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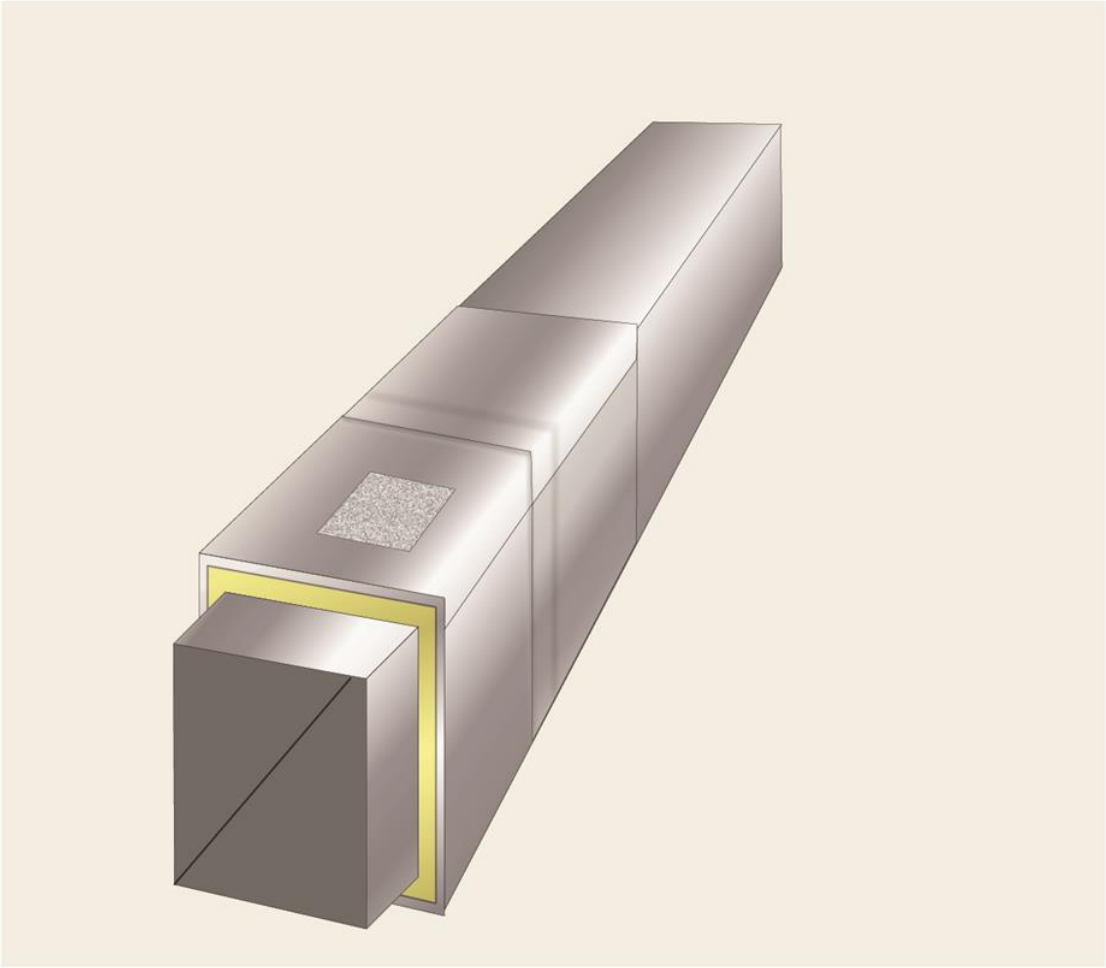
Revision 0
Prepared July, 2017

3M™ VentureClad™ Insulation Jacketing Products on Insulation Ducts

Recommended Installation Guide

Duct Insulation Jacketed with Factory and Field Installed 3M™ VentureClad™ Products



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Product Key	
1577CW	Smooth silver aluminum with adhesive
1577CW-E	Embossed silver aluminum with adhesive
1577NA	Smooth silver aluminum without adhesive
1577CW-CM/WM/BM	Smooth silver aluminum, white, or black with adhesive and a membrane
1579GCW	Heavy duty, smooth silver aluminum with adhesive
1579GCW-E	Heavy duty, embossed silver aluminum with adhesive
1579GNA	Heavy duty, smooth silver aluminum without adhesive
1579GCW-CM/WM	Smooth silver aluminum and white with adhesive and a membrane

1. Scope

a. Using 3M™ VentureClad™ products 1577CW, 1579GCW, and 1579GNA, 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. “CW” products have a pressure sensitive adhesive, covered with a release liner, over their entire inside surface. “NA” products have no adhesive.

b. 1577CW, 1579GCW, and 1579GNA are suitable for both indoor and outdoor applications but not for below ground, buried applications. It is recommended that either 1577CW pressure sensitive tape be used for sealing all 1579GCW and 1579GNA seams, whether they are lap or butt joints, or the more flexible 1578CW tape. The 1577CW tape may be used for both securement and sealing the 3M™ VentureClad™ that is part of the insulation sections /segments against both water and water vapor intrusion. The 1578CW tape is only to be used for sealing the 3M™ VentureClad™ that is part of the insulation sections / segments against water and water vapor intrusion in recommended locations. 4-inch wide seaming tape should be considered the standard if not recommended otherwise.

c. Although the figures within this manual show the 3M™ VentureClad™ and 3M™ Venture Tape™ products with an embossed and smooth aluminum finish, they are also available in other colors.

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 or unfaced fiberglass, mineral wool, molded expanded perlite, flexible aerogel, and calcium silicate.

e. These procedures assume the ducts will operate at below ambient temperatures and therefore include sealing against water vapor intrusion. For below ambient applications, where condensation control is required, it may be beneficial to select a 3M™ VentureClad™ product with a high emittance (i.e., > 0.5) to reduce the insulation thickness required to prevent surface condensation. Since all the 3M™ VentureClad™ products covered by this manual will have a low water vapor permeance, no additional vapor retarder needs to be used so long as the 3M™ VentureClad™ is sealed tightly at all locations.

f. The maximum use temperature of the Natural Aluminum 3M™ VentureClad™ products is 300°F (149°C). The maximum use temperature of the Membrane 3M™ VentureClad™ products is 248°F (120°C). The pipe service temperature itself may be much higher on above ambient service. In those cases, the exposure temperature of the 3M™ VentureClad™ should be controlled to below 300°F by the design and installation of the insulation system.

g. Proper adhesion of the materials is paramount in the long term success of the jacketing and the tape products. It is recommended that for both the 3M™ VentureClad™ and the 3M™ Venture Tape™ installation, the installer keep the adherent surfaces free of dust, dirt, grease, and water, including water from surface condensation. It is recommended that the application is to seal immediately once this adhesive is exposed by removing the release liner.

2. Notes that apply to the installation of 3M™ VentureClad™ 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 3M™ VentureClad™ 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: *The guidelines in this manual do not purport to address all of the safety concerns, if any, associated with the use of 3M™ VentureClad™ Products. At a minimum, 3M recommends that the insulation workers wear safety goggles and protective gloves for all work with 3M™ VentureClad™ and 3M™ Venture Tape™. However, it is the responsibility of the user of this manual to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

Note 4: *3M strongly recommends the facility owner/operator to conduct regular duct insulation system maintenance. Outdoor, damaged insulation systems can perform poorly allowing ingress of water from rain or melting snow or, on below ambient systems, water vapor intrusion with subsequent condensation. Wet insulation will not perform thermally on a par with that provided by the insulation material's manufacturer; further, it can lead to corrosion under insulation. The best prevention of these problems is a proactive insulation system maintenance program that includes sealing of the 3M™ VentureClad™ jacketing.*

Note 5: *3M generally recommends the use of either 3M™ Venture Tape™ 1577CW or 1578CW as a seaming tape, where necessary, with 3M™ VentureClad™ 1579GCW products. In situations where extremely tight corners are required, the more flexible, 3M™ Venture Tape™ 1578CW product is acceptable.*

Note 6: *Water shed, for North America only—3M recommends that air duct designers follow the guidelines given in Section 3.4 (page 6.5) of SMACNA's "HVAC Duct Construction Standard—Metal and Flexible" for sloping of the top surface for the purposes of rain water drainage. In lieu of this, the insulation workers can insert dowel rods between the top horizontal duct surfaces and the bottom of the insulation boards, insulating those top surfaces, to create a slope, prior to applying the 3M™ VentureClad™. The rods can be placed on one edge for smaller ducts or in the middle of larger ducts. Contractors in other countries should follow their local industry guidelines and requirements for insulated outdoor ducts.*

3. Insulated Rectangular Ducts

Prior to adding 3M™ VentureClad™, ducts should first be insulated. Typically, they are insulated with a fiberglass board faced with FSK or some other factory applied facing. Before applying 3M™ VentureClad™, all seams should first be taped with an aluminum foil based 3M™ Venture Tape™ such as 1525CW FSK tape, 1520CW aluminum foil tape, or 1517CW aluminum foil tape. These boards are also typically first installed and held in place using pins and speed washers (as shown on Figure 1 below). Be certain that the pins have been cut as close as possible to the speed washers. The 3M™ VentureClad™ should be applied over top of the pins and washers after first applying 3M™ Venture Tape™ foil tape over each pin-washer combination. See Figure 2.

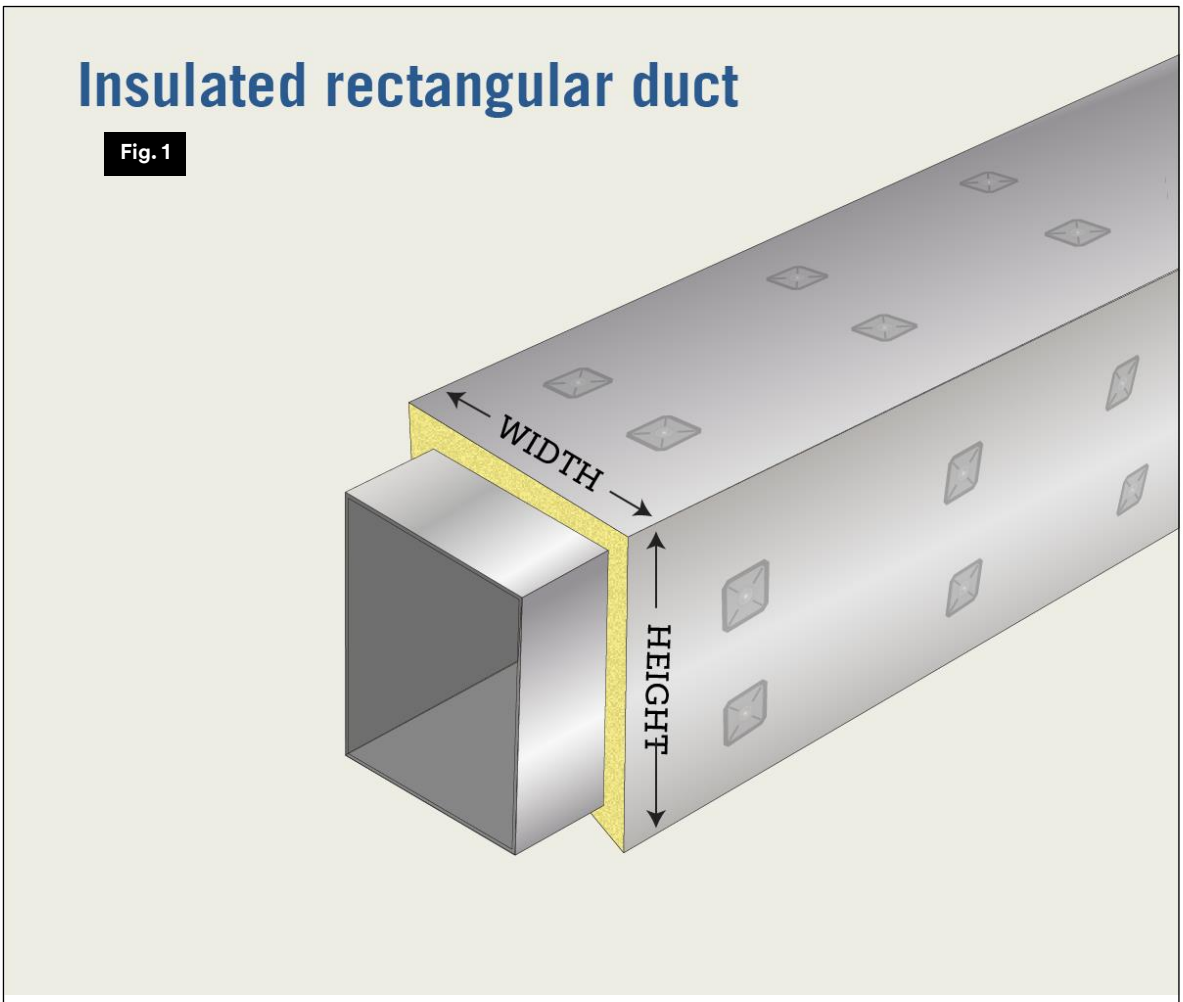


Figure 1 shows an insulated, rectangular duct with an insulation board which should be factory faced. As shown, the exposed pins and washers will first need to be covered, prior to installing 3M™ VentureClad™ jacketing, to protect against later puncturing of that jacketing.

3" x 3" strips of 3M™ Venture Tape™ used to cover washers

Fig. 2

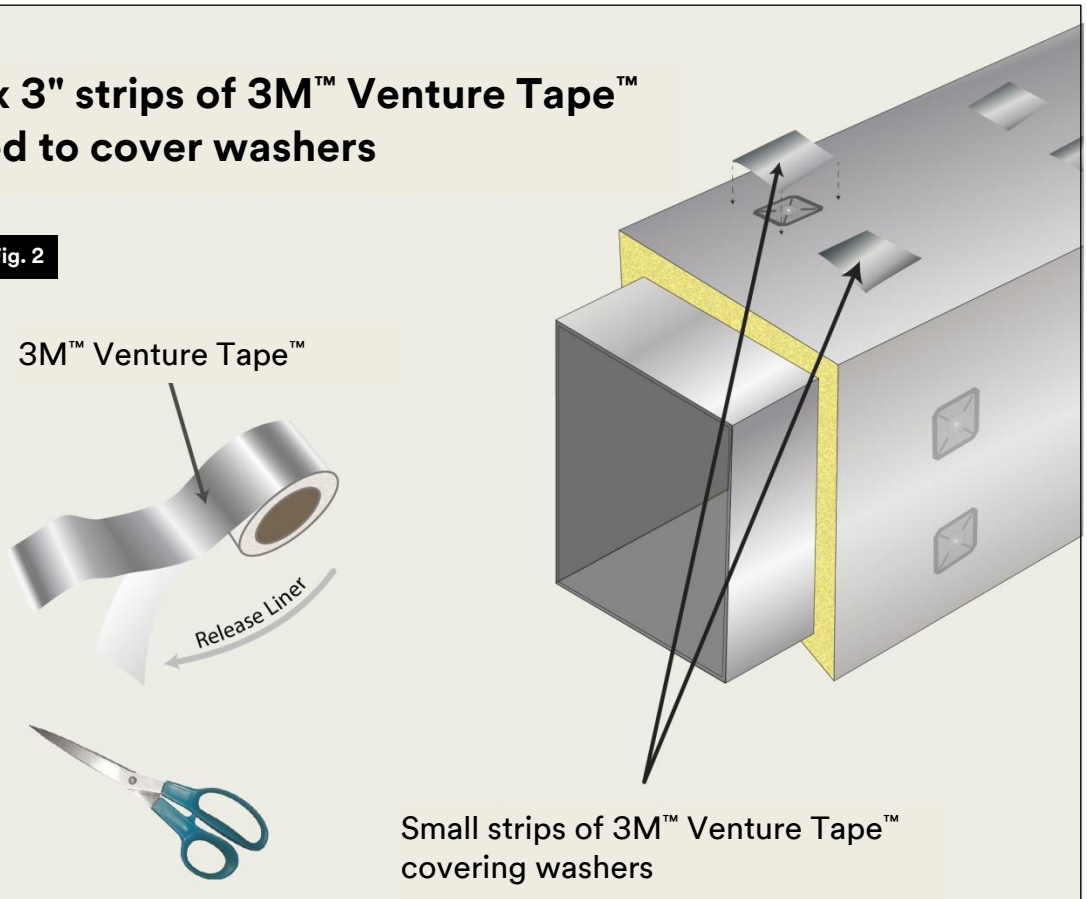
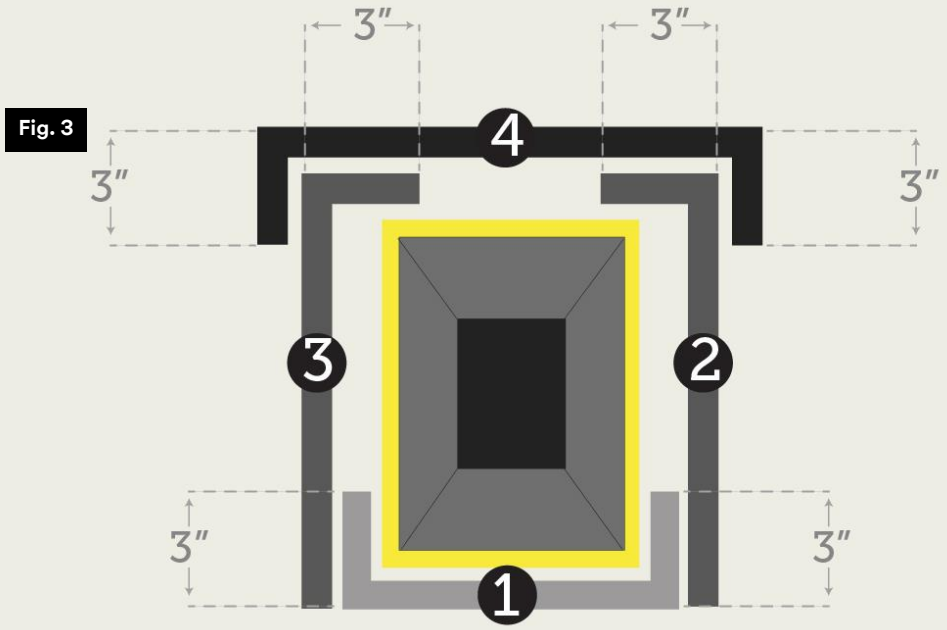


Figure 2 shows the process of covering the pins and washers, used to secure the insulation board, using 3M™ Venture Tape™. 3M recommends the use of 3" (75mm) wide FSK or aluminum foil based 3M™ Venture Tape™ cut into 3" (75mm) long strips.

Sequence of cutting and applying 3M™ VentureClad™

Fig. 3



1. Bottom
2. Side overlaps top by 3″
3. Other side overlaps top by 3″
4. Top overlaps each side by 3″

Figure 3 sequence of cutting and applying four cut sheets of 3M™ VentureClad™ to a section along the insulated duct: (1) bottom (2) first vertical side (3) second vertical side and (4) top, all using 3" (75mm) overlaps. Note that the 3 inch (75mm) overlap on (2) and (3), as well as on (4), are conservative 3M recommendations that should result in longer term performance of the 3M™ VentureClad™ jacket system. 3M recommends that the insulation contractor not trim the bottom edges of pieces 2 and 3, where they come in contact with piece 1. Instead, when pieces 2 and 3 are longer than necessary, 3M recommends that pieces 2 and 3 be folded over onto piece 1 to prevent the need for trimming.

Cutting bottom piece of 3M™ VentureClad™ to width of insulated duct + 6" (3" overlap on each side)

Fig. 4

Figure 4 shows an installer cutting a sheet of 3M™ VentureClad™ from the roll. In this case, the sheet dimensions will be the width of the roll x the width of the insulated duct. This cut sheet will be applied to the bottom of the insulated duct after first removing several inches of the release liner. Note the 3 inch (75mm) overlaps and hence the 6 inches (150mm) greater length).

Peeling back the release liner part way from front edge

Fig. 5

Figure 5 shows the installer starting to remove the release liner to expose the pressure sensitive adhesive. He should only pull the release liner back 3–4 inches (75–100mm), then start applying it to the face of the insulated duct, as shown in Figure 6.

Applying 3M™ VentureClad™ to bottom of duct

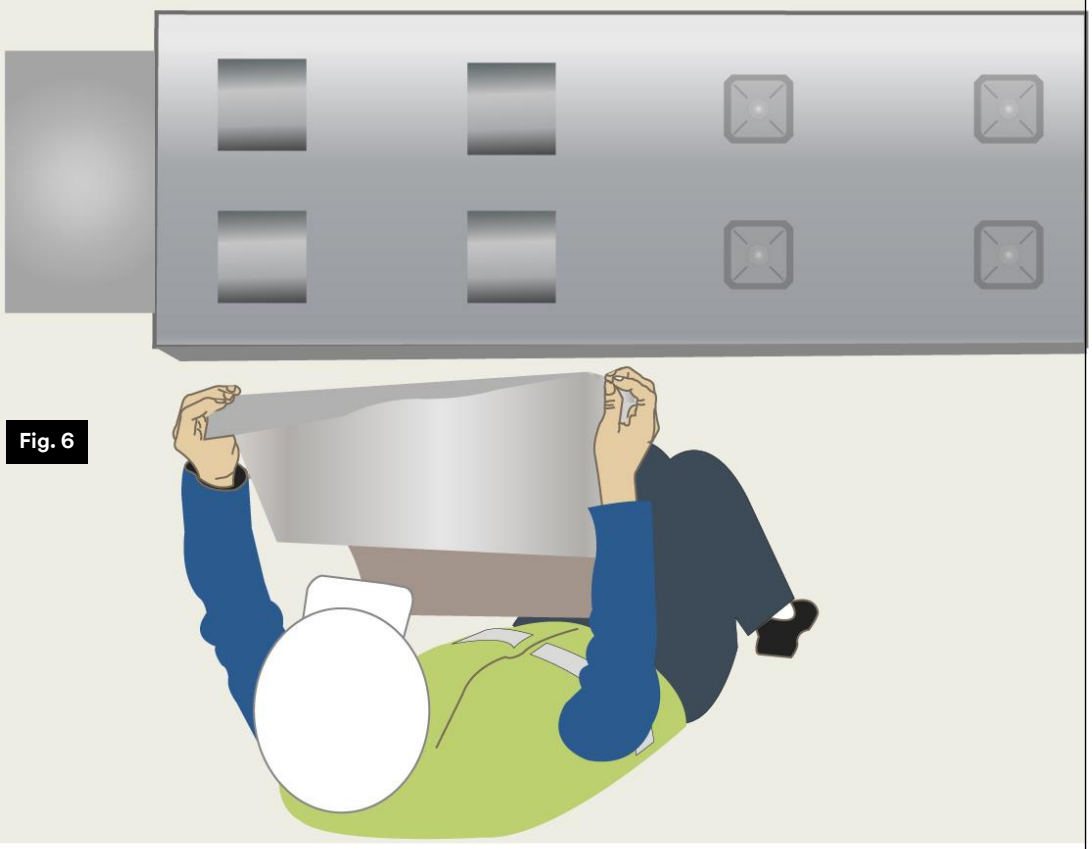


Fig. 6

Figure 6 shows the installer working underneath the insulated duct. He will apply this first sheet of 3M™ VentureClad™ (piece 1) to the insulated duct bottom (where the speed washers have already been covered with 3M™ Venture Tape™).

Using a squeegee to press 3M™ VentureClad™ onto bottom of duct

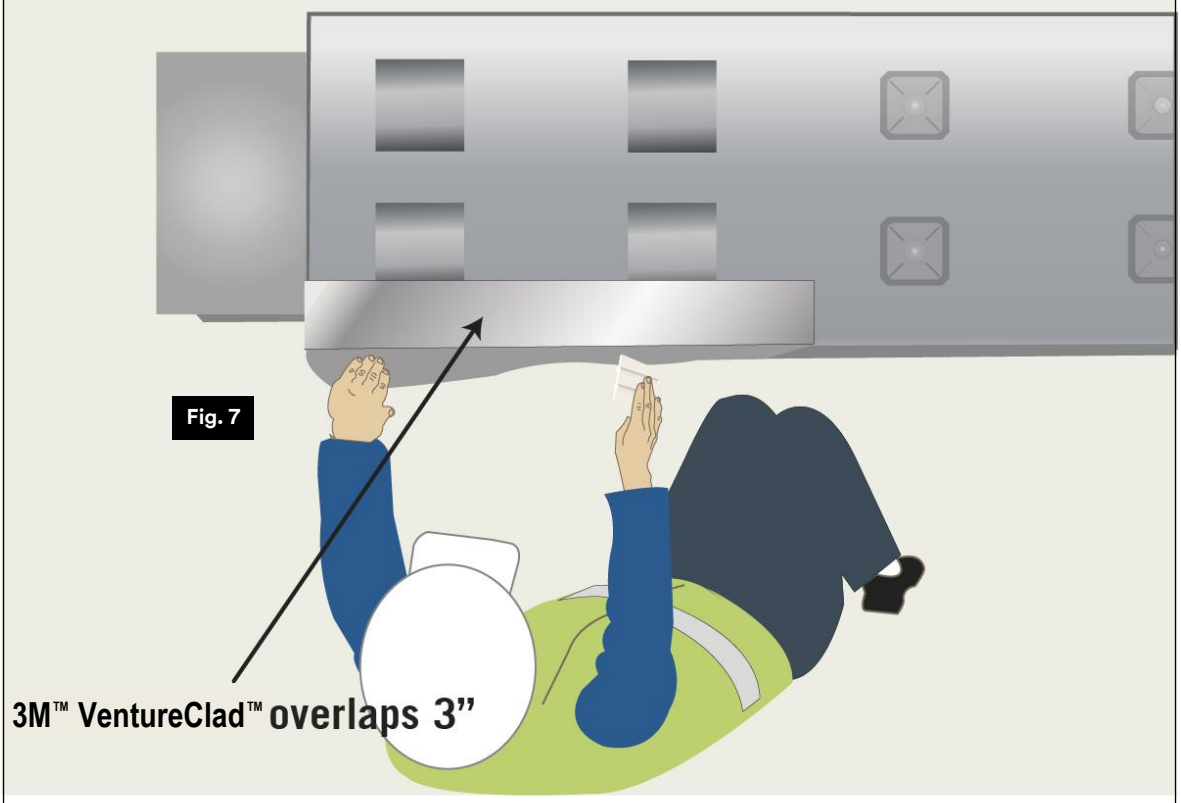


Figure 7 shows the installer using a squeegee to press the entire surface of the installed 3M™ VentureClad™ piece 1, on the bottom surface of the insulated duct, to assure that there is good adhesion of the 3M™ VentureClad™ jacket to the insulation.

Cutting side piece of 3M™ VentureClad™ from roll that is height + 3" long

Fig. 8

Figure 8 shows the installer cutting his second sheet (piece 2 or 3) of 3M™ VentureClad™, this one to be applied to one of the two vertical sides. Note that its minimum dimension is equal to the insulated duct height + 3 inches (75mm).

