Solar systems from Schweizer
Leaflet Snow guard with Solrif

The primary aim of a snow guard is to ensure the safety of passers-by and to prevent property damage in the area of the roof. In addition, the snow guard has an important influence on the distribution of the static load on the roof covering, the PV modules and the PV in-roof system.

1 Generally

For pitched roofs in regions with significant snowfall, the use of snow guards is strongly recommended. Planners and installers are called upon to check and fulfil their contractual liability to the customer. Systems should be built according to the current state of the art and in an accident-preventing manner. Local laws and regulations must be observed.

Snow load charts, climatic conditions, the building and its surroundings must be taken into account when designing snow guard systems. These are also influenced by standards, local regulations and insurance requirements.

Applicable standards and directives*:

- SIA 232/1: 2011, Pitched roofs
- SIA 261:2020, Actions on supporting structures
- Eurocode 1 - Actions on structures - Part 1-3: General actions, snow loads, 2003
- Eurocode 1 - National Annexes
- Guidelines for snow retention devices, Building envelope Switzerland, 2024
- ÖNORM B 3418 - Planning and execution of snow protection systems on roofs

*Without guarantee of completeness

2 Design of the snow guard

The snow guard should be built in accordance with the manufacturer's specifications and its design should be checked.

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The following points taken into account so that initial planning can approach professional execution must be observed:

- Is personal injury or damage to property possible due to falling snow or ice?
  -> Snow guard necessary!
- Reference height and snow load map
  Note: The reference height does not necessarily have to correspond to the height above sea level (SIA261, Appendix D).
- Roof pitch
- Position of the snow guard
  - If combined with a roof overhang, the snow guards should be positioned above it. Depending on the design of the roof overhang, large forces can act which could lead to damage.
  - The snow catchers must not be placed on the bottom row of tiles.
- Compare the permitted load on the product with the calculated or expected load.

  Load on snow guard F_s according to DIN EN 1991-1-3
  $F_s = s * b * \sin(\alpha)$
  s *Roof snow load in relation to the unfavourable load case for fixed snow, which can occur for the roof surface.*
  b *Horizontal distance of the interception grid or superstructure to the next interception grid or ridge.*
  α *Roof pitch*
- If necessary, install several rows of snow guards.
- Have the number and type of snow guards verified by a specialist.

A non-generic example to illustrate the snow guard spacing;

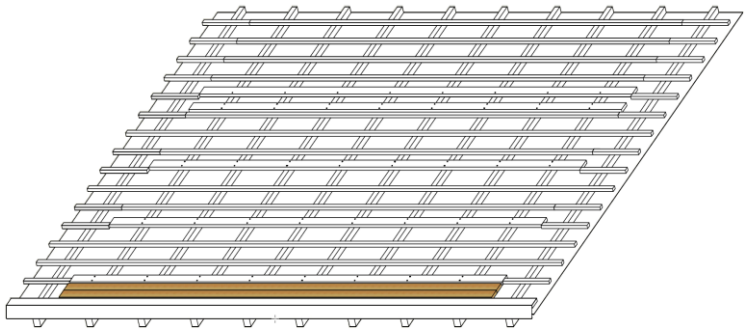
Reference height h_0 [m]	Roof pitch / distance between the snow guard rows							
	10° - 14°	15° - 19°	20° - 24°	25° - 29°	30° - 34°	35° - 39°	40° - 45°	46° - 50°
< 500	11 m	11 m	9 m	8 m	6 m	5 m	4 m	4 m
< 600	11 m	10 m	9 m	7 m	6 m	5 m	4 m	4 m
< 700	11 m	9 m	9 m	7 m	5 m	5 m	4 m	4 m
< 800	10 m	9 m	8 m	6 m	5 m	5 m	4 m	4 m
< 900	9 m	8 m	7 m	5 m	4 m	4 m	3 m	3 m
< 1000	8 m	7 m	6 m	4 m	3 m	3 m	3 m	3 m
< 1100	7 m	6 m	5 m	4 m	3 m	3 m	3 m	3 m
< 1200	6 m	5 m	4 m	3 m	3 m	3 m	3 m	3 m
< 1300	5 m	4 m	3 m	3 m	3 m	3 m	3 m	2 m
< 1400	4 m	3 m	3 m	3 m	3 m	3 m	2 m	2 m
> 1400	Property-specific solutions required							

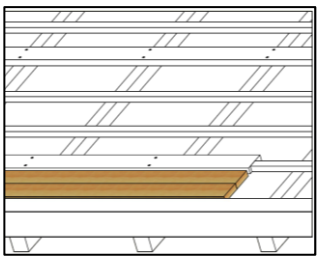
Saddle roof with a standard wind exposure and a double tubular snow guard with full-surface solar installation. (Source: Guidelines for snow retention devices, Building Envelope Switzerland, 2024)

