

## Installation Instructions

**Stop! Has your snow retention system been designed properly with the assistance of a distributor?**

**Notice to S-5!<sup>®</sup> product users:** Specific layout and assembly schematics for S-5! products are the responsibility of the user or project designer. Due to the many variables involved with specific panel products, climates, snow melt phenomena, and job particulars, the manufacturer cannot and does not express any opinions as to the suitability of any S-5! assembly for any specific application and assumes no liability with respect thereto. S-5! clamps are tested for ultimate holding strength on various seam types and materials. This information is available from S-5! distributors as well as from the S-5! website: [www.S-5.com](http://www.S-5.com). This document is an installation guide only and the photographs and drawings herein are for the purpose of illustrating installation tools and techniques, not system designs. Clamp spacing should never exceed 48" with X-Gard™ snow retention assemblies (contact your distributor for products to accommodate a seam spacing greater than 48").

## Tools Needed

- String Line
- Allen Wrench (included)
- Electric Screw Gun
- Calibrated Torque Wrench  
(For accurate tension values, do NOT use a clicking torque wrench)
- Hack Saw (to cut pipe)
- #10-16 x 1" Tek Screws (1 per every 50' of pipe)

## To Install X-Gard™

### Summary

1. The X-Gard attachment clamps will need to be properly spaced and mounted to the roof.
2. The X-Gard pipe will then be preassembled on the X-Gard brackets.
3. The bracket/pipe preassembly will then be attached to the roof-mounted clamps.

### Before You Start

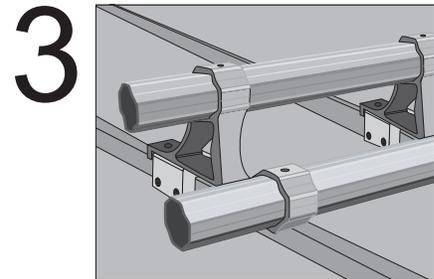
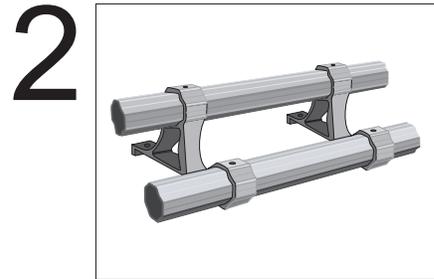
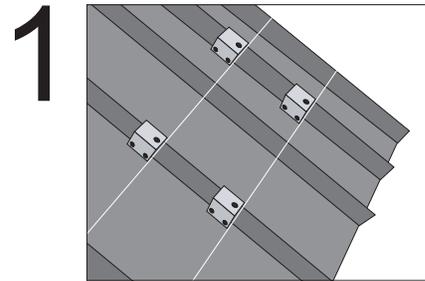
Place a string line across the top of the panel seams at the desired location to establish a true line for installation of the snow retention system. Individually measuring each attachment location from the eave is not recommended.

### Installation Steps 1-3

1. S-5! attachment clamps are installed differently depending upon clamp model and seam style. Please see the installation instructions included with your clamps.

To properly position/space the X-Gard attachment clamps on the roof, the clamps should be temporarily attached to the X-Gard brackets, aligned with the string line, tightened to the roof, and then the X-Gard brackets removed for preassembly with the X-Gard pipe.

- 1a. First, using the M10 (or M8 for mini-sized clamps) bolt provided, manually tighten the attachment clamp to the X-Gard bracket. When using a directional clamp, make sure it is fastened to the X-Gard bracket correctly for proper (upslope or downslope) orientation to ensure the clamps and their round-point setscrews engage the seam properly.
  - 1b. Next, thread the setscrews into the clamps by hand.
  - 1c. Position the clamp/bracket assembly appropriately on the panel seams, using the string line as a guide, and



**tighten the setscrews.** For maximum holding strength, setscrews should be tensioned and re-tensioned as the seam material compresses. Screw tension should be verified using a calibrated torque wrench between 160 and 180 inch pounds when used on 22ga steel and between 130 and 150 inch pounds for all other metals and thinner gauges of steel.

- 1d.** Once the clamps are properly spaced and tensioned, untighten the top bolts, remove the X-Gard™ brackets, and set the bolts aside for use later.
- 2.** With the clamps secured to the roof, preassemble the X-Gard brackets and the pipe of choice (1.9" round or NEX® 2.0) by feeding the pipe(s) through the appropriate number of brackets. X-Gard 1.0 bracket utilizes one pipe; X-Gard 2.0 bracket utilizes two pipes.
- 3.** Finally, securely attach the bracket/pipe assembly to the roof-mounted clamps for a dependable snow retention solution that will last the life of the roof.
  - 3a.** Place the preassembly on the roof and align the brackets with the clamps.
  - 3b.** Between each set of pipes, insert a splice at the joint.
  - 3c.** Tighten the X-Gard brackets onto the clamps using the bolts you set aside earlier. Bolts can be tightened with a 9/16" (17 mm) box-end wrench or ratchet. On larger jobs, a 1/2" drive electric impact will expedite this work. If using standard-sized clamps, tighten the included M10 bolt to 20 foot pounds (27 Nm). If using mini-sized clamps, tighten the included M8 bolt to 13 foot pounds.
  - 3d.** Secure each pipe to the X-Gard bracket using a #10-16 x 1" Tek screw (supplied by others) approximately every 50' along its length to prevent lateral migration of the pipe. This is done by inserting a screw through the top hole of each pipe loop in the X-Gard bracket.
  - 3e.** If necessary, trim the pipe at the end of the assembly, being sure it does not cantilever more than 4" beyond the last clamp of an assembly. Every pipe, including any trimmed pipes, must be attached with at least two X-Gard brackets. Pipe cutting tip: if it is necessary to field-cut the round pipe or NEX 2.0, such as at the end of an assembly, use a hack saw or electric reciprocating saw with a fine-tooth metal cutting blade. A power mitre saw with a fine tooth carbide tip blade also works well.
  - 3f.** Put a cap over the pipe(s) at both ends of the assembly to prevent unwanted debris/pests from finding their way inside the pipes.

### **S-5!® Warning! Please use this product responsibly!**

Products are protected by multiple U.S. and foreign patents. Visit the website at [www.S-5.com](http://www.S-5.com) for complete information on patents and trademarks. For maximum holding strength, setscrews should be tensioned and re-tensioned as the seam material compresses. Clamp setscrew tension should be verified using a calibrated torque wrench between 160 and 180 inch pounds when used on 22ga steel, and between 130 and 150 inch pounds for all other metals and thinner gauges of steel. Consult the S-5! website at [www.S-5.com](http://www.S-5.com) for published data regarding holding strength.

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