



DUCT INSULATION CLADDED WITH SITE INSTALLED PROCLAD PRODUCTS

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Installation Guide Manual for ProClad150 & Proclad Plus HD on Insulated Rectangular Ducts

1.0 Scope

- a. Using ProTech Global's Proclad range of products Proclad150, and Proclad Plus HD, the following recommended installation guidelines apply when installing these materials to rigid or semi-rigid duct insulation materials. It will apply to either factory or field jacketing. ProClad products have a pressure sensitive adhesive, covered with a release liner, over their entire inside surface. Note that the Proclad T products are 2 ply and typically used as a flexible seaming tape used to tape all overlaps to Proclad Plus HD as well as finishing of Proclad150 products around terminations where a more flexible product is required to provide a weatherproof seal.
- b. Proclad150 and Proclad Plus HD products are designed for both indoor and outdoor applications but not for below ground, buried applications. It is recommended that the Proclad T pressure sensitive tapes must be used for sealing all Proclad Plus HD overlaps, it's recommended to overlap the Proclad Plus HD on itself before using a 75mm wide Proclad T tape to seal the overlaps, seaming tape should be considered the standard requirement.
- c. Although the figures within this manual show the ProClad products and the Proclad T products with a smooth aluminium finish, they are also available with several other surface finishes: white, black, flat black and grey. If using embossed Proclad products, then the Proclad T tape to be used is the TS version.
- d. Insulation materials for which these procedures are applicable include, but are not necessarily limited to, the following: polystyrene, polyisocyanurate, phenolic foam, cellular glass, flexible elastomeric, polyolefin, faced mineral wool.
- e. These installation guidelines assume the ducts will operate at below ambient temperatures and therefore include sealing against water vapour intrusion. Since all the Proclad products covered by this manual will have a low water vapour permeance, no additional vapour barrier is required when Proclad products are installed and sealed correctly.

The maximum exposure temperature range for the Proclad range is stated on the relevant technical data sheets which we recommend are referred to before installation is carried out.

- f. Correct adhesion of the materials is paramount in the long-term success of the cladding and the tape products. It is recommended that for all the Proclad range of products the installer keeps the adherent surfaces free of dust, dirt, grease, silicones, and water. It is recommended that Proclad products are to be sealed immediately once this adhesive is exposed by removing the release liner, as a pressure sensitive adhesive the use of the plastic applicator to rub firmly down without bubbles is essential to provide a complete bond.

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2.0 Notes

Notes that apply to the installation of Proclad150 jacketing on insulated air handling ducts:

Note 1: The guidelines in this manual do not purport to address all engineering issues associated with the use of Proclad150 jacketing products and duct insulation system design. It is the responsibility of the facility owner to have (1) qualified structural engineers perform calculations, as required, to make certain that the duct securement is sufficient, accounting for the weight of the insulation system; (2) qualified mechanical engineers determine the insulation meets the required thermal requirements and (3) qualified corrosion engineers to specify type and thicknesses of insulation materials and coatings to protect the metal surfaces from corrosion under insulation.

Note 2: Users of this manual should use only trained, skilled, and experienced insulation workers. The guidelines included in this manual are not of sufficient detail to advise the installer of all techniques required to install insulation systems correctly.

Note 3: ProTech Global Ltd recommends that the insulation workers wear safety goggles and protective gloves for all work with Proclad150 and associated products.

Note 4: ProTech Global Ltd strongly recommends the facility owner / operator to conduct regular duct insulation maintenance system. We recommend a maintenance review program to repair any potential damage as water ingress will reduce the insulation performance of the system and potentially could lead to CUI. Any maintenance required is fast and simple and can be carried out by following repair guidelines.

Note 5: ProTech Global Ltd recommends the use of Proclad T as a seaming tape, where necessary, with both Proclad150 and Proclad Plus HD products and in situations where extremely tight corners requires sealing.

Note 6: Water shed – ProTech Global Ltd recommends a watershed to the tops of insulated ducts to allow natural water wash away following the standards within BS 5970.

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3.0 Insulated Rectangular Ducts

Prior to installing Proclad150, ducts should first be insulated in line with insulation manufacturers guidelines and to BS5790 standards, typically mineral wool, rigid foam board or nitrile insulation materials are used. Before applying Proclad150 all seams of foil faced insulation should first be taped with an aluminium foil based ProTech Global tape such as GT30HT, GTR55, or GT30R. The insulation materials are recommended to be banded in place using Proband60 to prevent the effects of air leakage and external wind loads (see Figure 1).

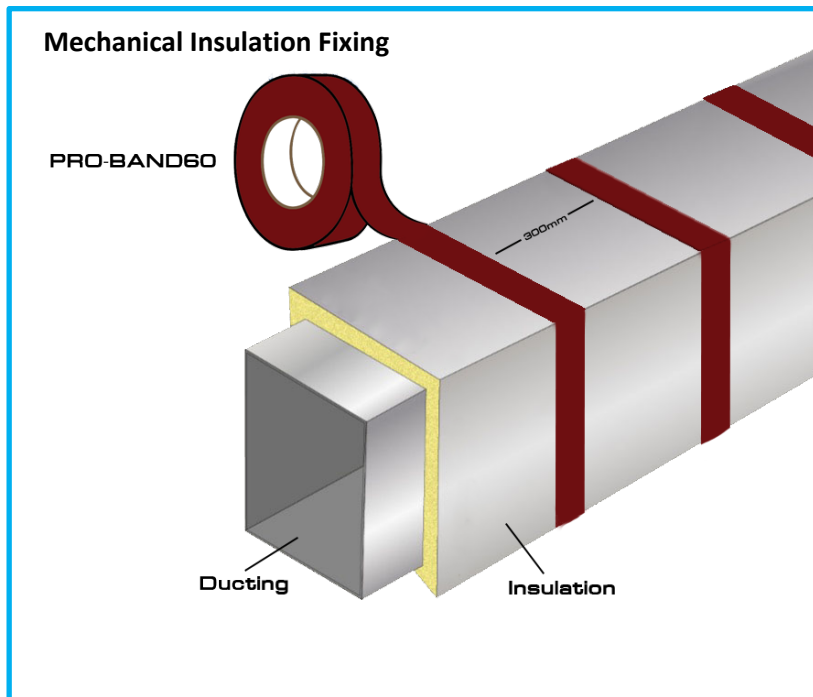


Figure 1 shows an insulated, rectangular duct with an aluminium faced insulation board. Pro-Band60 is a self-adhesive insulation banding solution, designed and engineered to create an external mechanical fix for insulated ducting systems.

As shown, the Proband60 is installed in line with the recommended guidelines prior to Proclad150 being installed.