Applying 3M™ VentureClad™ to side of insulated duct. Note that 3M™ VentureClad™ will overlap top by 3"

Fig. 9

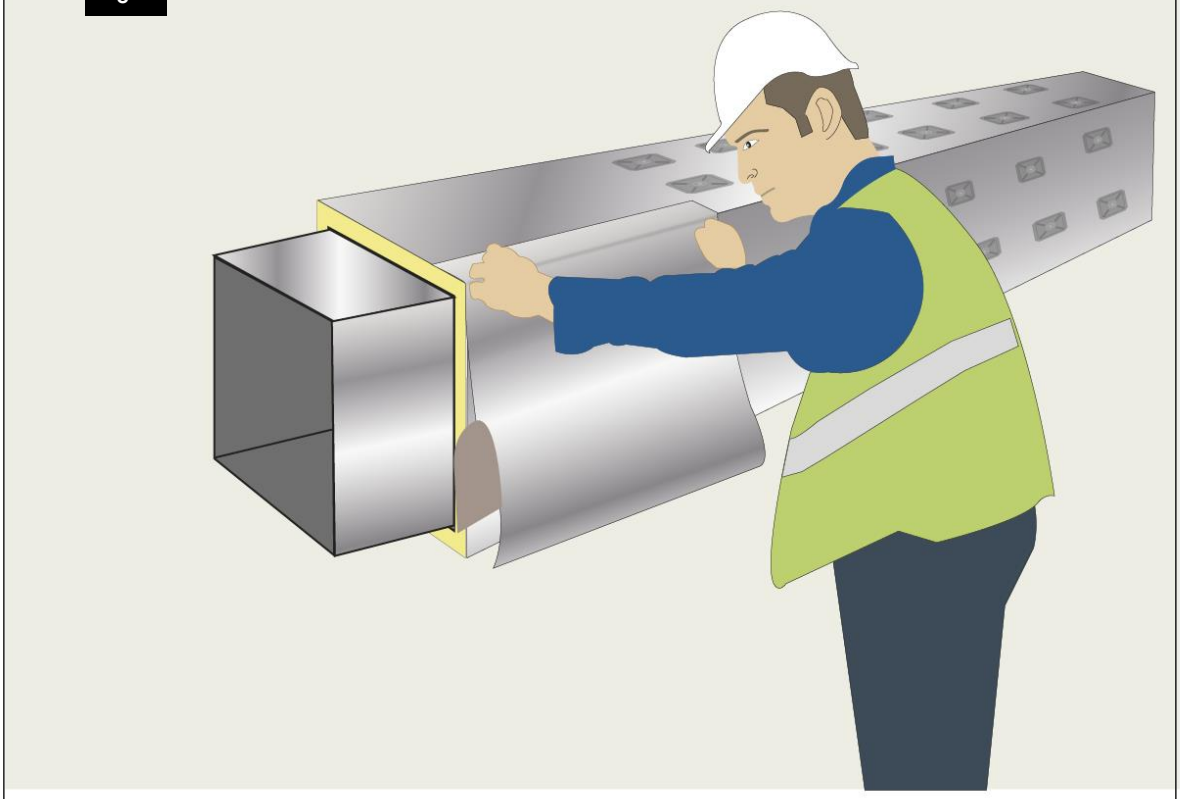


Figure 9 shows the installer applying the cut sheet of 3M™ VentureClad™ to the vertical side (piece 2). Note that he first lines up the top edge of the 3M™ VentureClad™ with the top edge of the insulated duct, then works his way down the side, peeling back the release liner in steps, then applying that section with the exposed adhesive.

Using a squeegee to press 3M™ VentureClad™ onto insulation surface

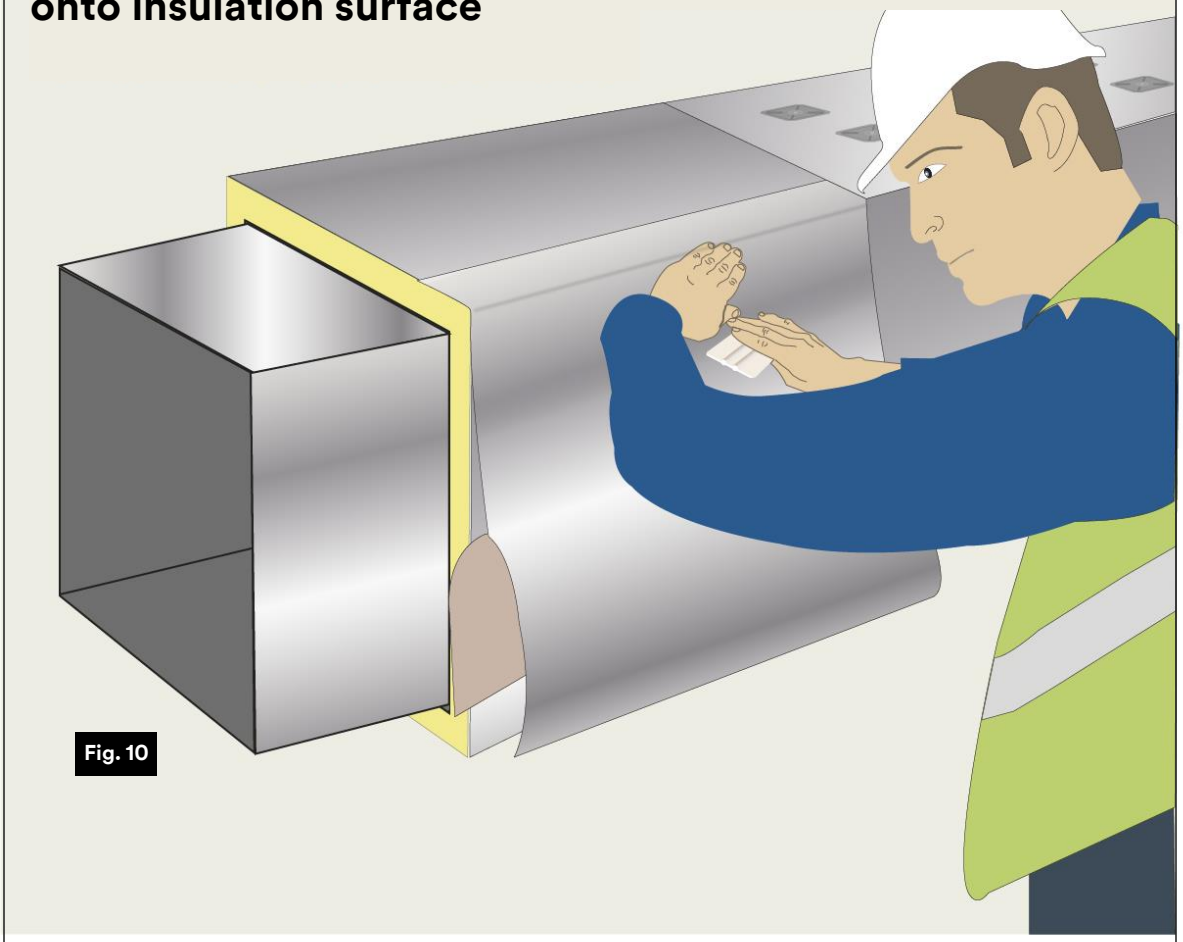


Fig. 10

Figure 10 shows the installer using the squeegee to make certain that the 3M™ VentureClad™ is fully adhered to the vertical side of the insulated duct (piece 2).

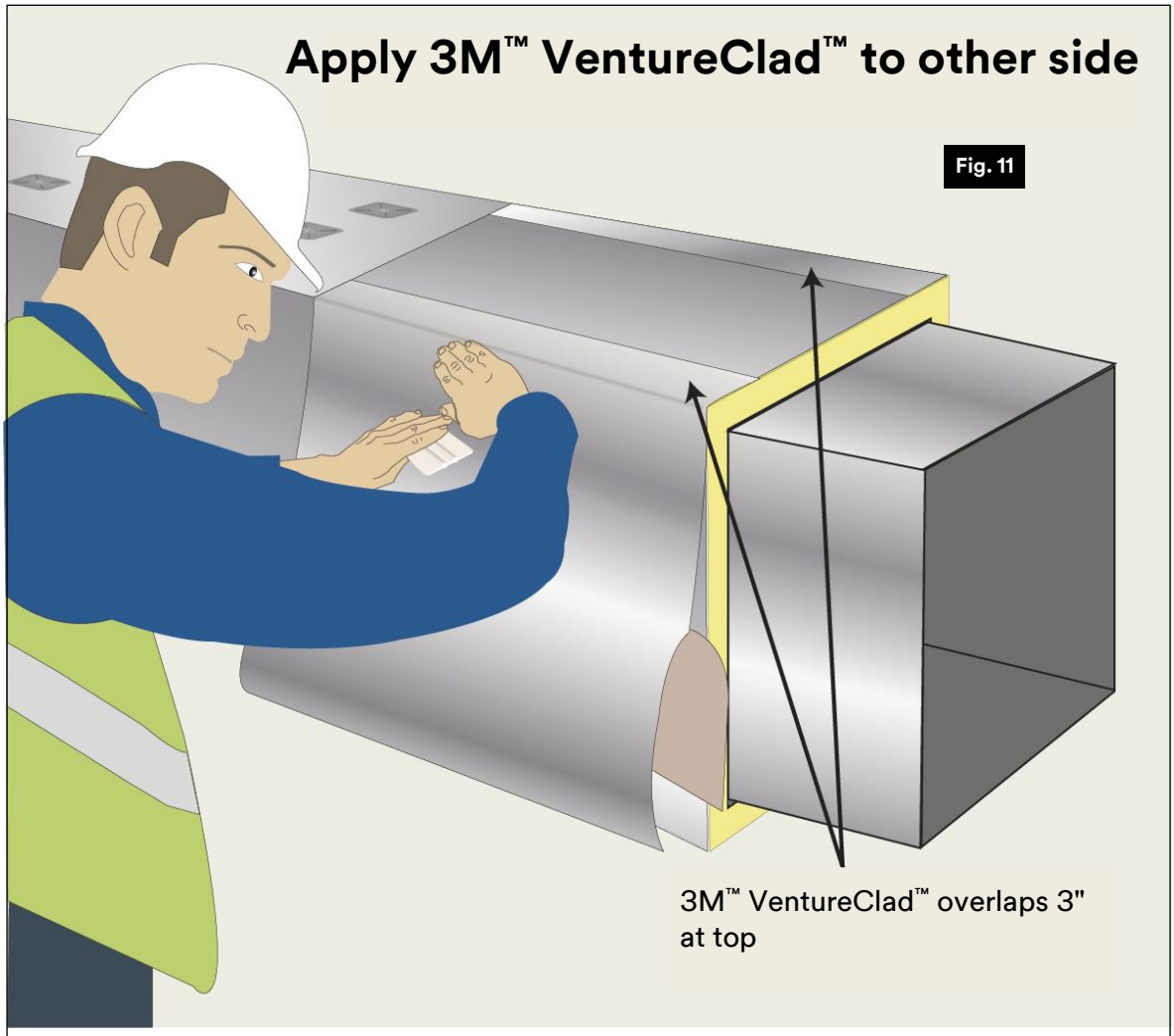


Figure 11 shows the installer installing 3M™ VentureClad™ on the second of the two vertical sides (piece 3) of the insulated duct.

Cutting top piece of 3M™ VentureClad™ from roll that is width + 6" long

Fig. 12

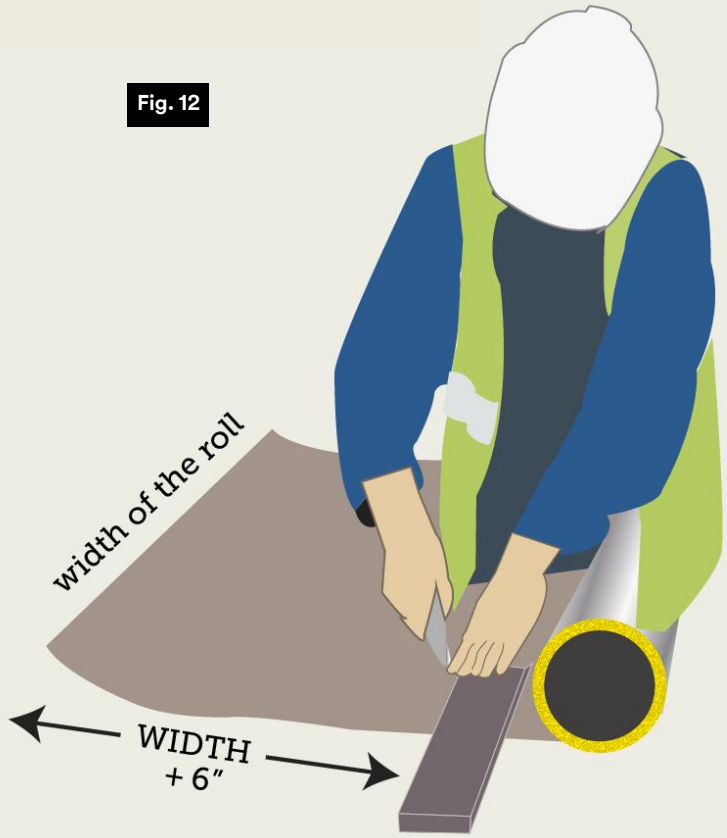


Figure 12 shows the installer cutting a sheet of 3M™ VentureClad™ for the top of the insulated duct (piece 4).

Applying the 3M™ VentureClad™ to top of insulated duct. Edges should overlap each vertical side by 3"

Fig. 13

Figure 13 shows the installer lining up the 3M™ VentureClad™ top sheet with the duct's edges (piece 4). After being installed, this sheet of 3M™ VentureClad™ should overlap each vertical side by 3 inches (75mm).

Using a squeegee to press 3M™ VentureClad™ onto insulation top surface

Fig. 14

Figure 14 shows the installer using the squeegee to smooth out the 3M™ VentureClad™ and to assure himself that the 3M™ VentureClad™ has completely adhered to the top surface of the insulated duct (piece 4).

Cut a piece of 3M™ Venture Tape™ to fit the length of the joint — peel off release liner

Fig. 15

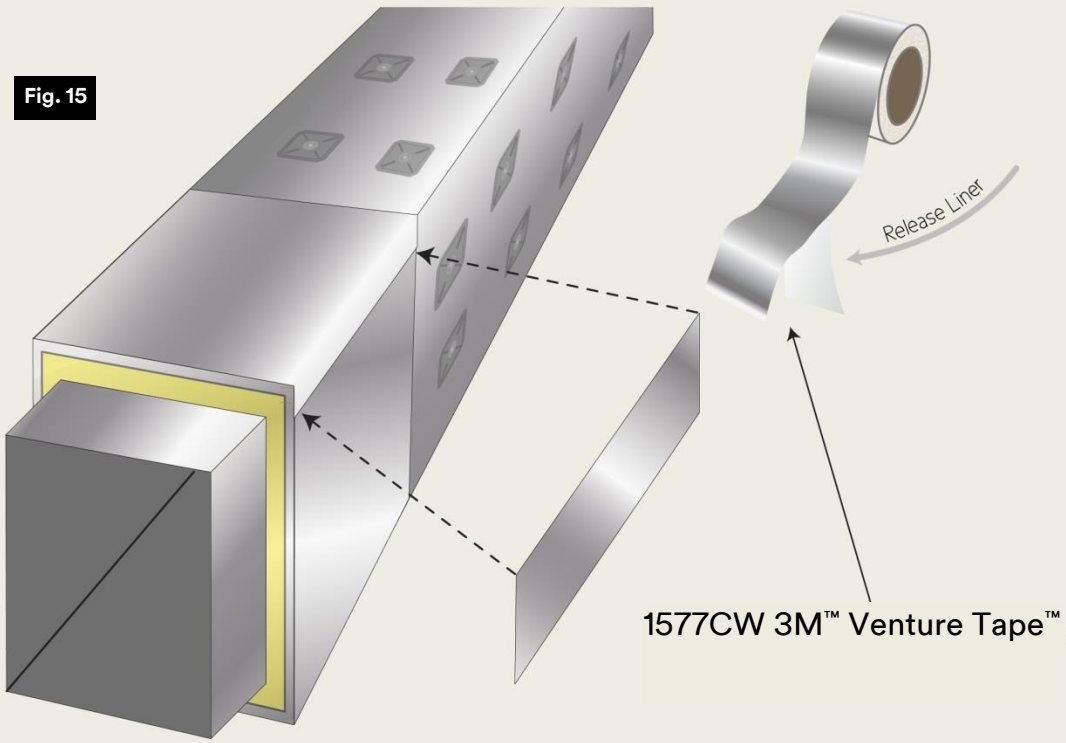


Figure 15 shows the location where a cut strip of 4 inch (100mm) wide 1577CW 3M™ Venture Tape™ will be applied to reinforce one of the 3M™ VentureClad™ 1579GCW joints. This step is unnecessary when using the lighter weight 1577CW 3M™ VentureClad™. Note that the more flexible 1578CW 3M™ Venture Tape™ may also be used to seal the 3M™ VentureClad™ seams.

Taping 1579CGW 3M™ VentureClad™ Joints

Fig. 16

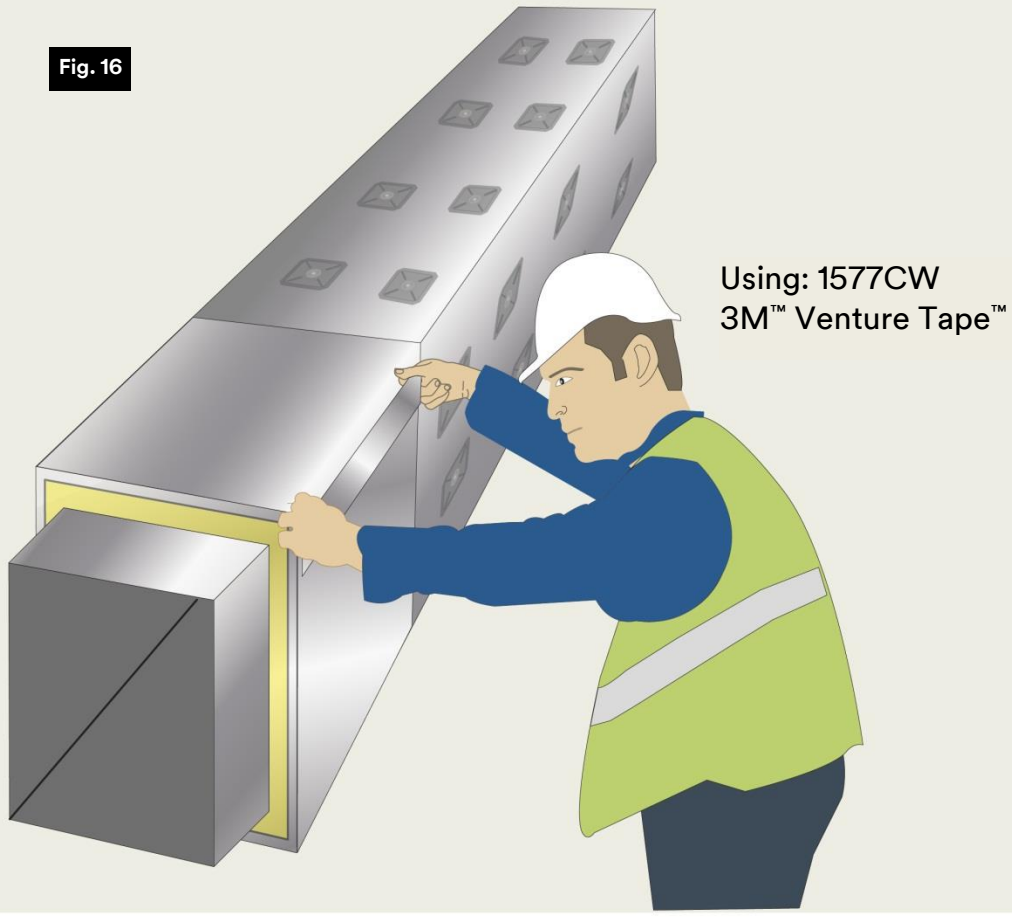


Figure 16 shows the cut strip of 4 inch (100mm) wide 1577CW 3M™ Venture Tape™ being applied to reinforce a joint when using 1579GCW 3M™ VentureClad™. Be certain to run over the tape with a squeegee after applying it to the 3M™ VentureClad seam. Note that the more flexible 1578CW 3M™ Venture Tape™ may also be used to seal the 3M™ VentureClad™ seams.

First section sealed with 3M™ VentureClad™

Fig. 17

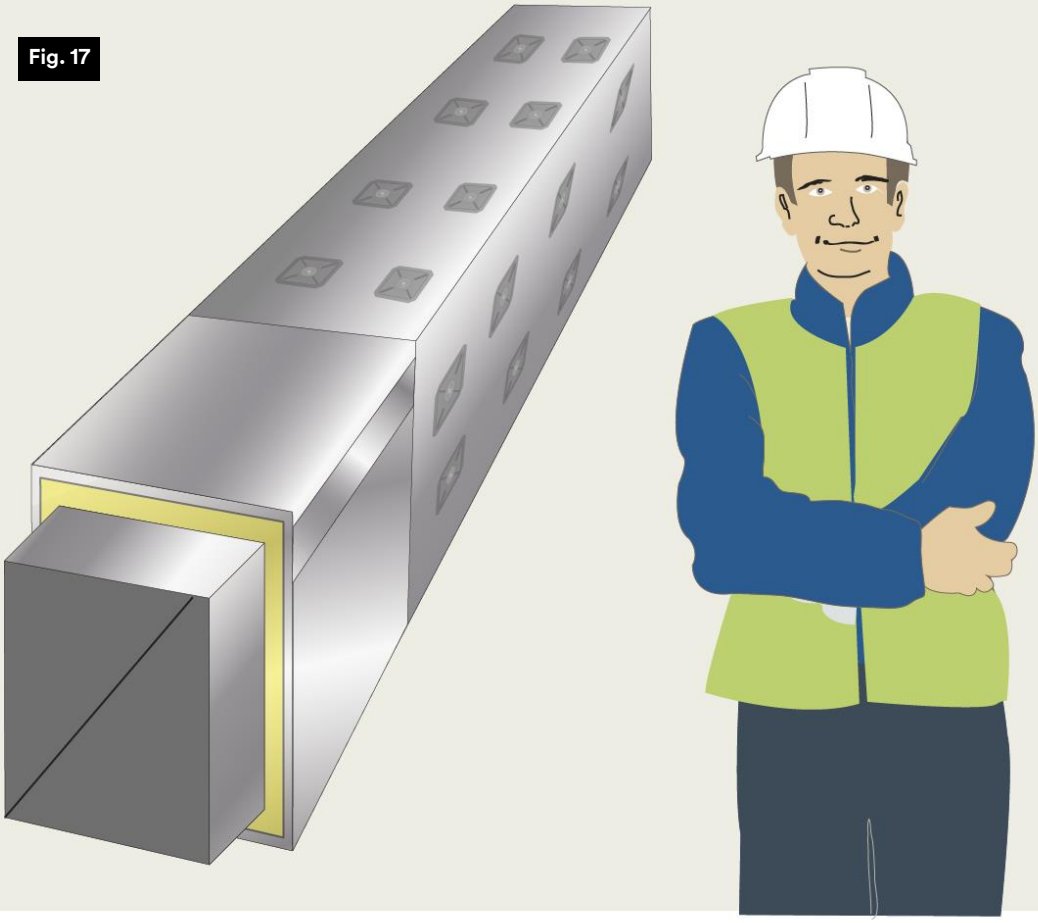


Figure 17 shows a first section of 3M™ VentureClad™ applied to the insulated duct. Note the joint reinforced with 1577CW 3M™ Venture Tape™ is only necessary when using 1579GCW 3M™ VentureClad™. The next step will be to duplicate this process on the duct section adjacent to this section. Note that the more flexible 1578CW 3M™ Venture Tape™ may also be used to seal the 3M™ VentureClad™ seams.

Continue to apply 3M™ VentureClad™ same as before overlapping previous applications by 3"

Fig. 18

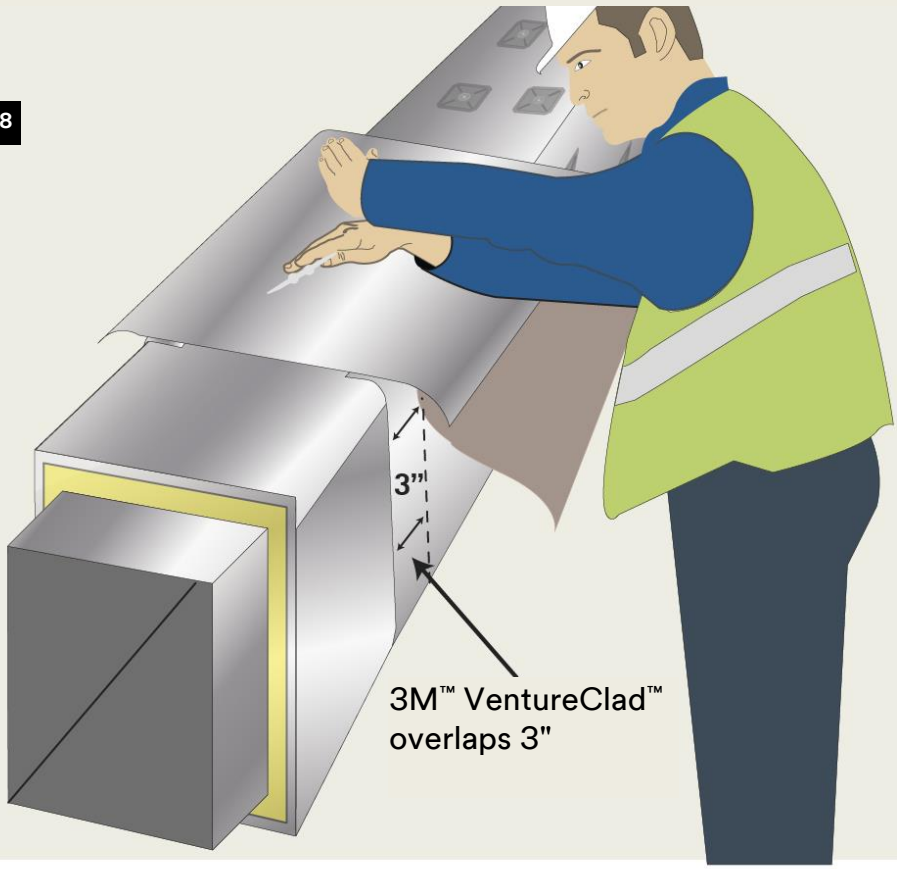


Figure 18 shows the insulator applying 3M™ VentureClad™ to the next section of duct. Note that he will overlap the first section's 3M™ VentureClad™ by 3 inches (75mm). Note that the installer should have first covered the speed washers with pieces of 3 inch x 3 inch (75mm x 75mm) 3M™ Venture Tape™, as shown in Figure 2.

