
V _{R,k} [kN]	0,40	0,68	—	0,75	—	0,79	—	0,85	—	0,94	—	0,94	—	0,94	—	0,94	—
	0,50	0,68	—	0,94	—	0,94	—	0,94	—	0,94	—	0,94	—	0,94	—	0,94	—
	0,55	0,68	—	0,94	—	1,23	—	1,23	—	1,23	—	1,23	—	1,23	—	1,23	—
	0,63	0,68	—	0,94	—	1,23	—	1,70	—	1,70	—	1,70	—	1,70	—	1,70	—
	0,75	0,68	—	0,94	—	1,23	—	1,70	—	2,40	—	2,40	—	2,40	—	2,40	—
	0,88	0,68	—	0,94	—	1,23	—	1,70	—	2,40	—	2,95	—	2,95	—	2,95	—
	1,00	0,68	—	0,94	—	1,23	—	1,70	—	2,40	—	2,95	—	3,46	—	3,46	—
	1,25	0,68	—	0,94	—	1,23	—	1,70	—	2,40	—	2,95	—	3,46	—	4,17	—
N _{R,k} [kN]	0,40	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,49	—	1,49	—	1,49	—
	0,50	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—	1,90	—	1,93	—
	0,55	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—	1,90	—	2,19	—
	0,63	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—	1,90	—	2,49	—
	0,75	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—	1,90	—	2,49	—
	0,88	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—	1,90	—	2,49	—
	1,00	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—	1,90	—	2,49	—
	1,25	0,46	—	0,76	—	0,86	—	1,03	—	1,27	—	1,60	—	1,90	—	2,49	—
M _{t,nom} [Nm]																	

If both components I and II are made of S320GD or S350GD the grey highlighted values may be increased by 8,0%.

Self piercing screw

Hilti S-MS 31 PS 4,8 x L
Hilti S-MS 31 PSS 4,8 x L
Hilti S-MS 31 PS-A 4,8 x L
Hilti S-MS 31 PSS-A 4,8 x L
with round head, Torx® drive system and sealing washer Ø12 mm

Annex 84

	Material: Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088 Washer: aluminium alloy EN AW-5052 - EN 485 stainless Steel (1.4301) - EN 10088 Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ - EN 573 Component II: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ - EN 573 Drilling capacity: $\Sigma t_i \leq 2,50 \text{ mm}$ Timber substructures: no performance determined
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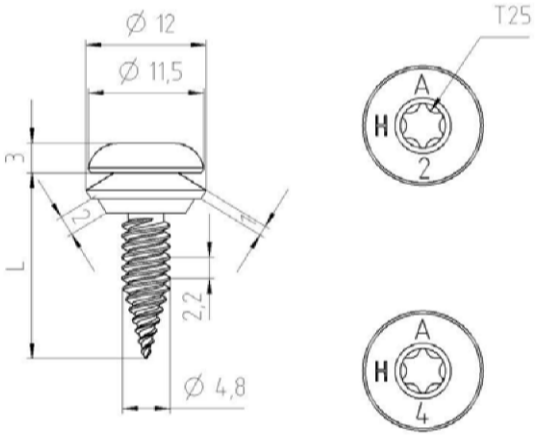
t_i [mm]		t_{II} [mm]					
		0,50	0,60	0,70	0,80	1,00	1,20
$V_{R,k}$ [kN]	0,50	0,59	—	0,59	—	0,59	—
	0,60	0,59	—	0,83	—	0,83	—
	0,70	0,59	—	0,83	—	1,07	—
	0,80	0,59	—	0,83	—	1,07	—
	1,00	0,59	—	0,83	—	1,31	—
	1,20	0,59	—	0,83	—	1,31	—
$N_{R,II,k}$ [kN]		0,35	—	0,49	—	0,63	—
$M_{t,nom}$ [Nm]		0,35	—	0,49	—	0,63	—

Pull-through of component I according to the recommendations of the aluminum profile producers.

Self piercing screw

Hilti S-MS 31 PS 4,8 x L
Hilti S-MS 31 PSS 4,8 x L
Hilti S-MS 31 PS-A 4,8 x L
Hilti S-MS 31 PSS-A 4,8 x L
with round head, Torx® drive system and sealing washer $\varnothing 12 \text{ mm}$

Annex 85

	<u>Material:</u> Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088 Washer: aluminium alloy EN AW-5052 - EN 485 stainless Steel (1.4301) - EN 10088 Component I: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ - EN 573 Component II: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ - EN 573 <u>Drilling capacity:</u> $\Sigma t_i \leq 2,50 \text{ mm}$ <u>Timber substructures:</u> no performance determined
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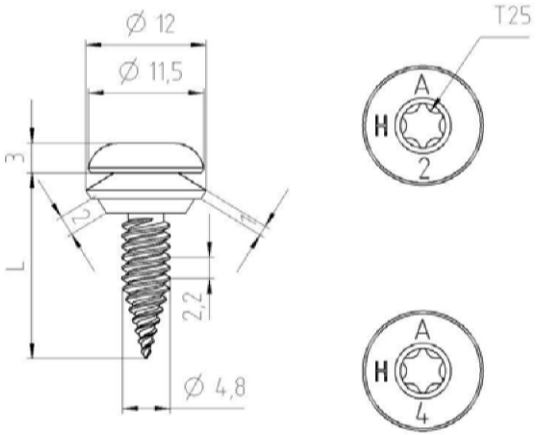
t_i [mm]		t_{II} [mm]					
		0,50	0,60	0,70	0,80	1,00	1,20
$V_{R,k}$ [kN]	0,50	0,45	—	0,45	—	0,45	—
	0,60	0,45	—	0,63	—	0,63	—
	0,70	0,45	—	0,63	—	0,82	—
	0,80	0,45	—	0,63	—	0,82	—
	1,00	0,45	—	0,63	—	1,00	—
	1,20	0,45	—	0,63	—	1,00	—
$N_{R,II,k}$ [kN]		0,27	—	0,38	—	0,48	—
$M_{t,nom}$ [Nm]		0,27	—	0,38	—	0,48	—

