# SANDWICH PANEL SCREW

## SELF DRILLING SCREW FOR FASTENING OF SANDWICH PANELS TO WOOD OR STEEL

- #1 drill point for increased pull-out values
- Tall head for easy and stable mounting
- Surface treated with ZYTEC™ M for good corrosion resistance
- The large thread and cone below the head as well as the washer with bonded EPDM ensures a better load distribution and sealing abilities
- Available in more than 500 colours (QUALICOAT certified powder)

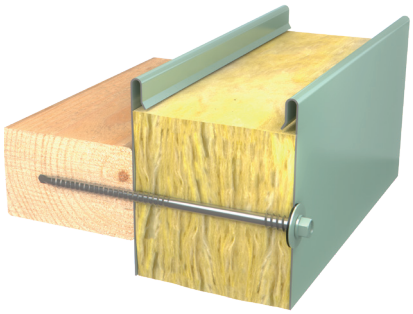

Hex head | Corrosion category C3 | Hardened steel

## PRODUCT RANGE

| MG/PG | Item no. | Item name | Washer [mm] | Thread [mm] | Length L [mm] | Panel thickness on wood / steel [mm] | Drill capacity [mm] | Head [mm] | Unit [pcs] |
|---|---|---|---|---|---|---|---|---|---|
| 06 1000 | 13605 | HWH 6.5/7.0 X 110 #1 A HX8 ALU-19B | ALU Ø19 | Ø6.5 | 110 | Max 60 / 48 - 95 | 2 x 0.5 - 2 x 1.0 | Ø10.0 HEX 8.0 | 100 |
| | 17819 | HWH 6.5/7.0 X 150 #1 A HX8 ALU-19B | | | 150 | Max 100 / 68 - 135 | | | |
| | 17821 | HWH 6.5/7.0 X 170 #1 A HX8 ALU-19B | | | 170 | Max 120 / 88 - 155 | | | |
| | 17823 | HWH 6.5/7.0 X 210 #1 A HX8 ALU-19B | | | 210 | Max 160 / 128 - 195 | | | |
| | 13609 | HWH 6.5/7.0 X 250 #1 A HX8 ALU-19B | | | 250 | Max 200 / 168 - 235 | | | |
| | 13610 | HWH 6.5/7.0 X 300 #1 A HX8 ALU-19B | | | 300 | Max 250 / 218 - 285 | | | |
| | 13611 | HWH 6.5/7.0 X 350 #1 A HX8 ALU-19B | | | 350 | Max 300 / 286 - 335 | | | |

## TYPICAL APPLICATION

- Fastening of sandwich panels to wood
- Fastening of sandwich panels to steel

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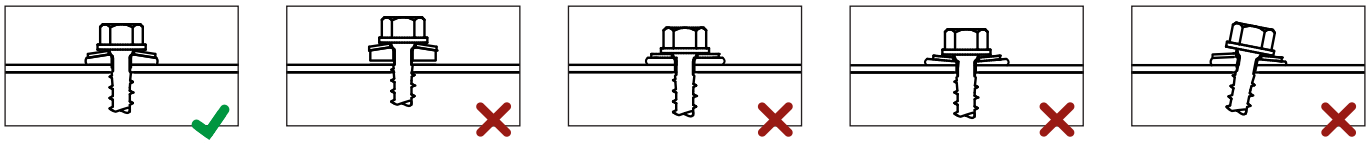
## INSTALLATION INSTRUCTIONS

For optimal performance it is important to follow the installation instructions. An incorrect installation may lead to decreased sealing abilities and/or load bearing capacity.

For optimal drill performance, it is recommended that the rotational speed is 1800 - 2500 RPM.



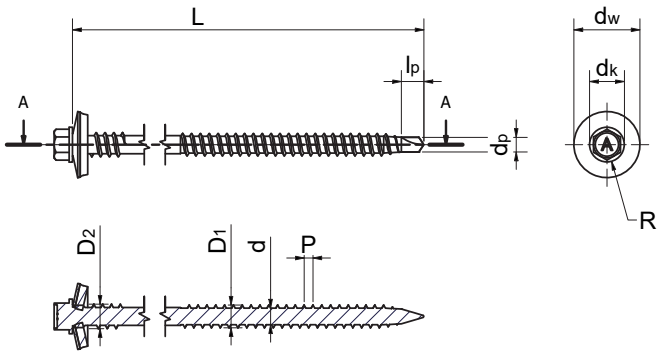
Correct | Not tightened enough | Overtightened | Very overtightened | Tilted angle

## GOOD TO KNOW

Sandwich panels are often constructed from an insulating layer with glued steel sheeting with a thickness of 0.6 mm. Practical tests show that deformation of the steel plate on the outside of the sandwich panel occurs by a force of approximately 1.0 kN when using a screw with Ø19 mm washer with EPDM-rubber. This should be taken into consideration during the calculation of a given structure assembly. Furthermore, the pull-through resistance of the steel plate on the outside of the sandwich panel should be taken into account as well.

## TECHNICAL DATA

| | | |
|---|---|---|
| Outer diameter, $D_1/D_2$ | [mm] | Ø6.5/7.0 |
| Inner diameter, d | [mm] | Ø4.8 |
| Head diameter, $d_k$ | [mm] | Ø10.0 |
| Washer diameter, $d_w$ | [mm] | Ø19.0 |
| Drill point diameter, $d_p$ | [mm] | Ø4.3 |
| Drill point length, $l_p$ | [mm] | 6.5 |
| Pitch, P | [mm] | 2.5 |
| Drive type, R | [-] | HEX 8.0 |





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## DESIGN RESISTANCE (WOOD)

The design resistance of the screw is determined in accordance with EN 1993-1-3:2006 + AC:2009, Eurocode 3 for steel structures and EN 1995-1-1:2004 + AC:2006 + A1:2008 + A2:2014, Eurocode 5 for timber structures.