First two sections sealed with 3M™ VentureClad™

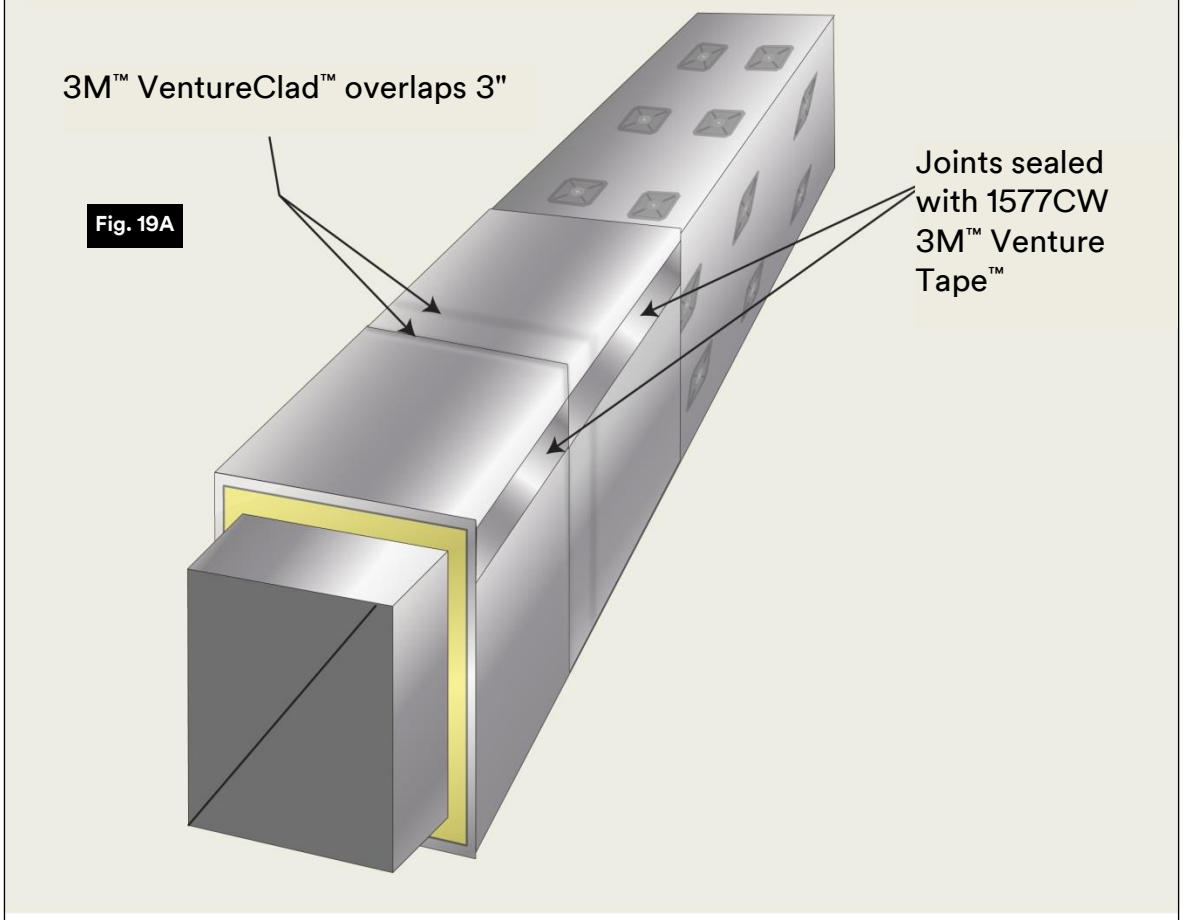


Fig. 19A

Figure 19a shows the first two sections of this straight, insulated duct with 3M™ VentureClad™ and joints reinforced with 4 inch (100mm) wide 1577CW 3M™ Venture Tape™ when using 1579GCW 3M™ VentureClad™. Note that the more flexible 1578CW 3M™ Venture Tape™ may also be used to seal the 3M™ VentureClad™ seams.

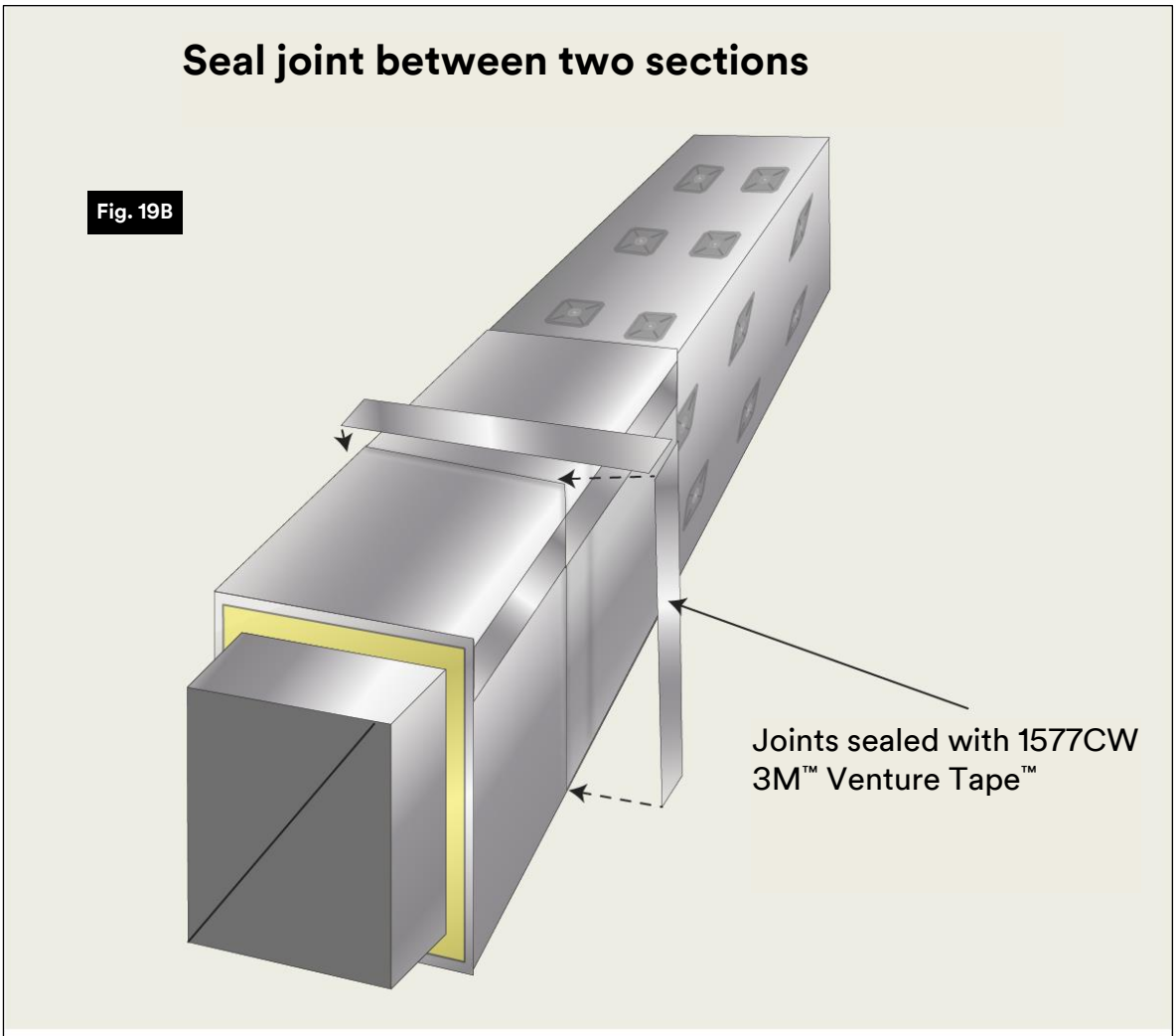


Figure 19b shows the first step in the addition of 4 inch (100mm) wide 1577CW 3M™ Venture Tape™ over a circumferential 1579GCW 3M™ VentureClad™ butt joint. When using the lighter weight 1577CW 3M™ VentureClad™ jacket, the addition of the tape is unnecessary. Note that the more flexible 1578CW 3M™ Venture Tape™ may also be used to seal the 3M™ VentureClad™ seams.

Seal joint between two sections

Fig. 19C

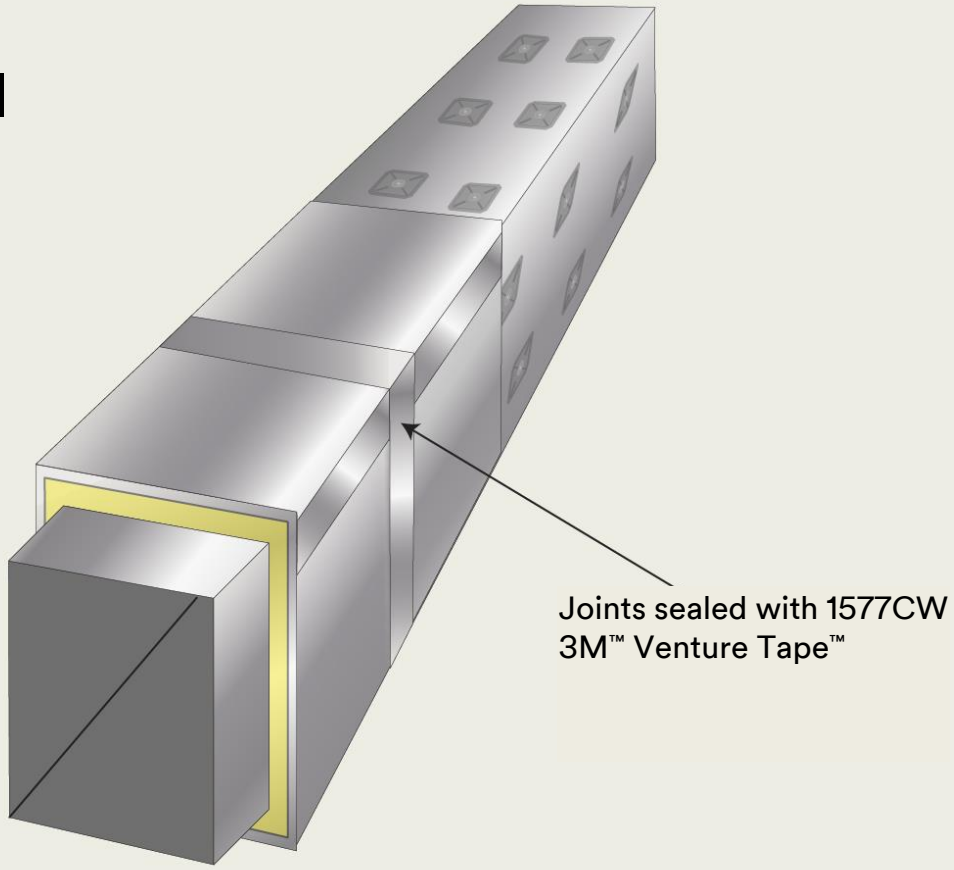


Figure 19c shows the finished lap and butt joints where the first and second jacket sections join when using 1579GCW 3M™ VentureClad™ as the jacket. Note that they are taped with 4 inch (100mm) wide 1577CW 3M™ Venture Tape™. When using the lighter weight 1577CW 3M™ VentureClad™ as the jacket, taping of the joints like this is unnecessary. Note that the more flexible 1578CW 3M™ Venture Tape™ may also be used to seal the 3M™ VentureClad™ seams.

4. Insulated rectangular duct reducers

Fig. 20

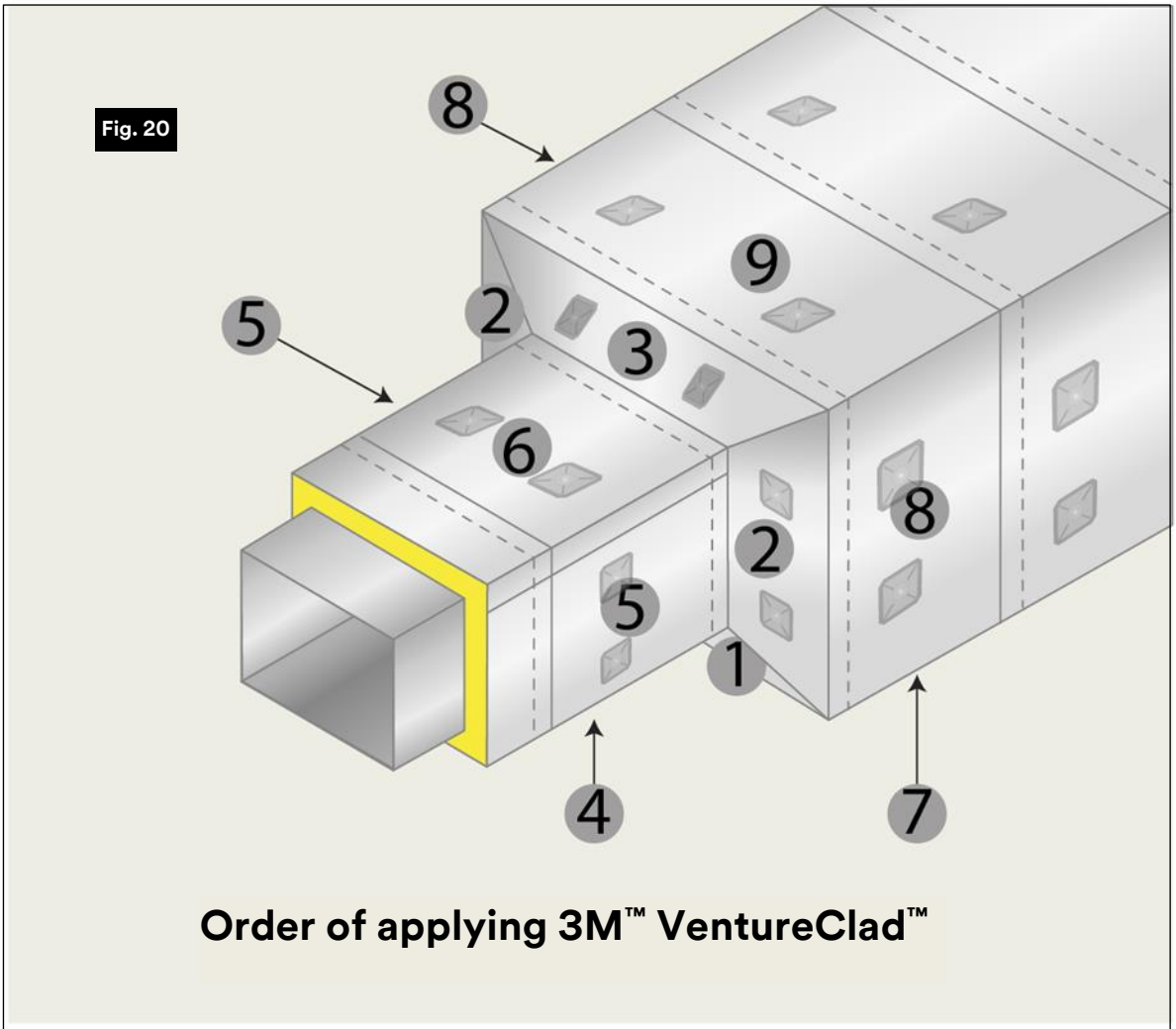


Figure 20 shows an insulated, rectangular duct reducer which transitions from a larger duct section to a smaller duct section. The numbers 1 through 9 give the order of applying 3M™ VentureClad™ to the insulation. As shown in Figure 2, each washer should first be covered with a small (3 inch x 3 inch or 100mm x 100mm) piece of 3M™ Venture Tape™, such as 1525CW, prior to applying the 3M™ VentureClad™.

Fig. 21

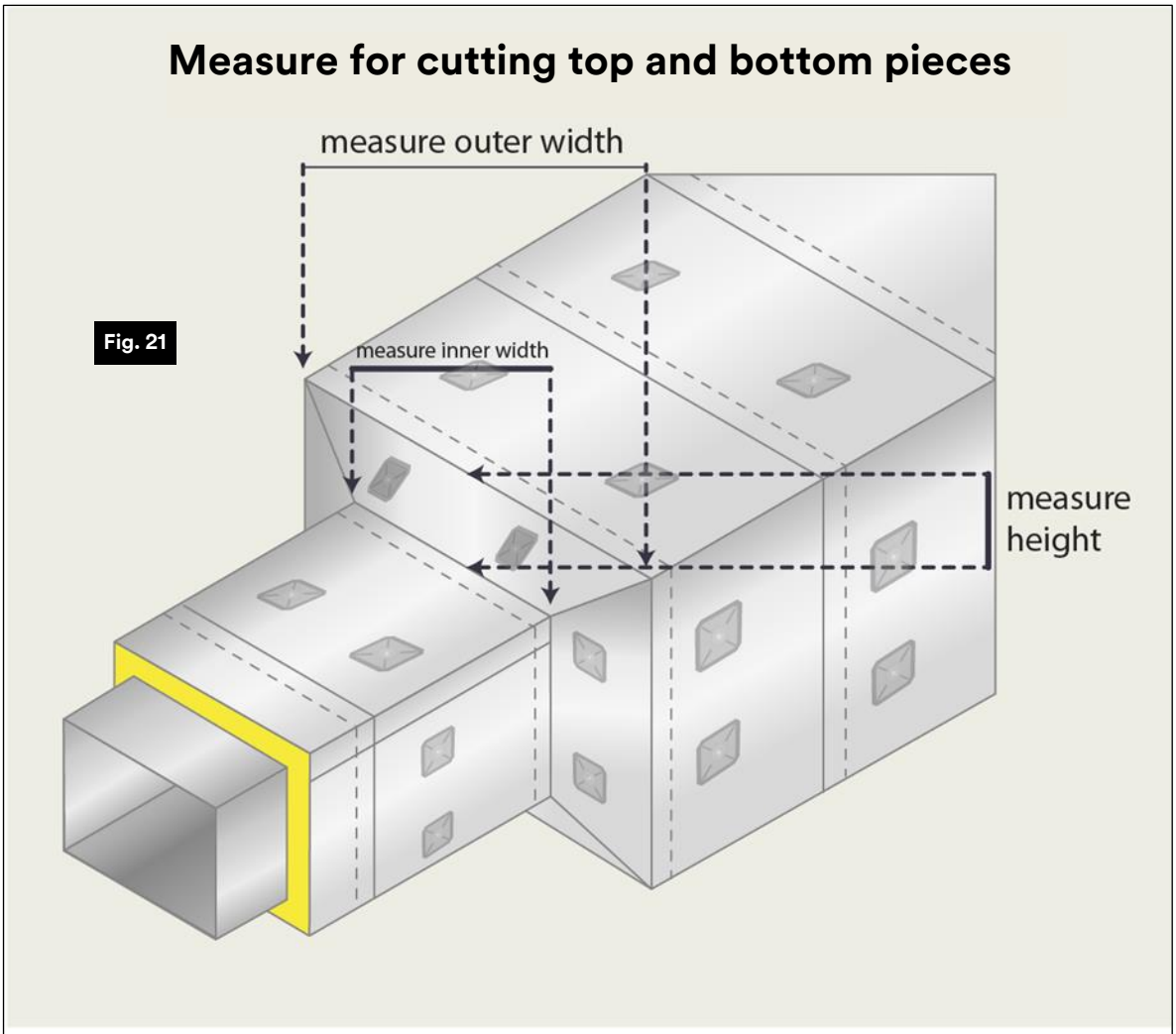


Figure 21 shows where to make measurements for the 3M™ VentureClad™ sections that will be applied to the insulated duct reducer sections.

Cut 2 pieces of 3M™ VentureClad™ as demonstrated below for bottom and top

Fig. 22

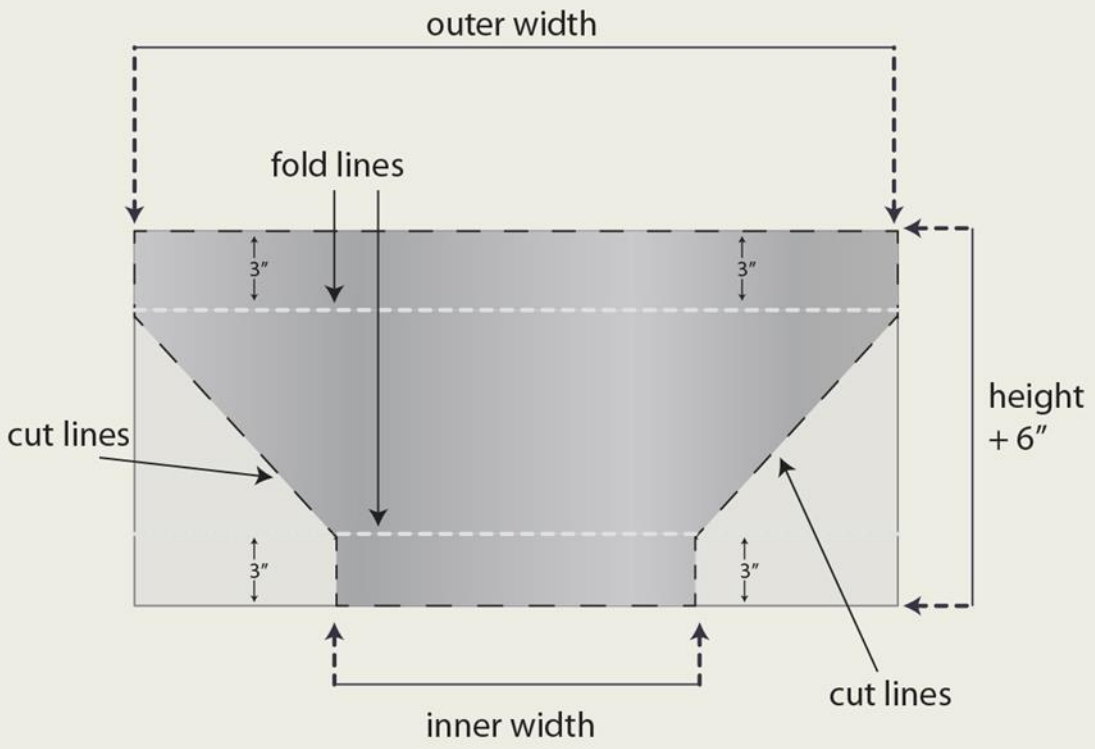


Figure 22 shows where to make cuts to the 3M™ VentureClad™ used to cover the bottom and top faces of the insulated duct reducer. Note that the installer should first start with a rectangular section measuring outer width x height + 6 inches (150mm), then mark the cut lines, and finally cut along the cut lines.

Measure for cutting side pieces

Fig. 23

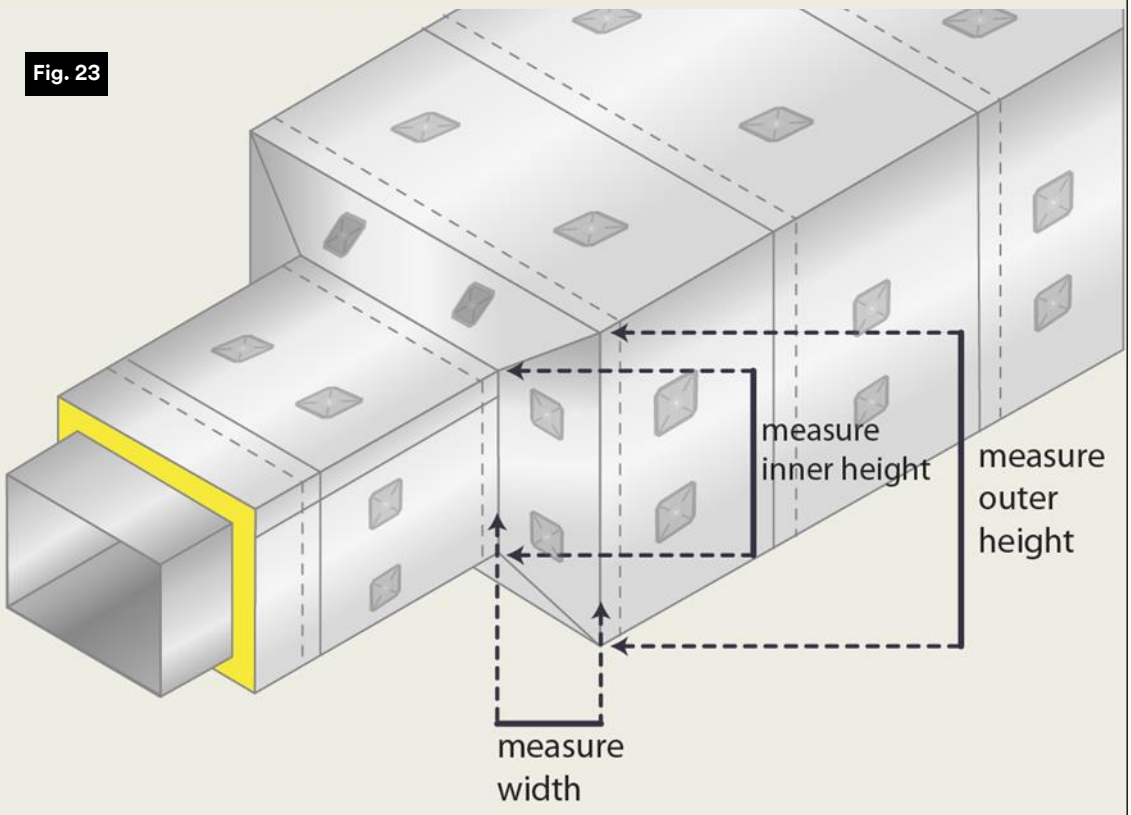


Figure 23 shows where to make measurements for the 3M™ VentureClad™ to be applied to the left and right sides.

Cut 2 pieces of 3M™ VentureClad™ as demonstrated below for two side pieces

Fig. 24

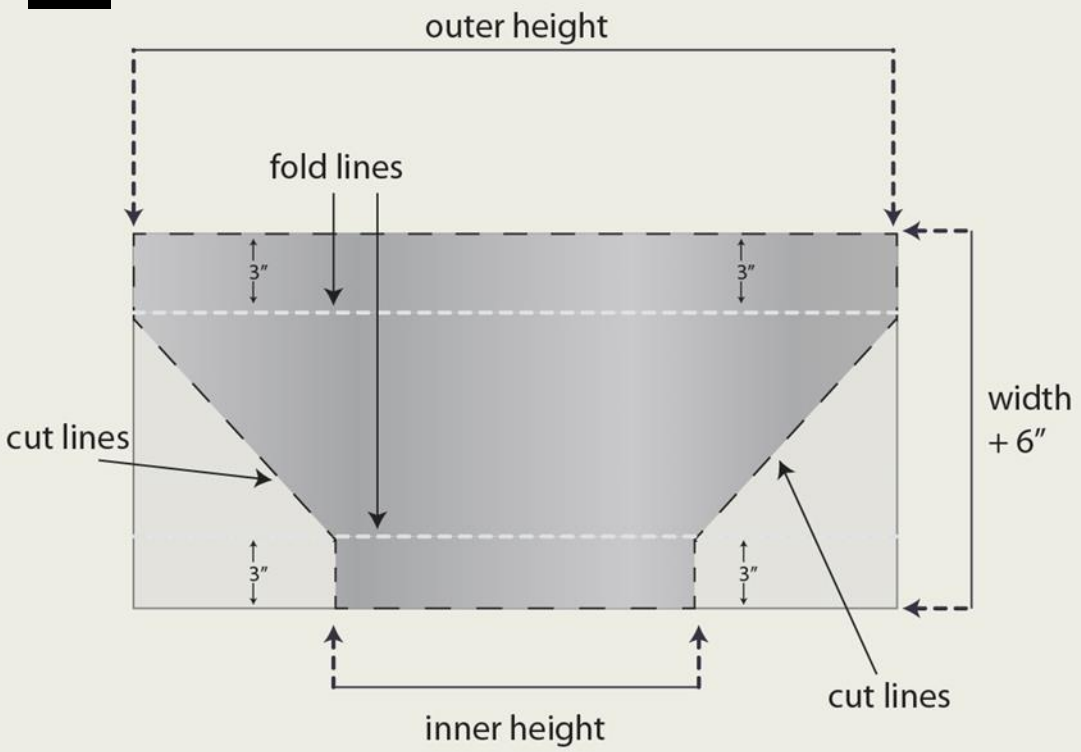


Figure 24 is similar to Figure 18 except this is for the two side pieces of 3M™ VentureClad™ that are to be applied to the left and right sides of the insulated rectangular duct reducer.