Pull-through of component I according to the recommendations of the aluminum profile producers.

Self piercing screw

Hilti S-MS 31 PS 4,8 x L
Hilti S-MS 31 PSS 4,8 x L
Hilti S-MS 31 PS-A 4,8 x L
Hilti S-MS 31 PSS-A 4,8 x L
with round head, Torx® drive system and sealing washer $\varnothing 12 \text{ mm}$

Annex 86

	<u>Material:</u> Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088 Washer: aluminium alloy EN AW-5052 - EN 485 stainless Steel (1.4301) - EN 10088 Component I: aluminium alloy with $R_{m,min} = 215 \text{ N/mm}^2$ - EN 573 Component II: S280GD, S320GD, S350GD - EN 10346 <u>Drilling capacity:</u> $\Sigma t_i \leq 2,50 \text{ mm}$ <u>Timber substructures:</u> no performance determined
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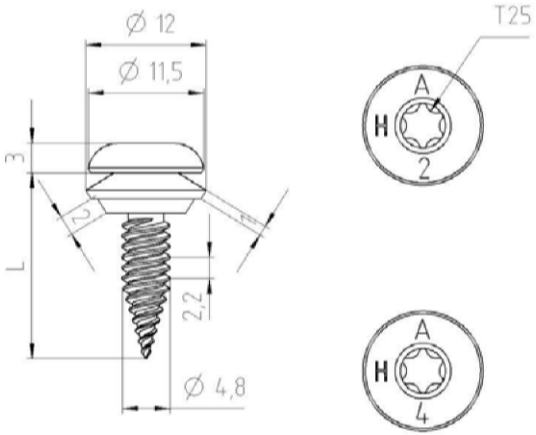
t_i [mm]		t_{II} [mm]							
		0,50	0,55	0,63	0,75	0,88	1,00	1,25	
$V_{IR,k}$ [kN]	0,50	0,59	—	0,59	—	0,59	—	0,59	—
	0,60	0,59	—	0,59	—	0,83	—	0,83	—
	0,70	0,59	—	0,59	—	0,83	—	1,07	—
	0,80	0,59	—	0,59	—	0,83	—	1,07	—
	1,00	0,59	—	0,59	—	0,83	—	1,31	—
	1,20	0,59	—	0,59	—	0,83	—	1,31	—
$N_{R,II,k}$ [kN]		0,76	—	0,86	—	1,03	—	1,27	—
$M_{t,nom}$ [Nm]		0,76	—	0,86	—	1,03	—	1,27	—

Pull-through of component I according to the recommendations of the aluminum profile producers.

Self piercing screw

Hilti S-MS 31 PS 4,8 x L
Hilti S-MS 31 PSS 4,8 x L
Hilti S-MS 31 PS-A 4,8 x L
Hilti S-MS 31 PSS-A 4,8 x L
with round head, Torx® drive system and sealing washer $\varnothing 12 \text{ mm}$

Annex 87

	<u>Material:</u> Fastener: stainless steel (1.4301, 1.4401, 1.4404, 1.4567) - EN 10088 Washer: aluminium alloy EN AW-5052 - EN 485 stainless Steel (1.4301) - EN 10088 Component I: aluminium alloy with $R_{m,min} = 165 \text{ N/mm}^2$ - EN 573 Component II: S280GD, S320GD, S350GD - EN 10346 <u>Drilling capacity:</u> $\Sigma t_i \leq 2,50 \text{ mm}$ <u>Timber substructures:</u> no performance determined
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t _i [mm]		t _{II} [mm]							
		0,50	0,55	0,63	0,75	0,88	1,00	1,25	
V _{I,R,k} [kN]	0,50	0,45	—	0,45	—	0,45	—	0,45	—
	0,60	0,45	—	0,45	—	0,63	—	0,63	—
	0,70	0,45	—	0,45	—	0,63	—	0,82	—
	0,80	0,45	—	0,45	—	0,63	—	1,00	—
	1,00	0,45	—	0,45	—	0,63	—	1,44	—
	1,20	0,45	—	0,45	—	0,63	—	1,44	—
N _{R,II,k} [kN]		0,76	—	0,86	—	1,03	—	1,60	—
M _{t,nom} [Nm]									

Pull-through of component I according to the recommendations of the aluminum profile producers.

Self piercing screw

Hilti S-MS 31 PS 4,8 x L
Hilti S-MS 31 PSS 4,8 x L
Hilti S-MS 31 PS-A 4,8 x L
Hilti S-MS 31 PSS-A 4,8 x L
with round head, Torx® drive system and sealing washer $\varnothing 12 \text{ mm}$

Annex 88