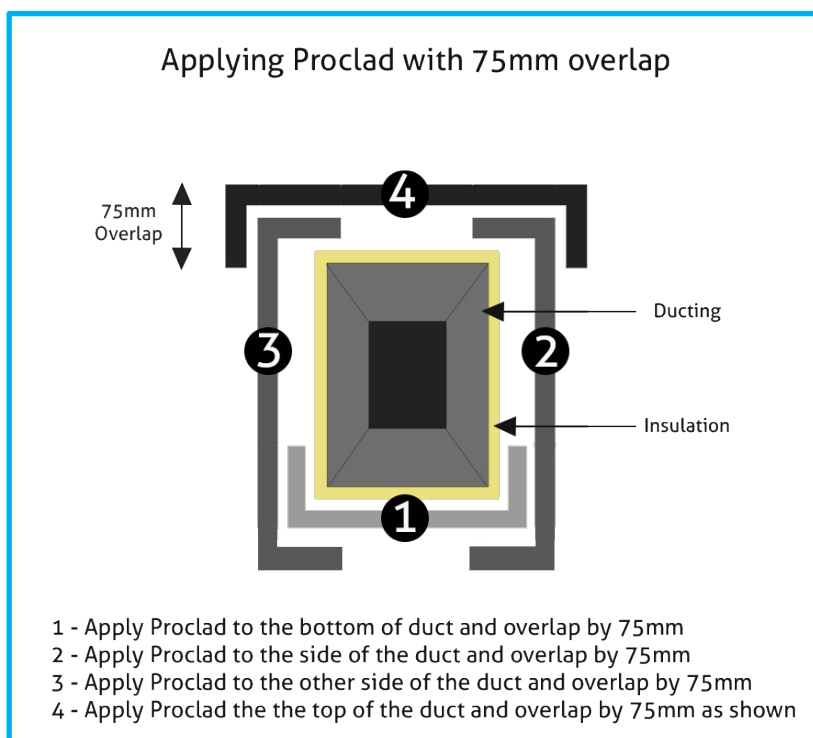


Figure 2 sequence of cutting and applying four cut sheets of Proclad150 to a section along the insulated duct: (1) underside (2) first vertical side (3) second vertical side and (4) top, all using (75 mm) overlaps. Note that the 75 mm overlap on to all sides are minimum ProTech Global recommendations that should result in longer term performance of the Proclad150.

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Cutting ProClad to width of insulated duct to include 150mm overlap (75mm on each side as shown in Figure 2)



Figure 3 shows an installer cutting a sheet of Proclad150 measured to the width of the insulated duct plus the 75mm overlap to each side it's to be overlapped on, a total of 150mm extra on top of piece required. The use of a sharp blade and a straight edge will provide a sharp, clean cut. Ensure the surface the Proclad150 is rolled out on is clean, dry, and free from contaminates.

From the section of ProClad cut from the roll, peel back release liner from the front edge



Figure 4 shows an installer cutting a sheet of Proclad150 measured to the width of the insulated duct plus the 75mm overlap to each side it's to be overlapped on, a total of 150mm extra on top of piece required. The use of a sharp blade and a straight edge will provide a sharp, clean cut. Ensure the surface the Proclad150 is rolled out on is clean, dry, and free from contaminates.

NB: Only 75 – 100mm of the release liner back should be pulled back, then start applying it to the face of the insulated duct, as shown in Figure 5.

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From the section of ProClad cut from the roll, peel back release liner from the front edge

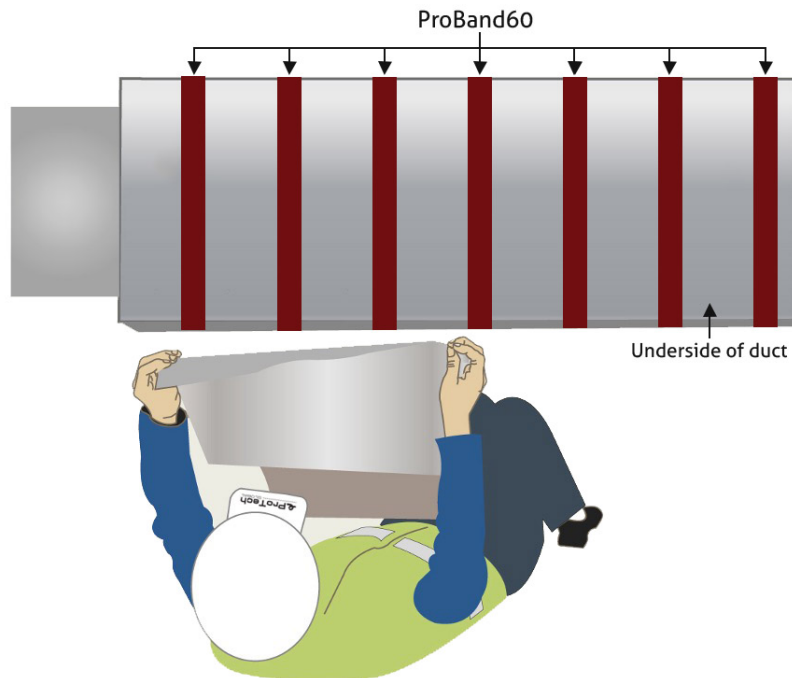


Figure 5 shows the installer working the underside of the insulated duct, he will apply the first sheet of Proclad to the insulated duct bottom overlapping onto the sides.

Apply ProClad to the side of the insulation duct. NB: ProClad must overlap the underside applied ProClad by at least 75mm

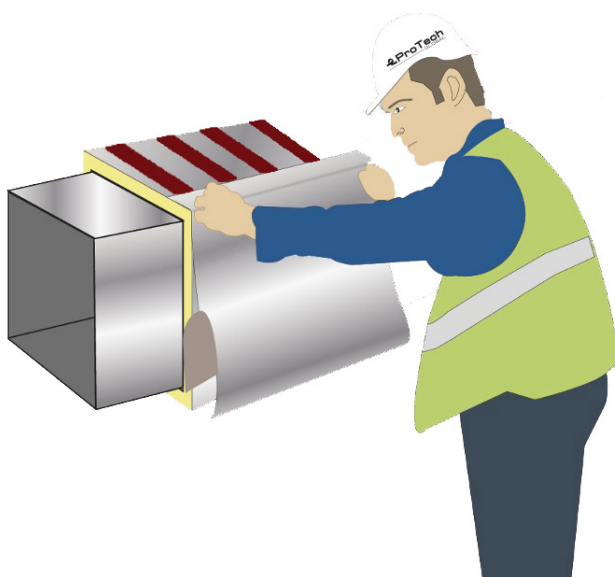


Figure 6 shows the installer applying the cut sheet of Proclad to the vertical side. Note that he first lines up the Proclad to the side of the insulated duct, folds over the 75mm overlap to the top side and then works his way down the side. Once in the correct position use the plastic applicator to rub Proclad smoothly in place avoiding bubbles, continue to remove the liner and smooth in place until whole piece is fully in place.

