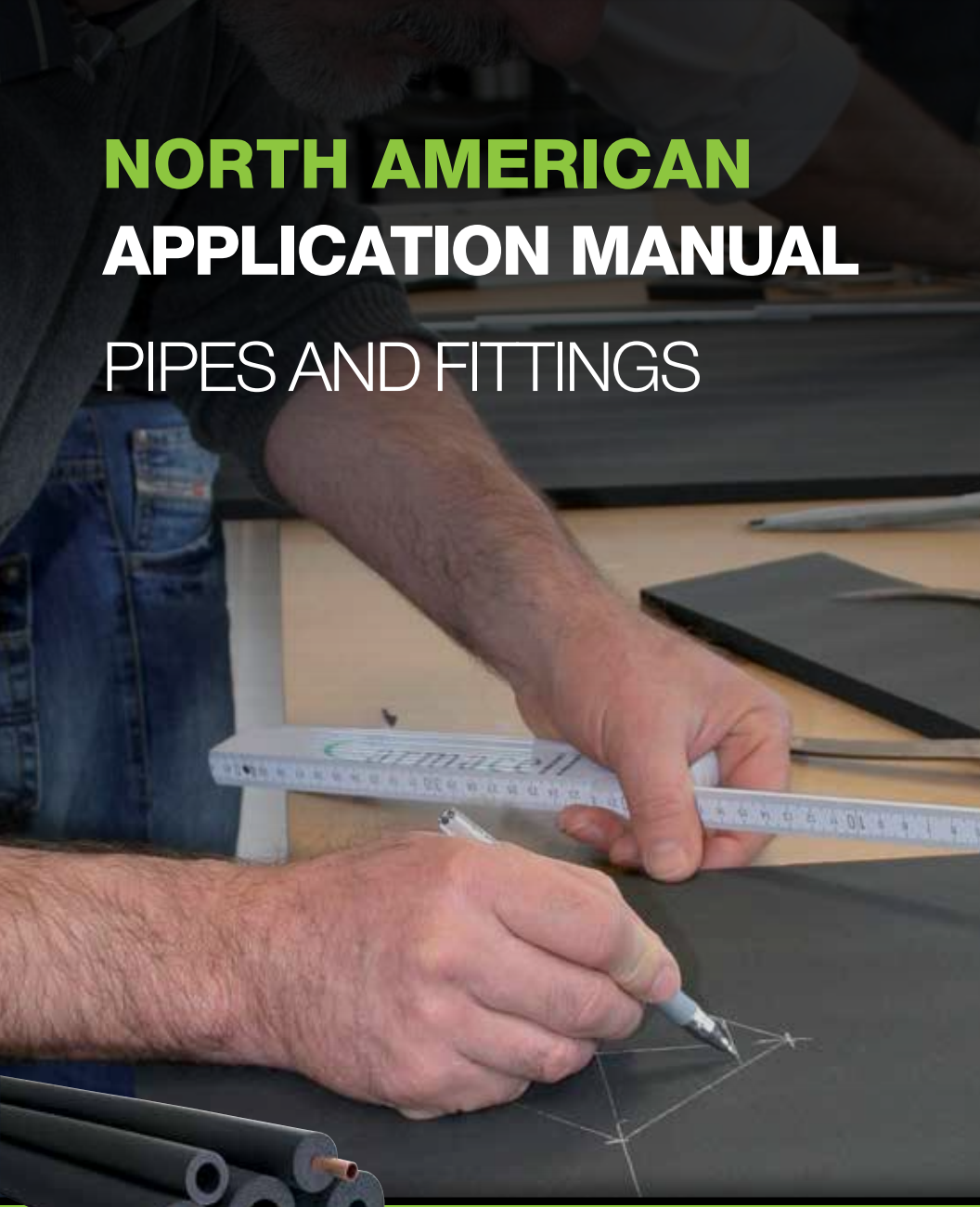
NORTH AMERICAN
APPLICATION MANUAL

PIPES AND FITTINGS



Armaflex®

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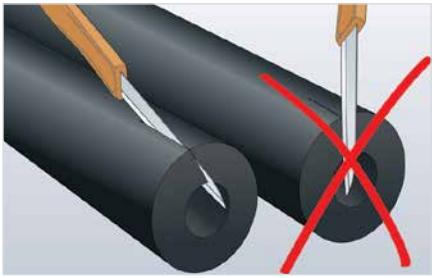
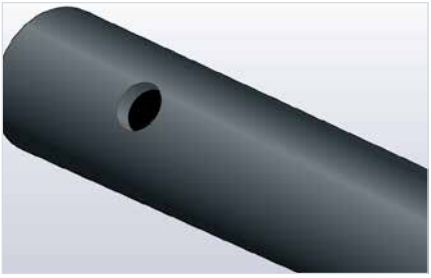
Pipes and Fittings

Insulating pipes using Armaflex tubes

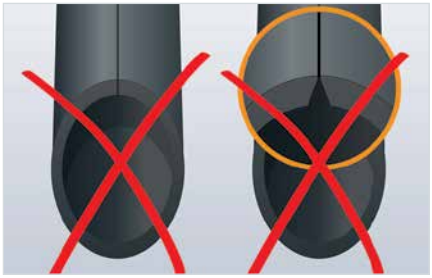
CUTTING ARMAFLEX TUBES



Use a sharp non-serrated knife. Keep knife at a low angle when slitting tube.



Use sharpened off-cuts of pipes to make holes.



Always cut on the flattest side of tubes.

 See videos at www.armacell.us

INSULATING NEW PIPEWORK USING SLIDE-ON TECHNIQUE

Note: Insulating around bends – Armacell's recommendation is the insulation should not be slid around pipe bends when the insulation thickness is 1/2" or greater. A fabricated mitered fitting cover must be used.

Be aware on tight bends (such as those likely to be encountered on small bore pipes) there is a risk that the insulation will kink in the throat of the bend if the insulation is slid around the bend, reducing insulation thickness.

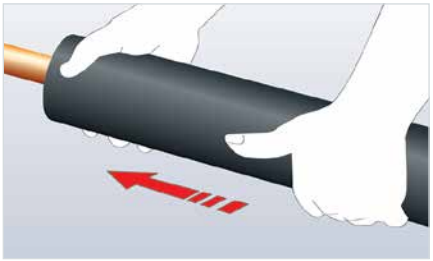
In the refrigeration/air-conditioning sector, the required insulation thickness is then no longer achieved and condensation can occur on the surface of the insulation. When installing tubes with a self-adhesive seal, there is the additional risk of compression of the adhesive lining in the bend area, which can lead to seams coming apart.

The following should be taken into account in these cases:

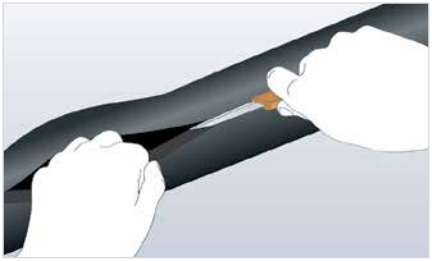
To avoid insulation kinks, and the adhesive seam from being compressed, the bends should be cut into segments to fit (see **Segment bend with 1 middle part - 2+1 using Armaflex tube** on page 26). In such cases we only recommend the use of standard, non self-adhesive, tubes.

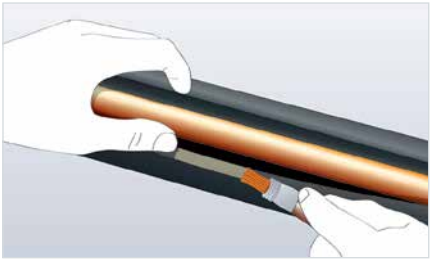
Note: Do not attempt to pull the Armaflex tube along the pipe as this may cause the insulation to tear.

Always push the Armaflex tube over the pipe as shown.

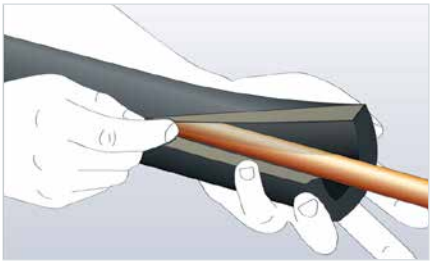


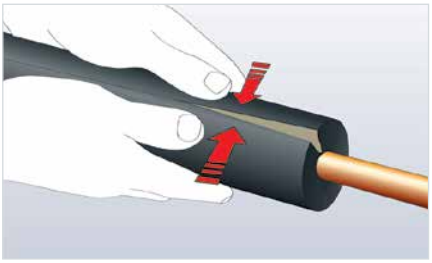
INSULATING EXISTING PIPEWORK USING SNAP-ON TECHNIQUE





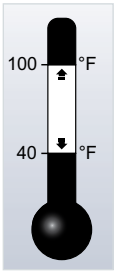
1. With a sharp non-serrated knife, slit the flat part of the unslit tube along the entire length.
2. Place the slit tube onto the clean pipe; apply a thin, even film of Armaflex adhesive to the two cut edges using a short bristle brush. Apply the adhesive along the tube length. Alternate 6-8" on both sides to maintain even tackiness.

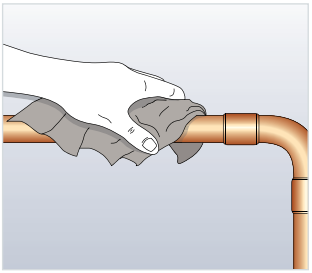




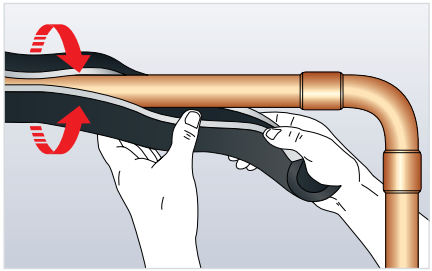
3. Allow the adhesive to be tacky to the touch, not dry or wet. Test with the fingernail.
4. Free the seams from the pipe where applicable, align the edges and press the seam detail with firm, even pressure to finish.
5. For sweated or welded pipes, insulate the fittings first followed by the straight sections.
6. For other pipes with enlarged fittings (PVC, screwed iron, etc.) insulate the straight sections first and then the fittings. (See page 30)

INSULATING PIPES WITH ARMAFLEX SELF-SEAL TUBES

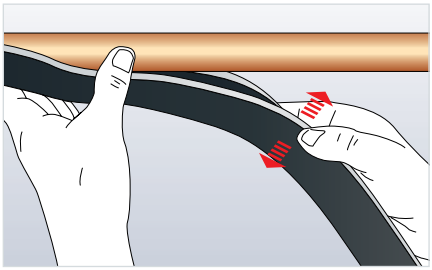




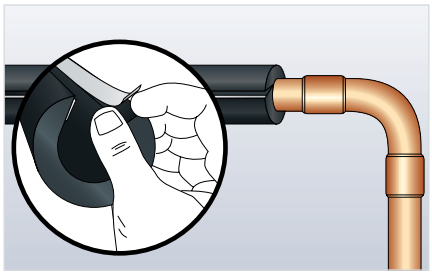
Clean all dust, dirt, oil and water from pipework using denatured alcohol where necessary.
Install Armaflex when ambient temperature is between 40°F and 100°F.



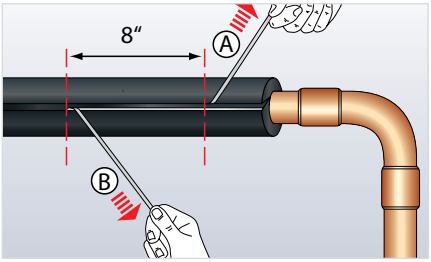
Open pre-slit Armaflex and snap onto pipe (the release paper is still protecting the self-adhesive strip).



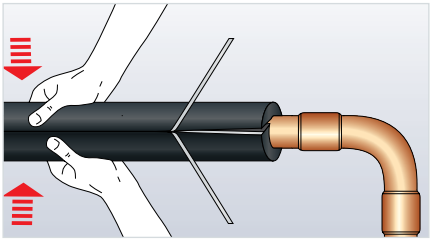
Adjust fitted Armaflex to ensure slit is easily accessible.



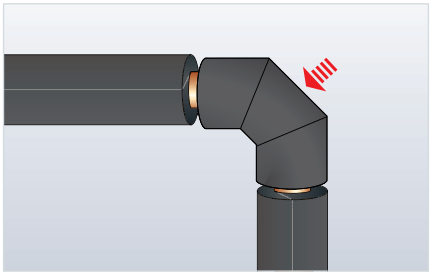
Locate the end of white release paper for the self-seal strip.



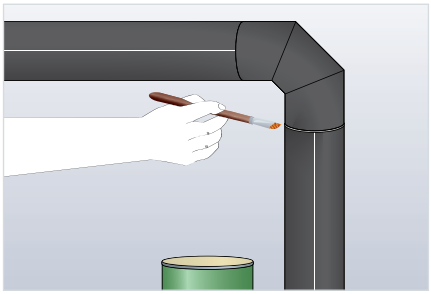
Remove the white release paper strip in 8” increments, by drawing it away from the insulation.



Close the slit seam and press together firmly to ensure a permanent seal.
Note: Squeeze 100% of the self seal joint.



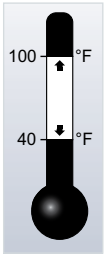
For sweated or welded pipes, insulate the fittings first followed by the straight sections. For other pipes with enlarged fittings (PVC, screwed iron, etc.) insulate the straight sections first and then the fittings. (See page 30)

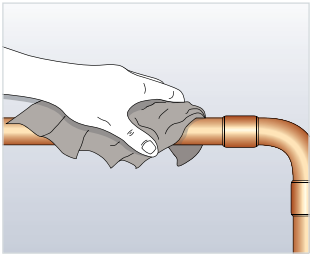


Note: With tight bends in pipes (small radius) there is a risk that the insulation will kink in the throat of the bend, reducing insulation thickness. In the refrigeration/air-conditioning sector, the required insulation thickness is then no longer achieved and condensation can occur on the surface of the insulation. When installing Armaflex self-seal tubes there is the additional risk of compression of the adhesive lining in the bend area, which can lead to seams coming apart. The following should be taken into account in these cases: If the insulation kinks and the adhesive seam is compressed, the bends should be cut into segments to fit.

