# DECLARATION OF PERFORMANCE

*Regulation (EU) no 305/2011*

## *SNKEVO_DOP_ETA110030*

1. Unique identification code of the product-type:
***SNKEVO5 - SNKEVO6 - SNKEVO8***

2. Intended use/es:

***The self-tapping screws are used for connections in timber constructions. The screws are used for connections in load bearing timber structures between members of solid timber, glued laminated timber, cross-laminated timber, and laminated veneer lumber (softwood and hardwood), similar glued members, wood-based panels or steel.***

***The screws are intended for use for connections subject to static or quasi static loading.***

***Steel plates and wood-based panels except solid wood panels and cross laminated timber shall only be located on the side of the screw head.***

***Furthermore, Rotho Blaas screws with diameters between 6 mm and 12 mm may also be used for the fixing of thermal insulation material on rafters and on vertical facades.***

3. Manufacturer:
***ROTHO BLAAS srl - via dell'Adige 2/1 - 39040 Cortaccia (BZ) - Italy***

5. System/s of AVCP:
***System 3***

6b. European Assessment Document:
***EAD 130118-01-0603 (February 2019 - Decision (EU) 2020/962)***

European Technical Assessment:
***ETA-11/0030 (2022-12-08)***

Technical Assessment Body:
***ETA-DANMARK A/S***

7. Declared performance/s:
***see next pages***

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

**Luca Sestigiani**
**Technical Director**

Cortaccia, 13.12.2022

This document consists of pages 5

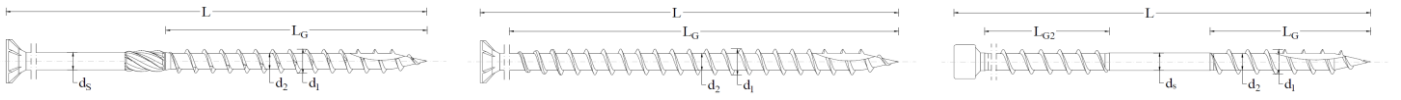
7. Declared performance/s:

***Technical specification*** *EAD 130118-01-0603 - ETA-11/0030*

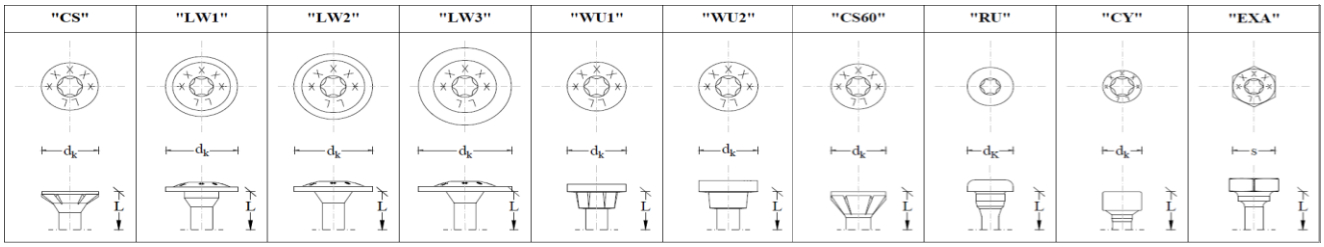
| **Essential characteristics** | | | **Performance/s** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ***Mechanical resistance and stability (BWR1)*** | | | | | | | | | | |
| ***PRODUCT-TYPE*** | | | ***SNKEVO 5*** | ***SNKEVO 6*** | ***SNKEVO 8*** | ***- -*** | ***- -*** | ***- -*** | ***- -*** | ***- -*** |
| Dimensions | $d = d_1$ | mm | 5,00 | 6,00 | 8,00 | - | - | - | - | - |
| | $d_2$ | mm | 3,40 | 3,95 | 5,40 | - | - | - | - | - |
| | $d_S$ | mm | 3,65 | 4,30 | 5,80 | - | - | - | - | - |
| | head | type | CS | CS | CS | - | - | - | - | - |
| | $d_K$ | mm | 10,00 | 12,00 | 14,50 | - | - | - | - | - |
| | L min | mm | 30,0 | 40,0 | 40,0 | - | - | - | - | - |
| | L max | mm | 120,0 | 300,0 | 600,0 | - | - | - | - | - |
| | $L_G$ min | mm | 20,0 | 24,0 | 32,0 | - | - | - | - | - |
| | $L_G$ max | mm | 60,0 | 100,0 | 130,0 | - | - | - | - | - |
| Characteristic yield moment | $M_{y,k}$ | Nm | 5,4 | 9,5 | 20,1 | - | - | - | - | - |
| Bending angle | α | ° | 34,6 | 32,8 | 30,5 | - | - | - | - | - |
| Characteristic tensile strength | $f_{tens,k}$ | kN | 7,9 | 11,3 | 20,1 | - | - | - | - | - |
| Characteristic torsional strength | $f_{tor,k}$ | Nm | 7,5 | 12,0 | 28,0 | - | - | - | - | - |

| | | | | |
|---|---|---|---|---|
| Insertion moment | $R_{tor,mean}$ | Nm | ≤ f tor,k / 1,5 | |
| Characteristic yield strength | $f_{y,k}$ | $N/mm^2$ | 1000,0 | *Screws from carbon steel* |