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Using a plastic applicator to press ProClad onto the insulation

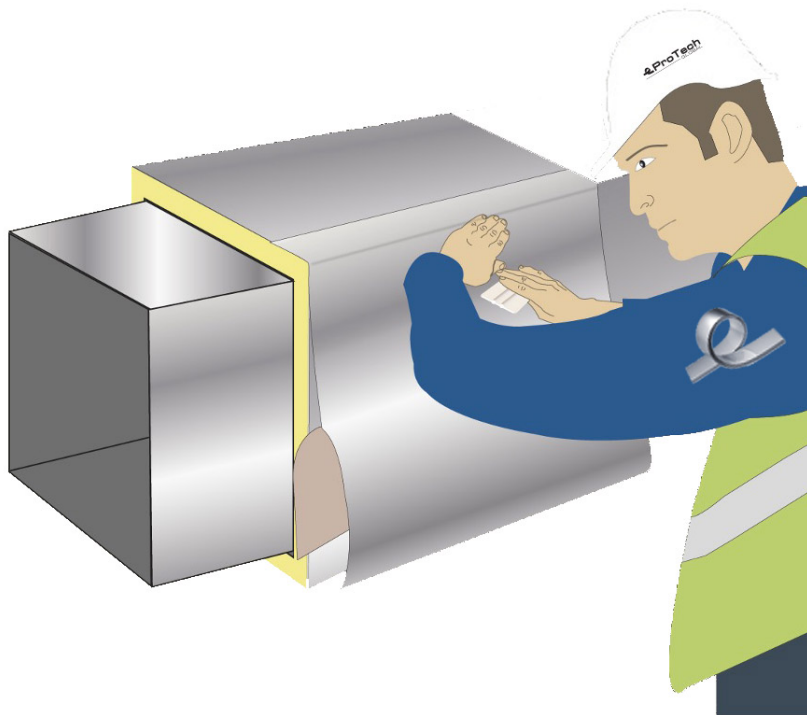


Figure 7 shows the installer using the applicator to make certain that the Proclad is fully adhered to the vertical side of the insulated duct, the picture shows overlap onto the top side of the duct, the liner is only partially removed to allow easy installation.

Using a plastic applicator to press ProClad onto the insulation

ProClad must overlap by
75mm on both sides



Figure shows 8 the installer lining up the Proclad top sheet with the top of the duct allowing for the 75mm overlap to each side of the duct. The installer uses the applicator to rub down firmly the Proclad to ensure a full adhesive bond.

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Cut a piece of ProClad T Tape to fit the length of the joint and peel off the release liner

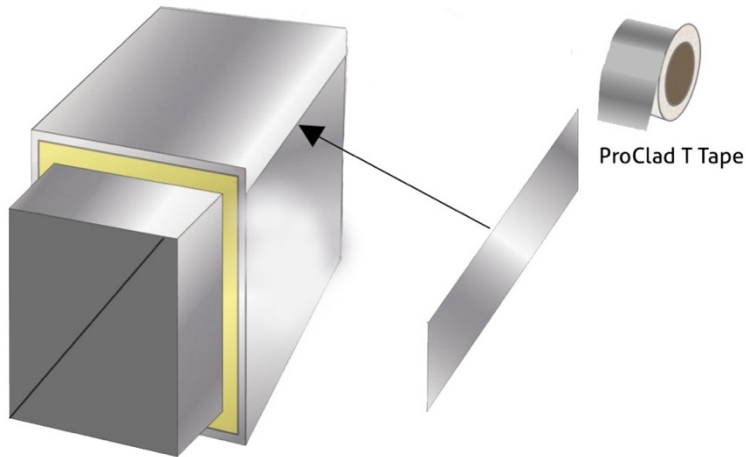


Figure 9 shows the location where a cut strip of 100 mm wide Proclad T tape will be applied to seal the Proclad Plus HD overlap, this is a mandatory requirement.

Taping Proclad Plus HD Overlaps



Figure 10 shows the cut strip of 100mm Proclad T tape being applied to the overlap a joint when using Proclad Plus HD. Be certain to rub over the tape with the applicator to provide a full adhesive bond.

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Image showing 2 sections of ProClad, seams sealed with ProClad T Tape

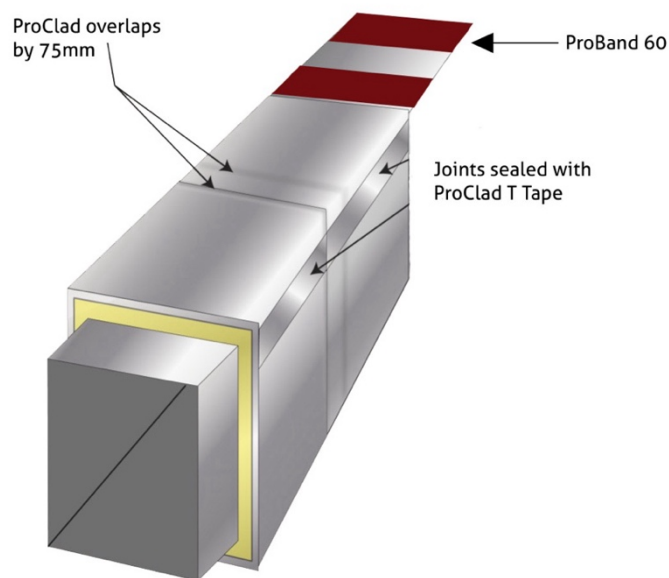


Figure 11 shows the first two sections of this straight insulated duct covered with Proclad Plus HD with all overlaps taped using 100mm Proclad T

ProClad Plus HD Taping

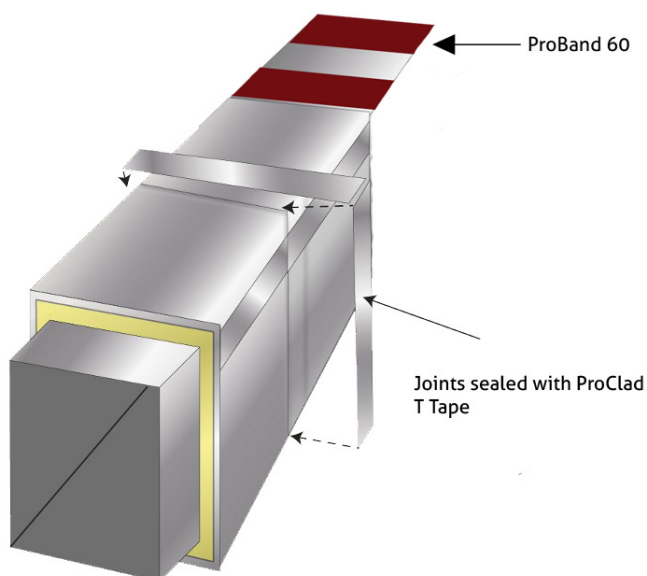


Figure 12 shows the taping of the vertical and horizontal overlapped Proclad Plus HD joints using 100mm Proclad T tape. The use of the tape is mandatory on all overlaps.