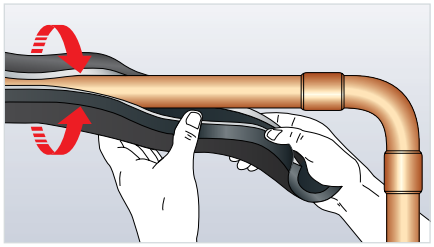
 See videos at www.armacell.us

INSULATING PIPES WITH ARMAFLEX LAPSEAL TUBES

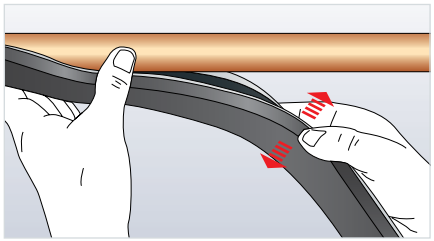




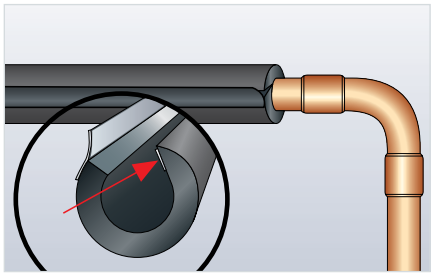
Clean all dust, dirt, oil and water from pipework using denatured alcohol where necessary.
Install Armaflex when ambient temperature is between 40°F and 100°F.



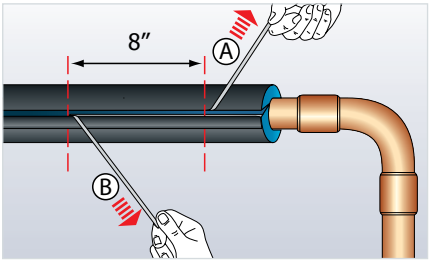
Open pre-slit Armaflex and snap onto pipe (the release paper is still protecting the self-adhesive strip).



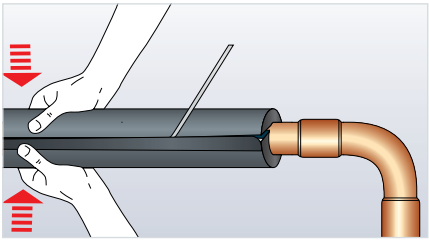
Adjust fitted Armaflex to ensure slit is easily accessible.



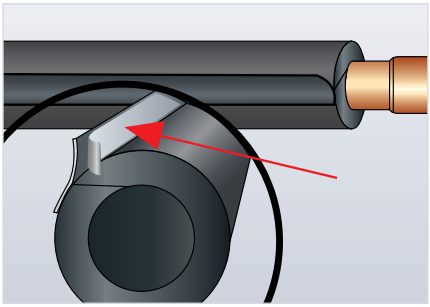
Locate the end of white release paper for the self-seal strip.



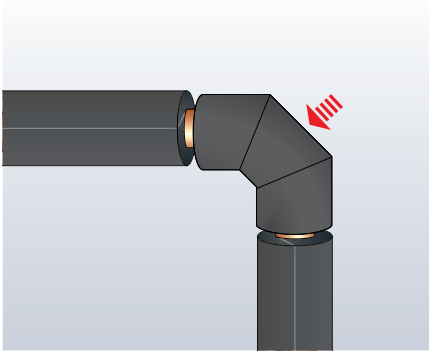
Remove the white release paper strip in 8” increments, by drawing it away from the insulation.



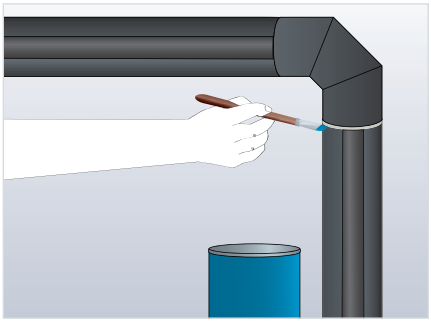
Close the slit seam and press together firmly to ensure a permanent seal.



Remove the release liner on the outer lap, and apply even pressure to completely close the lap onto the Armaflex surface.



For sweated or welded pipes, insulate the fittings first followed by the straight sections. For other pipes with enlarged fittings (PVC, screwed iron, etc.) insulate the straight sections first and then the fittings. (See page 30)



Seal all joints with Armaflex 520 adhesive. Do not stretch when sealing joints. When gluing joints under compression, with no gaps present, the wet seal method should be applied.

MULTI-LAYER INSULATION OF PIPEWORK

Note: See sleeving chart on page 110.

Staggering on pipework: cross-section view

Multi-layer insulation with tubes

The inner diameter of the second oversize tube should be selected according to the maximum outer diameter of the first layer.
(See price list for sleeving sizes.)

Staggering on pipework: longitudinal view

yellow lines indicate glued seams

Multi-layer insulation as a combination of tubes and sheets

If the outer diameter of the first layer is large enough (see **Insulating pipes with Armaflex sheet** on page 24), we recommend that the second layer is made with sheet material, since this can be adapted exactly to the outer diameter of the first layer.

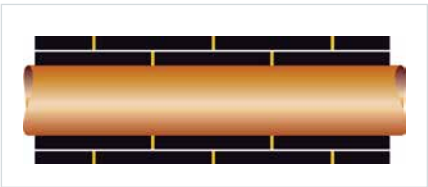
Multi-layer insulation of pipework with sheets

In general the insulation of pipes with sheet material is possible at an outer diameter of 3-1/2". Select layer insulation thickness combinations as appropriate depending on the outer diameter of the object (see **Insulating pipes with Armaflex sheet** on page 36).

Note: The ends of the tube or sheet of the second layer should be adhered to the first layer of Armaflex. To prevent sagging when the pipe size is 16"-24", the bottom 3rd of the insulation should be adhered to the pipe and/or to the bottom layer of insulation. When the piping diameter is above 24", all-over adhesive coverage is necessary on both surfaces.

Although not required for performance on pipes 24" and smaller, complete adhesive coverage is the best way to prevent corrosion under insulation (CUI).

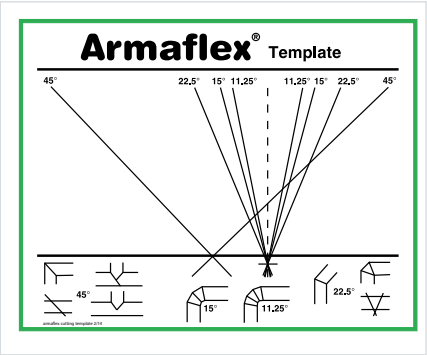
Multi-layer insulation of flat surfaces with sheets

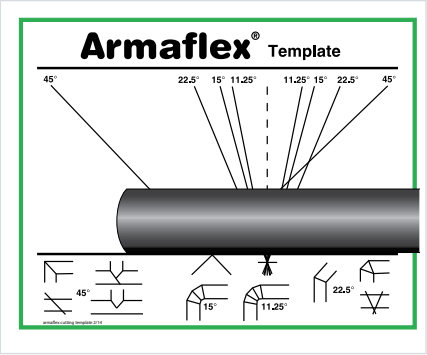


Yellow lines indicate glued seams

In the case of multi-layer insulation, the first layer should be applied using all-over adhesive coverage. The second layer should be adhered to the previous layer of Armaflex. Insulation on the underside of flat objects should be applied using all-over adhesive coverage for all layers. In general the butt joints and the longitudinal seams of the second layer should be staggered to those of the first layer.

USING THE ARMAFLEX TEMPLATE



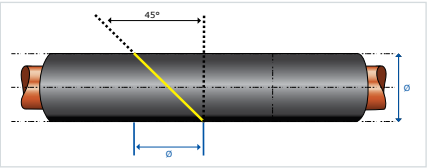


The fabrication of bends and tees using Armaflex tube material requires tubes to be cut to different angles. In order to make this process easier and quicker, the Armaflex template is provided on every box of AP Armaflex.

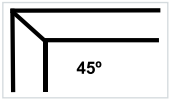
1. Place a copy of the Armaflex template face up on a table or worktop.
2. Align an Armaflex tube across the template parallel to the horizontal base line.
3. Select the required angle cut from the template and cut along this line.

Additional copies of the Armaflex template on hard PVC sheet are available on request (contact your local Armacell representative for more information).

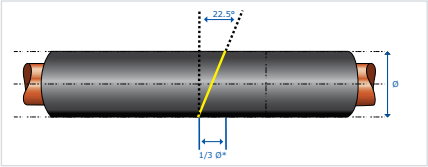
BEND WITH 90° ANGLE USING ARMAFLEX TUBE

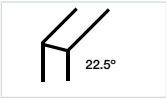


Note: Yellow lines indicate where cuts are to be made. For correct angle measurements please use the Armaflex template located on each tube box.



BEND WITH 45° ANGLE USING ARMAFLEX TUBE

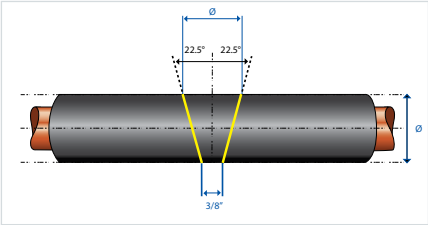


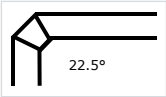


* The Ø details to achieve the 45° angle are approximate values!

Note: Yellow lines indicate where cuts are to be made. For correct angle measurements please use the Armaflex template located on each tube box.

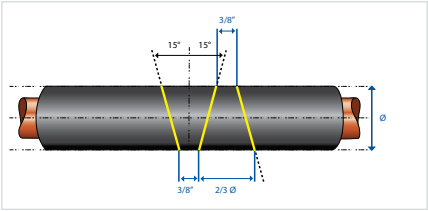
SEGMENT BEND WITH 1 MIDDLE PART – 2+1 USING ARMAFLEX TUBE

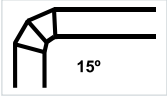




Note: Yellow lines indicate where cuts are to be made. For correct angle measurements please use the Armaflex template located on each tube box.

SEGMENT BEND WITH 2 MIDDLE PARTS – 2+2 USING ARMAFLEX TUBE

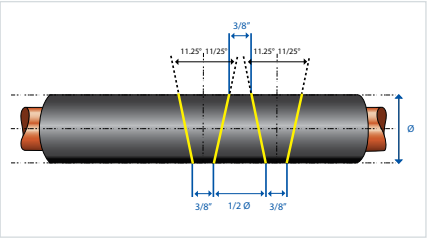




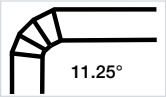
Note: Yellow lines indicate where cuts are to be made. For correct angle measurements please use the Armaflex template located on each tube box.

 See videos at www.armacell.us

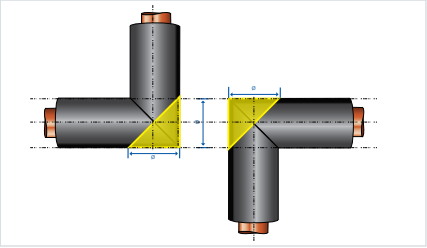
SEGMENT BEND WITH 3 MIDDLE PARTS – 2+3 USING ARMAFLEX TUBE



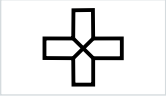
Note: Yellow lines indicate where cuts are to be made. For correct angle measurements please use the Armaflex template located on each tube box.



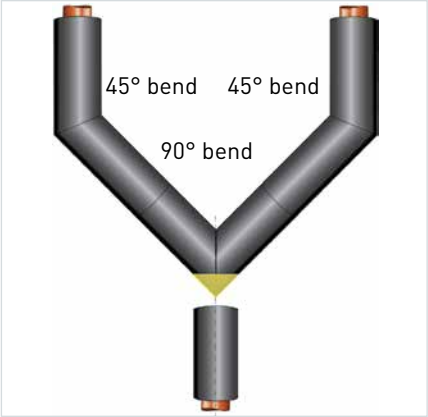
CROSSPIECE JOINT USING ARMAFLEX TUBE



Note: Yellow lines indicate where cuts are to be made. For correct angle measurements please use the Armaflex template located on each tube box.

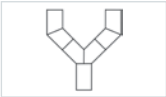


Y-TUBE USING ARMAFLEX TUBE

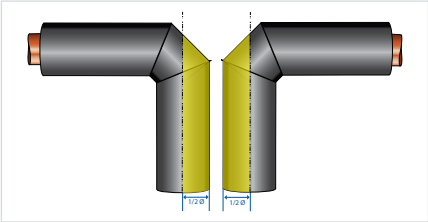


Note: Yellow lines indicate where cuts are to be made. For correct angle measurements please use the Armaflex template located on each tube box.

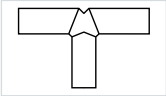
Further fabrication of the 45° bend (two) and the 90° bend (one).



SWEPT T-PIECE USING ARMAFLEX TUBE



Note: Yellow lines indicate where cuts are to be made. For correct angle measurements please use the Armaflex template located on each tube box.

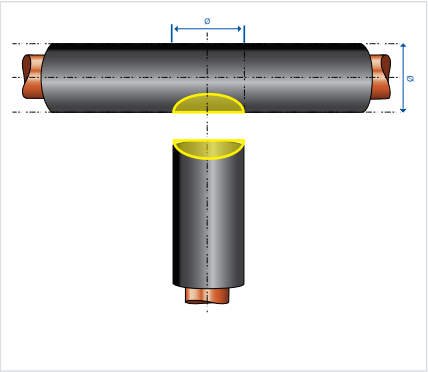


 See videos at www.armacell.us

T-PIECE USING ARMAFLEX TUBE

Method 1: The "Punched Hole" or "Fish Mouth" T-Piece

Note: Yellow lines indicate where cuts are to be made.



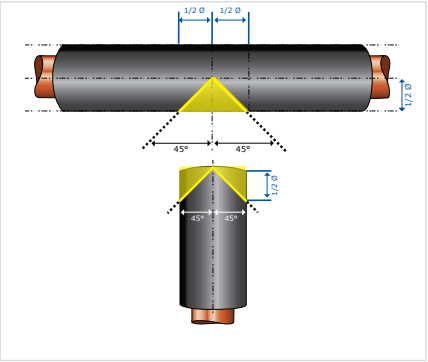
1. Punch a hole in the tube with a sharpened section of a copper pipe of the right diameter, forming the crossbar of the "T".

Note: For larger hole cut-outs use a pair of dividers to "mark out" and cut using a small sharp knife.

2. Slit this section of the tube open (half through the hole) and slide it over the pipe.

3. Cut a semi-circular recess in the end of the branch section of tube. It is better to have a cut which is a little too deep rather than too shallow.

4. Attach the branch section to the pipe and join the two halves of the "T". Adhere all seams with armaflex adhesive.



Method 2: "Miter-Box" T-Piece

Note: Yellow lines indicate where cuts are to be made.

1. Cut two 45º angles at the end of the tube section for the branching pipe as shown, using either a miter box or the Armaflex template.

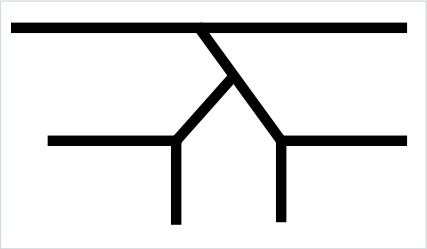
2. Cut a 90º wedge into the tube section covering the primary pipe. This should correspond to the outer diameter of the branching tube.