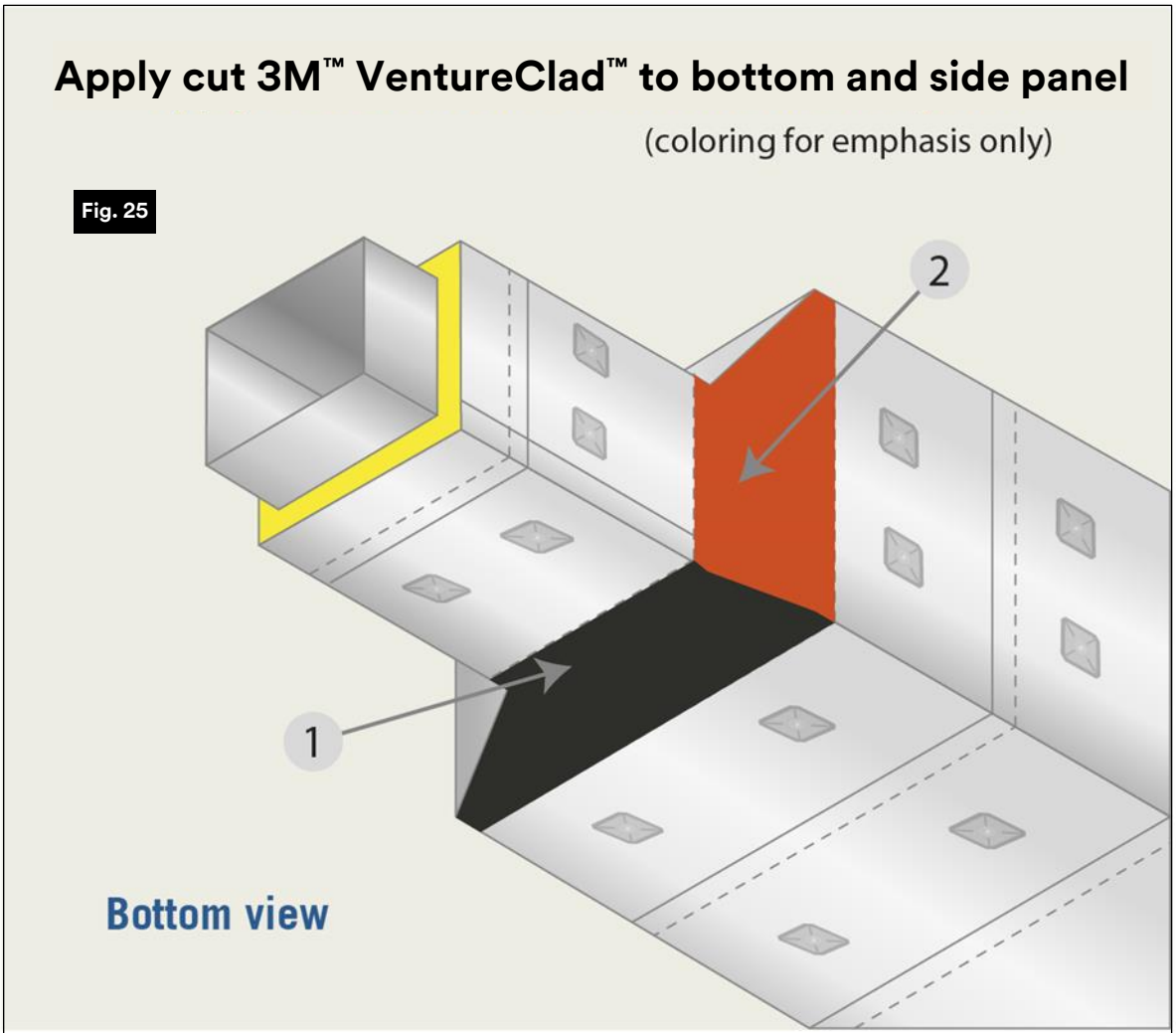


Figure 25 shows the first two faces to be covered with 3M™ VentureClad™ on the insulated rectangular duct. These are 1) the bottom and 2) one of the two sides.

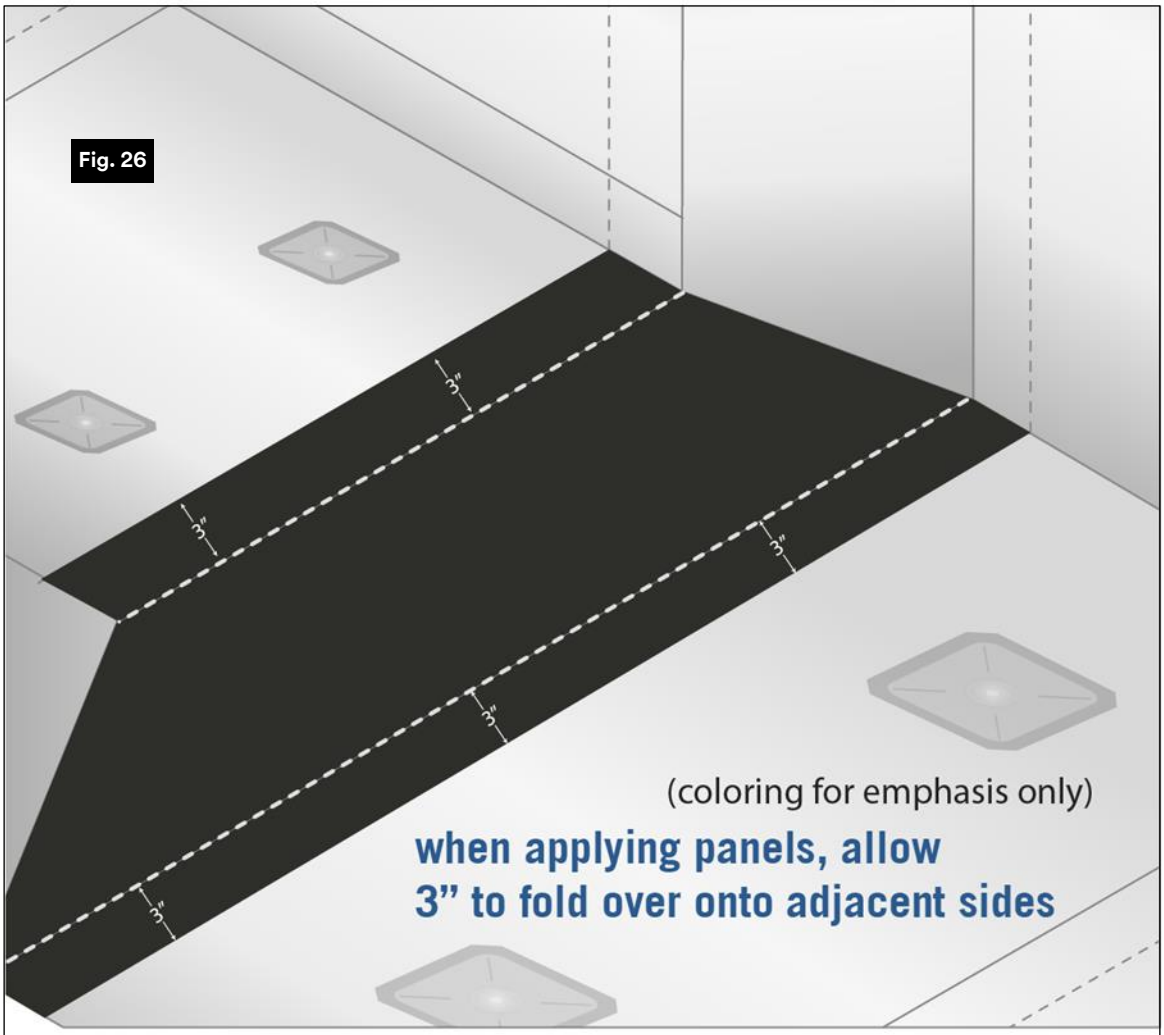


Figure 26 shows the location for the application of the cut 3M™ VentureClad™ to bottom of the insulated rectangular duct reducer. Note that there will be a 3 inch (75mm) overlap of each of the bottom faces of both the larger and smaller insulated duct sections.

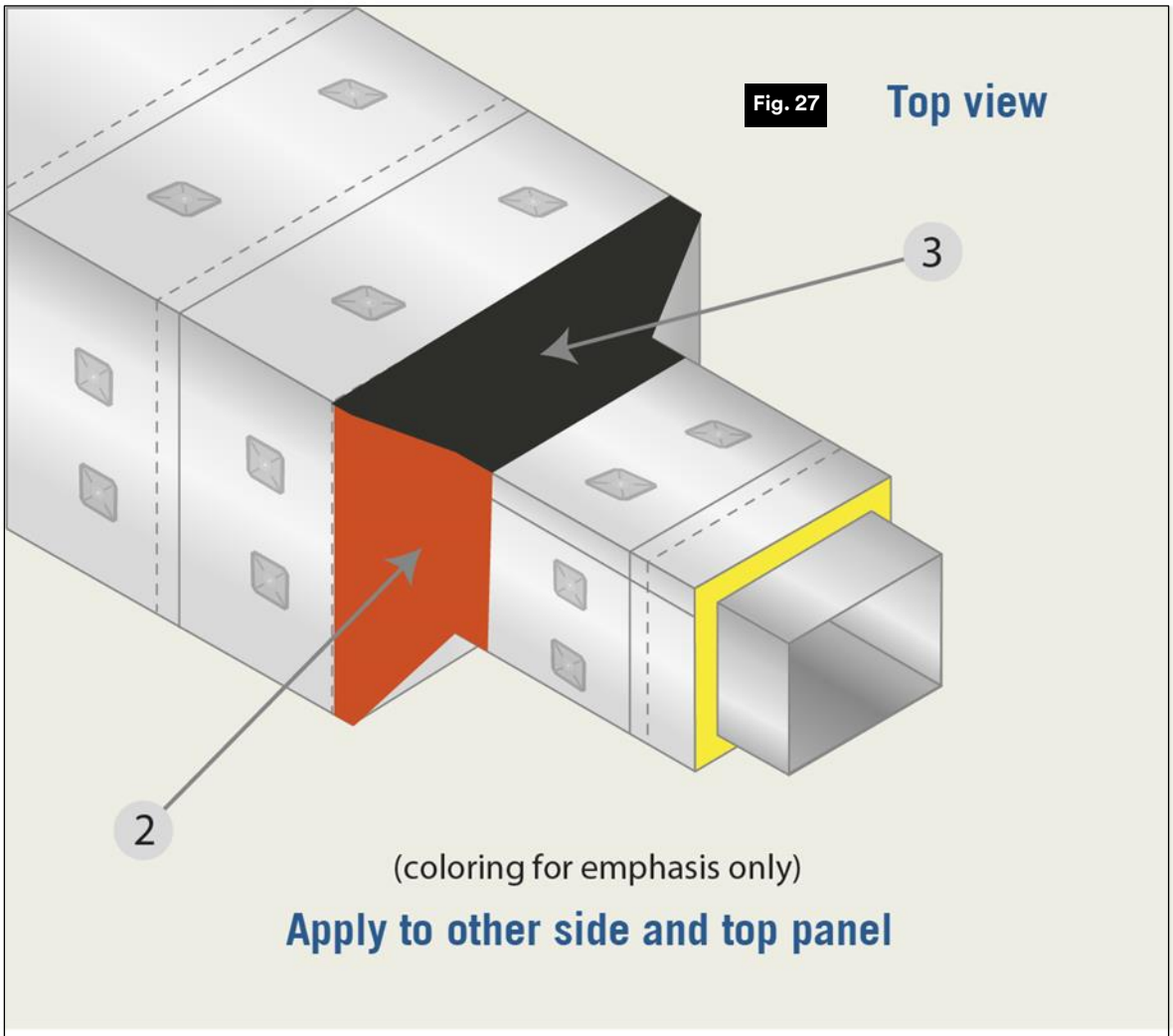


Figure 27 shows the locations of the next two faces of the insulated rectangular duct reducer to be covered with pre-cut pieces of 3M™ VentureClad™. These are 2) the second side and 3) the top.

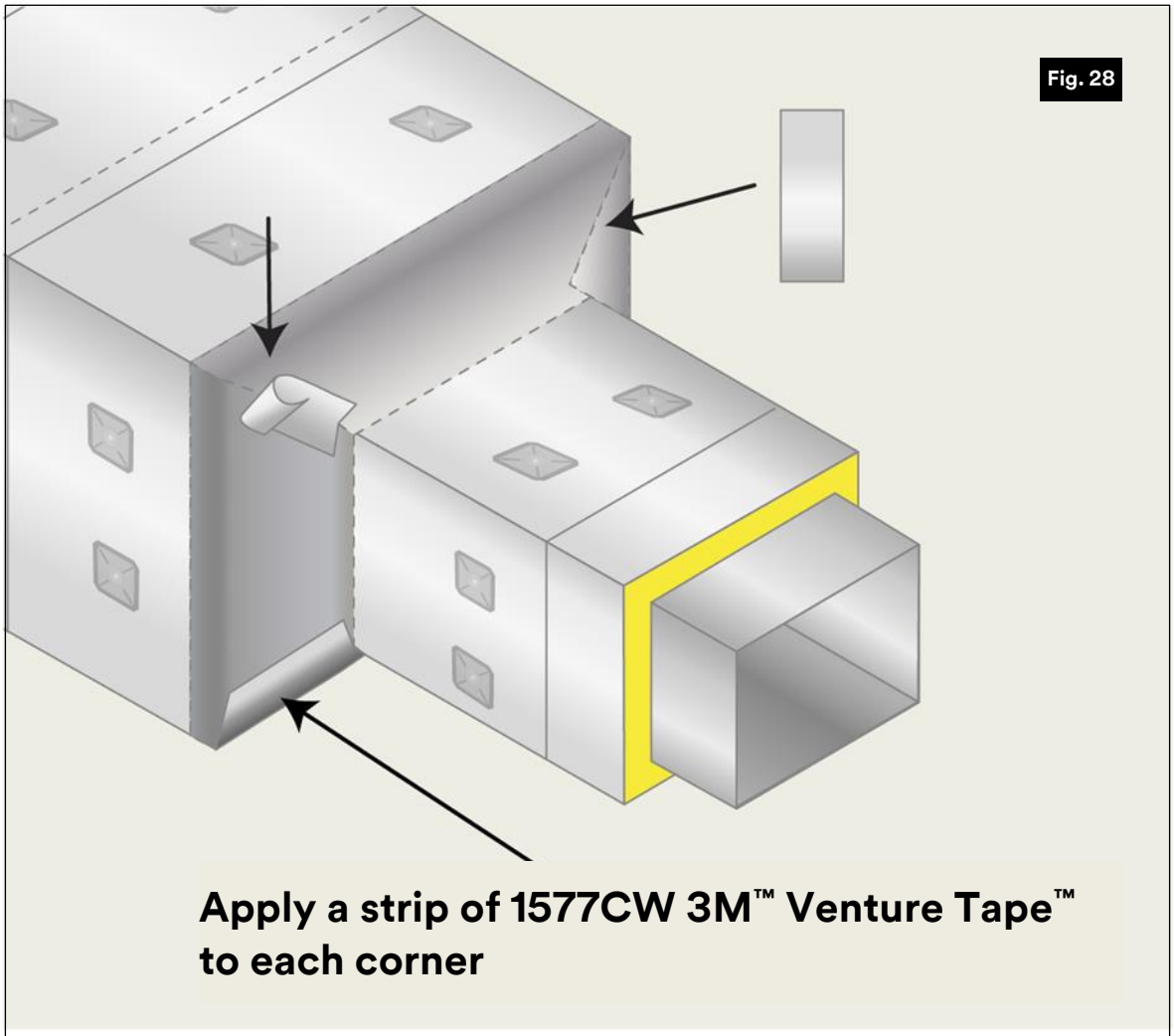


Figure 28 shows the application of a strip of 1577CW 3M™ Venture Tape™ being applied to one of the four corners of this rectangular duct reducer. This is done when using both 1577CW and 1579GCW 3M™ VentureClad™.

Measure for cutting bottom and top of small rectangle

Fig. 29

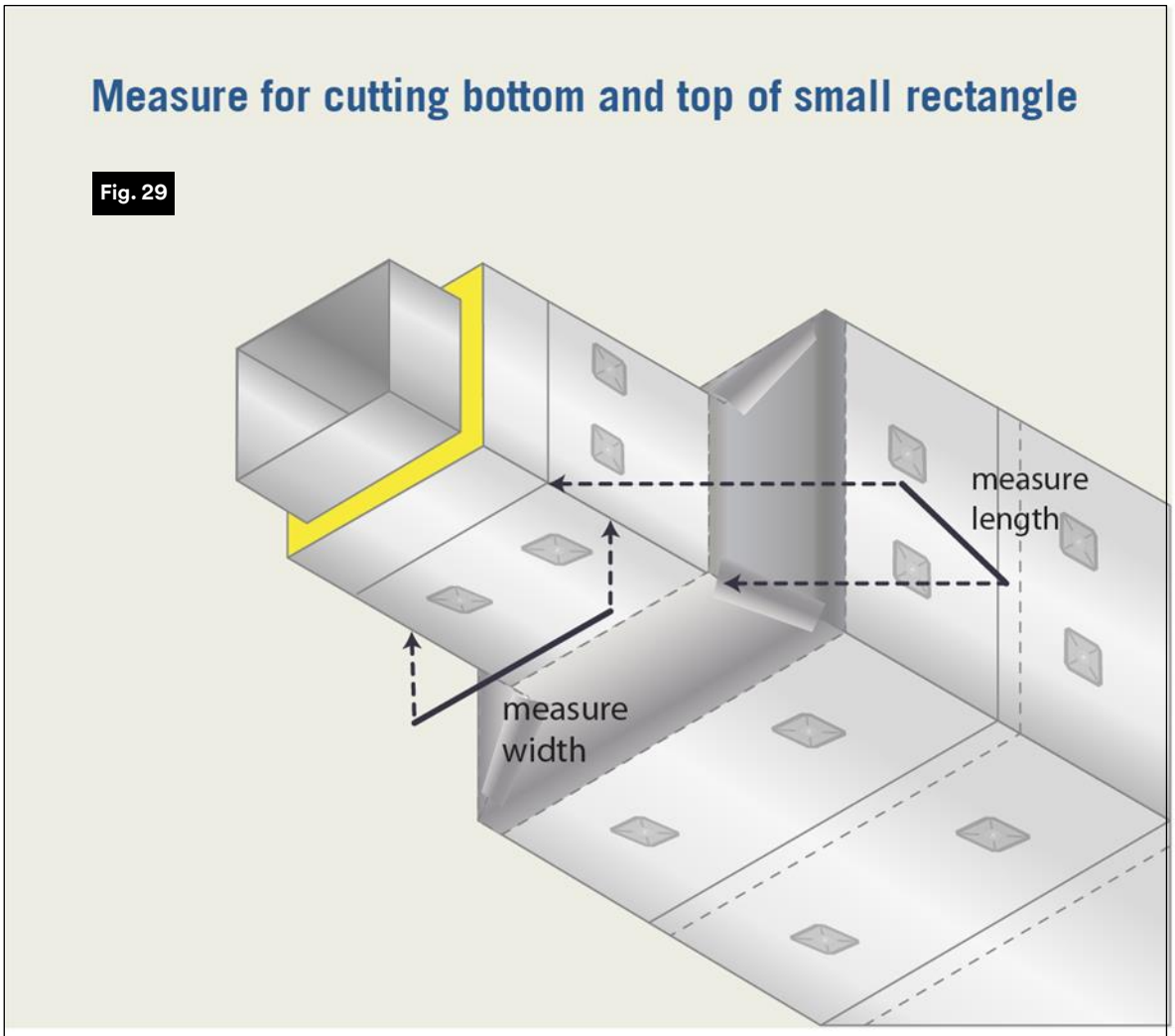


Figure 29 shows measurements to be made of the smaller of the two insulated rectangular ducts that connects to the reducer.

Cut 2 pieces of 3M™ VentureClad™ as demonstrated below for bottom and top pieces

Fig. 30

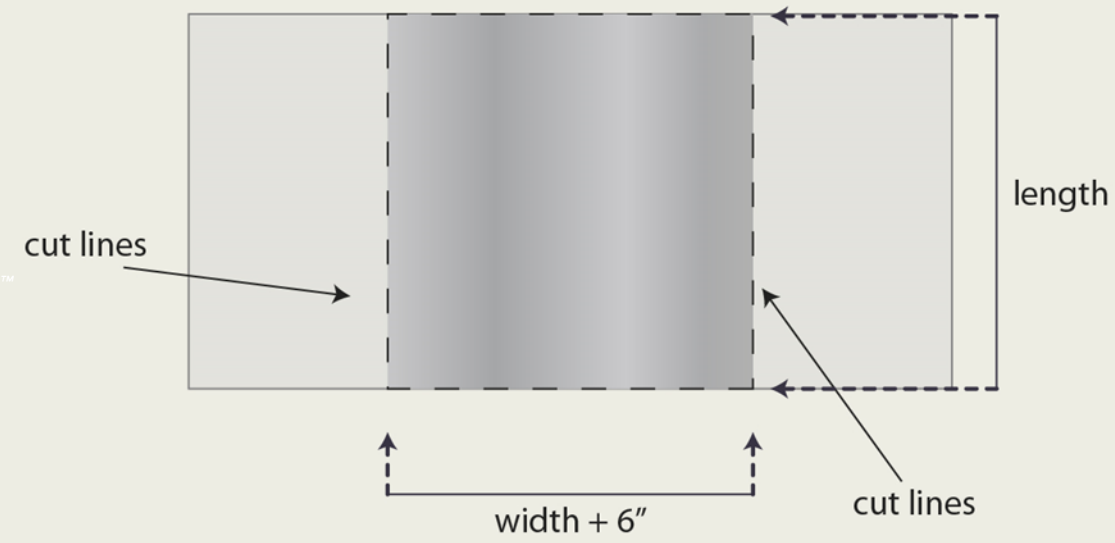


Figure 30 shows the cuts to be made to the 3M™ VentureClad™ to cover the bottom of the smaller insulated rectangular duct. In this case, "length" may be the 3M™ VentureClad™ roll width. The extra 6 inches (150mm) on the width allows the 3M™ VentureClad™ to be folded, by 3 inches (75mm), over each of the two vertical sides.

Measure for cutting sides of small rectangle

Fig. 31

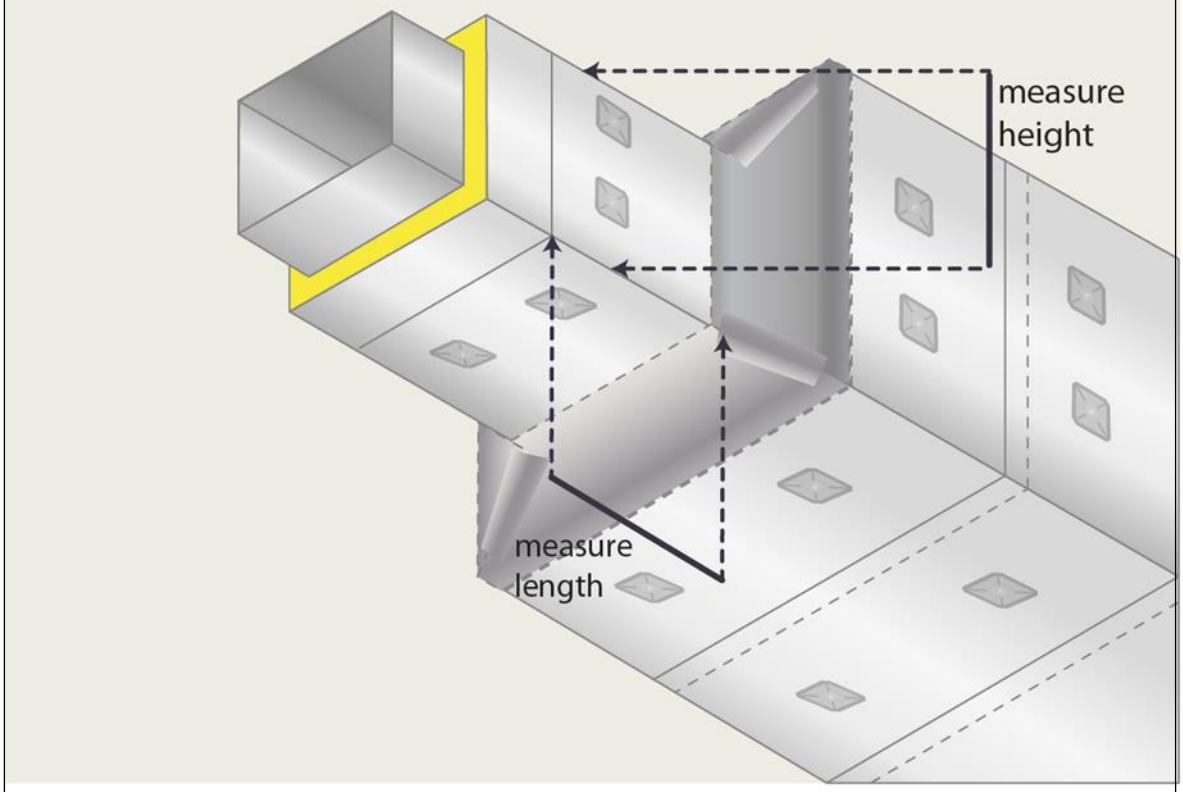


Figure 31 shows measurements to be made on the sides of the smaller insulated rectangular ducts.

Cut 2 pieces of 3M™ VentureClad™ as demonstrated below for sides

Fig. 32

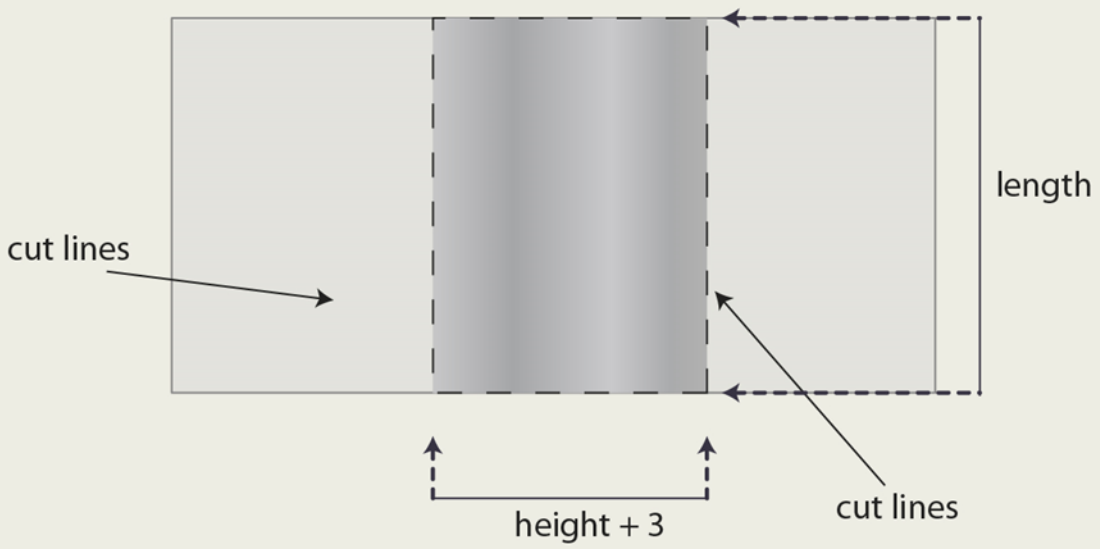


Figure 32 shows cut lines for cutting a piece of 3M™ VentureClad™ for each of the two sides of the smaller insulated rectangular ducts that connects to the insulated reducer. The extra 3 inches (75mm) added to the height allows for the 3M™ VentureClad™ application to start on the top surface before being applied to the sides.