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Completed Taped Sections

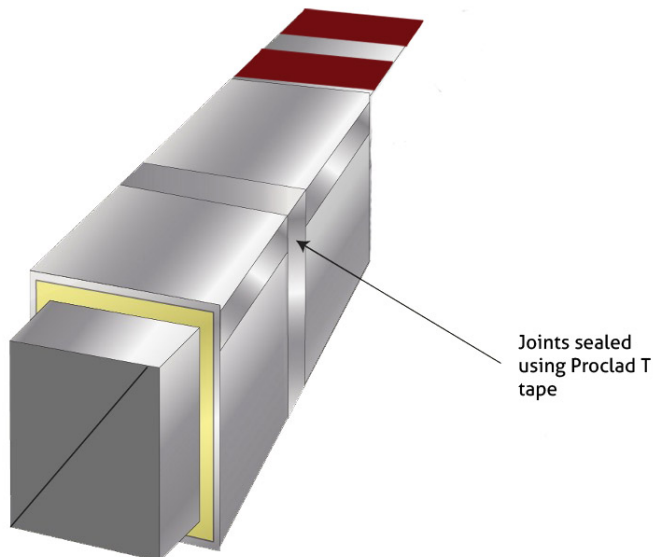
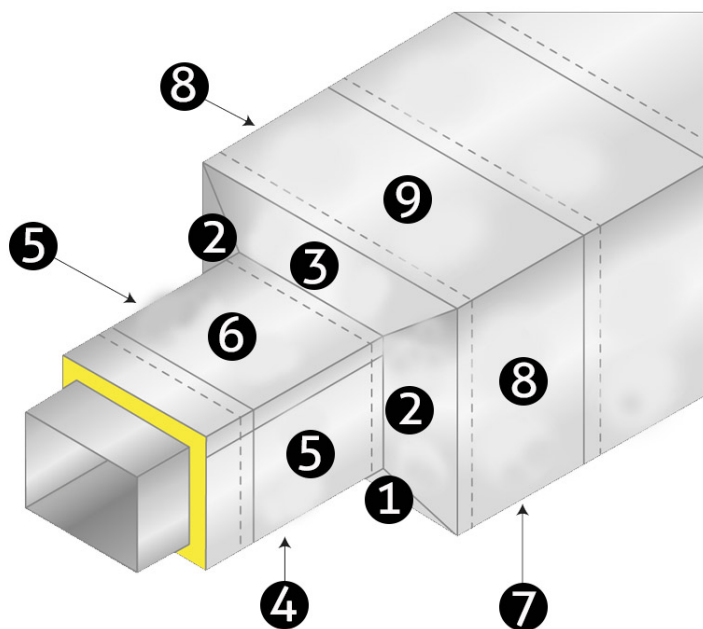


Figure 13 shows the finished lap joints where the first and second Proclad Plus HD sections join using Proclad T tape.

4. Insulated rectangular duct reducers



Order for applying ProClad

Figure 14 shows an insulated, rectangular duct reducer transitioning from a larger duct to a smaller duct section. The numbers 1 through 3 give the order of applying Proclad to the insulated reducer segments. Numbers 4 through to 9 show the order of Proclad on to the main duct sections covering the reducer segment overlaps (75mm each overlap).

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Measurements for cutting side pieces

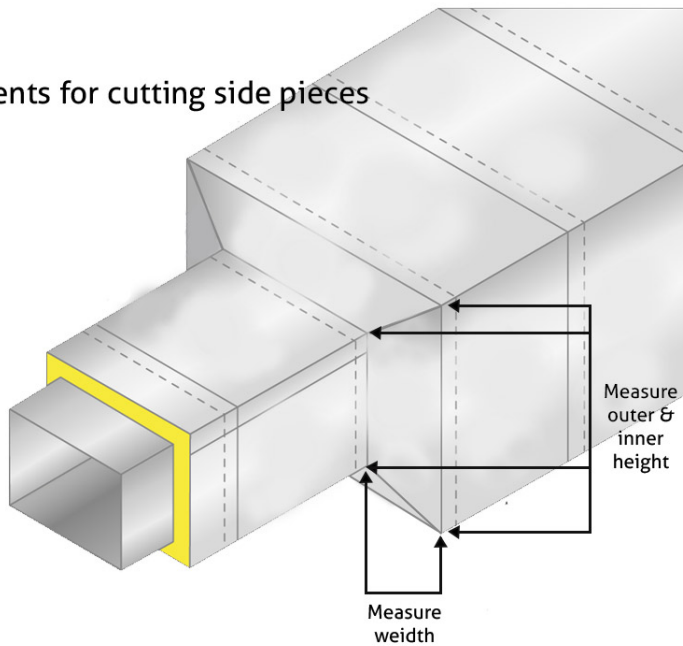


Figure 15 shows how to measure Proclad when applying to the reducer, always allow for the 75mm overlap on to each surface it's overlapping (150mm total). It's recommended that the reducer segments are installed so that the full Proclad pieces to the main duct body can cover the 75mm overlaps. Measure $w \times ih \times oh$.

Proclad T tape to reduce angles

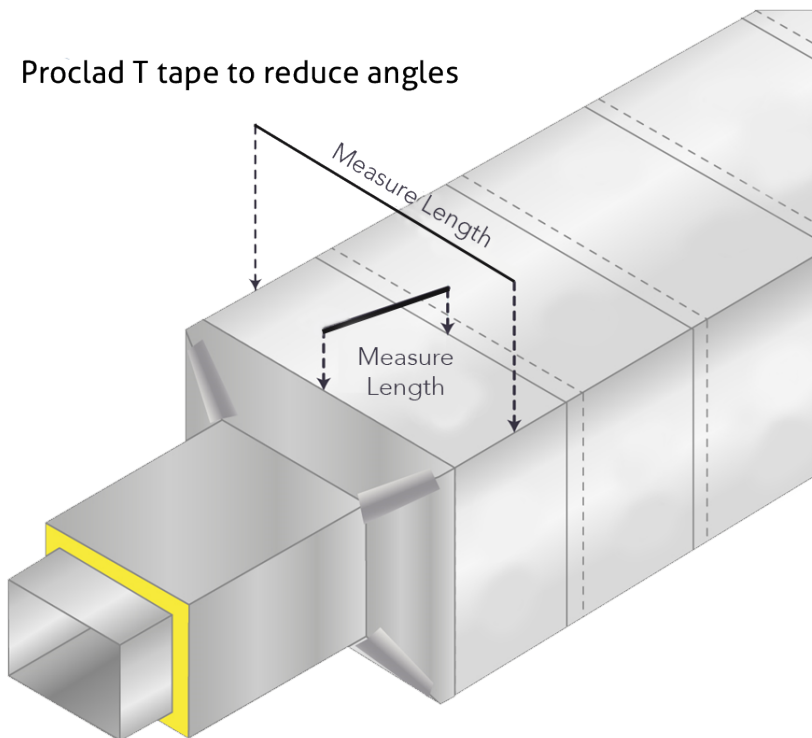


Figure 16 shows strips of Proclad T tape 100mm wide placed over the angles on the reducer to provide a full seal to the segments, a 50mm overlap to each side is recommended.