3. Join pre-cut parts with adhesive to form a "T".

4. Slit the formed piece sideways with a sharpened knife, apply adhesive to seams, fit when tack dry.

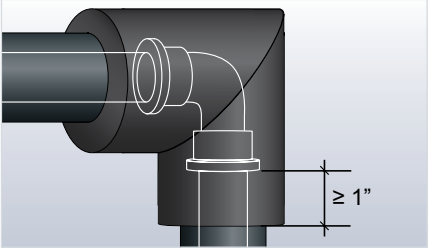
Method 3: The "3 Piece 45° Segment" T-Piece

1. Place tube on straight line on the carton template. Make one 45° cut. Hold both cut pieces together and make a second 45° cut going the opposite direction of the first cut. Be certain the cut is centered halfway through the first cut for even alignment.
2. Cut the third and final piece at a 45° angle. Measure the length of the cut to be equal to the other pieces.
3. Join each pre-cut piece with 520 adhesive.



Insulating coupling pipe joints

OVERSIZED 90° BEND

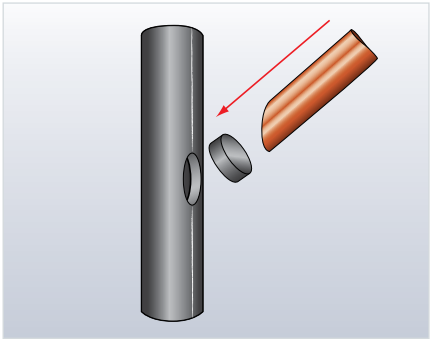


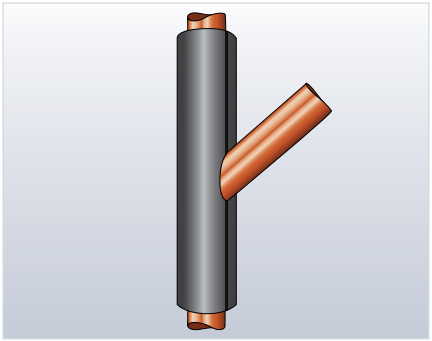
Insulate up to the pipe fitting using Armaflex tube and secure to the pipe using adhesive.

1. The fitting cover is made from tube the bore of which is the O.D. of the incoming tube. Provide a minimum overlap of 1" on each side (increase the distance of the overlap to match the insulation wall thickness if this exceeds 1"). The fitting may be made up using any of the methods described earlier (see **Bend with 90° angle using Armaflex tube** on page 30).
2. Slit the throat, apply adhesive to seams, fit when tack dry. Wet seal overlaps.

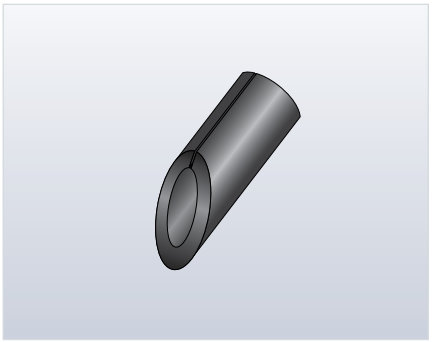
Angle T-piece (off-set) using Armaflex tube

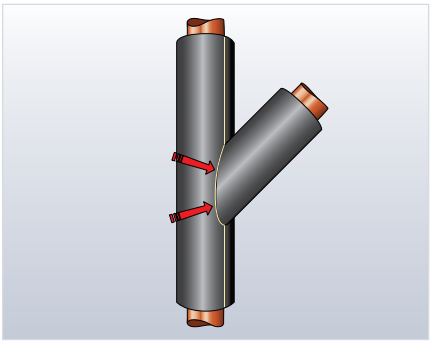
METHOD 1





1. Using a sharpened section of copper pipe of the correct diameter, punch a hole in the tube used to cover the main pipe. Make sure that the angle corresponds to that of the branch pipe.



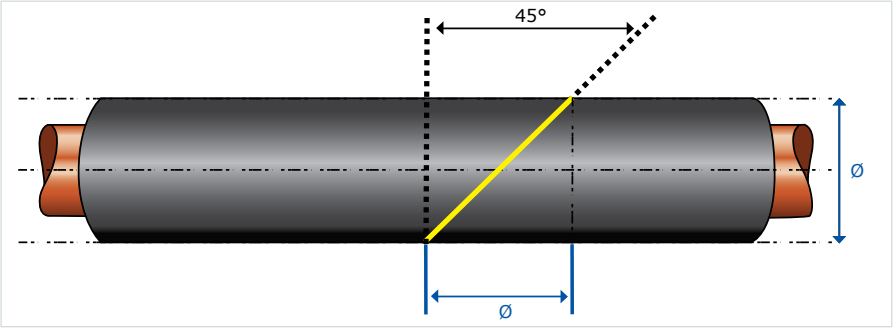


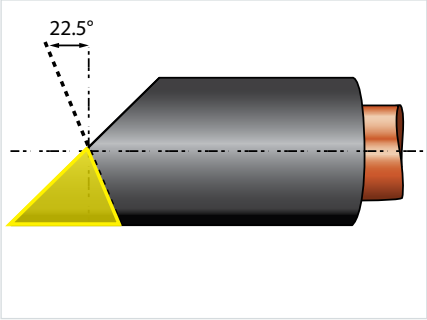
2. Cut a 45° angle at the end of the tube sections for the branch pipe. Parallel to the cut, use a sharpened knife to cut a semi-circular recess in the end of the branch section of tube. It is better to have a cut which is slightly too deep rather than slightly too shallow.
3. Glue both pieces together using Armaflex adhesive.
4. Slit the shaped piece, apply adhesive to seams and fit when tack dry.

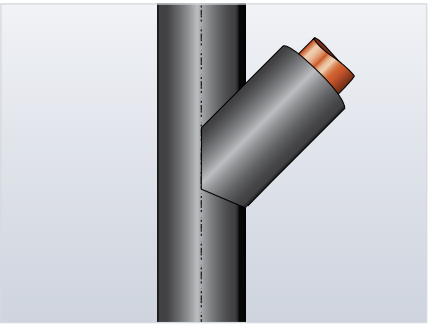
METHOD 2

Note: Yellow lines indicate where cuts are to be made. For correct angle measurements please use the Armaflex template located on each tube box.

1. Make a 45° cut as shown.

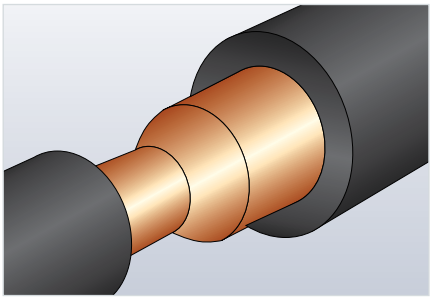




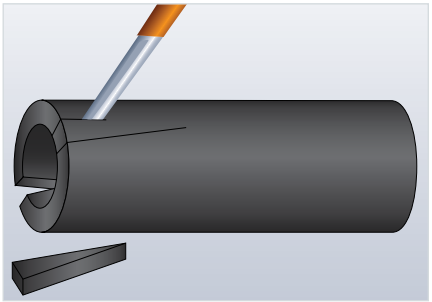


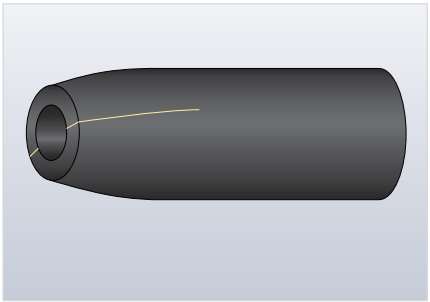
2. Use the piece of the tube with the 45° angle, mark a 22.5° angle and cut off as shown above.
3. Chamfer the inside of the tube where it touches the insulation around the straight pipe.
4. Wet seal all seams.

Pipe reducer using Armaflex tube

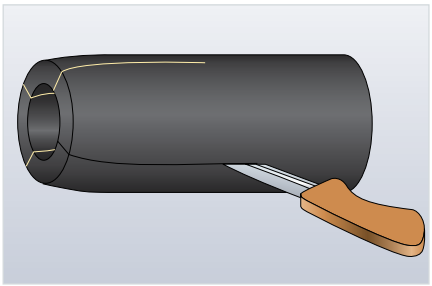


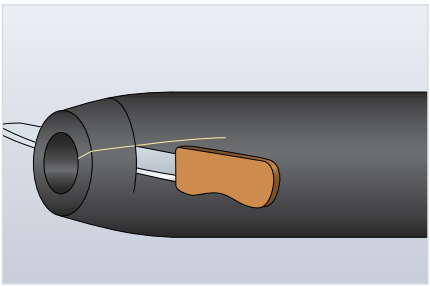
Pipe reducer to be insulated



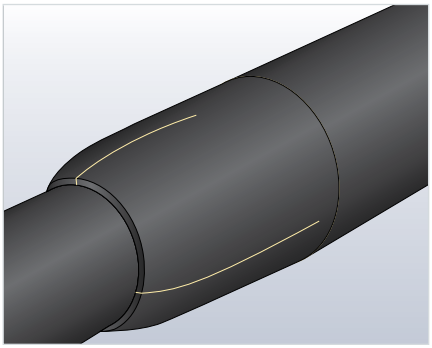


Cut out segments from a tube of the larger diameter and glue seams with Armaflex adhesive.





Cut reducer to size – allow compression of 1/4" at each end. Slit fitting on the flat side.



Install and glue seam and butt joints.

Insulating pipes with Armaflex sheet

AP Armaflex tubes are available for pipes with outer diameters up to 10", AC Accoflex up to 2-1/8", UT Solaflex to 2-1/2" and NH Armaflex tubes are available for pipe with outer diameters up to 8". Larger pipes and ducts between 16" and 24" should have adhesive coverage on the bottom 1/3 only. Pipes, ducts and tanks 24" and over should be insulated with Armaflex sheet/roll and all-over adhesive coverage is required.

It is often advantageous to insulate smaller pipes using Armaflex sheet, even when correctly dimensioned tubes are available. Care should be taken to ensure that the stresses in the seams, caused by the bending in the sheet, do not become too great.

These stresses rise as the insulation thickness increases and as the pipe diameter decreases. Please consult the table on the next page to gauge the applicability of different thicknesses of Armaflex sheet.

The ambient temperature during installation will also impact on the levels of stress likely to be encountered.

For advice on installing Armaflex sheet in ambient temperatures $\geq$ 40°F please see following table.

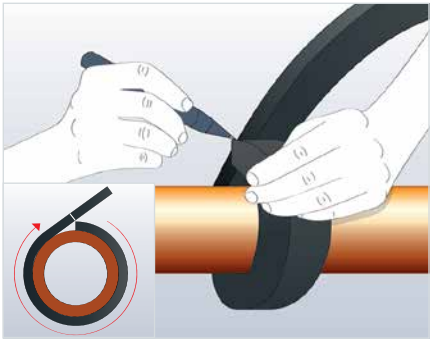
AP Armaflex Sheets	Pipe Outer Diamter				
	≥ 3-1/2"	≥ 4"	≥ 5"	≥ 6"	≥ 8"
3/8"	•	•	•	•	•
1/2"	•	•	•	•	•
3/4"	•	•	•	•	•
1"		•	•	•	•
1-1/2"			•	•	•
2"					•

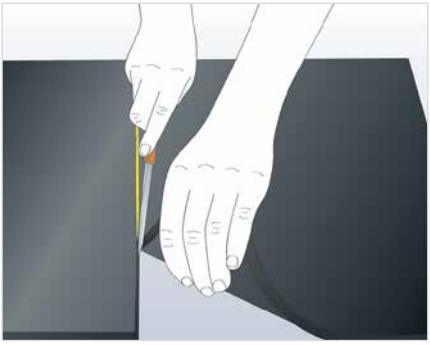
Note: AP/Armaflex tubes are offered with engineered wall thicknesses. This should be taken into account when selecting AP/Armaflex sheet thicknesses.

UT Solaflex NH Armaflex	Pipe Outer Diamter			
	≥ 3-1/2"	≥ 4"	≥ 5"	≥ 6"
1/4" (NH Rolls Only)	•	•	•	•
1/2"	•	•	•	•
3/4"	•	•	•	•
1"			•	•
1-1/2" (NH Rolls Only)				•

Insulating large pipes with Armaflex sheet

1. Determine the circumference of the pipe.
   Important: Always measure with a strip of Armaflex of the same thickness to be used for the straight insulation.

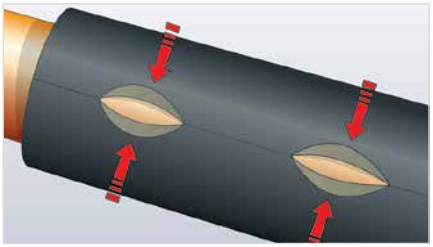




Warning: Do not stretch the strip.

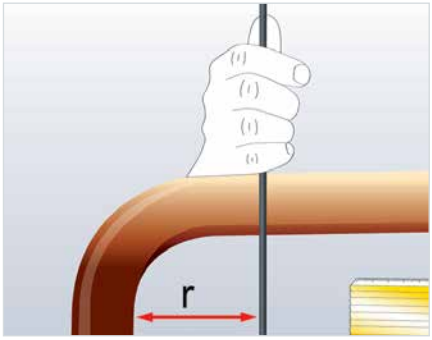
2. Cut Armaflex sheet to the required size – apply Armaflex adhesive to the cut surfaces along the entire longitudinal seam in a thin layer, allow to tack dry.
3. Press together at the ends and then in the middle. Close the entire seam starting from the middle.

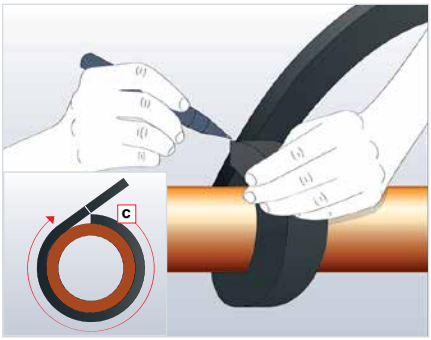
Note: In order to prevent the seam re-opening, ensure the adhesive has been fully applied to the edges of the seam and ensure the correct amount of adhesive has been applied.



Check the open time of the adhesive to ensure it is still fit for use.

