

TOUGH PROTECTION ON THE HIGH SEAS

Arma-Chek Juna

IMO-certified insulation system for shipbuilding. Original closed-cell ArmaFlex with an extremely tough flexible covering. For combustible and non-combustible installations.

Lightweight, robust, space-saving and cost-efficient.

Application Manual

www.armacell.eu



2-in-1
solution



 **armacell**[®]
Arma-Chek

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General

Working with Arma-Chek Juna

- The installer should have a general knowledge of the installation techniques relating to ArmaFlex tube and sheet products.
- Use high-quality tools. A sharp knife, good brushes and fresh ArmaFlex adhesive are required.
- Use clean ArmaFlex material. There should be no dust, dirt or oil on the surface. If necessary, remove using the ArmaFlex cleaner.
- Use the correctly dimensioned material!
- Always split oval tubes on the flat side.
- Never pull glued joints when sealing them, always push them together, ensuring that the material is fitted under compression.
- Never insulate installations and systems that are in operation! Wait 36 hours before starting insulated plant (24 hours for ArmaFlex RS850) - the adhesive is then fully cured.
- Do not use self-adhesive matching Arma-Chek tape as the only means of bonding butt and longitudinal joints and seams.
- Do not apply Arma-Chek covering on seams and joints which are glued with ArmaFlex adhesive until the adhesive has been given time to fully cure (typically 36 hours, 24 hours for ArmaFlex RS850).
- Do not carry out fabrication on the floor. Fabricate Arma-Chek products on a workbench as you would do metal jacketing.
- Avoid installing in very wet or humid conditions. Use a tent, for example, to protect where possible.
- Avoid installing Arma-Chek covering under tension.

- When using Arma-Chek covering on ArmaFlex substrate make sure that all seams/joints are damage free and completely sealed with the correct type of ArmaFlex adhesive.
- Always use the specified ArmaFlex adhesives. Do not assume the adhesives will all do the same job! If in doubt, consult Armacell's Technical Department or your local agent.
- In indoor application areas which will be washed down, always apply the Arma-Chek Mastic to seal all seams and joints after they have been glued with the specified ArmaFlex adhesive.
- Keep the number of joints to a minimum and stagger them.

Health & Safety

- When using adhesive and mastic sealants, the manufacturer's recommendations should be strictly followed. Details are available from your local Armacell Customer Services Department / local agent.
- Arma-Chek coverings can be cut easily with a sharp craft knife. Such knives should be handled with due care.

Tools for installing Arma-Chek

	Folding rule / tape measure		Straight edge
	Chalk for marking irregular shapes		Template (printed on every ArmaFlex carton)
	Silver ink marker pen		Scissors
	Dividers		Brushes with short, firm bristles
	Callipers		Smooth spatula for smoothing down covering
	sharp knives, ceramic knives*		Sharpened pipe ends for the most common pipe diameters
	Safety craft knife		Fabric paint rollers for surface gluing
	Sharpening stone*		Gluemaster
	Mastic gun		ArmaFlex Toolbox

* A tool kit consisting of three knives plus a sharpening stone is available.

Correct use of ArmaFlex adhesive

There are three types of accessories currently available:

- ArmaFlex adhesive (ArmaFlex 520, ArmaFlex RS850 and ArmaFlex HT 625)
- Arma-Chek Black Mastic

- Arma-Chek Juna self-adhesive tapes

ArmaFlex adhesive

The adhesives to use are:

ArmaFlex 520, ArmaFlex RS850 or ArmaFlex HT 625 depending on your application:

- Before use shake ArmaFlex 520 and ArmaFlex HT 625 and stir the adhesive thoroughly. Keep container closed when not in use.
- Use brushes with short, stiff bristles. Alternatively the ArmaFlex adhesive gluemaster can be used when working with the adhesive.
- Application procedures for installing the Arma-Chek covering to flat and large surface areas, where all-over adhesive coverage is required: For Arma-Chek Juna covering adhesive is required on both sides (ArmaFlex surface and overlapping area). Always ensure there is all-over adhesive coverage with no signs of dry spots where applicable, such as flat surfaces, vessels and pipe diameters above 500 mm. The Arma-Chek Juna covering is to be fixed and secured, tack-drying time is required. Note: If the ArmaFlex surfaces are left to tack dry, they will not bond when pressure is applied. When this happens you can reactivate the adhesive by applying a further film of ArmaFlex adhesive. A short-pile fabric paint roller/ large paint brush may be preferred on large circular and flat surfaces.
- Allow the adhesive to tack dry on overlapping details . The tack-drying time depends on the thickness of the adhesive layer and the ambient conditions (temperature, relative humidity, air movement). The correct initial drying time is checked by the "fingernail test": touch the surface with a fingernail, if the fingernail does not adhere to the surface and the surface itself does not feel tacky, the covering can be positioned and fixed by applying pressure by hand, a dry paint roller or a wide brush to bond the covering to the ArmaFlex. Apply pressure to the entire surface, smoothing the covering and making sure there are no air pockets present. Always check for alignment and avoid creases and wrinkles.