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5. Insulated Rectangular Duct, 90° Elbows

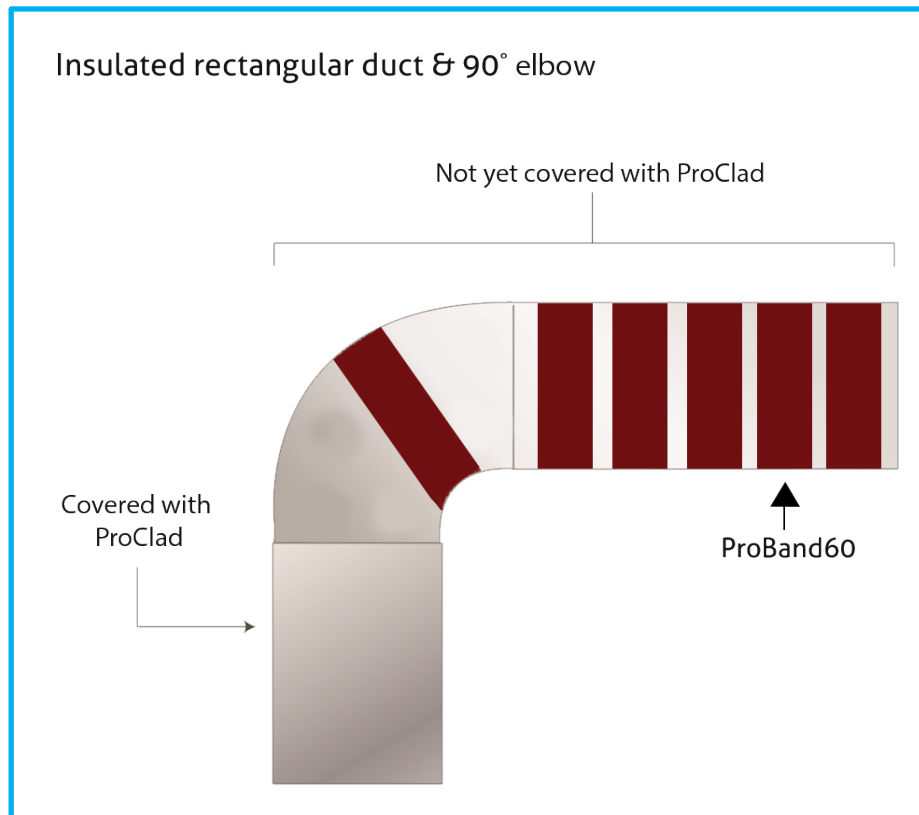


Figure 17 shows an insulated rectangular duct with a 90° rectangular elbow. It is recommended that the elbow be covered first with Proclad so that the Proclad on the straight duct can overlap the elbow providing a neat finish.

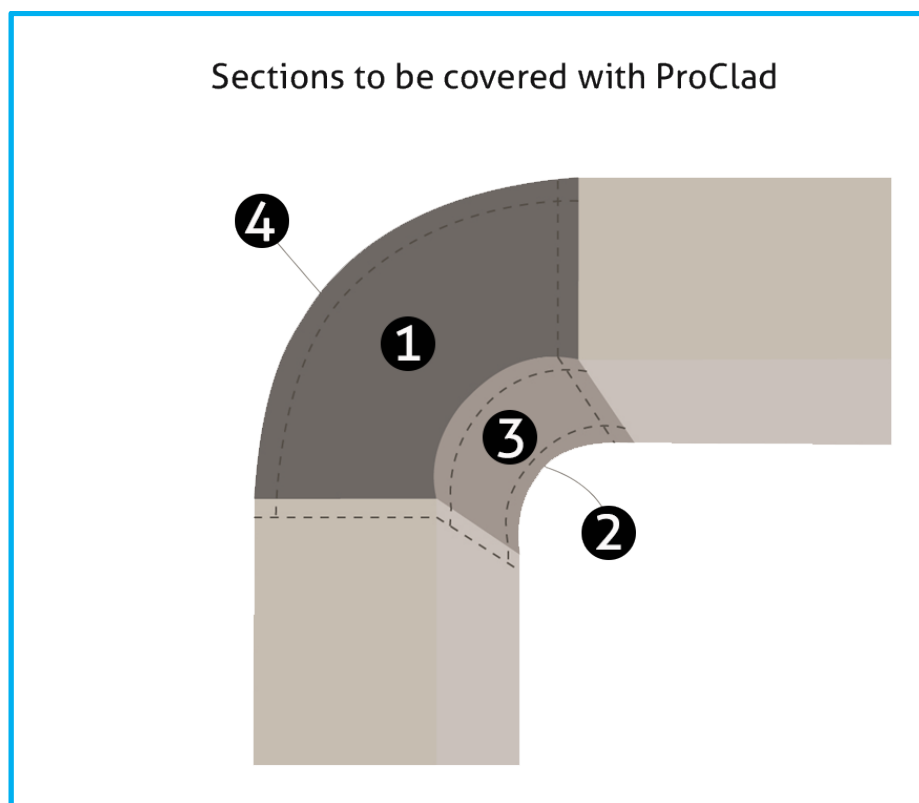


Figure 18 shows the sequence for covering the 90° insulated rectangular elbow with Proclad, we recommend pieces to be applied as numbered with 75mm overlaps to each side, these overlaps are to be feathered so they adhere flat to the sides of the duct. The sequence should allow for watershed overlaps as per standard installation.