Two-part bend with Armaflex sheet

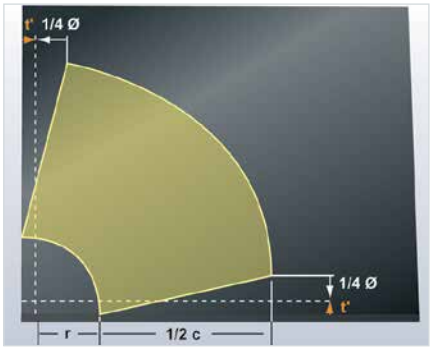




Establish the inside radius, **r**, by dropping a perpendicular line to meet a horizontal line from the outside of the two welds. The point where these two lines intersect gives the origin for the radius, **r**. This is the throat radius.

Measure in a trimming allowance (determined by the insulation thickness) along both vertical and horizontal edges then transfer to the sheet as indicated.

Determine the circumference of the pipe using a strip of Armaflex of the thickness to be installed.



Divide the pipe circumference in half and transfer this dimension to the Armaflex sheet.

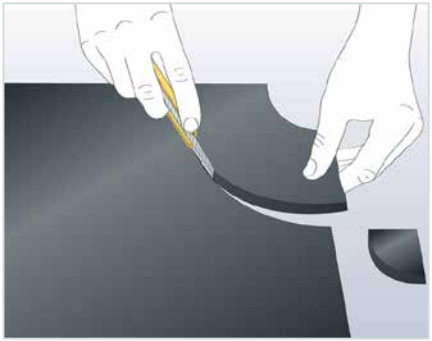
Mark out the two arcs from the intersection of the trim lines.

r = inside radius of bend

½ **c** = half of pipe circumference

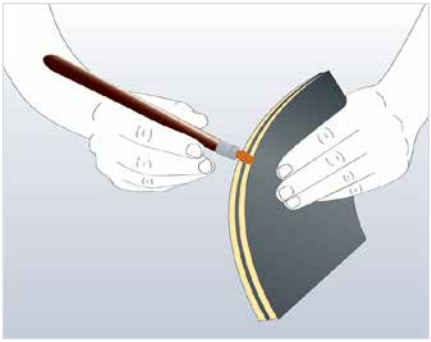
t' = insulation thickness

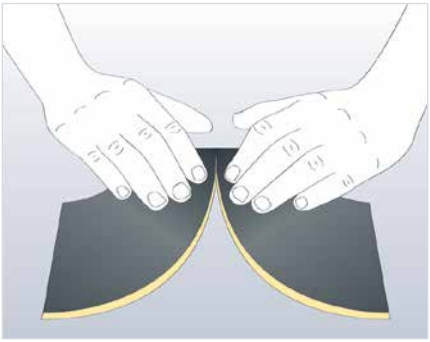
Ø = OD of pipe



Cut out the first half-section of the elbow.

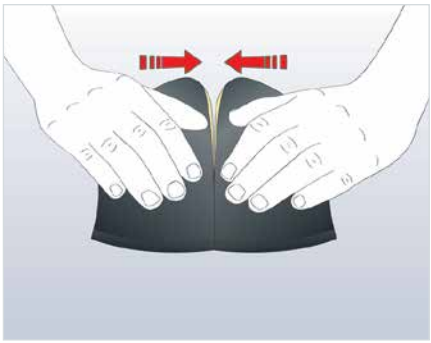
Use the first half-section as a template to cut out the second half-section of the elbow.





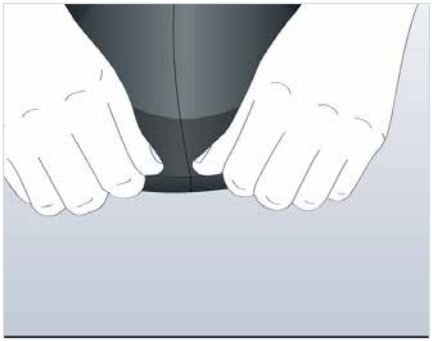
Place the sections together with the rough surfaces inward. Apply Armaflex adhesive to the outer edges.

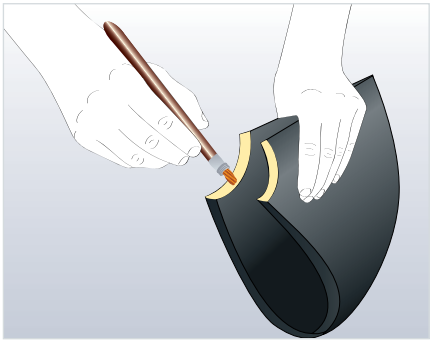
Allow the adhesive to tack dry (fingernail test) then press the two sections together at one side to make a short seam.



Next, press the opposite sides together, also making a short seam. Working towards the center.

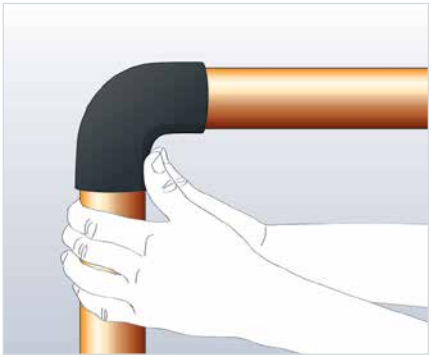
Press the remainder of the joint firmly together.

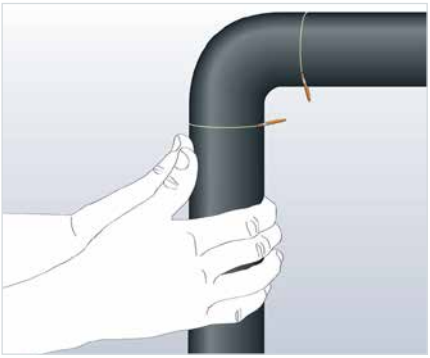




Turn the assembly over and press the seam firmly together from the inside, so that a good adhesive joint is achieved across the entire wall thickness.

Apply Armaflex adhesive to the inner joint edges.

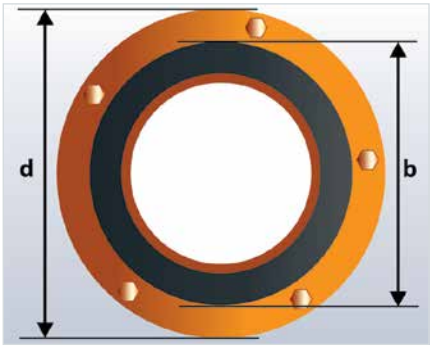


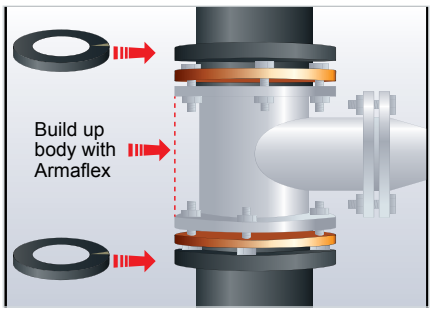


Place the insulation cover over the pipe bend. Allow the adhesive to tack dry, then press the joint faces firmly together.

Wet seal joints with adhesive, fitted under slight compression, to complete the bend.

Valve insulation with Armaflex sheet





For greater stability, the valve body can be strengthened by building up the body with a layer of Armaflex.

Insulate the pipe up to the flange.

Determine:

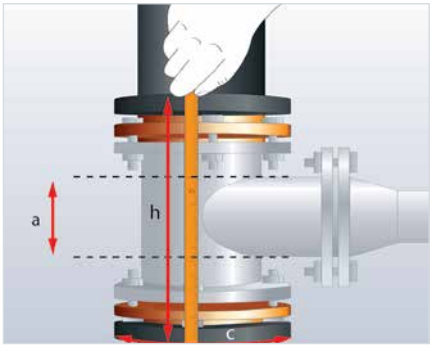
b = circumference of insulated pipe

d = depth of flange ring

Fabricate two end discs:

With the corresponding radius of **d** mark a circle on Armaflex sheet material, with the radius **b** mark the cutout. First cut out the whole disc, then the cutout. Cut the discs on one side and glue together again on the insulated pipe.

 See videos at www.armacell.us



Fabricate the valve body

Measure:

h = height between the outer faces of the two rings.

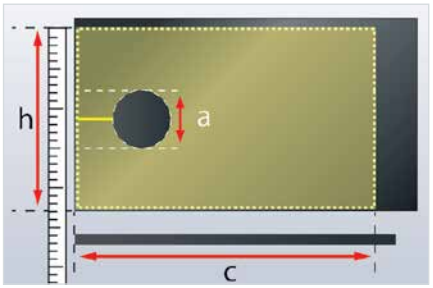
a = diameter of spindle neck

c = circumference of the rings

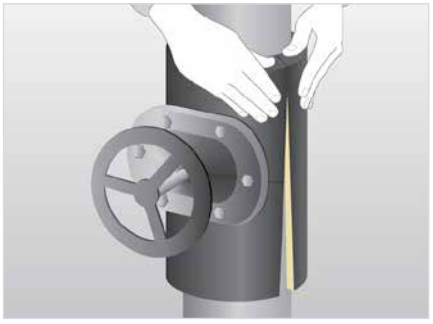
Important: Always measure with a strip of Armaflex of the thickness to be used for the insulation.
Do not stretch the strip.

Transfer height **h**, circumference **c** and diameter of spindle neck **a** to the Armaflex sheet and mark the cutouts for the spindle neck.

Note: Cutouts should always be made 1/8" less than measured.



Note: For valve spindles without connecting flanges it is recommended that the cutouts are marked in the first quarter of the Armaflex sheet.

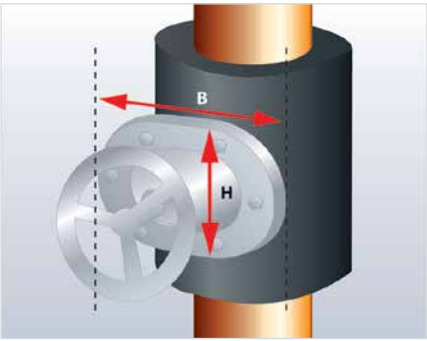


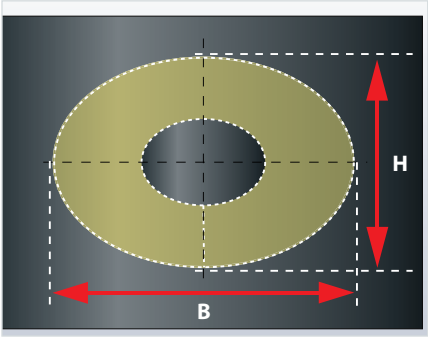
Cut the valve jacket and fit on the valve. Then apply a thin coat of Armaflex adhesive to all seams of the valve cover. Allow to tack dry (fingernail test), fit, then press together firmly.

Note: The valve body should always be insulated after the pipe.

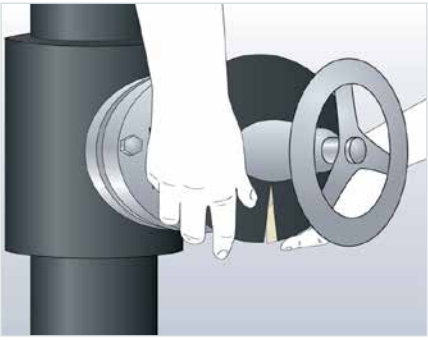
To increase the security of the seams, pre-fabrication of the valve cover on the workbench is recommended based on accurate measurements.

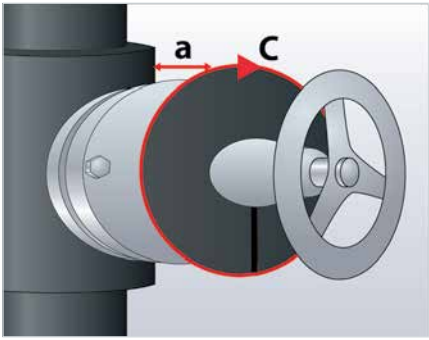
Insulating neck-T / pipe-T / spindle neck of valve with Armaflex sheet



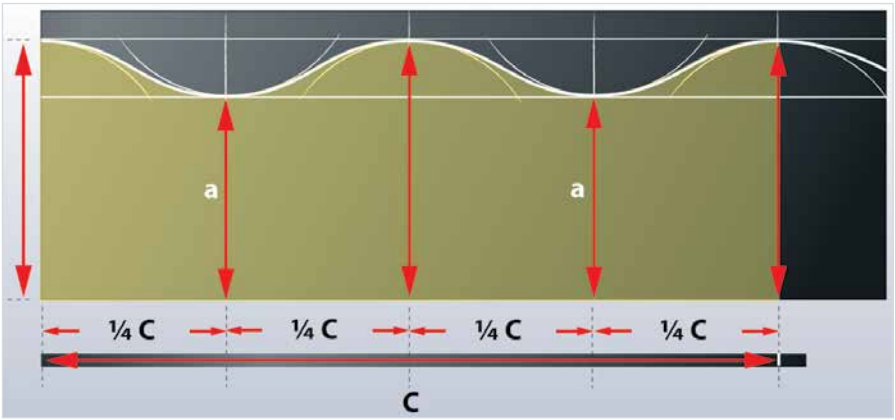


Measure the height of the spindle housing flange and its width, and fabricate an end disc.

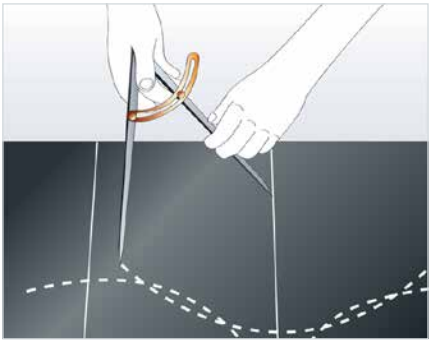


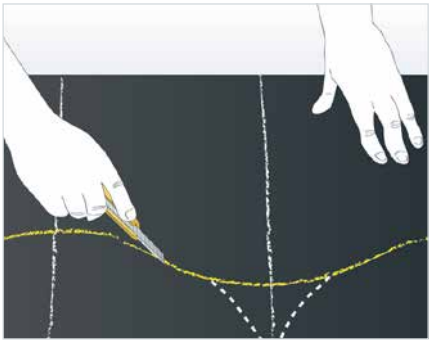


Cut through the disc on one side, apply adhesive to the cut edges, allow to tack dry. Re-join the end disc after placing it over the spindle neck. Measure the circumference of the end disc with a strip of Armaflex and transfer the measurement to the sheet material.

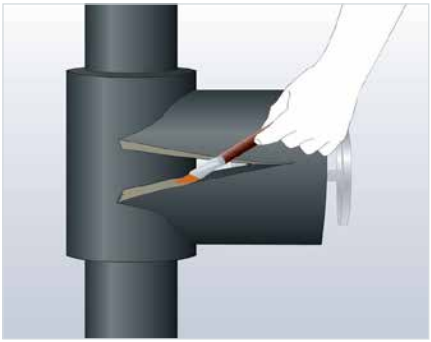


Mark off the circumference into 4 equal sections. Measure the minimum depths of the spindle housing including the thickness of the Armaflex end disc. Transfer these heights to the Armaflex sheet.