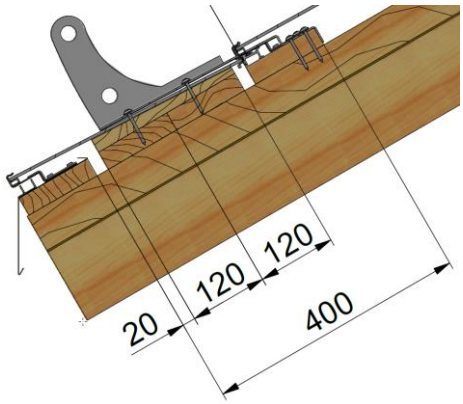
3 Fitting the snow guard supports

- The snow guard supports are usually mounted on L x 432 mm dummy modules, but can also be installed on other dummy module sizes. These instructions describe the installation on an L x 432 mm dummy module.
- During installation, it must be ensured that the snow guard support is positioned in such a way that torsional forces are transferred to the battens and the dummy module. This means that snow forces parallel to the roof act in the direction of tension of the snow guard support.
- Ensure that the batten to which the snow supports are screwed is adequately fastened. Ideally, these battens should be pre-drilled and, if necessary, secured with an additional block on the counter battens to prevent them from sliding downwards. The snow guard support must be fastened with suitable screws. These should also be connected to the counter battens and the rafters.

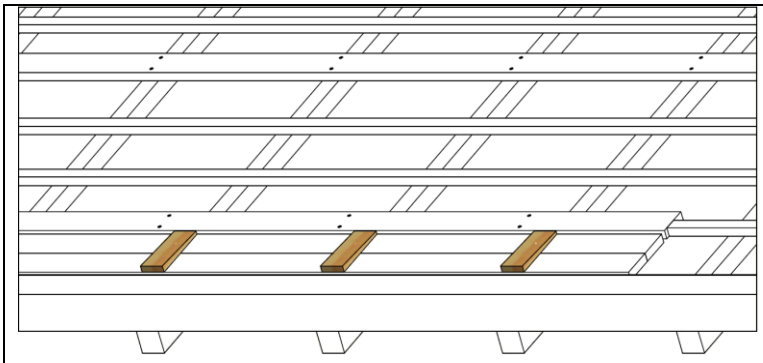
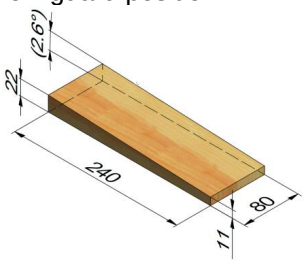
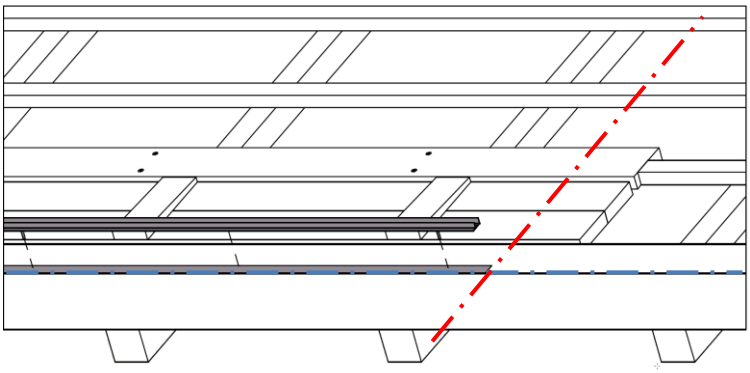
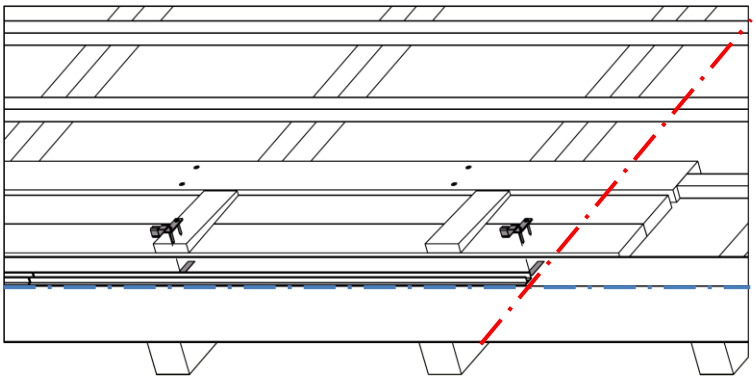
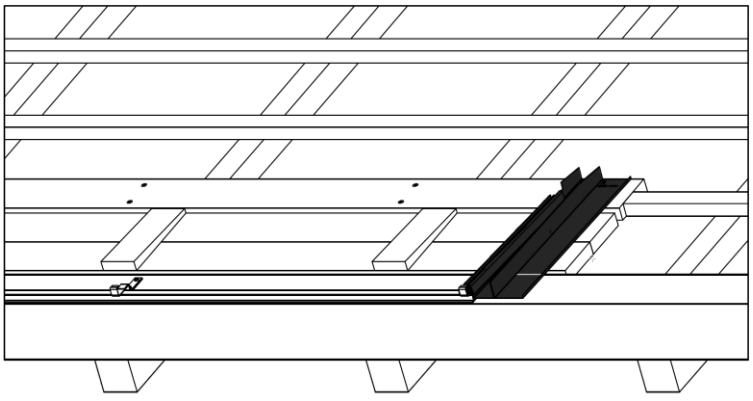
3.1 Snow guard support installation procedure