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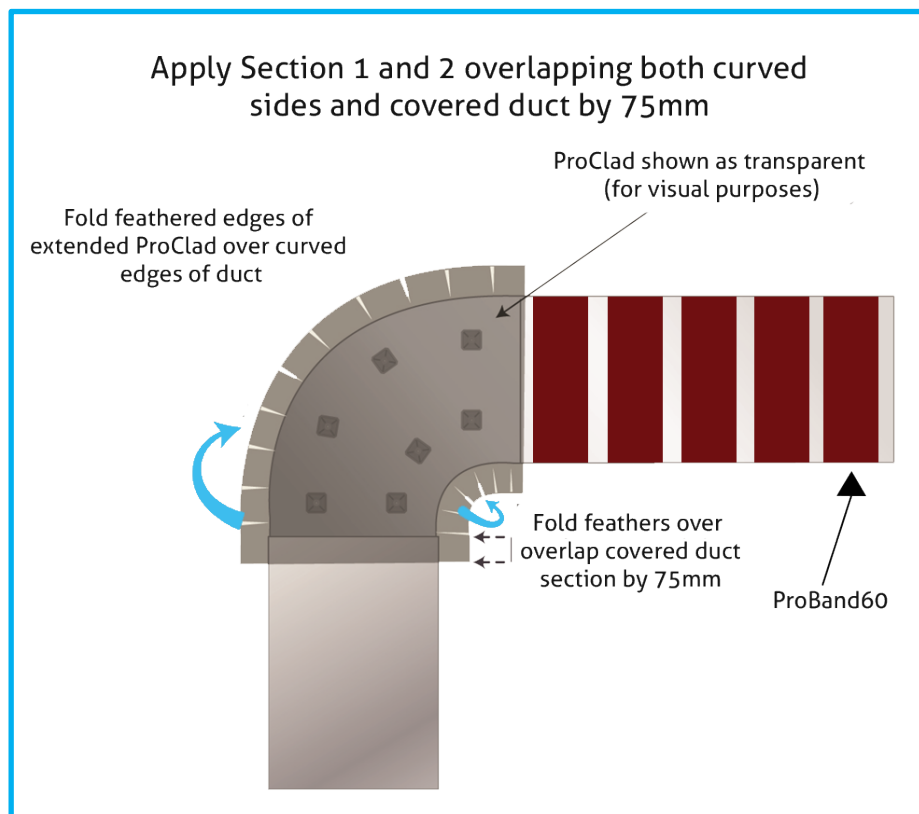


Figure 19 shows the side of the rectangular elbow covered with a piece of Proclad cut to size with the 75mm overlap to all sides, the overlaps to the inner and out curves of the elbow are then feathered before sealing onto the insulation.

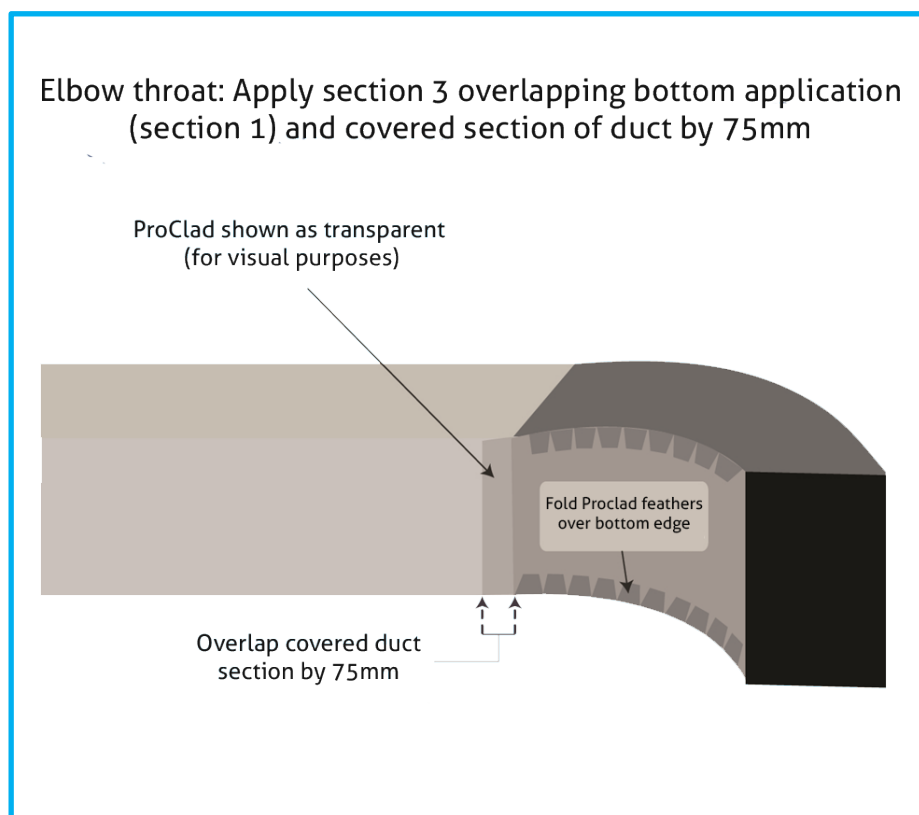


Figure 20 shows the elbow throat covered with a specially cut rectangular section of ProClad to the elbow heel: Section 3. This Section 3 will cover the “feathers” from Sections 1 and 2.

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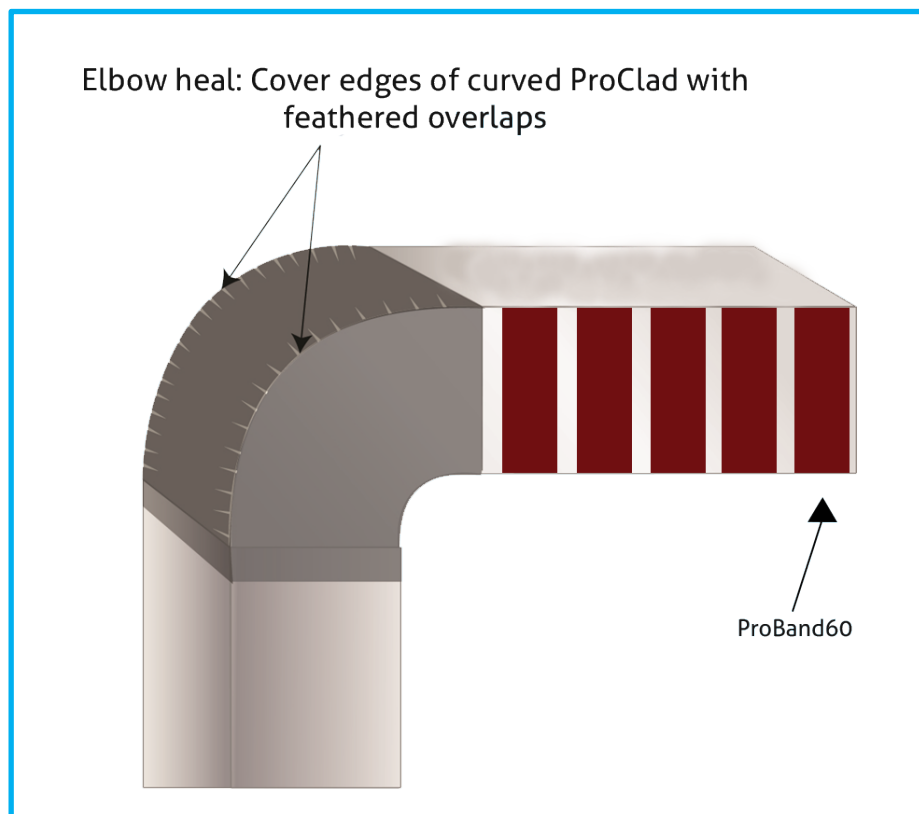


Figure 21 shows the location for applying the cut Section 4 Proclad to the top of elbow. The Proclad covers the feathered edge of the 2 sides pieces previously applied.