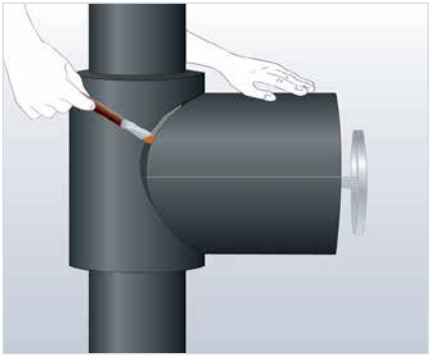


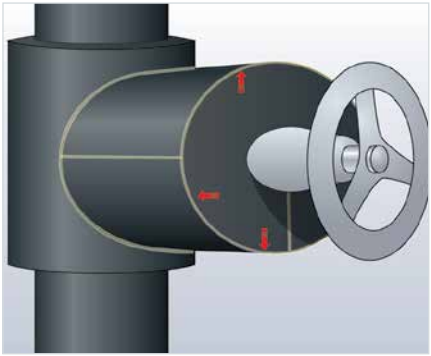
With the radius of the insulated valve body mark out 5 arcs, round the intersections of the lines and join the arcs with a continuous line. Cut out the shaped section of sheet.



Chamfer away the inside surface at the highest point (where the sheet rests against the side of the valve body).

Apply adhesive to the longitudinal seam, allow to tack dry, then seal around the spindle housing.

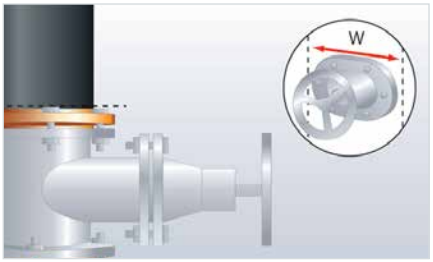




Important: Secure bonding in the area of the spindle neck penetration is essential.

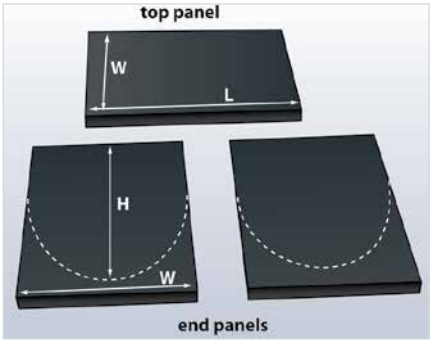
 See videos at www.armacell.us

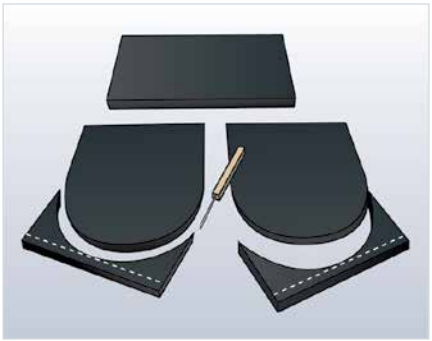
Insulating valves with D-box made of Armaflex sheet



Establish the following measurements:

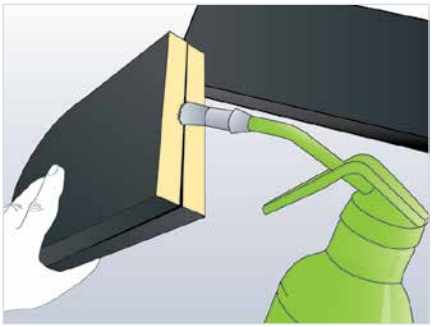
L = length of valve + 2 x thickness of insulation
H = height of valve + 2 x thickness of insulation
W = Ø (diameter) + 3/8"

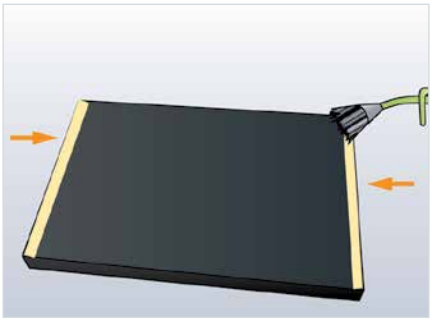




Mark out and fabricate 2 end panels and 1 top panel using the measurements taken in the previous step.

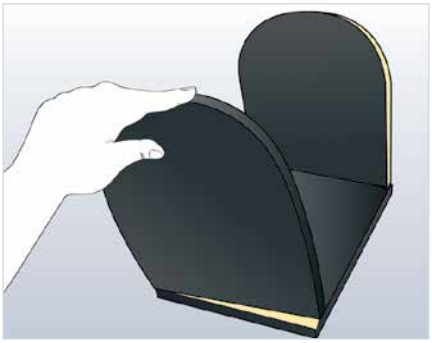
Cut cleanly using a small sharp knife.

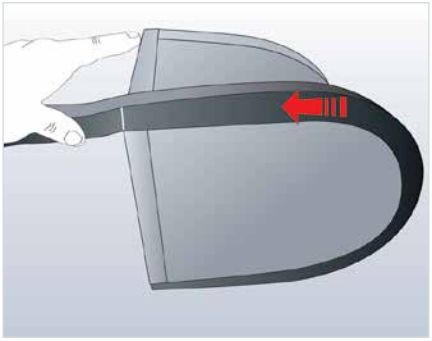


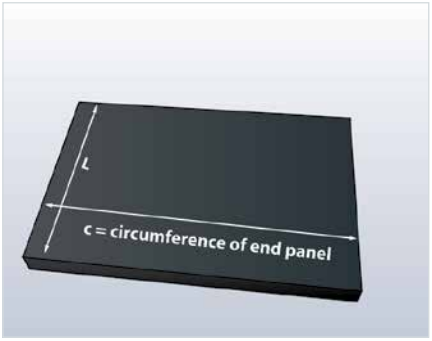


Apply Armaflex adhesive along the edges as indicated.

Note: The glue line must be as wide as the thickness of the Armaflex used.





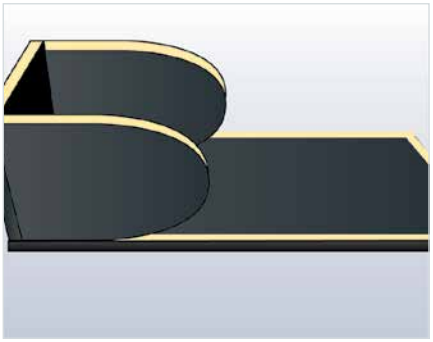


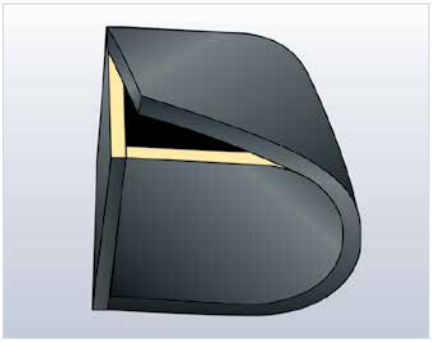
Glue the top edges of the end panels and the top panel edge.

Secure the end panels to the top panel making sure the edges are aligned.

Use a strip of Armaflex of the same thickness to determine the circumference around one end panel (including the top panel).

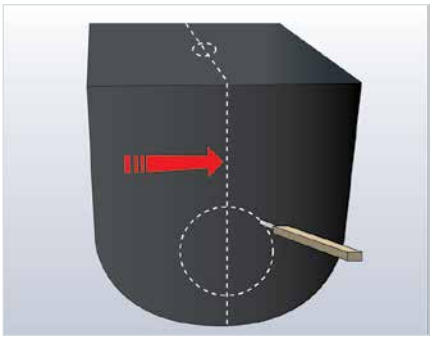
Mark measurement **L** and circumference and cut the body panel to size. Apply Armaflex adhesive to the body panel end and the body panel edges as shown.

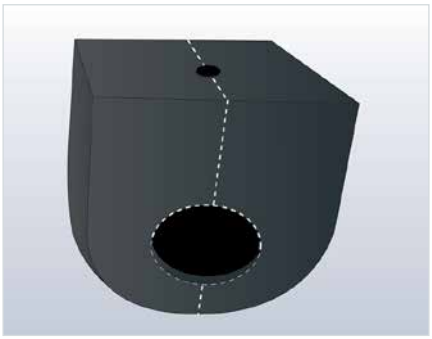




Gently roll the body panel edges around the end panels until the cover panel resembles a box.

Secure the square 90º edge as shown. Ensure the edge is aligned and neat. Continue to secure all edges in this way.





Cut holes for the insulated piping connections on each of the end panels and a final cutout for the valve spindle connection at the top.

Split the box into two halves and fit around the valve.

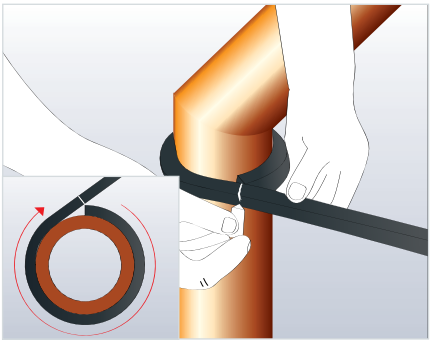
To finish, apply Armaflex adhesive to the seams, allow to tack dry and join the seams. Vapor seal the connections (joints) to the linear insulated pipes using Armaflex adhesive.

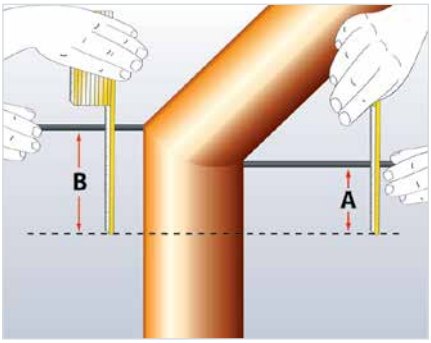
Important: Secure bonding in the area of the spindle neck penetration is essential.

Note: Armaflex tape may be applied to the spindle neck in the area of the penetration to provide additional protection.

Offset angle and pipework bend angle joints

The following illustrations show the various stages of work when insulating a miter angle or bevel joint in a pipe. The procedure when insulating a right angle pipe joint is effectively the same.

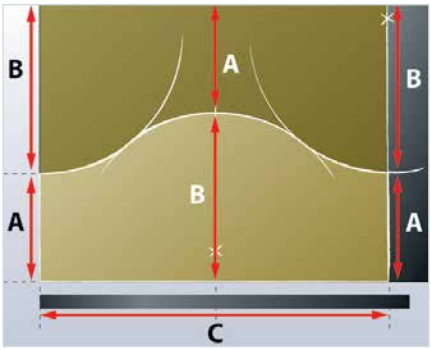




Determine the circumference of the pipe **C**

Important: Always measure with a strip of Armaflex of the same thickness to be used for the insulation. Do not stretch the strip.

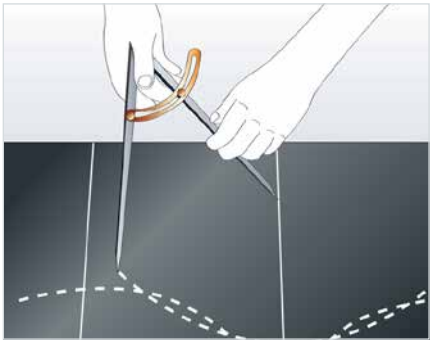
Measure the outer height **B** and the inner height **A** of the miter joint.

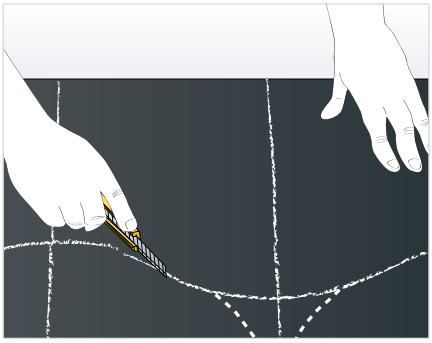


Transfer the circumference to the Armaflex sheet and mark the center line.

Transfer the outer and inner height to the Armaflex sheet.

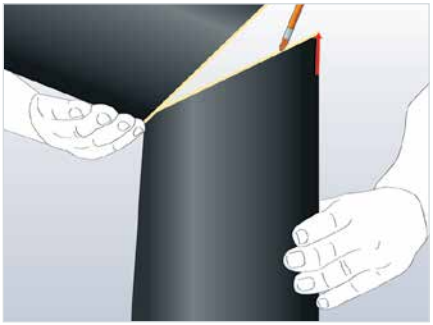
 See videos at www.armacell.us



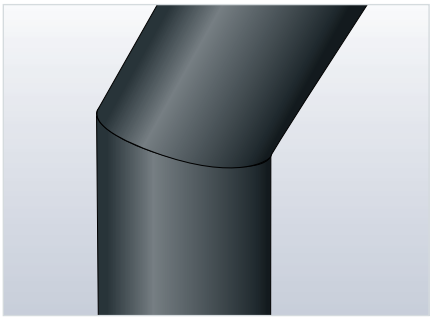


Measure the half-circumference using dividers and mark 3 arcs.

Join the arcs with a continuous line. Cut along the line. When repositioned by 180°, the upper and lower sections produce the two parts of the miter joint.



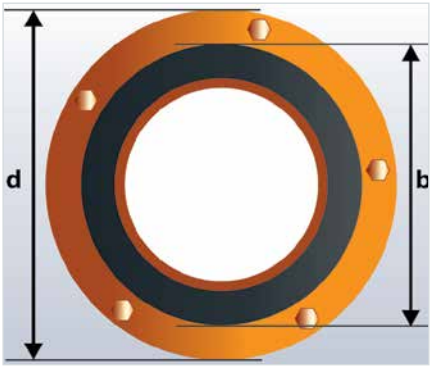
Apply Armaflex adhesive to the longitudinal seam, then to the connecting seam.

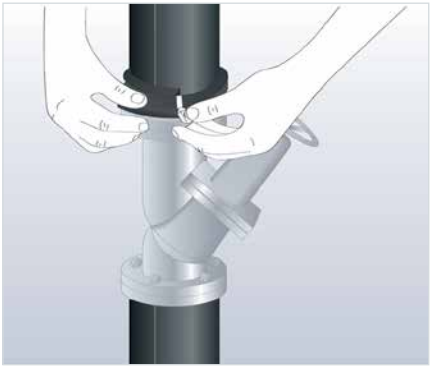


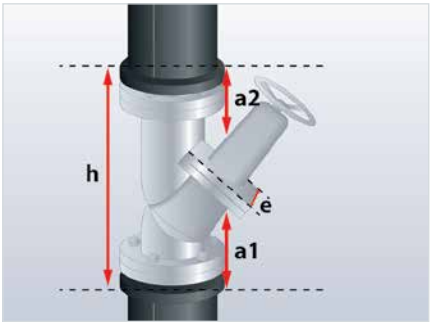
The insulation is now complete.