The resistance when loaded in tension, $N_{Rd}$, appears from the table on the right and is the minimum value of the pull-out resistance of the supporting object, the pull-through resistance of the outermost steel sheet of the sandwich panel, and the tension resistance of the screw.

The theoretical values must be considered indicative since the conditions at the construction site may vary. Practical tests of the specific application are recommended for verification of the listed values.

Assumptions:

Fixed object: Sandwich panel
Steel sheets: S280GD - EN 10346

Supporting object: Structural wood, C24
Density, $\rho_k$ = 350 kg/m³

L = Length of the screw [mm]
$t_{1,t}$ = Thickness of the outermost steel sheet of the sandwich panel [mm]

All resistances are stated in kN (1 kN ≈ 100 kg)
Safety factor: $\gamma_M$ = 1.35, $k_{mod}$ = 0.90

MG/PG: 06 1000 HWH 6.5/7.0 X L #1 "A" HX8 ALU-19B

| Design resistance when loaded in tension, $N_{Rd}$ [kN] | | | | | | | |
|---|---|---|---|---|---|---|---|
| $t_{1,t}$ \ L | 110 | 150 | 170 | 210 | 250 | 300 | 350 |
| 0.50 | 0.67 | 0.67 | 0.67 | 0.67 | 0.67 | 0.67 | 0.67 |
| 0.55 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 |
| 0.63 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 |
| 0.75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 0.88 | 1.17 | 1.17 | 1.17 | 1.17 | 1.17 | 1.17 | 1.17 |
| 1.00 | 1.33 | 1.33 | 1.33 | 1.33 | 1.33 | 1.33 | 1.33 |
| 1.13 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 |
| 1.25 | 1.67 | 1.67 | 1.67 | 1.67 | 1.67 | 1.67 | 1.67 |



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## DESIGN RESISTANCE (STEEL)

The design resistance of the screw is determined in accordance with EN 1993-1-3:2006 + AC:2009, Eurocode 3 for steel structures.

The resistance when loaded in tension, $N_{Rd}$, appears from the table on the right and is the minimum value of the pull-out resistance of the supporting object, the pull-through resistance of the outermost steel sheet of the sandwich panel, and the tension resistance of the screw.

The resistance when loaded in shear, $V_{Rd}$, appears from the table on the right and is the minimum value of the bearing resistance of the supporting object and the innermost steel sheet of the sandwich panel, and the shear resistance of the screw.

The theoretical values must be considered indicative since the conditions at the construction site may vary. Practical tests of the specific application are recommended for verification of the listed values.

Assumptions:

Fixed object: Sandwich panel
Steel sheets: S280GD - EN 10346

Supporting object: Steel S280GD - EN 10346

$t_{I,t}$ = Thickness of the outermost steel sheet of the sandwich panel [mm]

$t_{I,f}$ = Thickness of the innermost steel sheet of the sandwich panel [mm]

$t_{II}$ = Thickness of the supporting object [mm]

All resistances are stated in kN (1 kN ≈ 100 kg)
Safety factor: $\gamma_M$ = 1.35

MG/PG: 06 1000 HWH 6.5/7.0 X L #1 "A" HX8 ALU-19B

Design resistance when loaded in tension, $N_{Rd}$ [kN]

| $t_{I,t}$ \ $t_{II}$ | 0.50 | 0.55 | 0.63 | 0.75 | 0.88 | 1.00 | 1.13 | 1.25 |
|---|---|---|---|---|---|---|---|---|
| 0.50 | 0.38 | 0.42 | 0.48 | 0.58 | 0.67 | 0.67 | 0.67 | 0.67 |
| 0.55 | 0.38 | 0.42 | 0.48 | 0.58 | 0.67 | 0.73 | 0.73 | 0.73 |
| 0.63 | 0.38 | 0.42 | 0.48 | 0.58 | 0.67 | 0.77 | 0.84 | 0.84 |
| 0.75 | 0.38 | 0.42 | 0.48 | 0.58 | 0.67 | 0.77 | 0.87 | 0.96 |
| 0.88 | 0.38 | 0.42 | 0.48 | 0.58 | 0.67 | 0.77 | 0.87 | 0.96 |
| 1.00 | 0.38 | 0.42 | 0.48 | 0.58 | 0.67 | 0.77 | 0.87 | 0.96 |
| 1.13 | 0.38 | 0.42 | 0.48 | 0.58 | 0.67 | 0.77 | 0.87 | 0.96 |
| 1.25 | 0.38 | 0.42 | 0.48 | 0.58 | 0.67 | 0.77 | 0.87 | 0.96 |

Design resistance when loaded in shear, $V_{Rd}$ [kN]

| $t_{I,f}$ \ $t_{II}$ | 0.50 | 0.55 | 0.63 | 0.75 | 0.88 | 1.00 | 1.13 | 1.25 |
|---|---|---|---|---|---|---|---|---|
| 0.50 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 |
| 0.55 | 0.76 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| 0.63 | 0.76 | 0.88 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 |
| 0.75 | 0.76 | 0.88 | 1.08 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 |
| 0.88 | 0.76 | 0.88 | 1.08 | 1.40 | 1.78 | 1.78 | 1.78 | 1.78 |
| 1.00 | 0.76 | 0.88 | 1.08 | 1.40 | 1.78 | 2.16 | 2.28 | 2.39 |
| 1.13 | 0.76 | 0.88 | 1.08 | 1.40 | 1.78 | 2.16 | 2.59 | 2.69 |
| 1.25 | 0.76 | 0.88 | 1.08 | 1.40 | 1.78 | 2.16 | 2.59 | 3.01 |



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