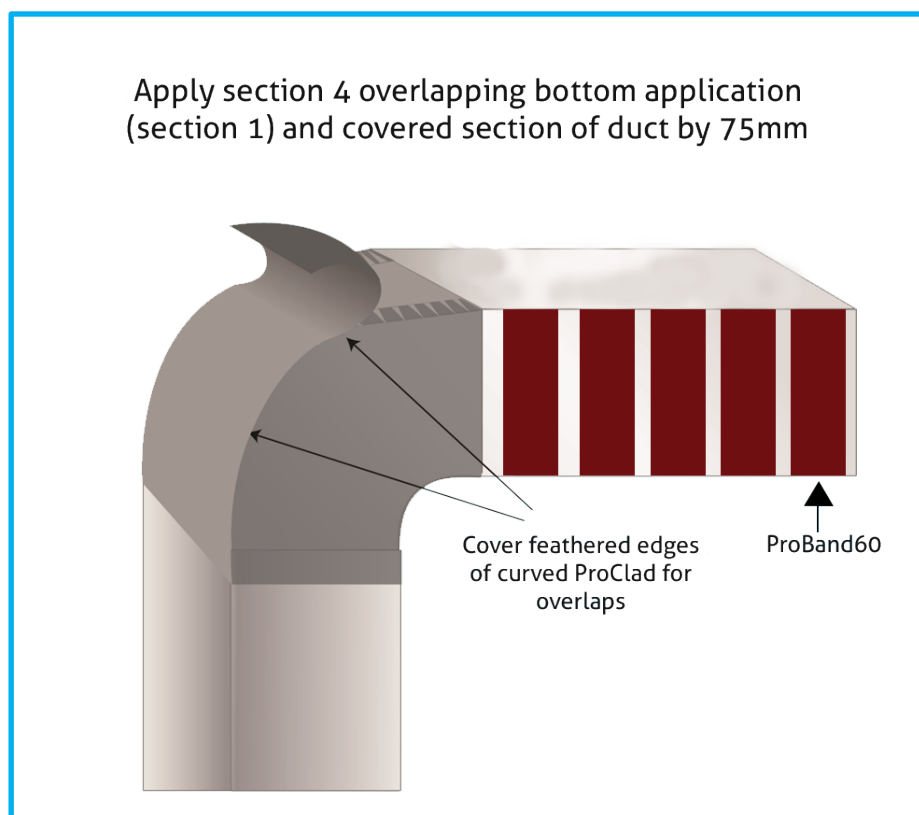


Figure 22 shows the top side of the insulated rectangular duct covered with the cut piece of ProClad Section 4.

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After applying all the sections of Proclad, seal all the joints with Proclad T tape

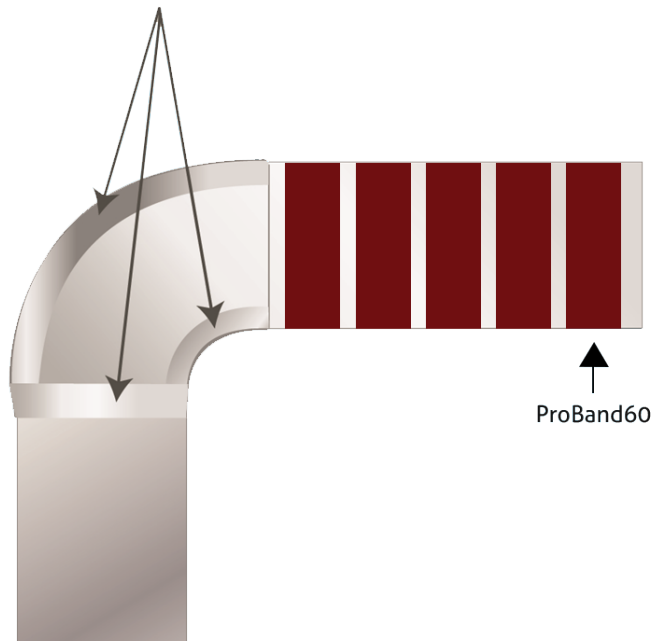


Figure 23 shows the insulated, 90° rectangular duct elbow totally covered with ProClad. Note that the heel and throat edges, as well as the butt joint between the straight rectangular duct and the elbow, must all be sealed with ProClad T tape. Feather the Proclad T tape as necessary to get it to lay down on the elbow sides.

6. Repairs to damage to Proclad on Insulated Ducts

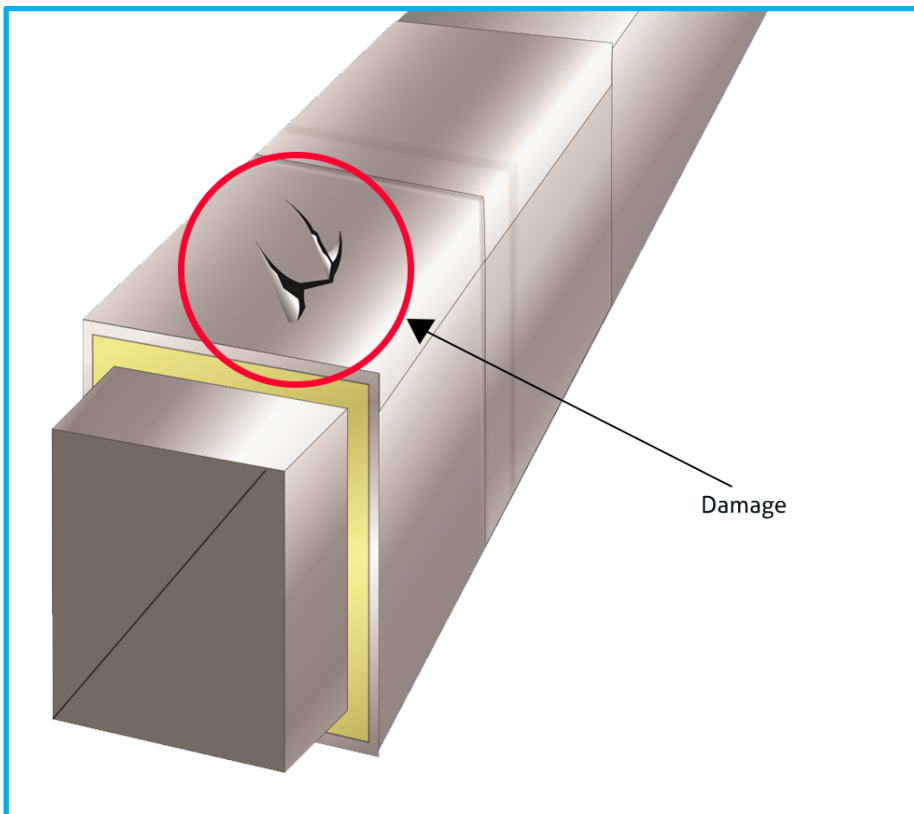


Figure 24 Sometimes the Proclad on a duct can be damaged. When it does it should be repaired as soon as possible using Proclad. Repair to quick and simple.