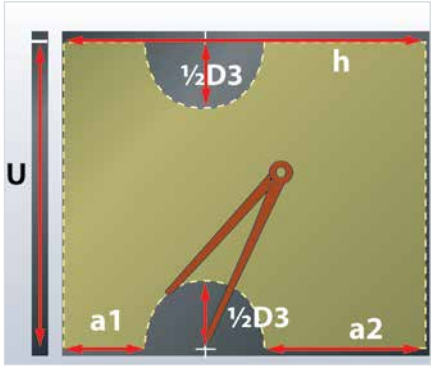
Strainers, strainer valves and inclined seat valves

The work involved in insulating a strainer valve or an inclined seat valve is similar (some measurements need to be extended) except that an end disc may be required.









Insulate the pipe up to flange.

Determine:

b = circumference of insulated pipe

d = depth of flange ring

h = measure the distance over the outer faces of the two Armaflex rings you have positioned next to the flanges

 See videos at www.armacell.us

a1 = measure the distance from the strainer to the outer face of the lower ring

a2 = measure the distance between the strainer and the outer face of the upper ring

e = diameter of strainer

Fabricate two discs

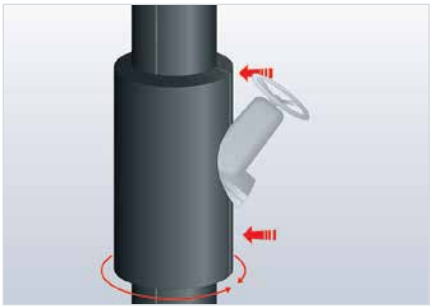
Measure the diameter of the flange and the diameter of the insulated pipe using a pair of calipers. Transfer these measurements to a piece of Armaflex sheet. Mark out two concentric circles with dividers. Repeat and cut out two Armaflex rings.

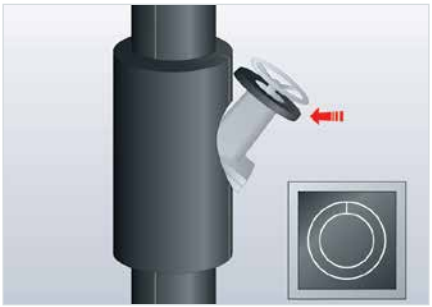
Note: It is often desirable to apply strips of Armaflex directly to the strainer at this point. Packing out in this way can add additional strength to the fitting cover and can reduce the impact of shrinkage at low temperatures.

Important: Always measure with a strip of Armaflex of the thickness to be used for the insulation.

Warning: Do not stretch the strip.

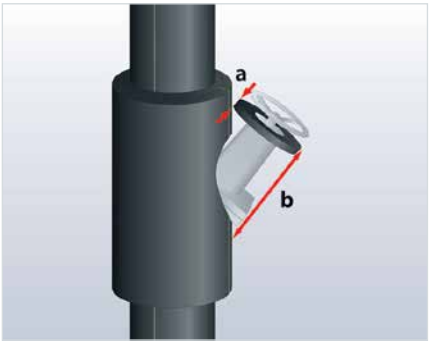
Transfer these measurements to the Armaflex sheet and mark the cutout required for the seat valve body.

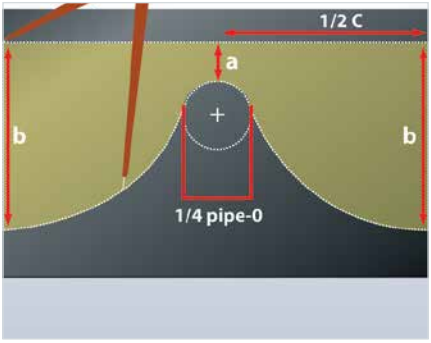




Cut the sheet and attach the insulation to the seat valve body using Armaflex adhesive.

Cut a ring of Armaflex with inner diameter equal to the outer diameter of the insulated offset part of the strainer. Attach this ring to the end of the insulated section as shown using Armaflex adhesive.





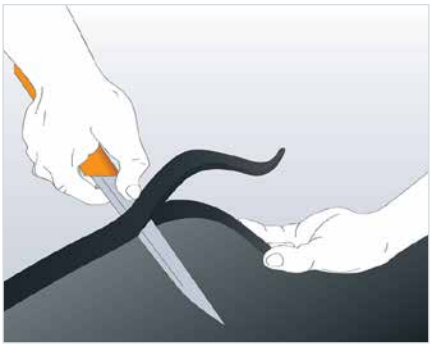
Determine:

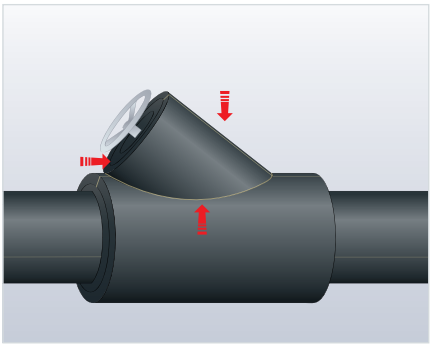
a = shortest distance from the ring of Armaflex to the insulation around the strainer body.

b = longest distance from the ring of Armaflex to the insulation around the strainer body.

Using the circumference of the offset section of the strainer prepare a sheet of Armaflex.

Transfer distance **b** on the outer boundary liner and distance **a** on the center line.





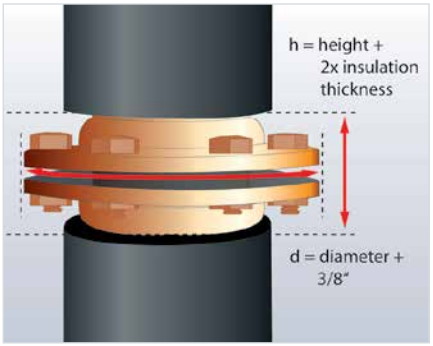
Cut the remaining section of sheet.

Chamfer the sheet away where it is to touch the insulation around the strainer body.

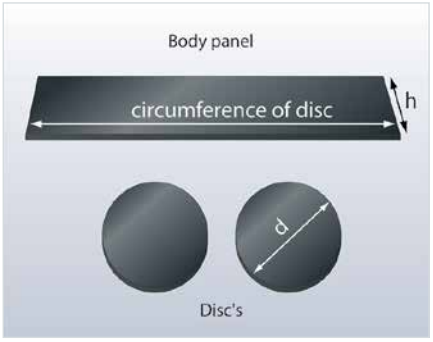
Flange boxes

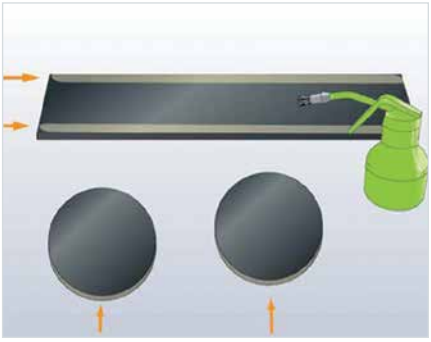
The following section shows the installation techniques for insulating flanges.

In chilled-water or refrigeration applications it is advisable to pack the gaps between the nuts with strips of Armaflex insulation.



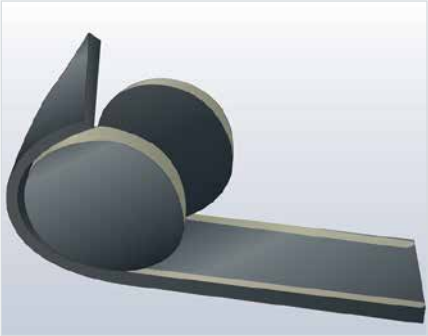
Using a pair of calipers, determine the diameter of the flange face. Add 3/8" to this measurement. Measure the length of the flange (incl. bolts) and add 2x the insulation thickness of the sheet used.

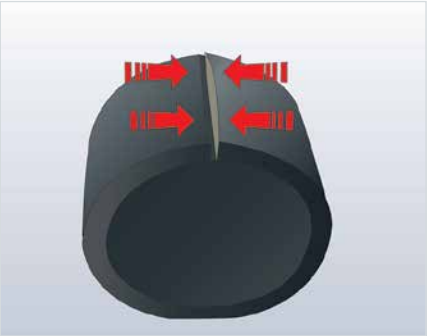




Transfer these measurements to a piece of Armaflex sheet. Mark two concentric circles with dividers. Repeat on a second piece of sheet. Cut out two Armaflex rings.

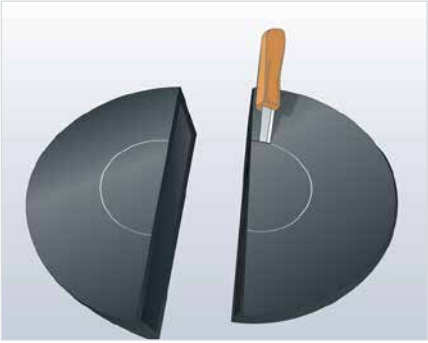
Determine the circumference of the disc.

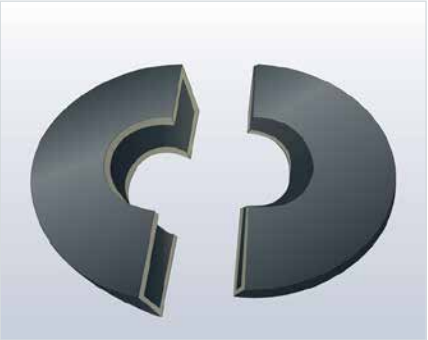




Roll the body panel up and around the end discs, do not stretch during application. Check alignment throughout.

Place the edge to the edge of the adjoining seam opposite.



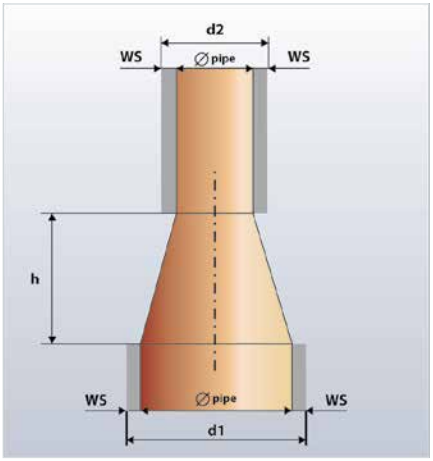


Using a small sharp knife cut out for the insulated pipe diameter.

To finish fit the two halves of the flange box around the flange and wet seal all seams and joints to the insulated pipe.

 See videos at www.armacell.us

Concentric reducers



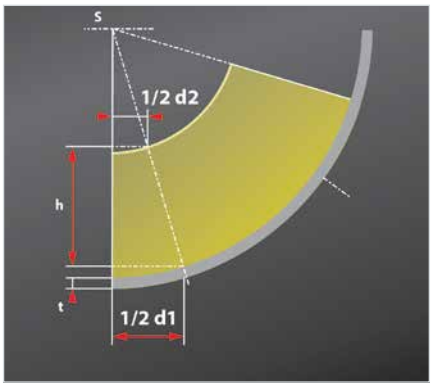
Determine the following measurements

h = height of the reducer, including both welds

d1 = diameter of larger pipe + 2 x insulation thickness

d2 = diameter of smaller pipe + 2 x insulation thickness

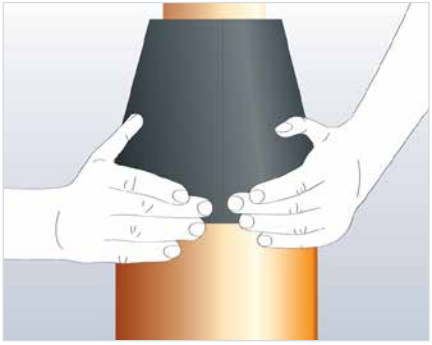
Determine the circumferences by placing a strip of Armaflex sheet material of the same thickness to be used around the larger diameter pipe. Do not stretch the strip.

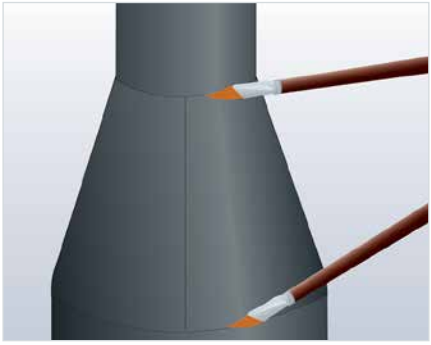


Thickness of Armaflex sheet material								
t	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1-1/2"	2"

Transfer the measurements determined onto the surface of the Armaflex sheet marked as shown in the picture. Minimize material waste by drawing the half-elevation on the edge of the Armaflex sheet.

Cut out the reducer piece with a sharp knife (yellow area indicates the cutting lines).

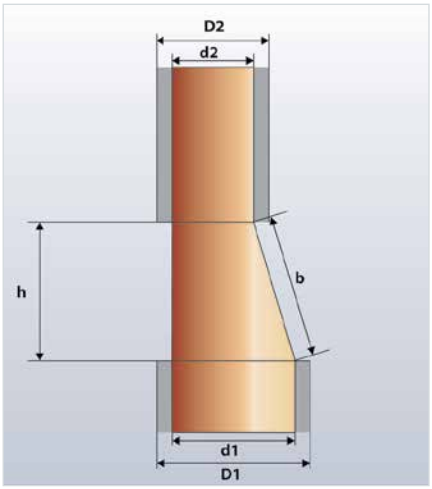




Apply a thin coat of adhesive to the edges to be joined, allow to tack dry. Press together firmly at one end, then at the other end and complete the joint.

Complete insulation by insulating the pipes on either side of the reducer and wet seal both butt joints.

Eccentric Reducer



Determine the following measurements:

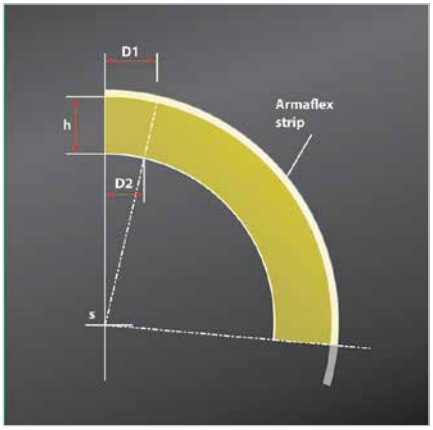
h = height of the eccentric reducer including both welds

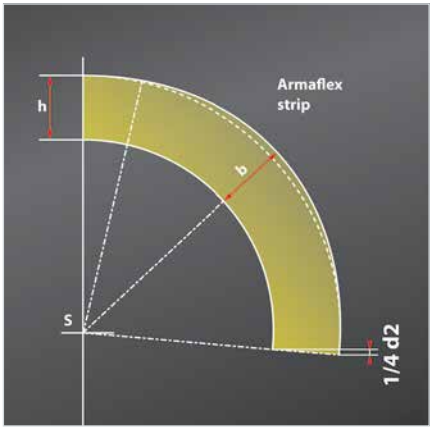
D1 = diameter of the larger pipe + 2x insulation thickness

D2 = diameter of the smaller pipe + 2x insulation thickness

b = true length of the reducer

Determine the circumference by placing a strip of Armaflex sheet material in the same thickness to be used around the larger diameter pipe.