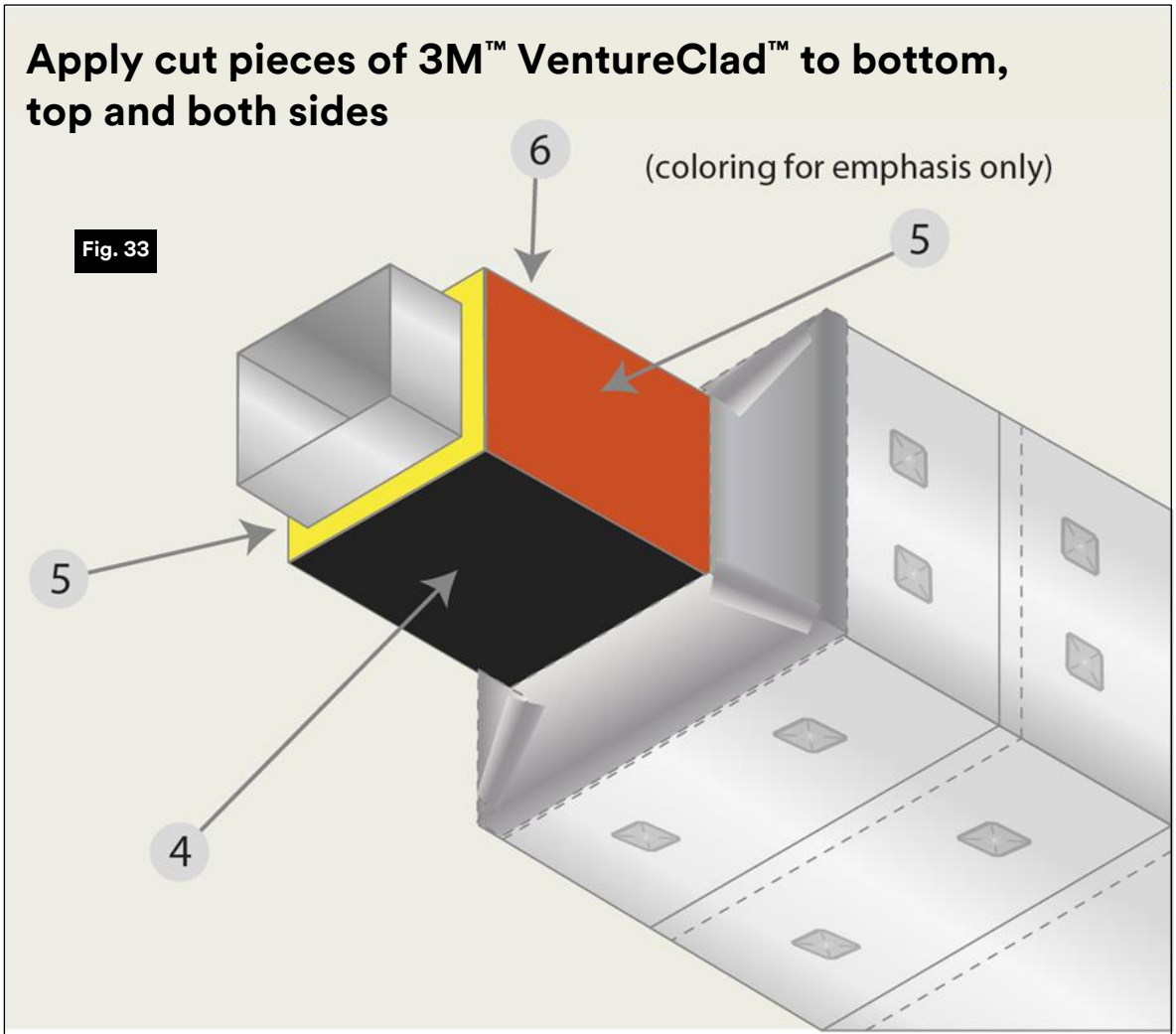


Figure 33 shows the application of the two cut 3M™ VentureClad™ pieces, first to the bottom of the smaller rectangular duct (# 4), then to one of the two vertical sides (# 5), and finally the top (# 6).

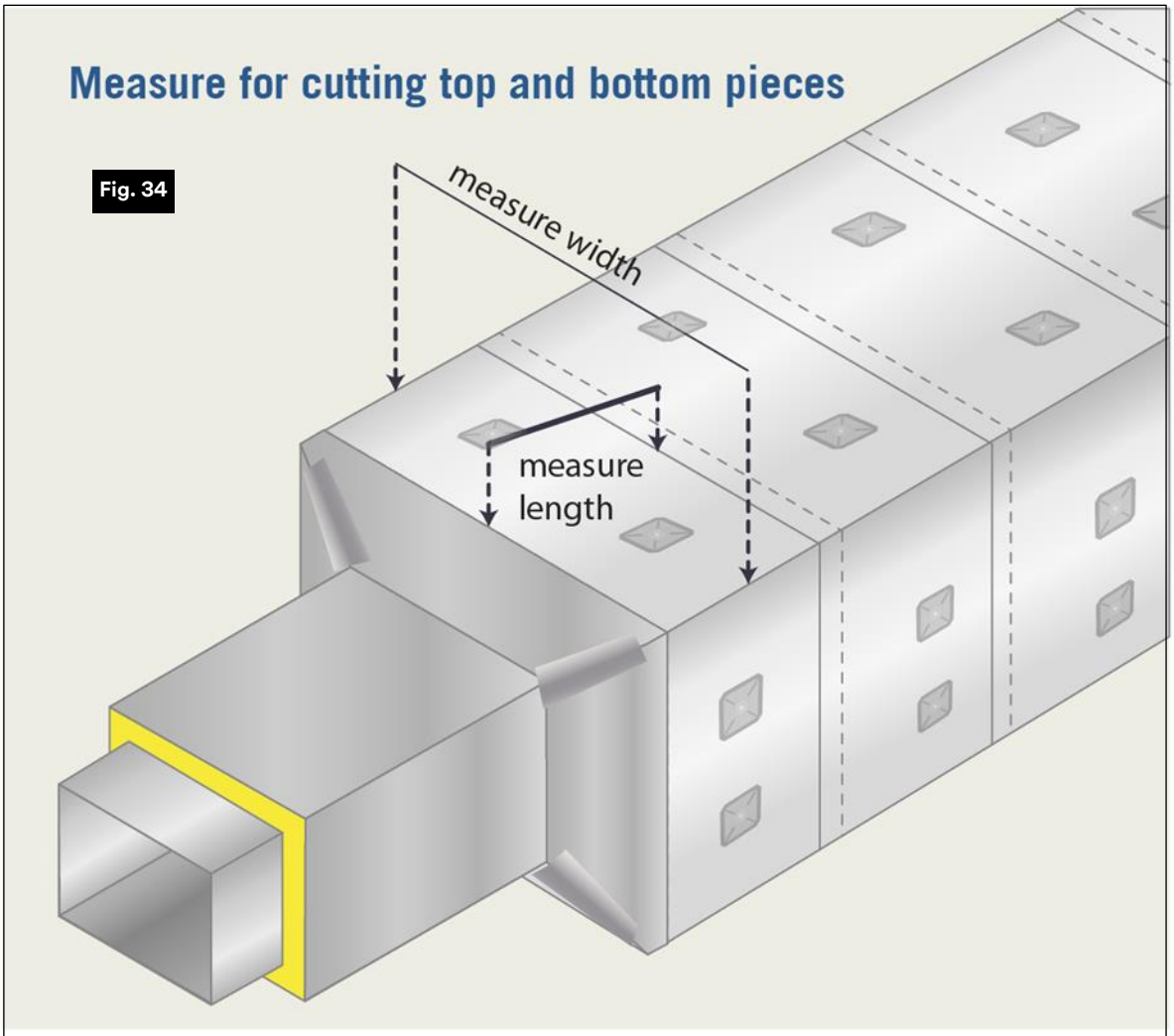


Figure 34 shows measurements to be made for the 3M™ VentureClad™ pieces to be applied to the bottom and top of the larger insulated rectangular duct section that connects to the reducer. Note that prior to applying the 3M™ VentureClad™, each washer should be first covered with a piece of 3M™ Venture Tape™, as shown in Figure 2.

Cut 2 pieces of 3M™ VentureClad™ as demonstrated below for bottom and top pieces

Fig. 35

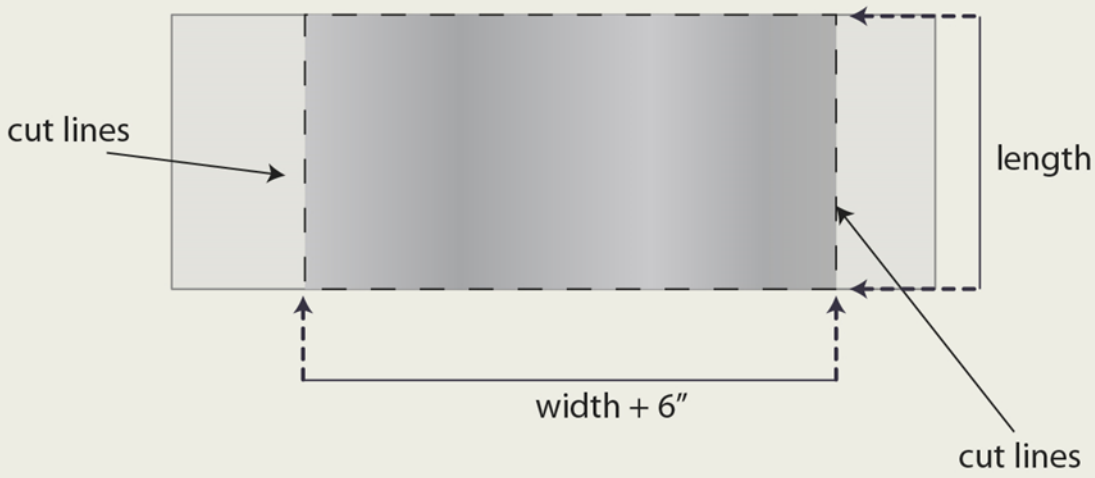


Figure 35 shows the cut lines for the bottom and top pieces of 3M™ VentureClad™ to be applied to the larger insulated rectangular duct section connecting to a reducer. The dimension on the drawing shown as "length" may simply be the 3M™ VentureClad™ roll width. The extra 6 inches (150mm), added to the dimension "width", allows for a 3 inch (75mm) overlap of each of the two vertical sides.

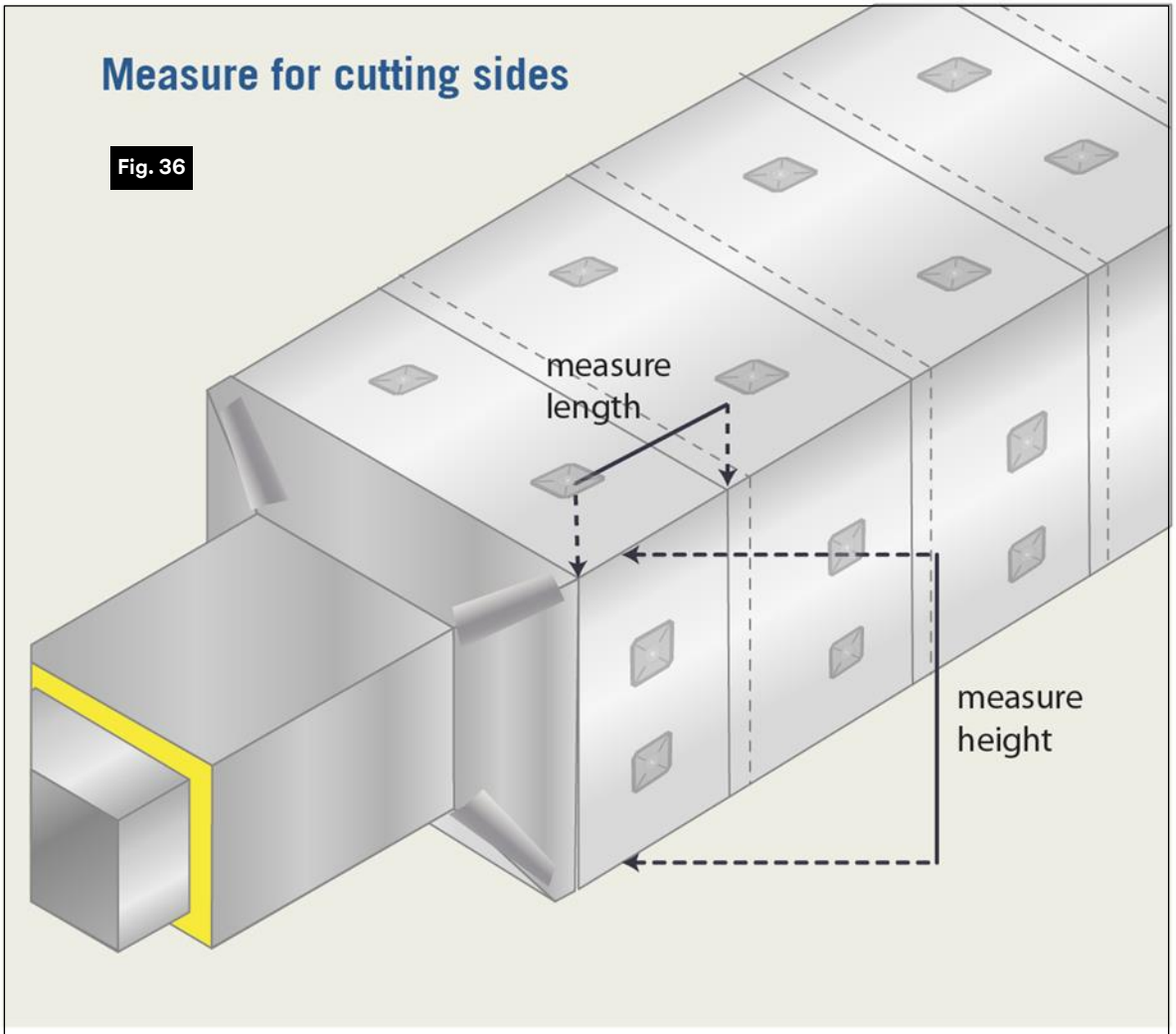


Figure 36 shows measurements to be made on the sides of the larger insulated rectangular duct that connects to the reducer.

Cut 2 pieces of 3M™ VentureClad™ as demonstrated below for side pieces

Fig. 37

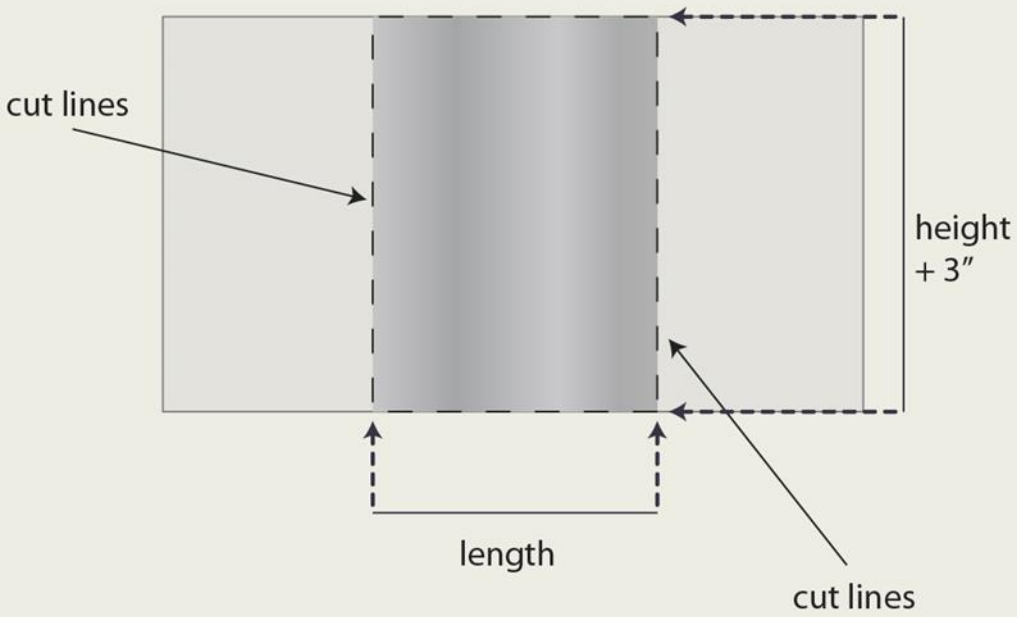


Figure 37 shows cut lines for cutting the two sidewall pieces of 3M™ VentureClad™ to cover the larger insulated rectangular duct. Note that the extra 3 inches (75mm), added to the height, allows for the 3M™ VentureClad™ to start on the top surface and then be folded over to cover the sidewall. Also, note that "length" may simply be equal to the width of the 3M™ VentureClad™ roll.

Apply cut pieces of 3M™ VentureClad™ to sides, bottom first and overlapping previously applied pieces — leave 3" at the bottom to go under next application

Fig. 38

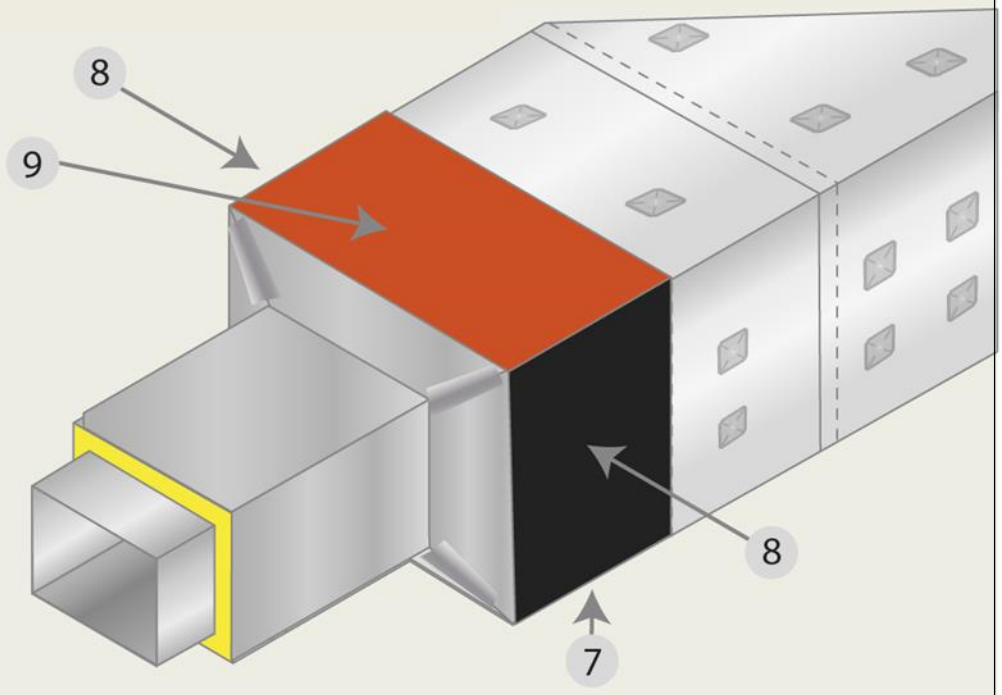


Figure 38 shows the first two pieces of 3M™ VentureClad™ to be applied to the surfaces of the larger insulated rectangular duct that connects to the reducer. First, apply the 3M™ VentureClad™ to the bottom (# 7), then apply it to each of the two sides (# 8), and finally apply it to the top (# 9).

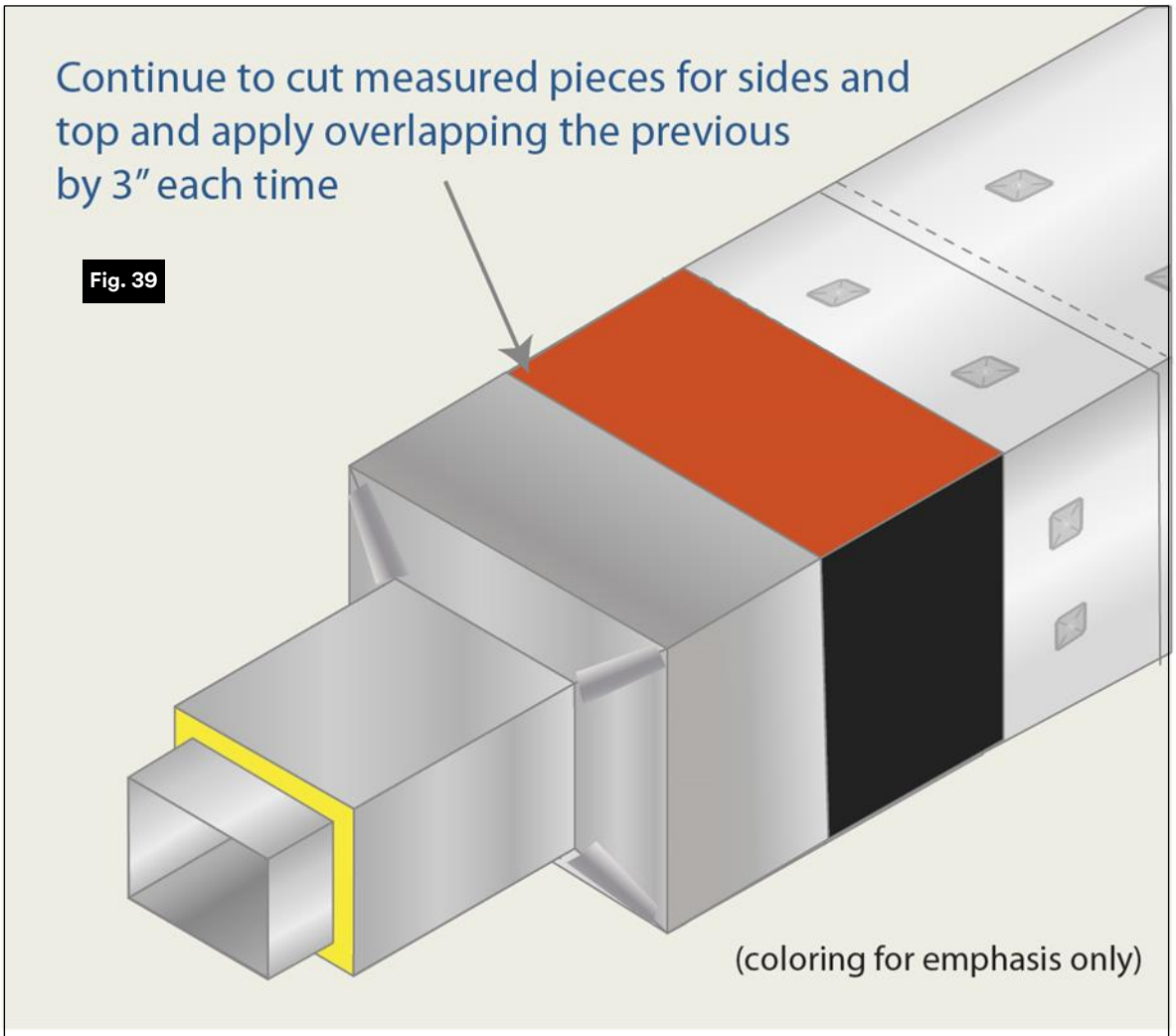


Figure 39 shows where the next pieces of 3M™ VentureClad™ are to be applied on the larger section of the insulated rectangular duct that connects to the reducer.

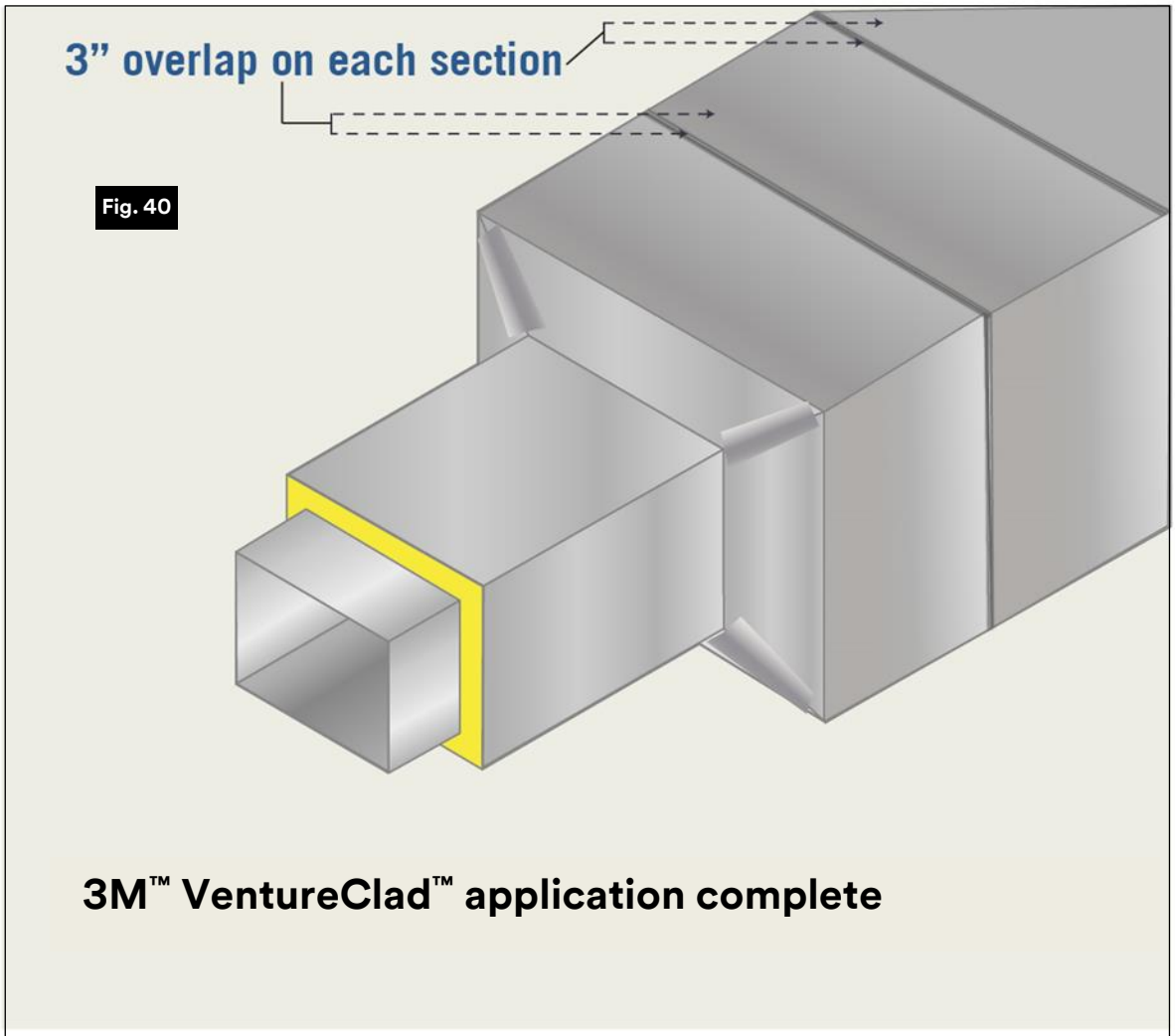


Figure 40 shows the completed application of the 3M™ VentureClad™ to the first two sections of the larger insulated rectangular duct section that are adjacent to the reducer.