Install two Solrif battens to support the snow guard supports.

	Attach at least one wooden wedge to each snow guard position. 
	Install the eaves profile. If the eaves profile is mounted on a metal sheet, use a nail seal. Ø 4 mm Pre-drilling is recommended.
	Attach the mounting brackets to the bottom row in accordance with the S.P.T. report. If the brackets are mounted on a metal sheet, use a nail seal. Ø 4 mm Pre-drilling is recommended.
	Place Side Flashing right and Flashing profile right. If necessary, shorten Side Flashing right and Flashing profile right.

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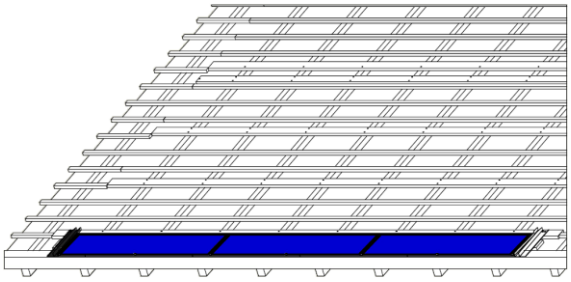
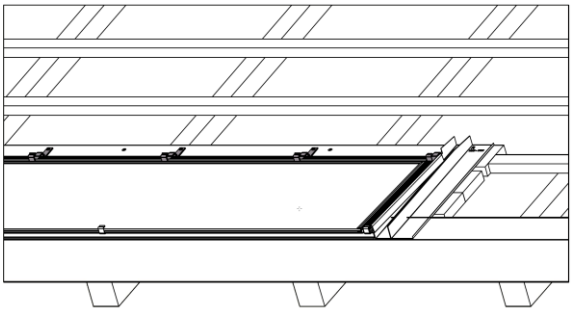
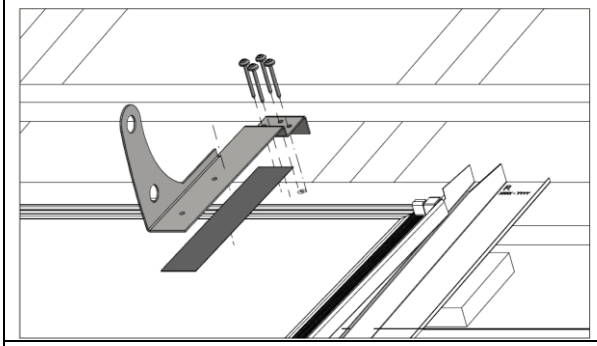
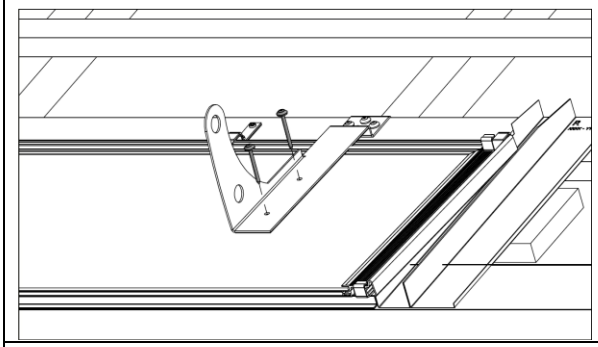
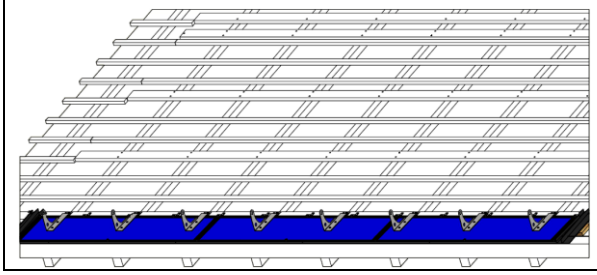
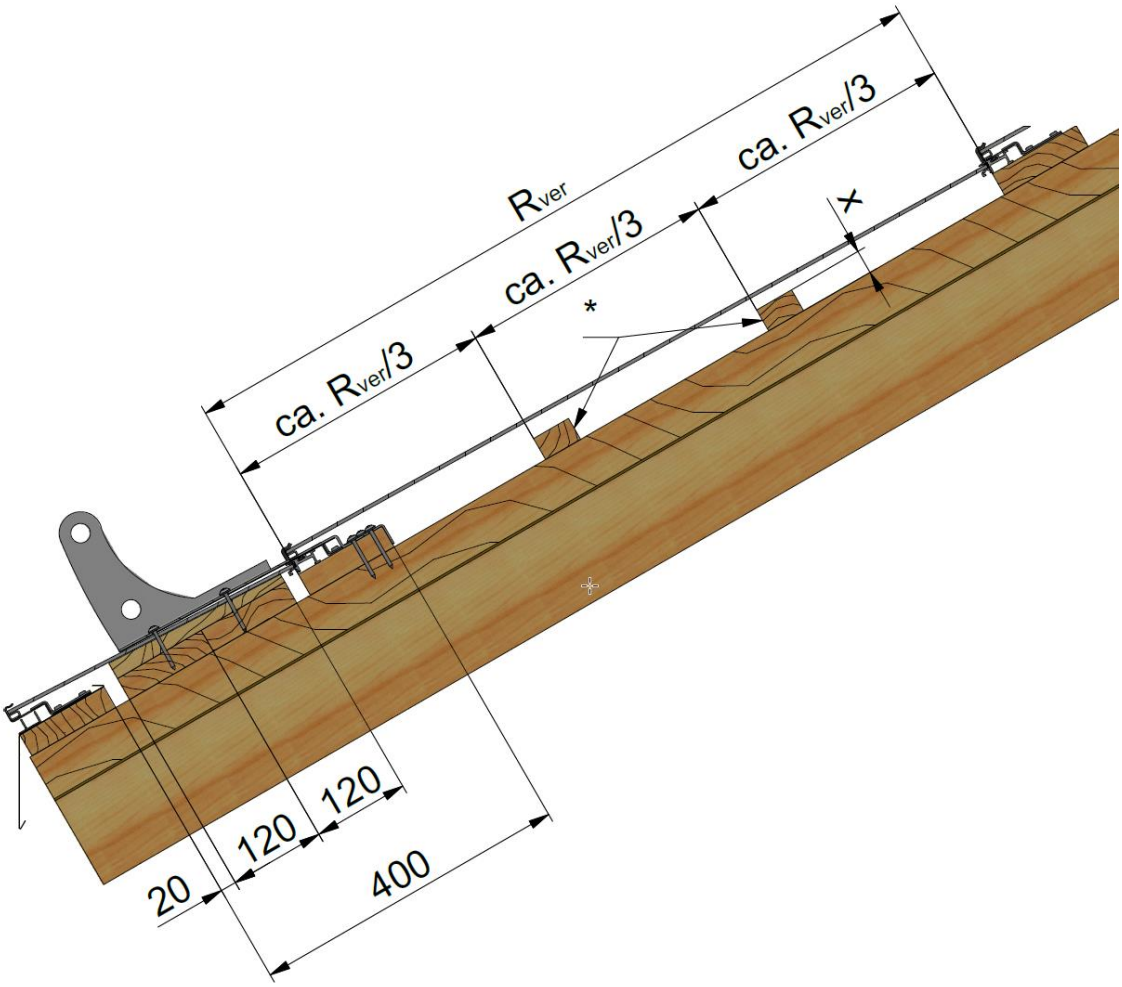
	Install snow guard blind modules with Side Flashing left and Flashing profile left.
	Attach the next row of mounting brackets according to the S.P.T. report. Use the assembly jig. Attach the earthing set in accordance with the Solrif installation instructions.
	Snow guard supports with nailing tape and screw to the roof batten. *Four sheet metal screws 4.5 x 60, T20
	*Drill blind module and screw snow guard support to blind module. *Two sheet metal screws 4.5 x 60, T20
	Installation procedure for snow guard supports completed, continue as per Solrif installation instructions. The snow guard pipes can be installed now or after completion of the PV field.

*These steps or articles are product-specific. The illustrations show a Glaromat AG product for Switzerland. Products from Heuel und Söhne GmbH for Germany and Austria can be found at our partner partner deSonna GmbH.

3.2 Vertical section



R_{ver} Raster vertical
X Tile lath height min. 30mm, or Solrif lath height

*Support slats must not collide with the junction box!

3.3 Wedge

If necessary, the width can be larger. The number of wedges should be based on the number of snow guard supports. Additional snow guard supports can be installed.