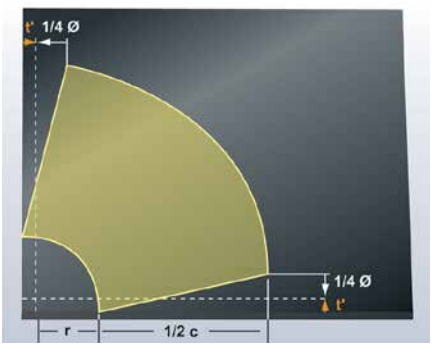


Transfer the measurement determined onto the surface of the Armaflex sheet material, as shown in the picture.

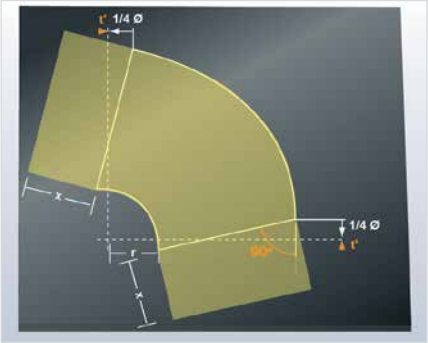
Modify the pattern as appropriate.

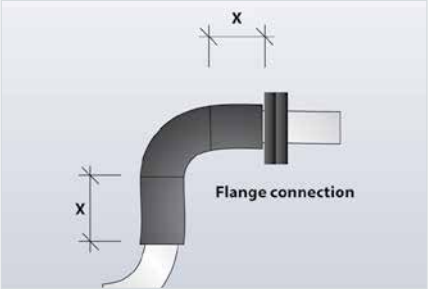
Two-part bend made of Armaflex sheet with extension

In some cases flanges, valves, etc. are located in close proximity to bends. In such situations it is practical to insulate this area as a single operation:



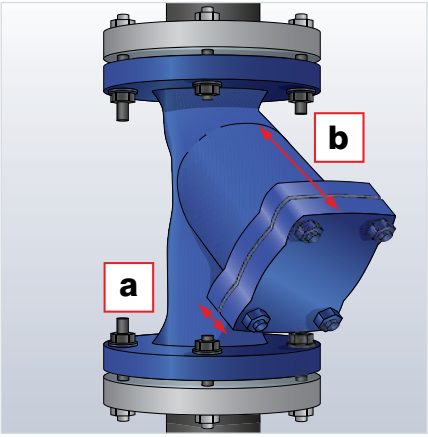
1. Fabricate a two-part bend (see **Two-part bend with Armaflex sheet** on page 36)





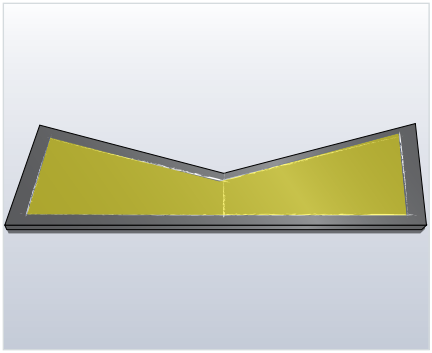
2. At both ends of the bend, mark the required extension **x** at a 90° angle.
3. Cut the first half-section of the extended elbow. Use the first half-section as a template to cut the second half-section of the elbow.
4. Place the sections together and apply Armaflex adhesive to the outer edges.
5. Allow the adhesive to tack dry and glue the pieces together (see **Two-part bend with Armaflex sheet** on page 36).
6. Place the insulation cover over the pipe bend. Allow the adhesive to tack dry then press the joint faces firmly together.

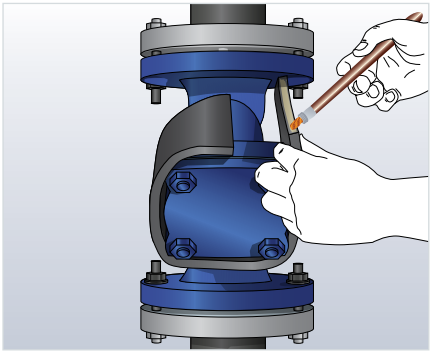
Strainer valve insulation with Armaflex sheet



1. Insulate the incoming pipes up to the flange.
2. Measure the shortest distance **a** and the longest distances **b** of the end of the strainer to the uninsulated strainer valve body.
3. Determine the circumference of the removable cover of the strainer. **Important:** Always measure with a strip of Armaflex of the thickness to be used for the insulation. Do not stretch the strip.

 See videos at www.armacell.us

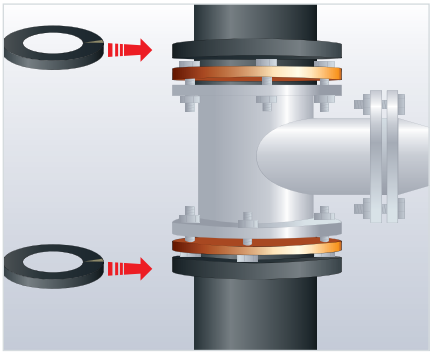


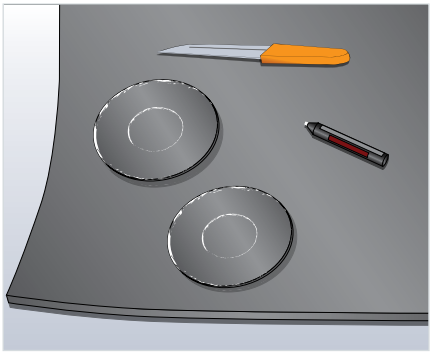


4. Transfer the circumference to Armaflex sheet and mark a center line.
5. At each end mark the longest distance **b** from the end of the strainer to the uninsulated strainer valve body and at the center line mark the shortest distance **a**.

Note: The strainer section may extend into the insulation of the strainer valve body and an additional length may be necessary so that the insulation of the strainer section juts out of the insulation of the strainer valve body.

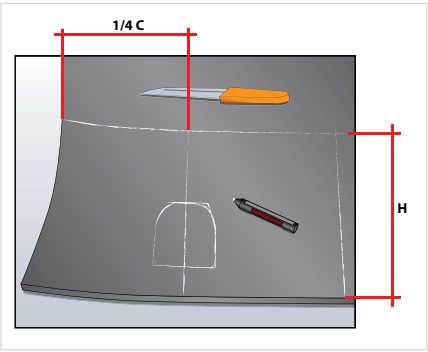
6. Cut the cut the piece out of the sheet material and attach the insulation to the strainer section using Armaflex adhesive.

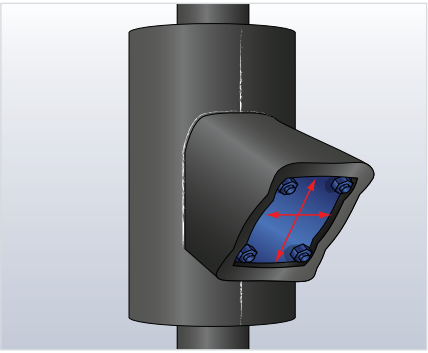




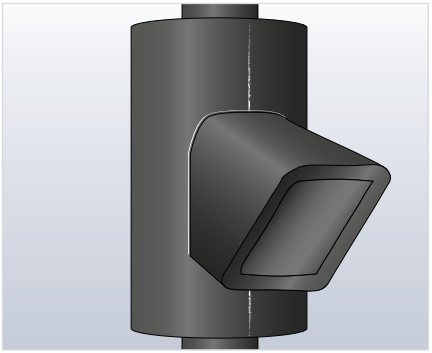
7. Using a pair of calipers determine the diameters of the:
   - insulated incoming pipes
   - flanges of the strainer valve

8. Transfer these measurements to a piece of Armaflex sheet. Mark two concentric circles with dividers. Repeat on a second piece of sheet. Cut out two Armaflex rings and install on both flanges.
9. Measure the distance between the outer faces of the two Armaflex rings and the circumference of the disc by using a strip of Armaflex with the thickness to be used for the insulation.
10. Transfer the circumference and the height to the Armaflex.





11. Mark a center line and cut an outline for the strainer section. Cut the sheet and apply adhesive to the longitudinal seam. Attach the insulation to the strainer valve body using Armaflex adhesive.
12. Measure the height and the width of the strainer section including 2x insulation thickness, transfer to Armaflex sheet and cut out the disc for the end cover.
13. Determine the circumference of the disc. Always measure with a strip of Armaflex of the same thickness to be used for the insulation. Measure the shortest and the longest distances from the end of the strainer to the insulated strainer valve body.
14. Transfer these measurements to Armaflex sheet as shown and connect the end-points with a divider.

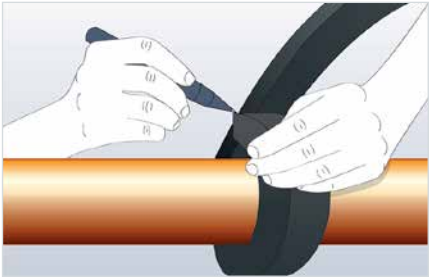


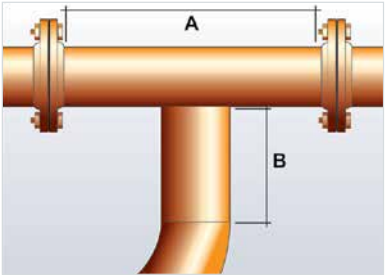
15. Cut the plotted shape and apply adhesive to all seams. Allow the adhesive to tack dry and roll the panel up around the end disc, do not stretch during application. Check alignment throughout.
16. Install strainer insulation and glue precisely to the strainer valve body.

Note: Although the strainer must be cleaned periodically, a removable cap is not be recommended on cold applications.

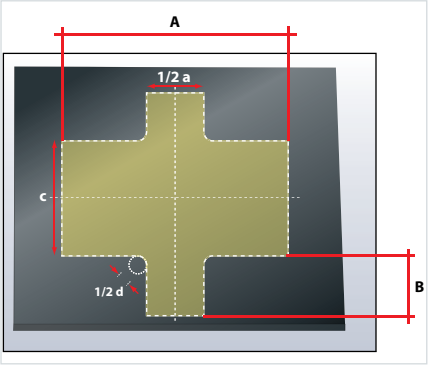
One-part T-piece with Armaflex sheet

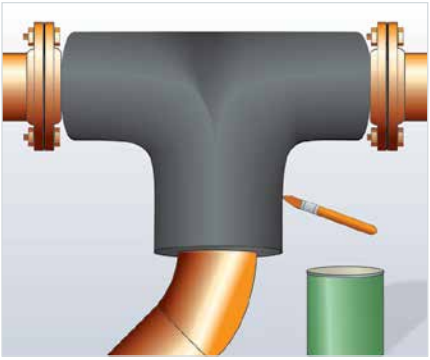
1. Measure the circumference of the uninsulated main pipe and branch pipe with a strip of Armaflex of the same thickness to be used for the insulation.





2. Determine length **A** of the main pipe and length **B** of the branch pipe.



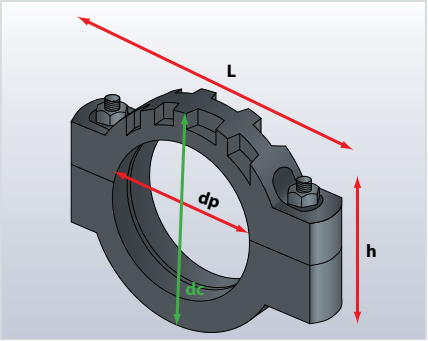


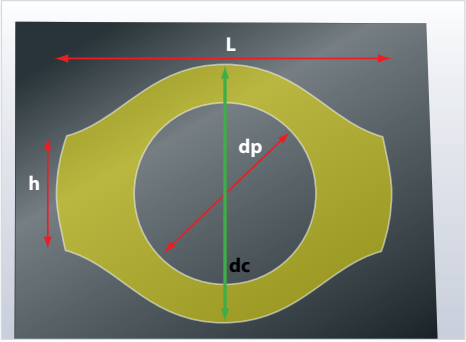
3. Transfer these measurements to a piece of Armaflex sheet and mark vertical and horizontal center lines.
4. Determine the length of the branch pipe to be insulated. Mark from the center point to both sides on the vertical center line.
5. Mark 1/2 diameter of branch pipe and join the points with straight lines.
6. With 1/2 of the diameter of the branch pipe. Cut out the section.
7. Apply adhesive to all seams, allow to tack try, then seal around the T-piece.

 See videos at www.armacell.us

Insulating victaulic couplings with Armaflex sheet

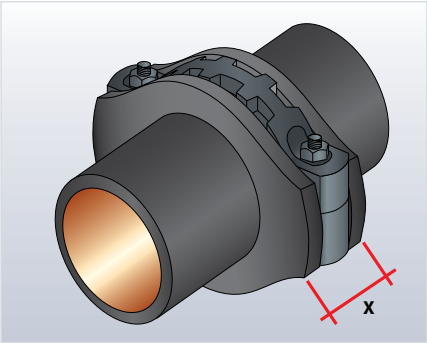
1. Insulate pipes up to the coupling.

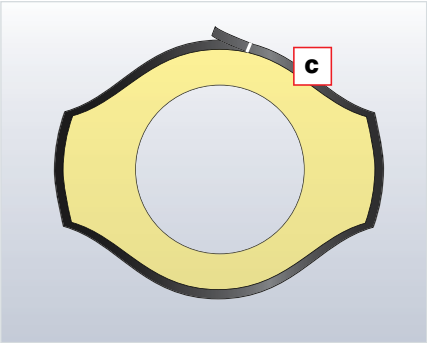




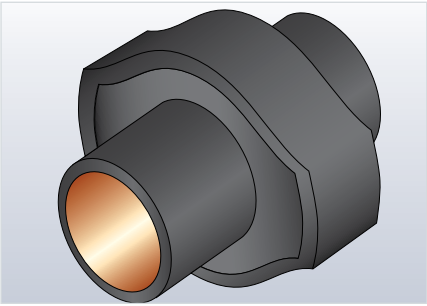
2. Determine
   dc =diameter of coupling + 2 x insulation thickness
   h = height of srews + 2 x insulation thickness
   L = length of coupling
3. Using 1/2 of **dc** (diameter coupling + 2 x insulation thickness) as a radius, transfer a circular arc to the Armaflex sheet and mark a horizontal center line.
4. From the center of the line, mark the width of the coupling.
5. At both ends, mark the height of the screws plus 2x insulation thickness at a 90º angle to the center line.
6. Connect the four end-points and the circular arc with a tangent so that an oval-like disc is formed.
7. Determine the diameter of the insulated pipe and mark it on the Armaflex sheet.