5. Insulated Rectangular Duct, 90° Elbows

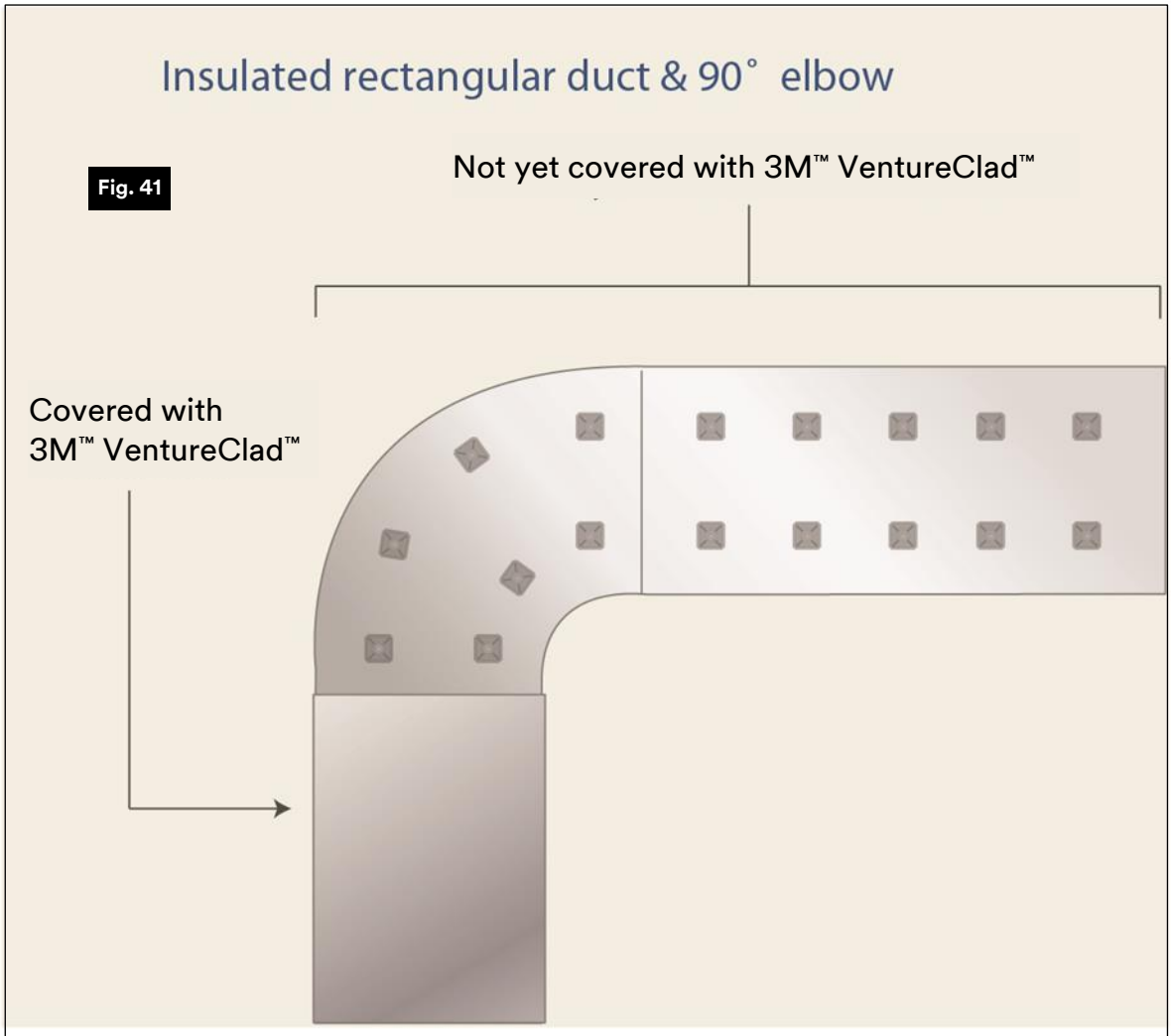


Figure 41 shows one section of an insulated rectangular duct connected to another section with a 90° rectangular elbow. It is recommended that the elbow be covered with 3M™ VentureClad™ following the covering of one adjacent section of the rectangular duct.

Sections to be covered with 3M™ VentureClad™

Fig. 42

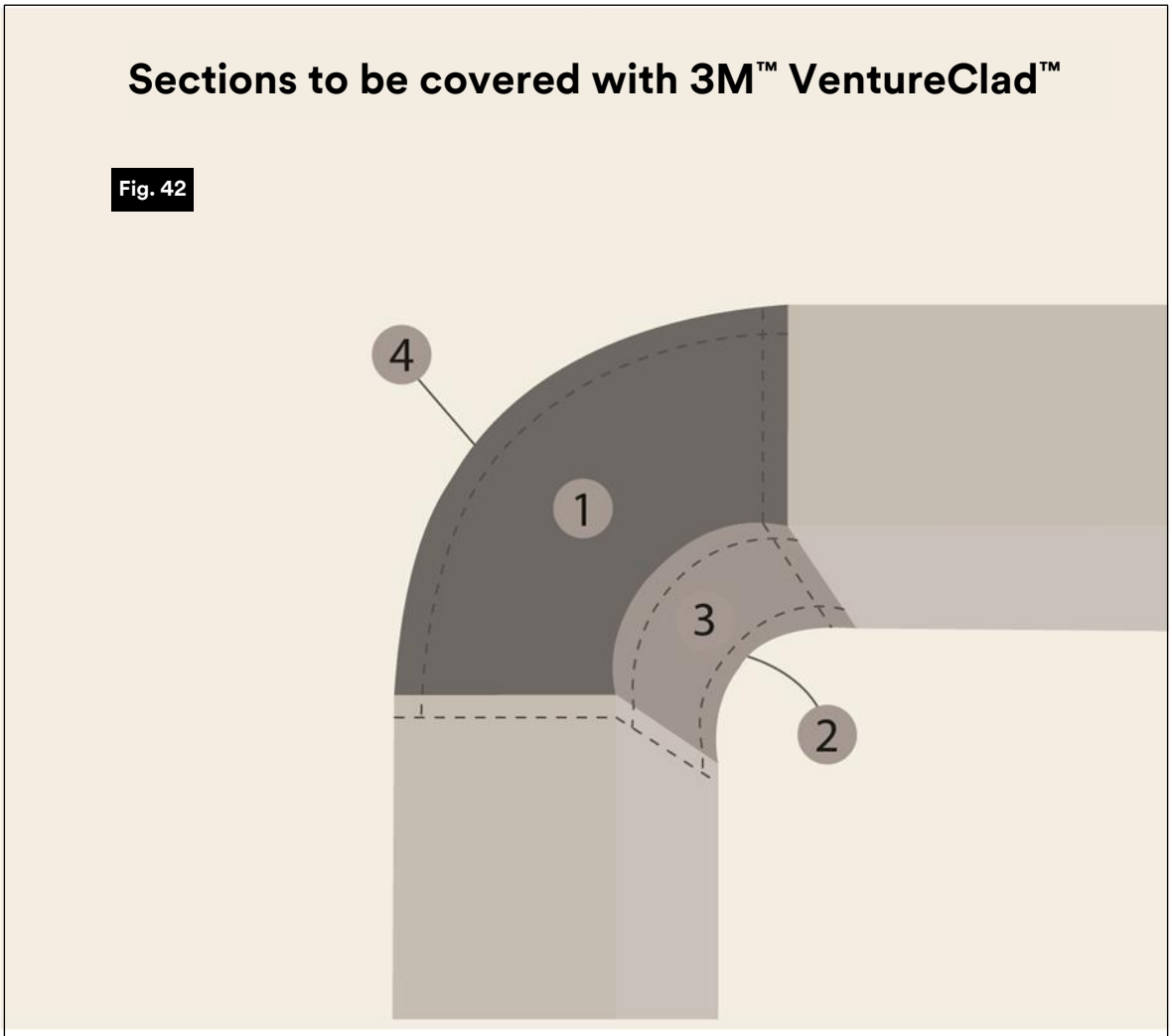


Figure 42 shows the sequence for covering the 90° insulated rectangular elbow with 3M™ VentureClad™ for a horizontal duct with 4 pieces of cut 3M™ VentureClad™. Hence, each rectangular elbow has two sides (Sections 1 and 2), a bottom or throat (Section 3) and a top or heel (Section 4). In the case of one vertical duct transitioning to a horizontal duct, the sequence is the same.

Before applying each section of 3M™ VentureClad™, cover washers with 3" x 3" strips of 3M™ Venture Tape™

Fig. 43

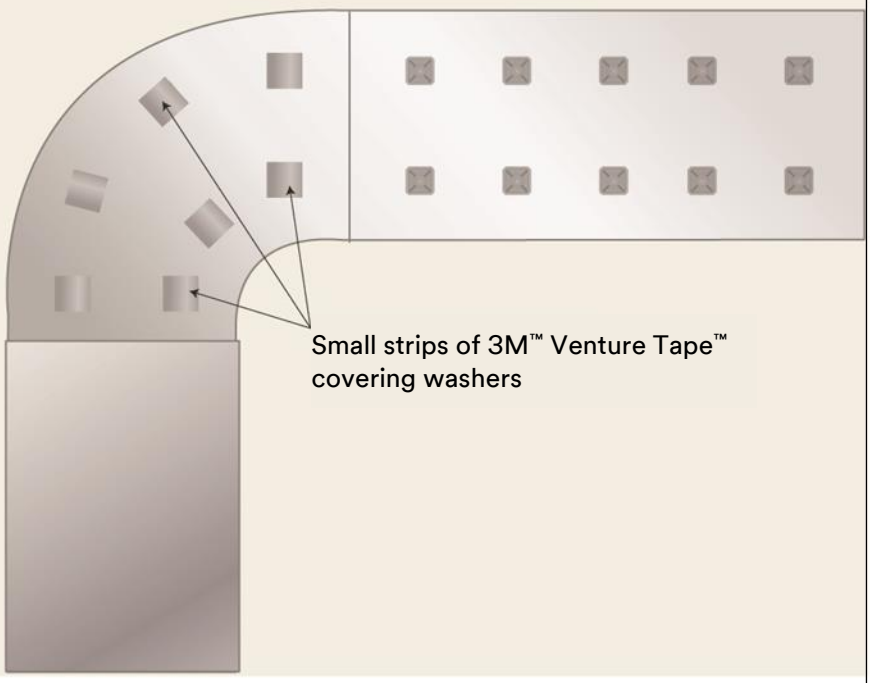


Figure 43 shows small strips of 3M™ Venture Tape™, such as 1525CW FSK, used to first cover the exposed pins and washers that are holding the insulation board to the duct.

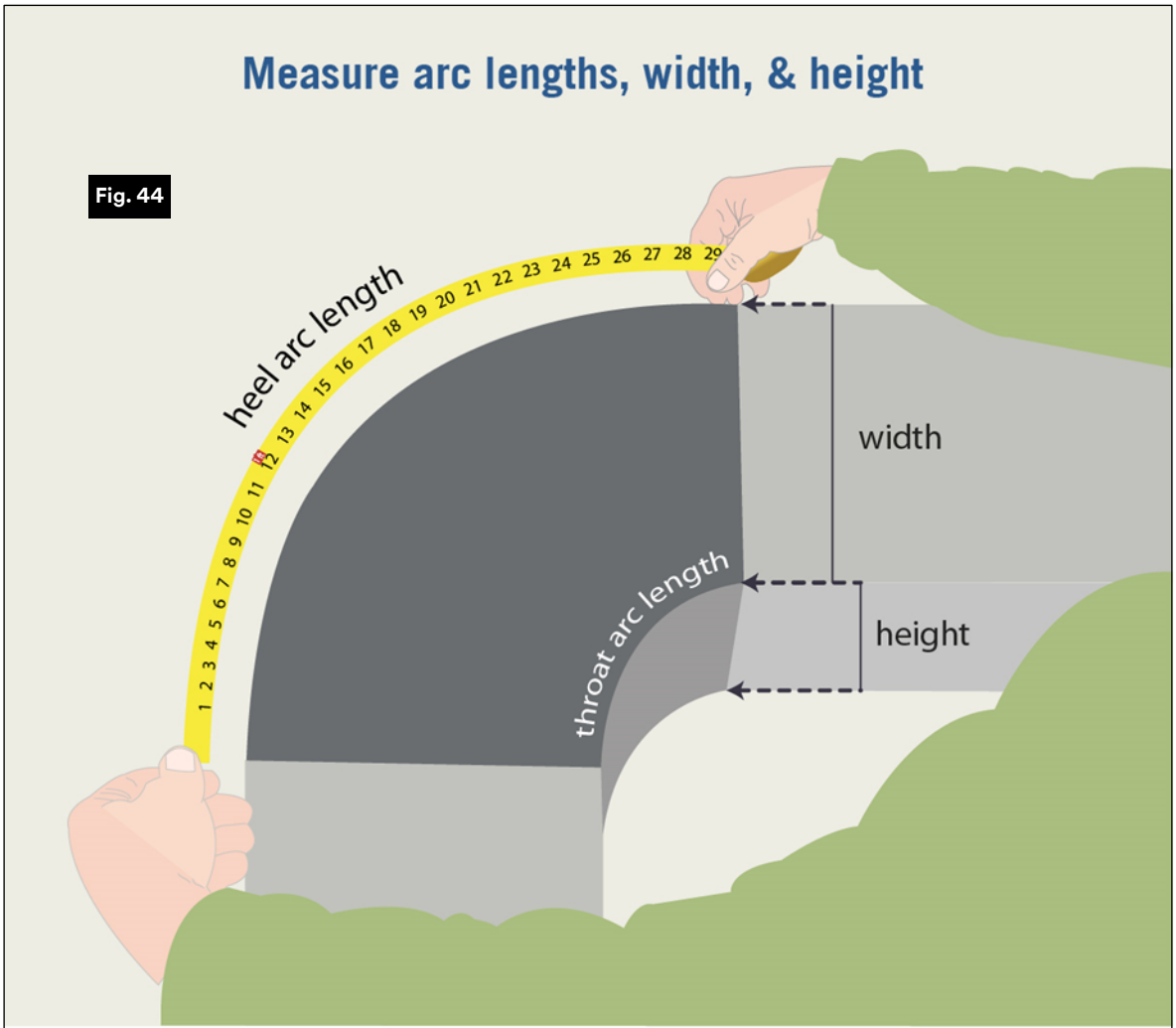


Figure 44 shows the installer measuring the heel and throat arc lengths prior to cutting the pieces of 3M™ VentureClad™ to be used to cover both the top and bottom surfaces of this rectangular elbow.

Cut <u>two</u> pieces of 3M™ VentureClad™ as shown below to fit sections 1 and 2 cut feathers in the heel and arc sides.

Fig. 45

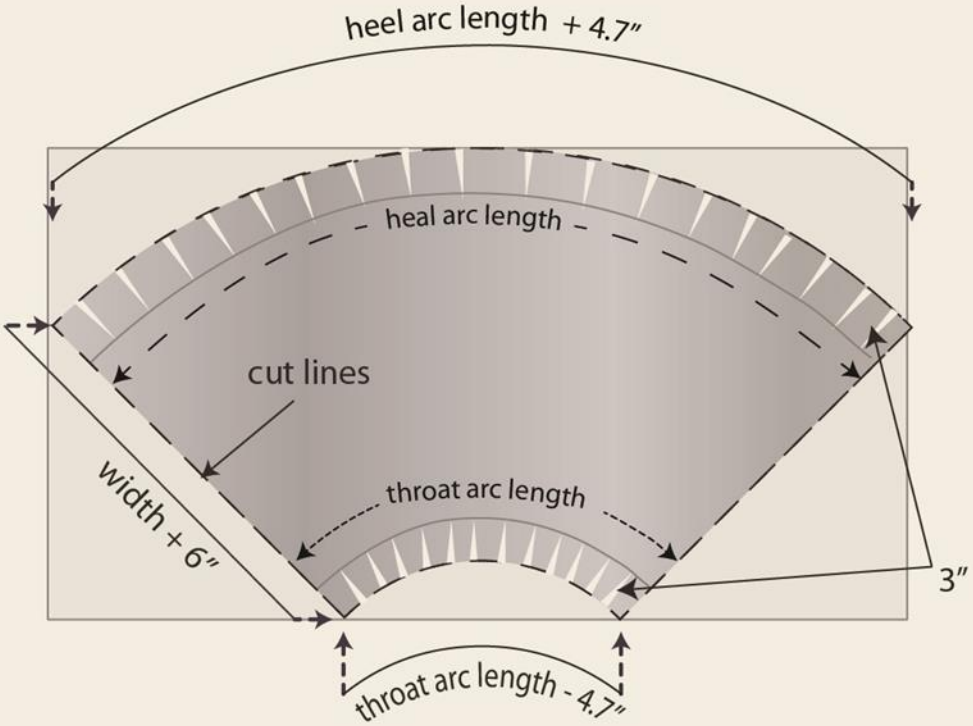


Figure 45 shows the pattern from which to cut the first piece of 3M™ VentureClad™, Section 1, to cover each side (Sections 1 and 2) of an insulated 90° rectangular elbow. Note the "feathered" curved edges that will be used to fold over curved edges. These "feathers" are simply 3 inch (75mm) cuts, made with scissors, in the 3M™ VentureClad™ material. Note that the 3M™ VentureClad™ heel arc length should be 4.7 inches (120mm) longer than the sheet metal elbow heel length and that the 3M™ VentureClad™ throat arc length should be 4.7 inches (120mm) shorter than the sheet metal elbow throat length.

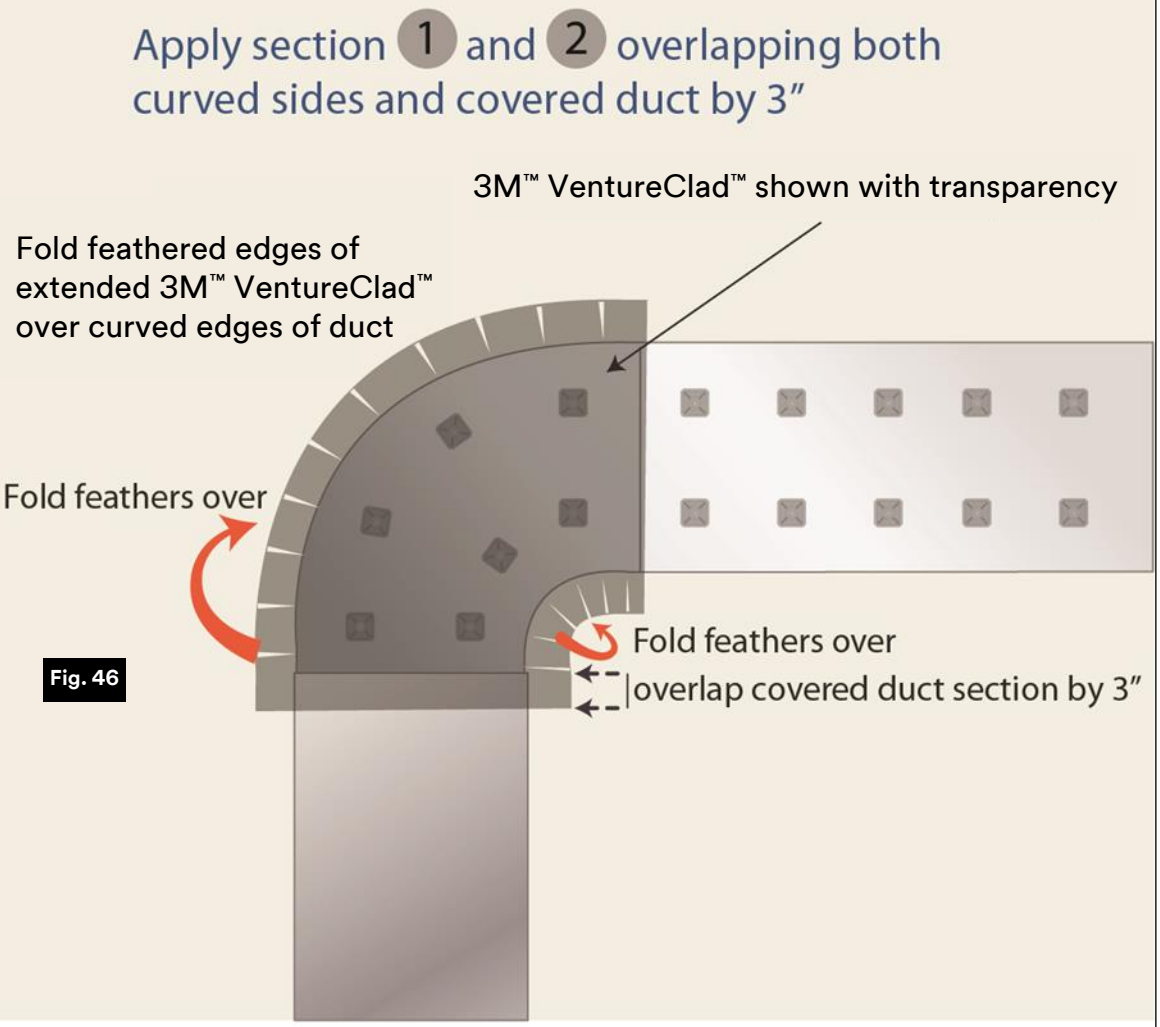


Fig. 46

Figure 46 shows the side of the rectangular elbow covered with a piece of 3M™ VentureClad™ first cut to fit. This drawing represents either Section 1 or 2. The "feathered" edges will be folded over and adhered to the throat and heel.

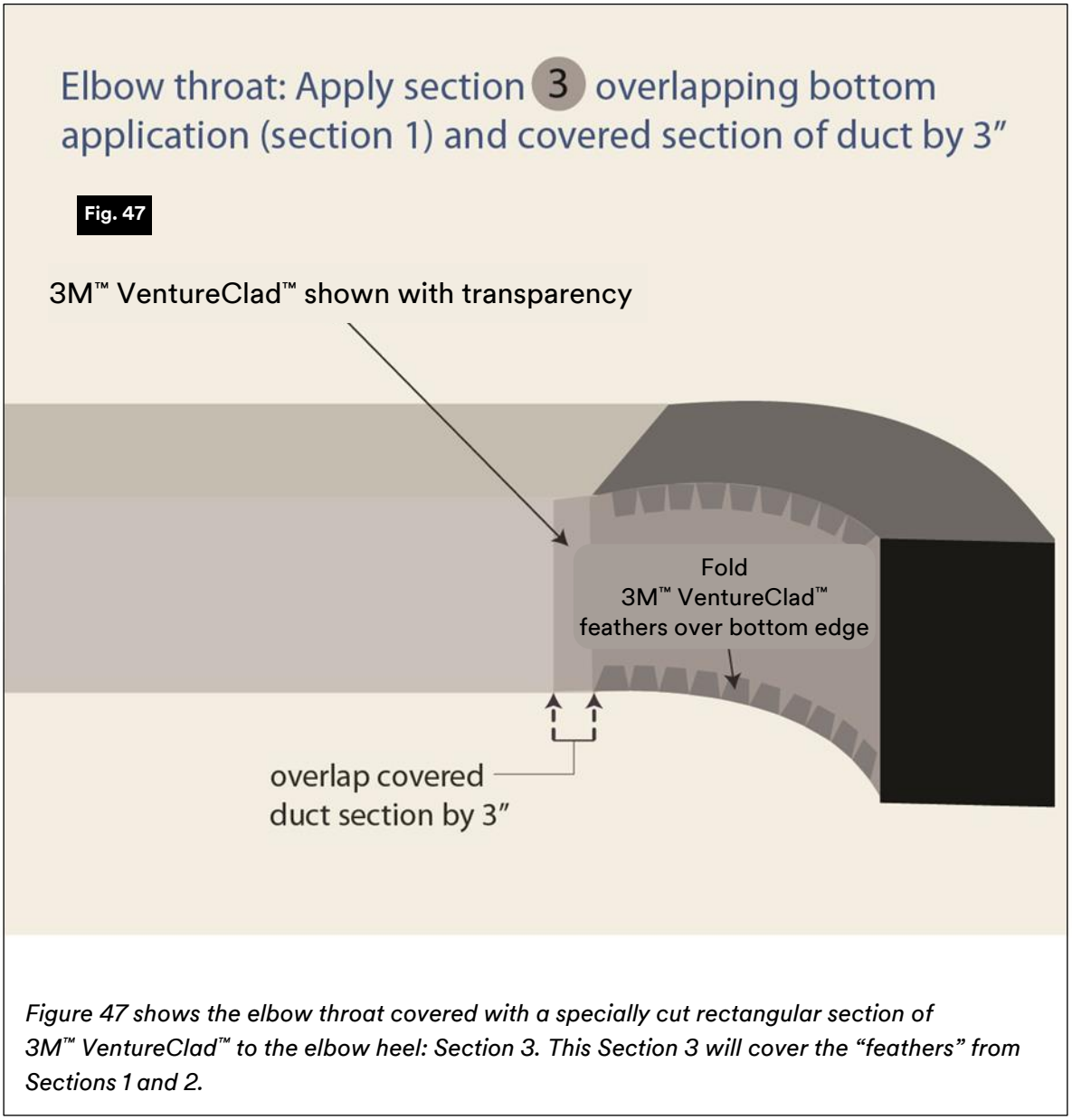


Figure 47 shows the elbow throat covered with a specially cut rectangular section of 3M™ VentureClad™ to the elbow heel: Section 3. This Section 3 will cover the "feathers" from Sections 1 and 2.

Elbow heal: Cover edges of curved 3M™ VentureClad™ with feathered overlaps

Fig. 48

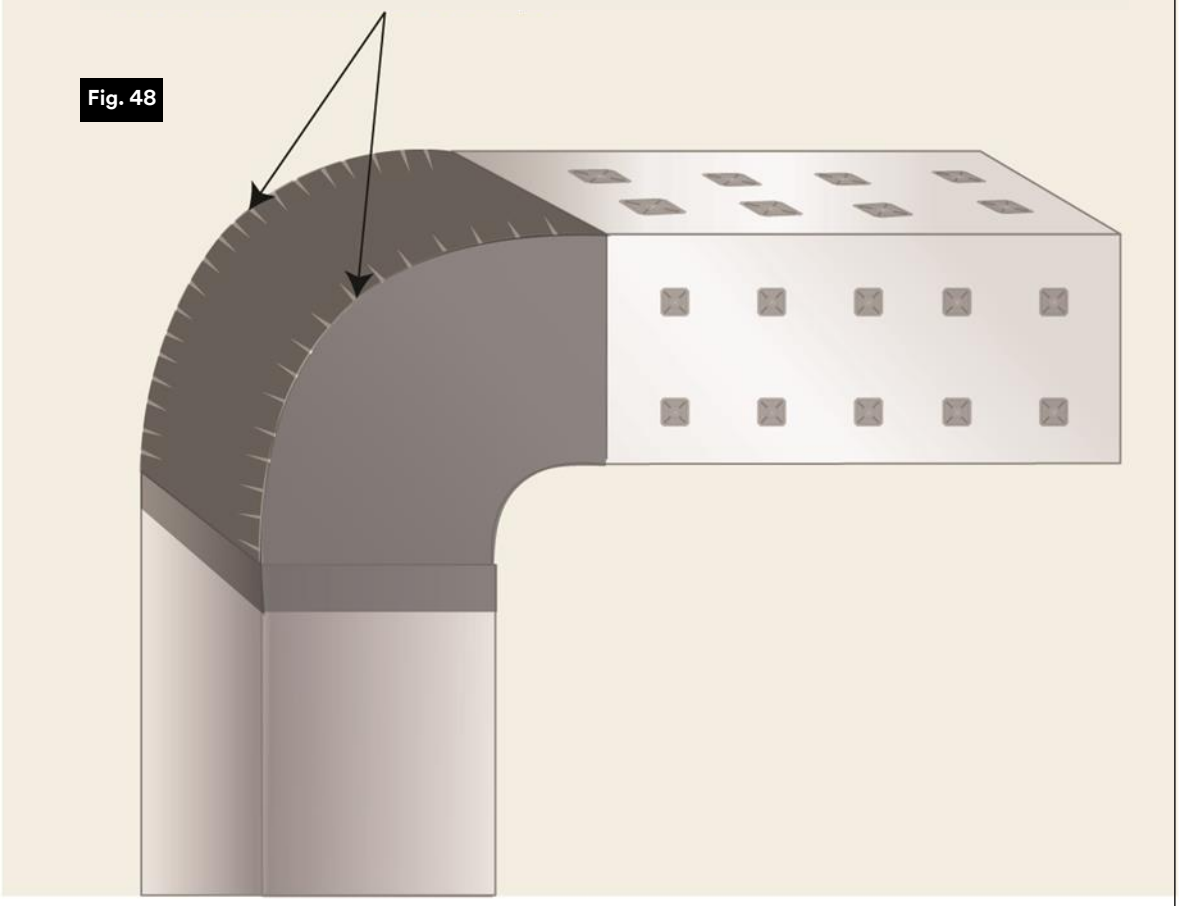


Figure 48 shows the location for applying the cut Section 4 3M™ VentureClad™ to the elbow heel. Note that it will cover the "feathers" from Sections 1 and 2 after it is applied.