***Self-tapping screw***




Head - type [Head - type]




| ***PRODUCT-TYPE*** | ***SNKEVO 5*** | ***SNKEVO 6*** | ***SNKEVO 8*** | ***- -*** | ***- -*** | ***- -*** | ***- -*** | ***- -*** |
|---|---|---|---|---|---|---|---|---|
| Durability against corrosion | "evo coating" | "evo coating" | "evo coating" | - | - | - | - | - |
| | Satisfactory durability and serviceability when used in timber structures according to Eurocode 5. Service class 1 - 2 - 3 | | | | | | | |

| Essential characteristics | | | Performance/s | |
|---|---|---|---|---|
| Characteristic withdrawal parameter | $f_{ax,k}$ | N/mm² | 11,7 *( ρa = 350 kg/m³ )* | for screws in solid or glued laminated timber, cross laminated timber and SWP members with maximum characteristic density of 440 kg/m³ |
| | | | 15,0 *( ρa = 500 kg/m³ )* | for screws in non pre-drilled LVL with 460 kg/m³ ≤ ρk ≤ 550 kg/m³ |
| | | | 29,0 *( ρa = 730 kg/m³ )* | for screws in pre-drilled LVL or FST (ETA-14/0354) with 590 kg/m³ ≤ ρk ≤ 750 kg/m³ |
| | | | $7 \cdot 10^{-4} \cdot \rho k^{1.6} \cdot d^{-0.34}$ - | for screws in pre-drilled hardwood members with maximum characteristic density of 590 kg/m³ |
| | | | - - | - |
| | | | - - | - |
| | | | - - | - |
| Characteristic head pull-through parameter | $f_{head,k}$ | N/mm² | 10,5 *( ρa = 350 kg/m³ )* | for screws or for washer in connections with softwood and in connections with wood-based panels with thicknesses above 20 mm |
| | | | 8,0 - | for screws in connections with wood-based panels with thicknesses between 12 mm and 20 mm |
| | | | 8,0 *( Fax,Rk ≤ 400N )* | for screws in connections with wood-based panels with a thickness below 12 mm (minimum thickness of the wood based panels of 1,2·d) |
| | | | 20,0 *( ρa = 500 kg/m³ )* | for screws with countersunk head (CS) in connections with softwood LVL |
| | | | - - | - |
| | | | - - | - |
| | | | - - | - |
| Slip modulus for mainly axially loaded screws | $k_{ser}$ | N/mm | Softwood: 25 · d · ℓef | ℓef - Penetration length in the timber member [mm] |
| | | | Hardwood: 30 · d · ℓef | |

| Essential characteristics |
| --- |
| ***Mechanical resistance and stability (BWR1)*** |
| Spacing, end and edge distances of the screws and minimum thickness of the timber material |
| **Performance/s** |

The minimum thickness of wood-based panels should be 1,2·d. Furthermore the minimum thickness for following wood-based panels should be:

◦ Plywood, Fibreboards: 6 mm

◦ Particleboards, OSB, Cement Particleboards: 8 mm

◦ Solid wood panels: 12 mm

Minimum thickness for predrilled structural members is t = 24 mm for screws with outer thread diameter d < 8 mm, t = 30 mm for screws with outer thread diameter d = 8 mm, t = 40 mm for screws with outer thread diameter d ≥ 9 mm, t = 80 mm for screws with outer thread diameter d ≥ 11 mm and t = 100 mm for screws with outer thread diameter d = 13 mm. These minimum thickness values generally apply for non-predrilled softwood members, if the spacing parallel to the grain and the end distance is at least 25·d.

In all other cases, minimum thicknesses for screws in non-predrilled softwood members are given in EN 1995-1-1 (Eurocode 5) clause 8.3.1.2 as for nails in non-predrilled holes. Equation (8.18) may be applied for softwood members made of pine or for the fixing of boards, battens or wind braces, if the member is fixed with at least two screws. Otherwise EN 1995-1-1 clause 8.3.1.2 (7) applies.

For screws arranged at angles α< 90° between screw axis and grain direction minimum spacing and distances are defined as follows:
Minimum spacing a1 or a2 is defined perpendicular to the fastener axis, minimum end or edge distances a1,c, a1,t, a2,c or a2,t parallel or perpendicular to the grain, respectively, are defined between the centre of the threaded length (axial loading) or the length (lateral loading) in the respective timber member and the member surface as for axially loaded screws in Figure 8.11.a EN 1995-1-1.