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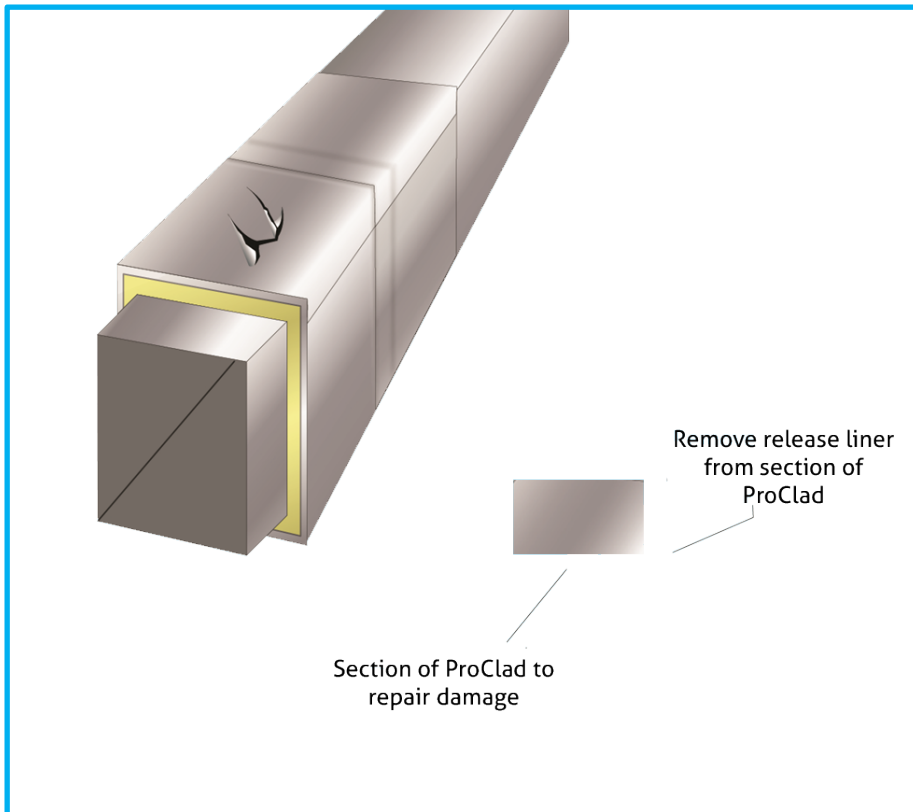


Figure 25 To repair the damaged area, remove any loose pieces and ensure the surrounding area is clean, dry and free from contaminants that might affect the adhesive bond of the new piece of Proclad. The replacement piece should be cut large enough to have a minimum 100mm covering all sides of the damaged area. Once in place firmly rub down using the applicator.

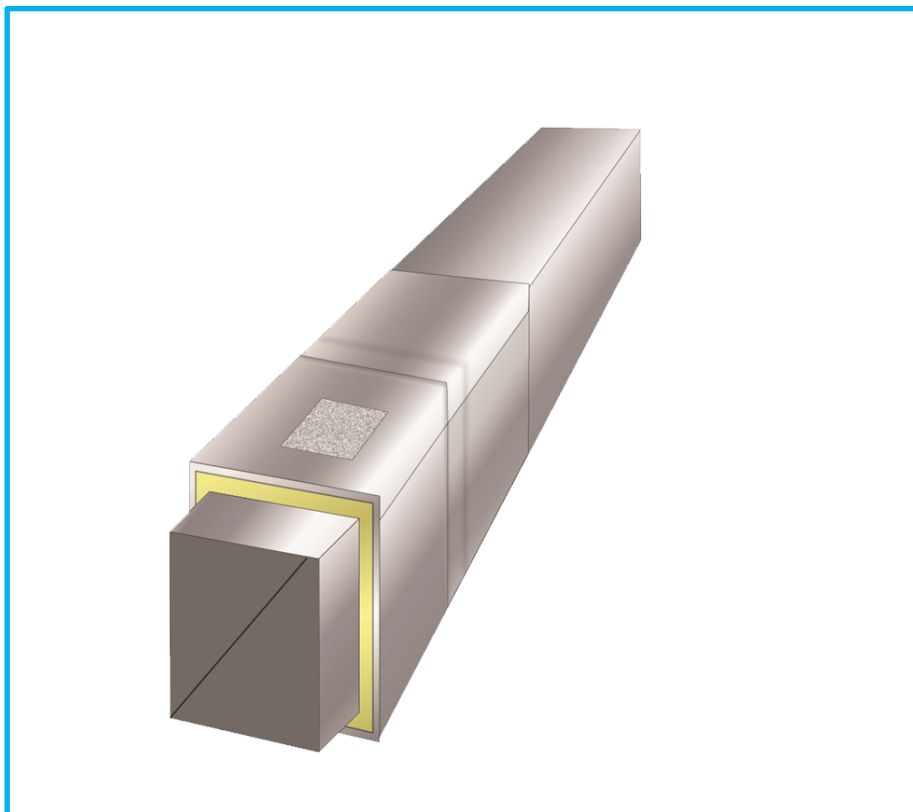


Figure 26 Picture shows replacement piece in place, note that using the matching Proclad will provide a very neat finish that should match very closely to the existing installation.

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Notes

The insulation materials should be installed to the industry standards outline in BS5790 before installing PROCLAD™150, failure to so may affect the long-term performance of the product.

All underlying insulation should be sealed using one of the ProcTech Global Ltd range of aluminium foil tapes to maintain the warranty conditions.

Legal Notices

The information, and, in particular, the recommendations relating to the application and end-use of ProTech Global Ltd products, are given in good faith based on ProTech Global Ltd.'s current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with ProTech Global Ltd.'s recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. ProTech Global Ltd reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

About ProTech Global Ltd

ProTech Global Ltd is a UK based company that has manufactured anti-corrosion products for over 25 years. With many years' experience in differing types of protection scenarios, ProTech Global Ltd has a reputation as a trusted supplier and partners with many corporations worldwide.