Cut a piece of 3M™ VentureClad™ as shown below to fit section 3

Fig. 49

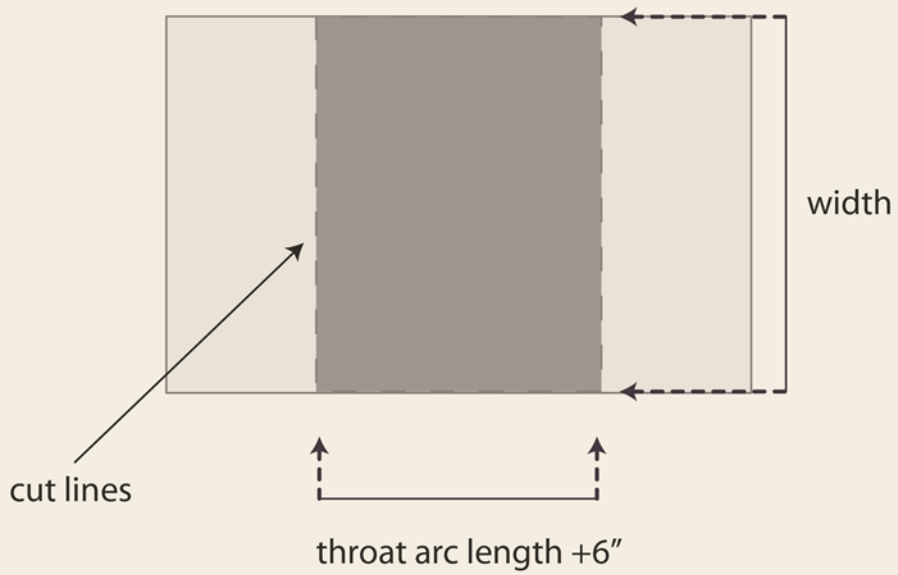


Figure 49 shows the rectangular piece of 3M™ VentureClad™ cut to fit the throat Section 3.

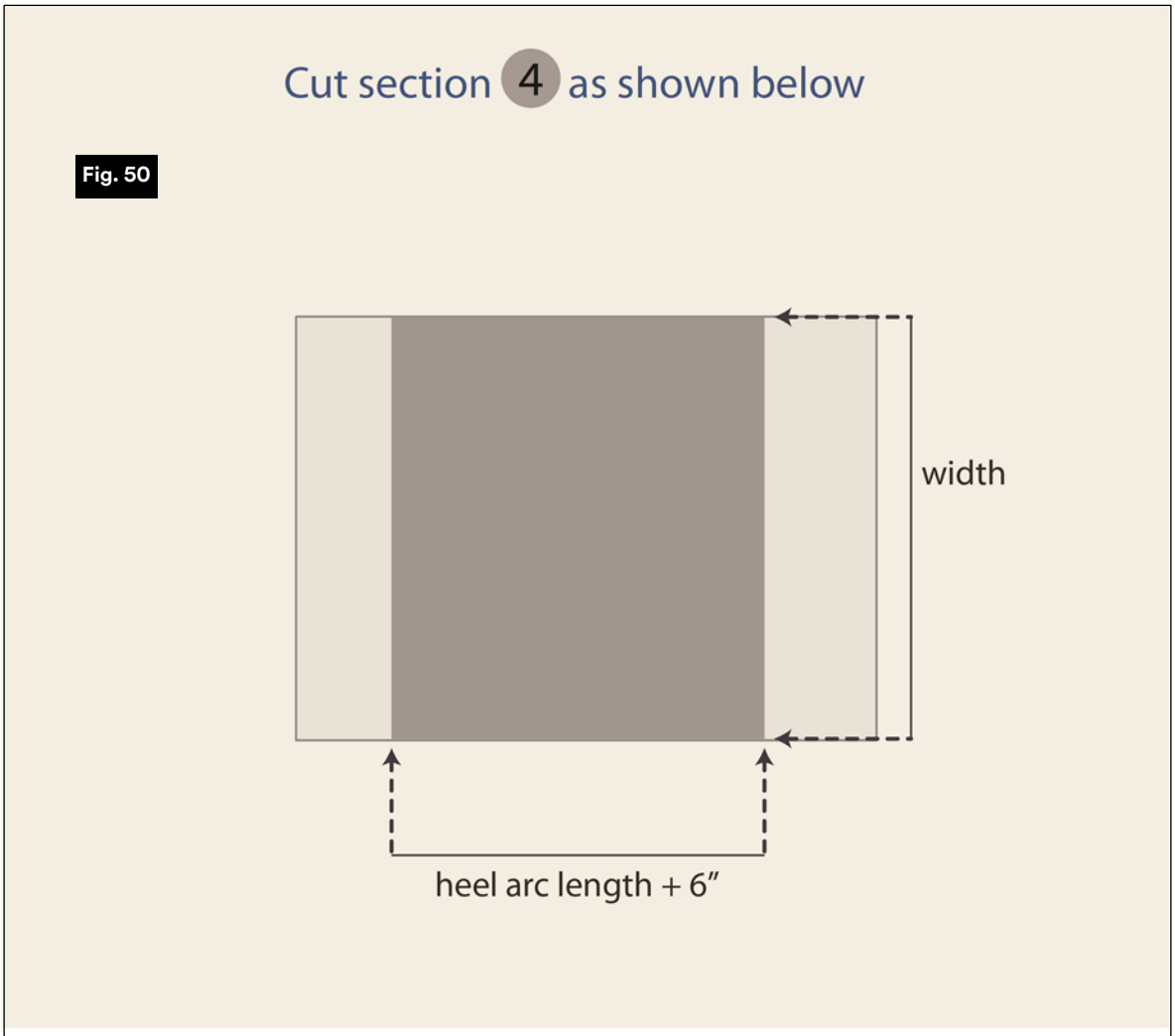


Figure 50 shows the rectangular heel Section 4 to be cut from the 3M™ VentureClad™.

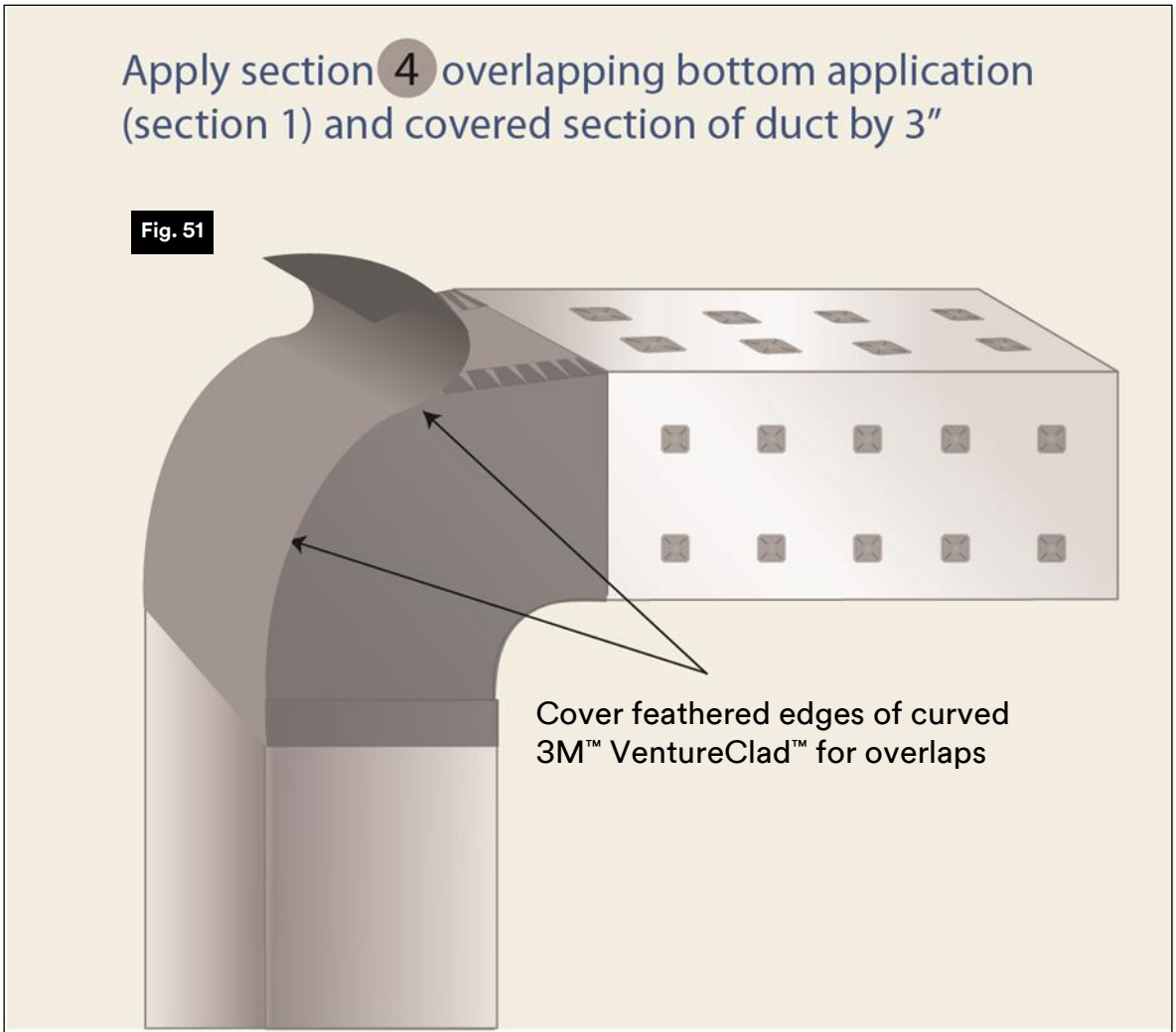


Figure 51 shows the top side of the insulated rectangular duct covered with the cut piece of 3M™ VentureClad™ Section 4.

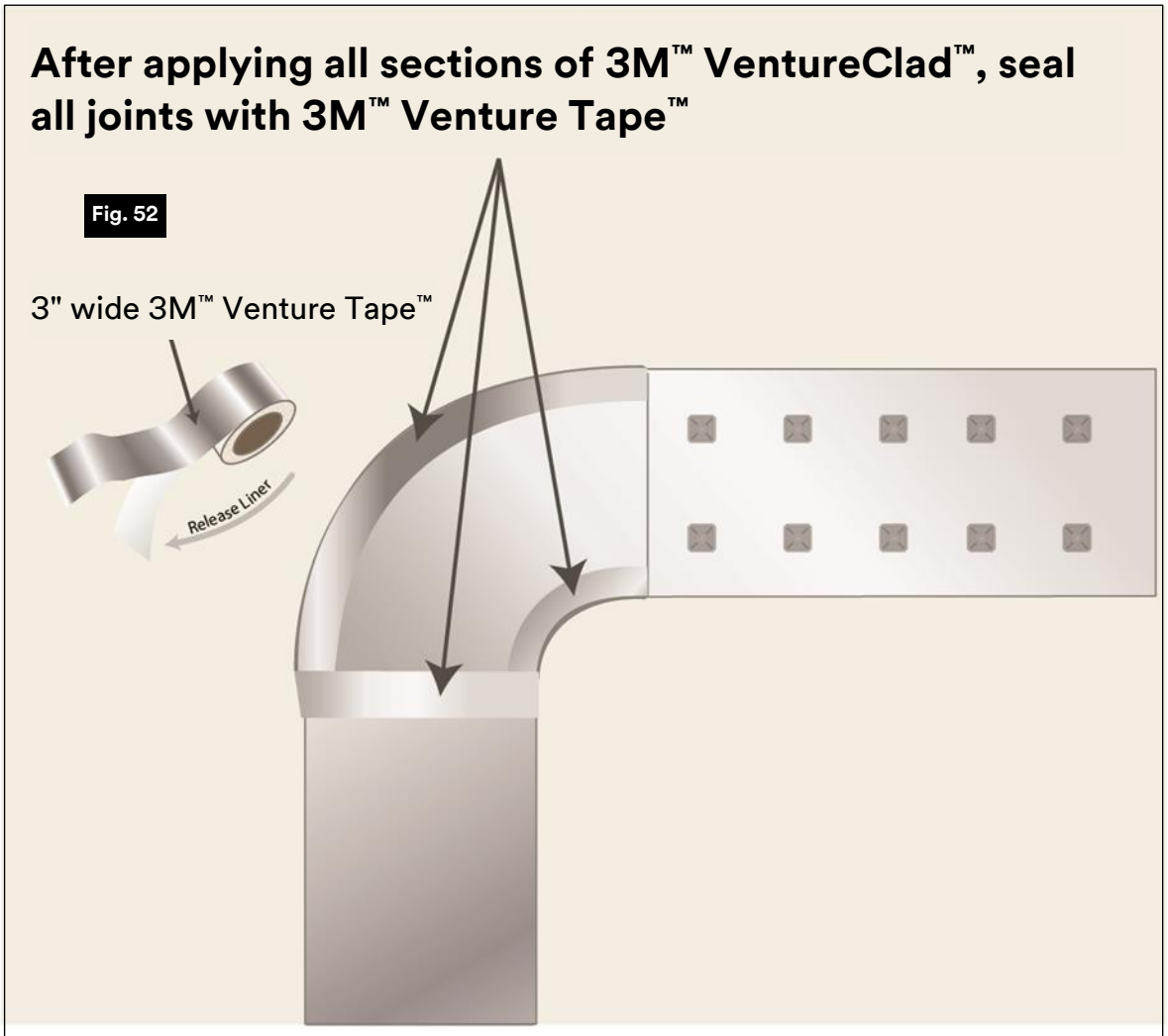


Figure 52 shows the insulated, 90° rectangular duct elbow totally covered with 3M™ VentureClad™. Note that the heel and throat edges, as well as the butt joint between the straight rectangular duct and the elbow, must all be sealed with 3M™ Venture Tape™ (either 1577CW or 1578CW). Feather the 3M™ Venture Tape™ as necessary to get it to lay down on the elbow sides.

6. Insulated Rectangular Duct Supports

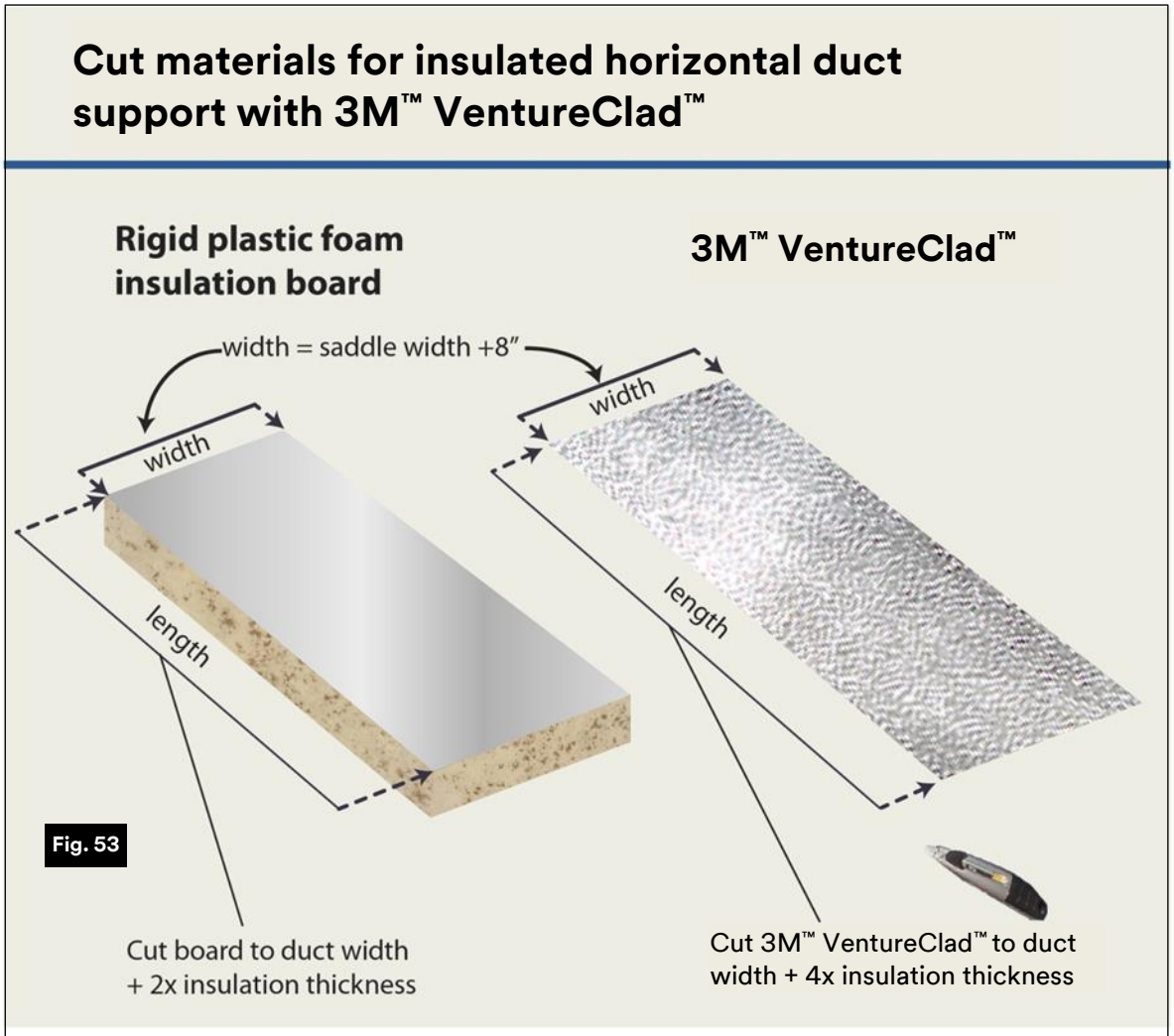


Figure 53: To form a horizontal duct support, the installer should start with a sheet of high compressive strength foam insulation board (i.e., high density expanded polystyrene or polyisocyanurate are typically used successfully). 3M recommends that the insulation board dimensions be (duct width + 2x insulation thickness) x (saddle width + 8 inches (200 mm)). 3M then recommends that the installer cut a sheet of 3M™ VentureClad™ that has dimensions of (duct width + 4 x insulation thickness) x (saddle width + 8 inches (200 mm)).

Apply 3M™ VentureClad™ to foam insulation board

After removing release liner, apply 3M™ VentureClad™ to insulation board, wrapping edges to cover exposed foam board ends

Fig. 54

Figure 54: After removing the release liner from the 3M™ VentureClad™, adhere it to the insulation board as shown above, being certain to wrap the board ends with the 3M™ VentureClad™ and press to get good adhesion over the entire surface.

Using a squeegee to assure good adhesion of 3M™ VentureClad™ Product to foam insulation board

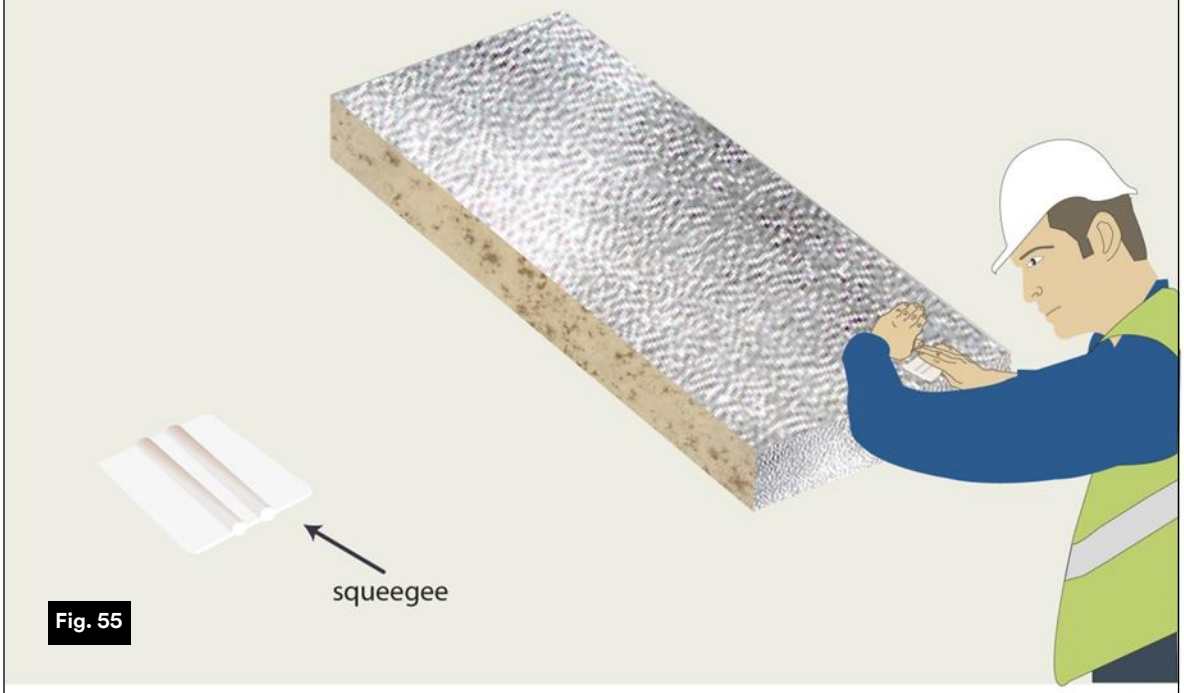


Fig. 55

Figure 55: 3M recommends the installer use a squeegee, as shown above, to make certain that the 3M™ VentureClad™ is well adhered over the entire insulation board surface.

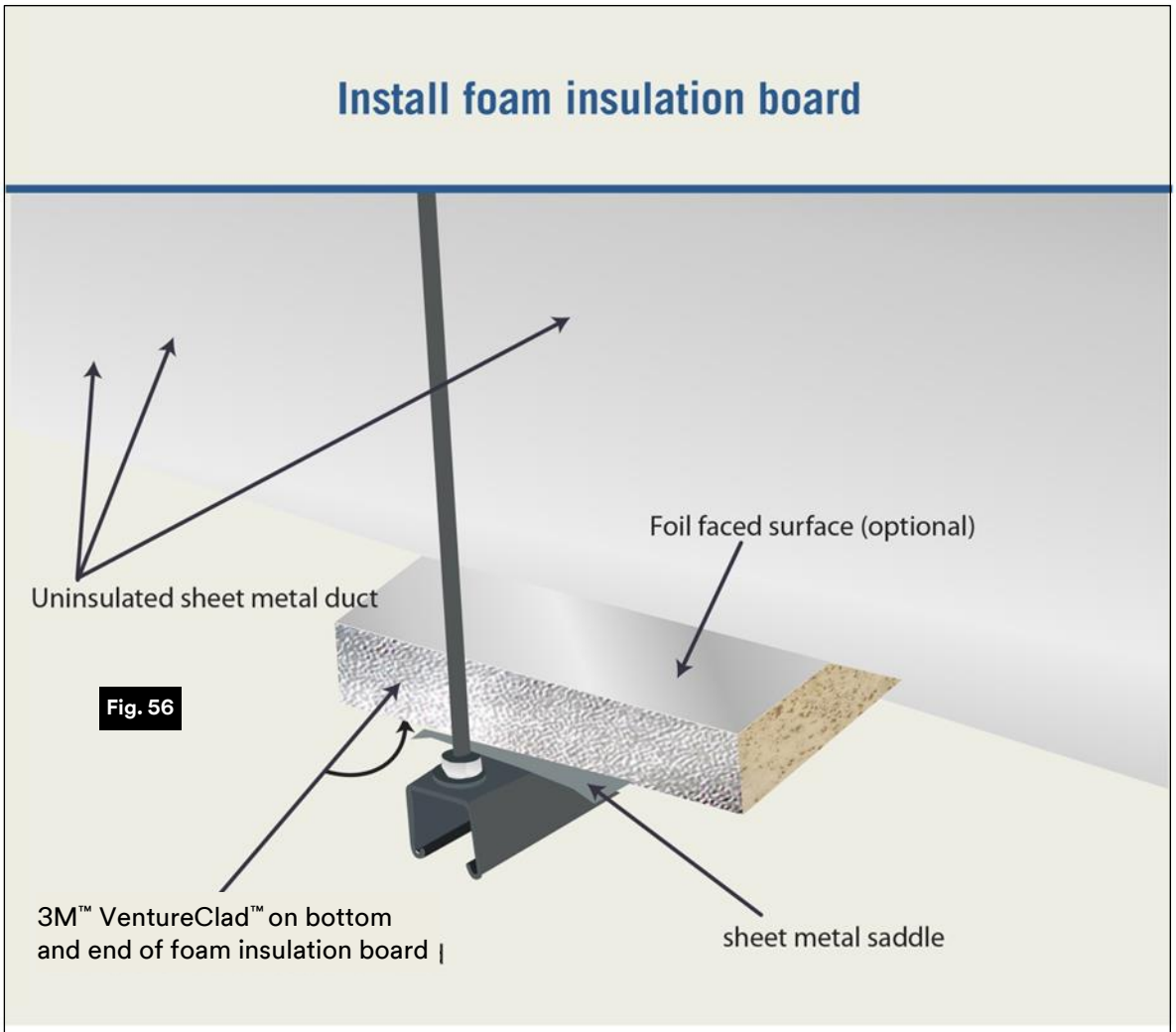


Figure 56: 3M recommends that at least two installers slide the faced insulation board between the sheet metal duct and the duct hanger + sheet metal saddle, with the 3M™ VentureClad™ facing down towards the saddle. Be certain to center this faced insulation board. Notice that the insulation board is wider than the sheet metal duct by 2 x insulation thickness (or by 1 x insulation thickness on each side).

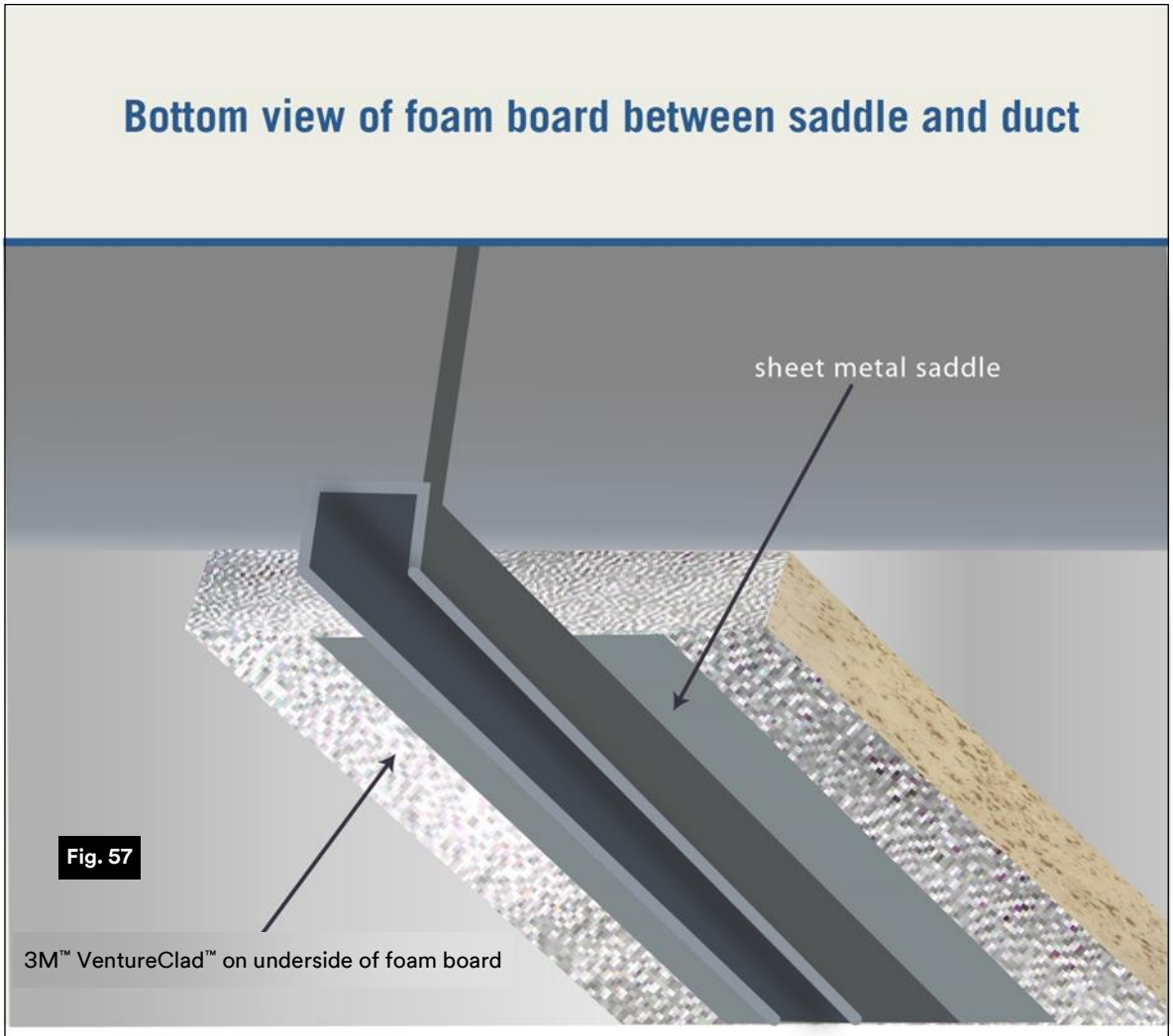


Figure 57: This view shows the 3M™ VentureClad™ facing down, towards the sheet metal saddle.