For structural timber members, minimum spacing and distances for laterally or axially loaded screws in predrilled holes are given in EN 1995-1-1:2008 (Eurocode 5) clause 8.3.1.2 and table 8.2 as for nails in predrilled holes. Here, the outer thread diameter d must be considered.

For screws in non-predrilled holes, minimum spacing and distances are given in EN 1995-1-1:2008 (Eurocode 5) clause 8.3.1.2 and table 8.2 as for nails in non-predrilled holes.

For Douglas fir members minimum spacing and distances parallel to the grain shall be increased by 50%.

Minimum distances from the unloaded edge perpendicular to the grain may be reduced to 3·d also for timber thickness t < 5·d, if the spacing parallel to the grain and the end distance is at least 25·d.

These requirements do not apply for structural wood-based panels or LVL with cross layers.

Minimum distances and spacing for exclusively axially loaded screws in predrilled and non-predrilled holes in members with a minimum thickness t = 12·d and a minimum width of 8·d or 60 mm, whichever is the greater, may be taken as:

◦ $a_1 = 5 \cdot d$ (Spacing parallel to the grain)

◦ $a_2 = 5 \cdot d$ (Spacing perpendicular to the grain)

◦ $a_{1,CG} = 10 \cdot d$ (Distance from centre of the screw-part in timber to the end grain)

◦ $a_{2,CG} = 4 \cdot d$ (Distance from centre of the screw-part in timber to the edge)

For a crossed screw couple the minimum spacing between the crossing screws is $a_2 = 1{,}5 \cdot d$. Spacing $a_2$ perpendicular to the grain may be reduced from 5·d to 2,5·d, if the condition $a_1 \cdot a_2 \geq 25 \cdot d^2$ is fulfilled.

**Cross Laminated Timber**

Unless specified otherwise in the technical specification (ETA or hEN) of cross laminated timber, minimum distances and spacing for screws in the wide face of cross laminated timber members with a minimum thickness t = 10·d may be taken as

- a1 = 4 · d (Spacing parallel to the grain)
- a2 = 2,5 · d (Spacing perpendicular to the grain)
- a3,c = 6 · d (Distance from centre of the screw-part in timber to the unloaded end grain)
- a3,t = 6 · d (Distance from centre of the screw-part in timber to the loaded end grain)
- a4,c = 2,5 · d (Distance from centre of the screw-part in timber to the unloaded edge)
- a4,t = 6 · d (Distance from centre of the screw-part in timber to the loaded edge)

Unless specified otherwise in the technical specification (ETA or hEN) of cross laminated timber, minimum distances and spacing for screws in the edge surface of cross laminated timber members with a minimum thickness t = 10·d and a minimum penetration depth perpendicular to the edge surface of 10·d may be taken as:

- a1 = 10 · d (Spacing parallel to the CLT plane)
- a2 = 4 · d (Spacing perpendicular to the CLT plane)
- a3,c = 7 · d (Distance from centre of the screw-part in timber to the unloaded end)
- a3,t = 12 · d (Distance from centre of the screw-part in timber to the loaded end)
- a4,c = 3 · d (Distance from centre of the screw-part in timber to the unloaded edge)
- a4,t = 6 · d (Distance from centre of the screw-part in timber to the loaded edge)

**Laminated Veneer Lumber**

Unless specified otherwise in the technical specification (ETA or hEN) of softwood LVL, minimum distances and spacing for screws 5 mm ≤ d ≤ 10 mm perpendicular to the wide face of softwood LVL members with a minimum head side thickness t1 = 8,4·d - 9 mm and a minimum point side thickness t2 = min {11,4·d; 75 mm} may be taken as:

- a1 = ( 5 + 7 | cos α | ) · d (Spacing parallel to the grain)
- a2 = 5 · d (Spacing perpendicular to the grain)
- a3,c = 10 · d (Distance to the unloaded end grain)
- a3,t = ( 10 + 5 cos α ) · d (Distance to the loaded end grain)
- a4,c = 5 · d (Distance to the unloaded edge)
- a4,t = ( 5 + 5 sin α ) · d (Distance to the loaded edge)

| **Essential characteristics** | **Performance/s** | ***Technical specification*** |
|---|---|---|
| ***Safety in case of fire (BWR2)*** | | |
| Reaction to fire | Euroclass A1 | *EN 13501-1 - CDR 2016/364 - ETA-11/0030* |
| ***Safety and accessibility in use (BWR4)*** | | |
| Same as BWR1 | | *EAD 130118-01-0603 - ETA-11/0030* |

Instruction and information for design of rothoblaas screws please refer to: **ETA-11/0030**