8. Cut out this disc and use as a template to create a second identical disc.





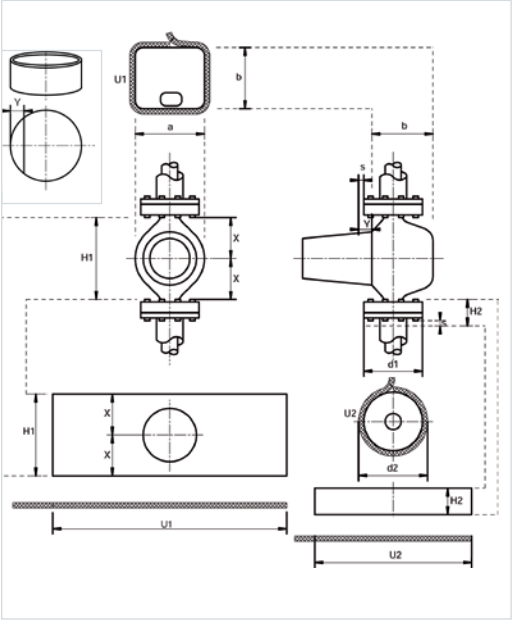
9. Glue both discs directly next to the coupling as shown.
10. Determine the circumference of the disc and measure the distance over the outer faces of the two discs.
    Transfer these measurements to a sheet of Armaflex.
    Important: Always measure with a strip of Armaflex of the same thickness to be used for the insulation. Do not stretch the strip.
11. Cut this section and glue over the Armaflex discs around the coupling.



 See videos at www.armacell.us

Insulating pumps with Armaflex sheet

Various types of pumps are available. The following section offers general advice and procedures which can be applied and modified as required to insulate most pump configurations.



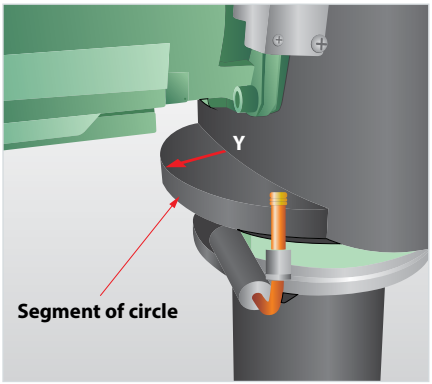
1. Insulate the incoming pipes up to the flange.
2. Cut to size two Armaflex discs including the cutouts according to the dimension of the pump body (**a** x **b**).
3. Determine the circumference of the disc **U1**.

Important: Always measure with a strip of Armaflex of the same thickness to be used for the insulation. Do not stretch the strip.

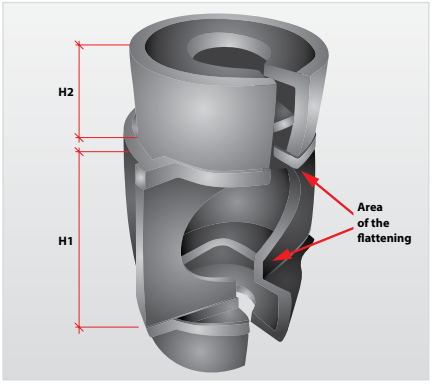
4. Cut out the section for the insulation of the pump body from an Armaflex sheet (**U1** x **H1**).
5. Create the cutout for the motor pump. To provide a close-fitting cutout in the penetration area of the pump motor, it should be 3/16" smaller then measured.
6. Glue both discs to the section for the pump body. Place the insulation cover over the pump body and apply adhesive. Allow to tack dry then press the surfaces firmly together.

Note: In the area of the pump motor, apply self-adhesive Armaflex tape to the pump to ensure the insulation is attached securely.

7. For the flattening, fabricate two circular sections. Cut out discs with the dimension of flange diameter + 2 x insulation thickness. Mark the **Y**-dimension, cut the two circular sections and glue at the top and bottom of the pump cap.



8. Fabricate the flange boxes: determine the diameter of the flanges **d1**, circumference **U2**, the height **H2** and the cutouts for the insulated piping connections.
9. Fit the flange boxes around the flange and wet seal all seams and joints.



The picture shows a pump box with a straight front cover and a semi-circular shell.

Installing Armafix insulated pipe supports

Pipe hanger locations

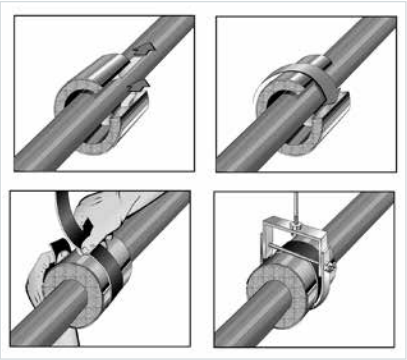
At pipe hanger locations where the insulation must resist compression, supporting devices must be used in combination with metal hanger shields.

Armafix Insulation Pipe Hangers (IPH)

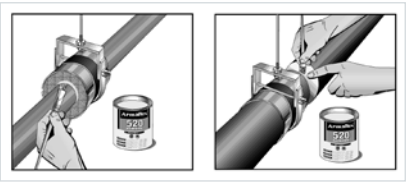
Armafix IPH (Insulation Pipe Hangers) provide fast, reliable support for insulated pipes, an innovative alternative to traditional block and dowel methods. The pre-insulated hangers ensure optimum load bearing, protect against thickness compression, and prevent condensation gaps that could otherwise compromise system integrity. To minimize the movement of Armaflex, it is recommended that a pair of non-skid pads be adhered to the clamps. In addition, to prevent loosening of the clamps, use of an anti-vibratory fastener, such as a nylon locking nut is recommended.

Armafix features a self-adhesive closure and an exclusive foam-to-foam bond. The insulated pipe hanger is adhered to Armaflex insulations using Armaflex 520 or 520 BLV Adhesive.

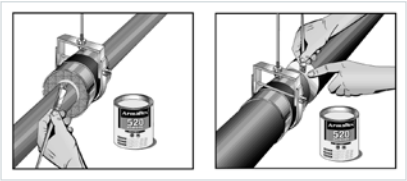
If the application is for clevis or saddle type of pipe hangers it is recommended that Armaflex Tape be wrapped around the Armafix prior to placing in the clevis or saddle hanger.



Easy Application



Application with insulation



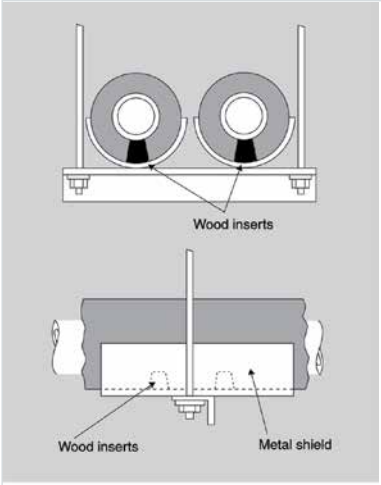


FIG. 1

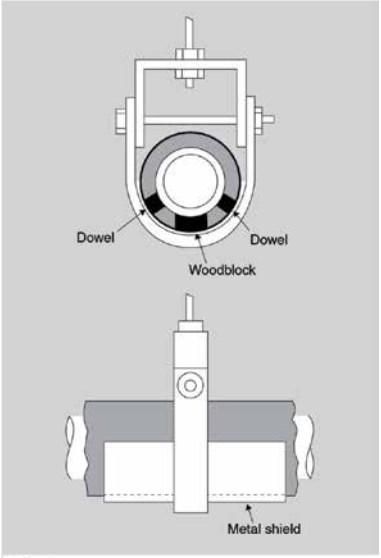


FIG. 2

Clamp (Friction Fit)

Important: Use only the rigid segments to bear the load.

Install Armaflex insulation on either side of the Armafix pipe support. Wet seal the butt joints with the Armafix pipe support using Armaflex adhesive.

Note: Ensure that the pipe insulation is installed under slight compression.

Traditional method

Although timesaving Armafix IPH is recommended, you can use traditional supporting devices such as short lengths of wood dowels or wood blocks, which are the same thicknesses as the Armaflex. These supporting devices rest on the metal shield that is installed between the insulation surface and the pipe hanger.

Single or multiple short wood dowels, may be used to support small-size pipes (see Figure 1). Larger-size pipes will require woodblocks approximately 1" x 3" or 1-1/2" x 4" by the Armaflex thickness, singly or in multiples. It is always best to curve the woodblock surfaces to match the curve of the pipe and the curve of the metal shield.

The holes cut into the Armaflex to receive the supporting devices are to be undersized so the supporting devices fit tightly. Coat the supporting device with 520 Adhesive, and insert into the hole in the Armaflex while the adhesive is still wet; then coat the outer surface with adhesive as a vapor seal.

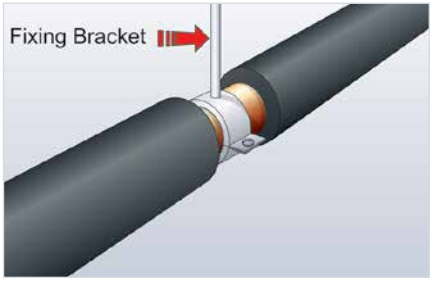
To eliminate the possibility of large or heavy pipes from teetering on the woodblocks, it is recommended that 3/4"- or 1"-diameter wood dowels be placed at 4 o'clock and 8 o'clock positions with each woodblock (see Figure 2).

Install the brackets.

Insulating over pipe supports (encapsulating)

The insulation of standard brackets can be carried out using the following procedure:

Note: When installing on cold lines, it is essential to raise concerns about the suitability of such systems before beginning work.

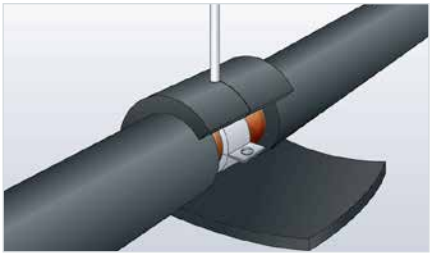


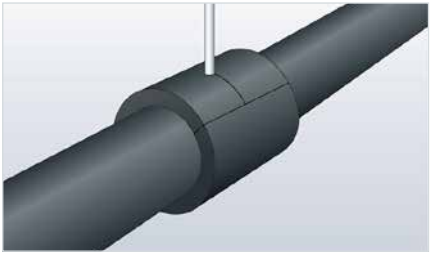
1. Install the Armaflex as close to the fixing bracket as possible. Seal the ends of the tube to the pipe with Armaflex adhesive.

Note: On cold lines, insulate the fixing bracket with a suitable Armaflex tube or with Armaflex self-adhesive tape 2-4" upward.

2. With a large off-cut of Armaflex tube, punch out a small hole to allow for the oil thread support of the bracket and slit with a small sharp knife along the flat face of the tube.

Note: For large pipe diameters the use of Armaflex sheet is recommended.





3. Place the Armaflex cover over the support area, mark and cut the true circumference of the cover.
   Fix and vapor seal all seams and joints in and around the attached insulation using Armaflex adhesive.

Insulation of other pipe supports

Armafix pipe supports represent the best option to create a fully water-vapor-tight system and prevent condensation on cold applications.

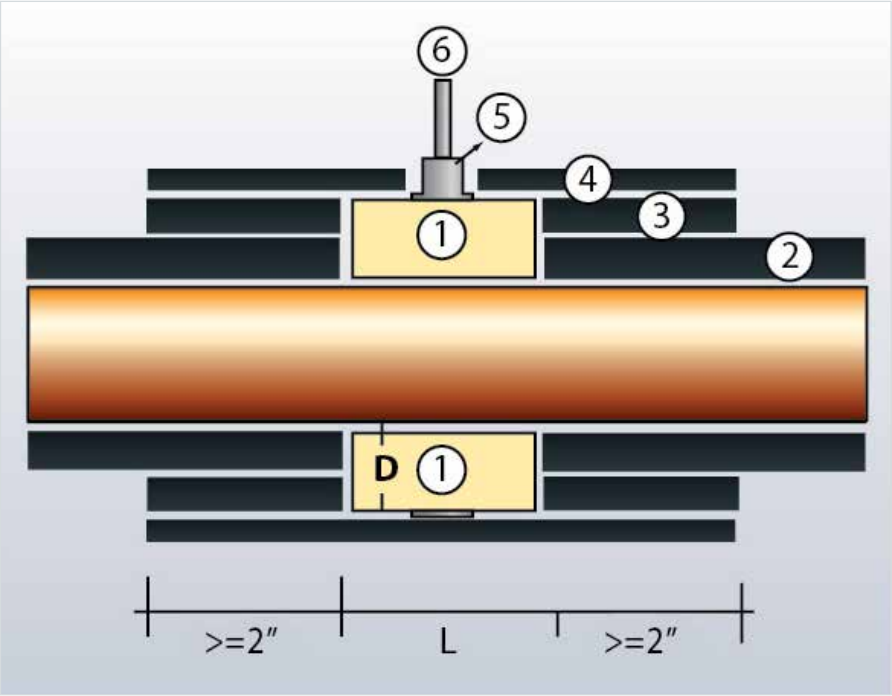
Often, cold clamps made of PUR/PIR complete the pipe hanging systems.

In these cases it is important that a vapor-tight bond between the cold clamps and the Armaflex insulation is achieved.

This interface represents a thermal bridge where condensation may occur and adhesion at these points requires special attention:

1. Clean the surface of the clamp using denatured alcohol.
2. Apply Armaflex adhesive on the surfaces which are to be glued. Allow this first layer of Armaflex adhesive to dry.
3. Apply a second thin coat of adhesive evenly on both the surface of the clamp and the Armaflex adhesive joints. After the adhesive has cured, the joints should be pressed together briefly, but firmly.
4. When gluing both butt joints under pressure, wet seal around the joint, when the clamps have been glued in advance.
5. If necessary double the Armaflex thickness to the diameter of the PUR-support.
6. To secure the butt joints, apply an overlapping strip of Armaflex using all-over adhesive coverage.

SCHEMATIC CROSS-SECTION OF A CONNECTION OF ARMAFLEX TUBES WITH A CLAMP MADE OF PU RIGID FOAM



1. Clamp made of PU rigid foam
2. Armaflex tube
3. Armaflex double layer
4. Armaflex overlap (thickness ≥ 3/8")
5. Connecting thread
6. Threaded bar

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