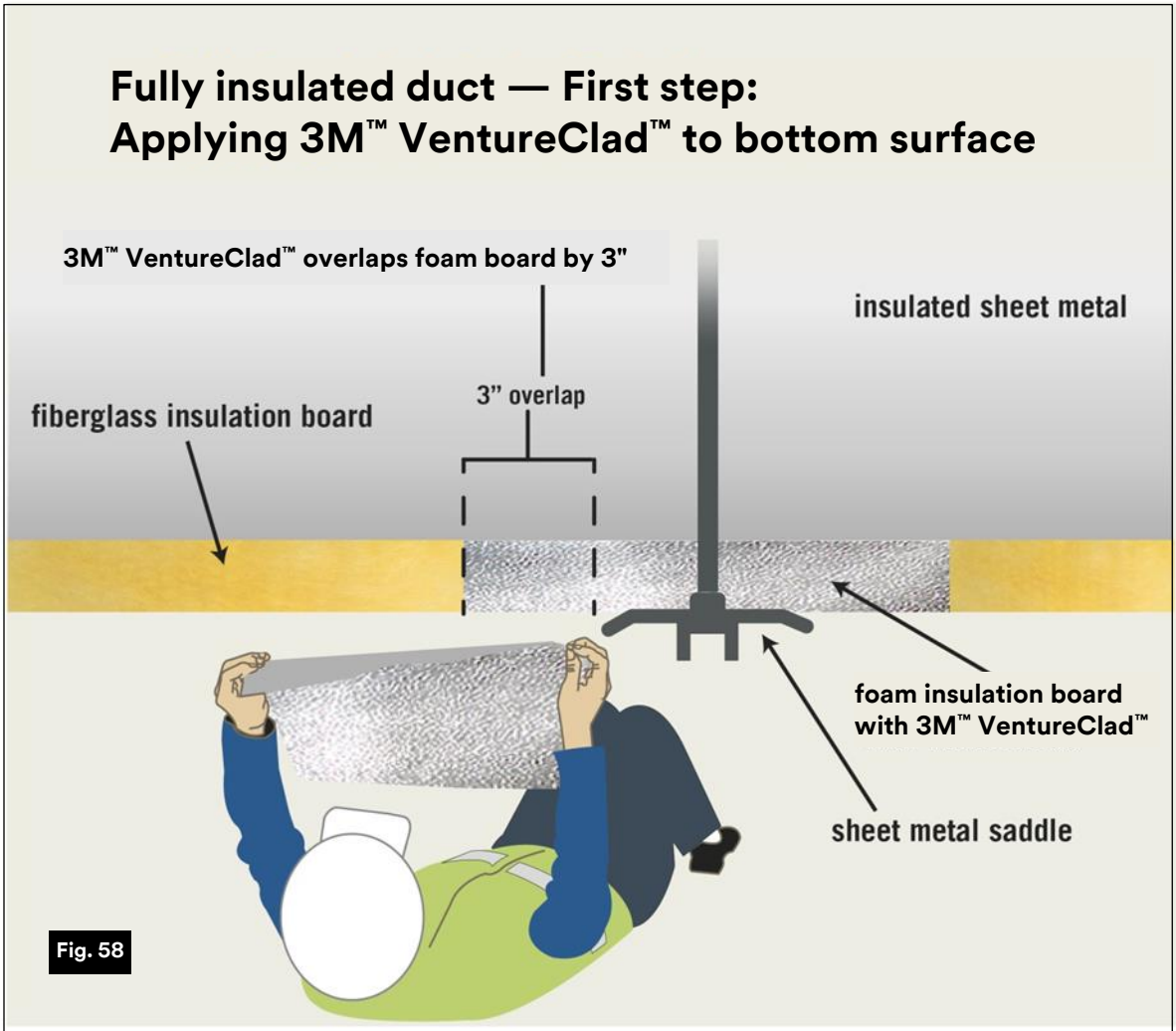


Figure 58: After the four duct surfaces have been insulated (typically with 3 pcf (48 kg/m³) fiberglass boards on the bottom and side and 6 pcf (96 kg/m³) fiberglass boards on the top surfaces), 3M recommends that the installer apply a pre-cut sheet of 3M™ VentureClad™ to that bottom surface. Be certain to overlap the insulation board by 3 inches (75mm), as shown above. As shown in Figures 3 through 7, the 3M™ VentureClad™ on this bottom surface should wrap around the duct sides by 3 inches (75mm) on each side.

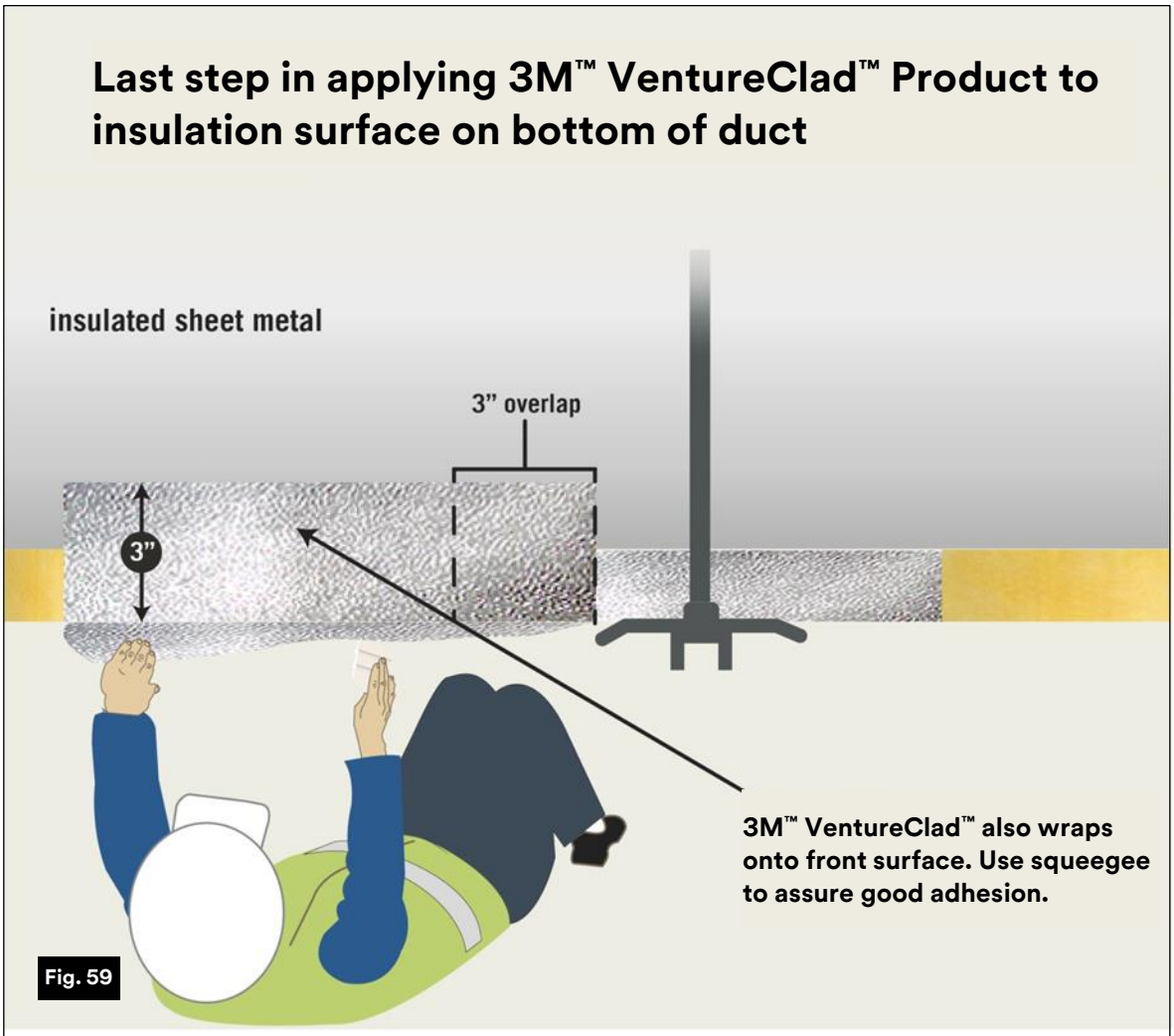


Figure 59: 3M recommends the installer use a squeegee to get a complete adhesion of the 3M™ VentureClad™ to the bottom surfaces of the insulation board. Also use the squeegee to assure good adhesion to the duct sides, as show in the drawing above.

Fig. 60 **Both sides overlap by 3" using 3M™ VentureClad™**

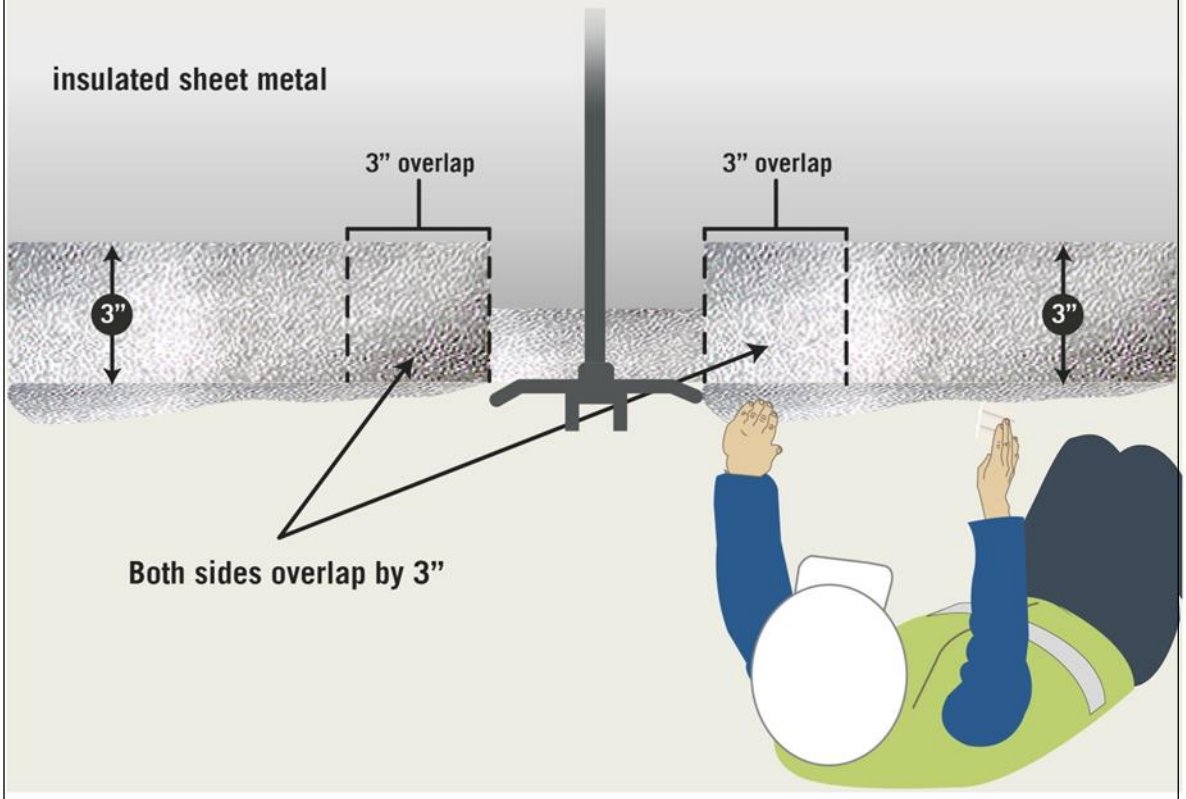


Figure 60: As shown above, after the 3M™ VentureClad™ on one side of the duct has been applied, 3M recommends that the installer apply the 3M™ VentureClad™ on the other side of the duct support saddle. Be certain to cut the 3M™ VentureClad™ to get a 3 inch (75mm) overlap on each side, then use the squeegee to get good adhesion over the complete surface.

7. Repairs to rips and tears in 3M™ VentureClad™ Product on Insulated Ducts

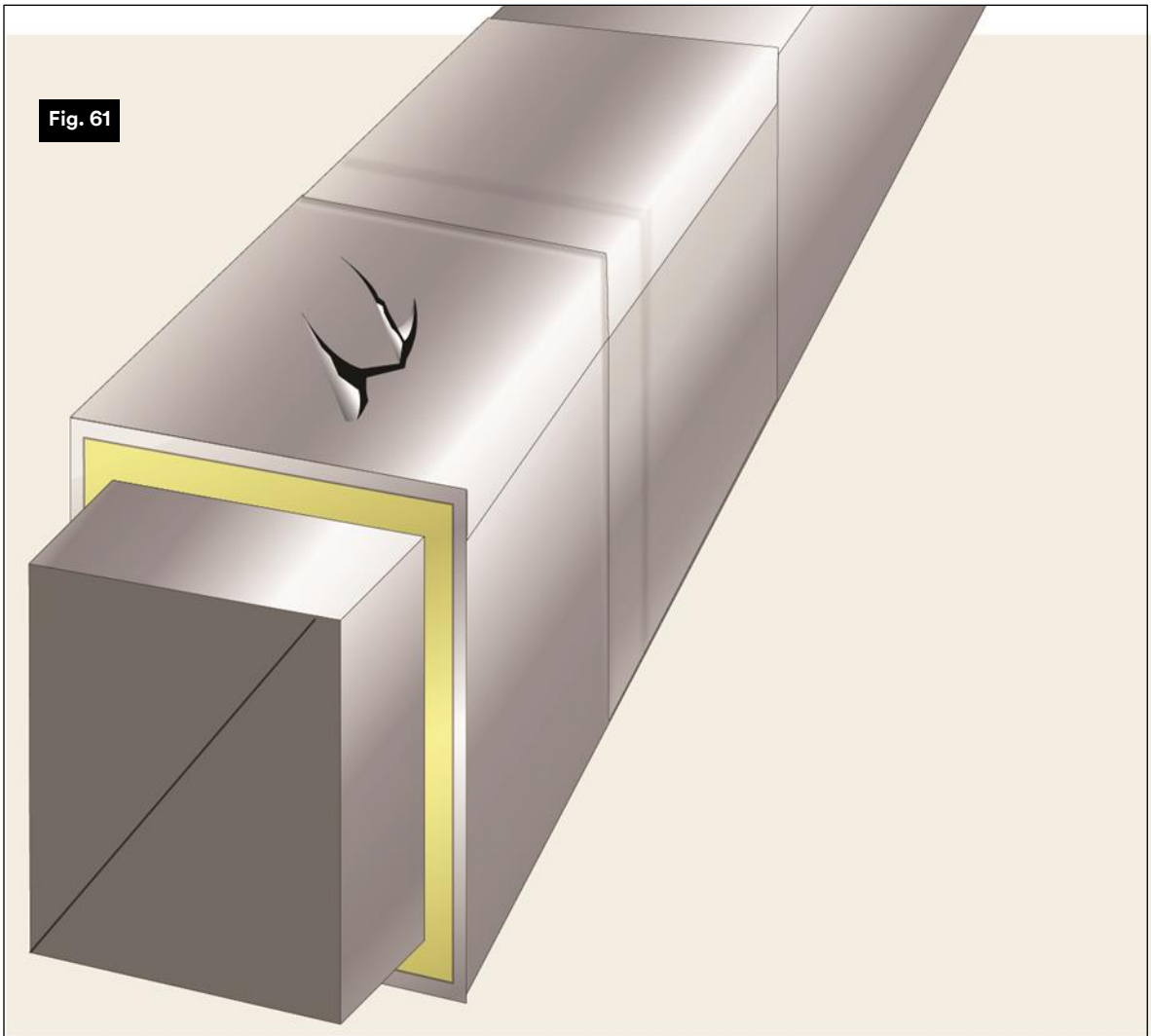


Figure 61: Sometimes the 3M™ VentureClad™ on a duct develops a rip or tear. When it does so, it should be repaired as soon as possible using 3M™ Venture Tape™. Fortunately, doing so is relatively easy.

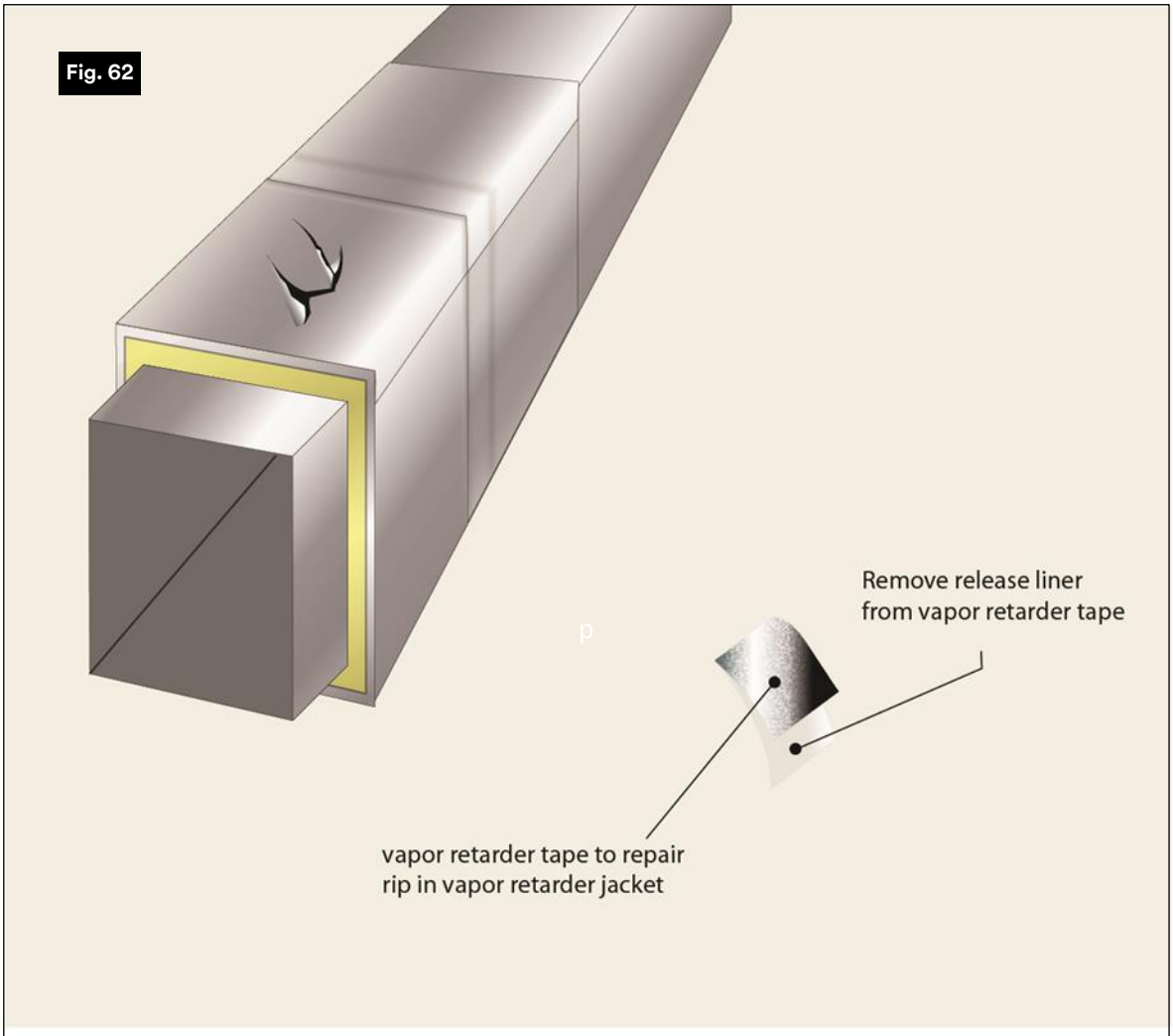


Figure 62: To repair a rip or tear in the 3M™ VentureClad™, cut to a length equal to the length of the rip, puncture or tear plus 3 inches (75mm) on all sides. Note that either 1577CW 3M™ Venture Tape™ or the more flexible 1578CW 3M™ Venture Tape™ may also be used to make these repairs.

Fig. 63

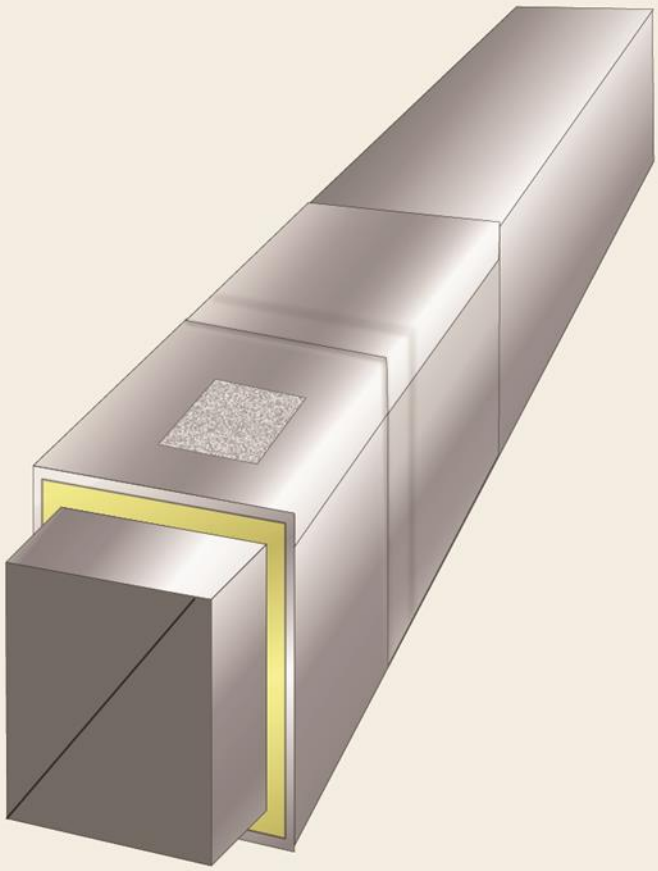


Figure 63: Press the piece of 3M™ Venture Tape™ over the rip or tear, being certain to cover the damaged portion of the 3M™ VentureClad™. Run a squeegee over the repair to make certain that the 3M™ Venture Tape™ is firmly adhered to the 3M™ VentureClad™. Note that either 1577CW 3M™ Venture Tape™ or the more flexible 1578CW 3M™ Venture Tape™ may also be used to make these repairs.

8. Using caulk to seal penetrations

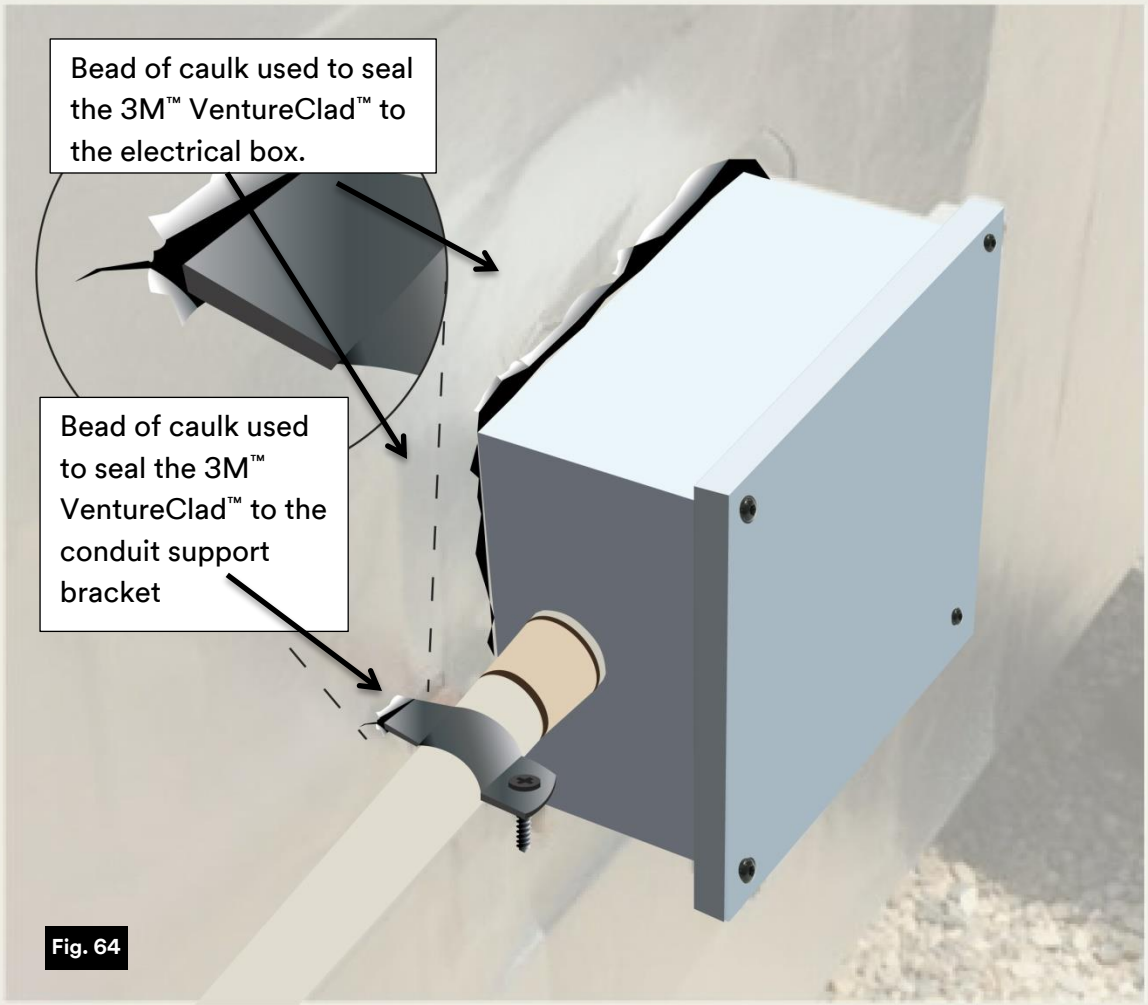


Figure 64 shows a couple of penetrations of 3M™ VentureClad™ jacketing on the side of an insulated duct. 3M™ Venture Tape™ cannot be effectively used to seal this electrical box and conduit bracket. So, there are gaps surrounding those components that need to be sealed.

Figure 65 shows 3M's recommendation, namely that a suitable outdoor caulk can be applied to seal the four sides of the electrical box and the conduit bracket. 3M also recommends that the caulked seams be inspected once a year and, if the caulk is found to have cracked and / or separated from the 3M™ VentureClad™, that it be removed and replaced with fresh caulk.

Technical Information

The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

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ISO 9001

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO9001 standards.

3M

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