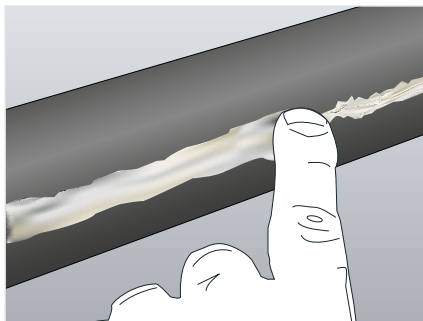
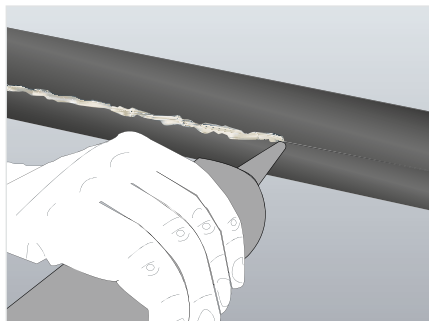


- If the surfaces are left to dry too long, they will not bond when pressure is applied. When this happens you can reactivate the adhesive by applying a further film of ArmaFlex adhesive following steps 2 to 4 again.
- In general, the application of adhesives should not be carried out when the ambient temperature is below the recommended application temperature or the relative humidity is higher than 80 %. (For further information see application hints for ArmaFlex adhesives.)
- Prior to applying the bead of Arma-Chek mastic, use ArmaFlex cleaner to clean your tools, contaminated Arma-Chek and all seam and joint details within the Arma-Chek Juna system.

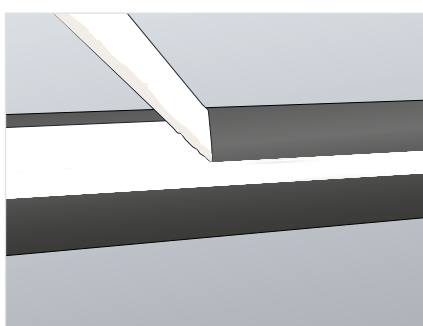
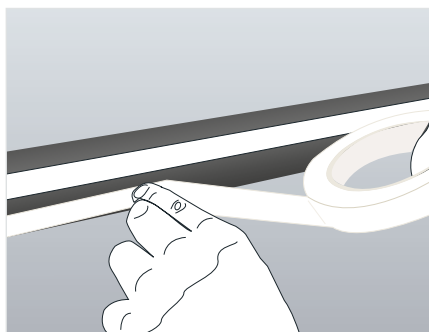
Arma-Chek Mastic

The Arma-Chek mastic is an adhesive and a sealing product designed to give additional, long-term protection to all Arma-Chek Juna glued seams and joints in indoor areas which will be washed down.

1. Before applying the mastic to all seams and joints, check that they are completely sealed with the correct type of ArmaFlex adhesive, and securely fixed down (see item 6).
2. Check that the seams and joints are clean, dry and free from contamination before applying the mastic. All seam and jointing details are to be cleaned with ArmaFlex Cleaner, before applying the Arma-Chek Mastic.
3. All seams and joints to have mastic beading applied which is at least 10 mm wide and 3 mm thick.
4. Smooth the mastic using a plastic spoon or your finger (use washing-up liquid and water).



The finish of the mastic can be enhanced by masking off 5 mm on either side of the seams and joints, prior to the application of the mastic. Proceed to remove the masking tape while the mastic is still wet. (Be aware of health and safety issues!!)



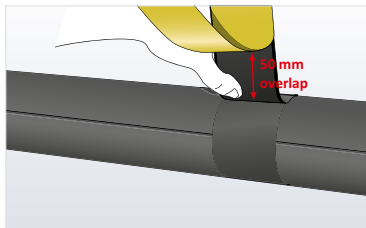
5. In general, the application of the mastic should not be carried out when the ambient temperature is below +5 °C or the relative humidity is higher than 80%.
6. The Arma-Chek Mastic should not be used as the sole means of fixing and bonding the covering (see item 1).

Correct use of Arma-Chek Juna Tapes

- The following procedures are applicable for Arma-Chek self-adhesive matching tape with 50 mm width.
- Self-adhesive tapes are to be used for indoor applications only - do not use them on outdoor installations!!
- Check that the seams and joints are clean, dry and free from contamination before applying the self-adhesive tape. To clean the seams and joints use the ArmaFlex Cleaner.
- Peel back the release paper and cover the entire seam line with an additional 50 mm overlap where applicable, applying pressure during the application.
- Check that the self-adhesive tape has completely adhered itself to the covering underneath.
- Self-adhesive Arma-Chek tape should not be used as the only means of fixing butt and longitudinal joints and seams.
- For better protection of the ending-points of the self-adhesive tape, adhere ending points with contact adhesive in addition.

Temperature limits using self-adhesive tapes:

- Ambient application temperature +10 °C to +35 °C, maximum relative humidity 80 %
- Always store in a warm, dry location. Ideal storage temperature +5 °C to +35 °C (+18 °C preferred).



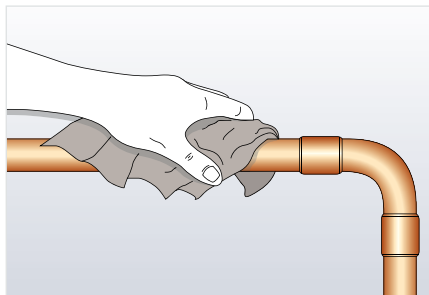
Arma-Chek Juna tube installation

Arma-Chek Juna pre-covered tubes are supplied with a self-adhesive seal in 1 metre lengths. The covering finishes approximately 10 mm before the end of the tube in order to guarantee that the insulation material is installed “under tension” around butt joints. **Temperature limits: Ambient application temperature +10 °C to +35 °C, maximum relative humidity 80 %.**

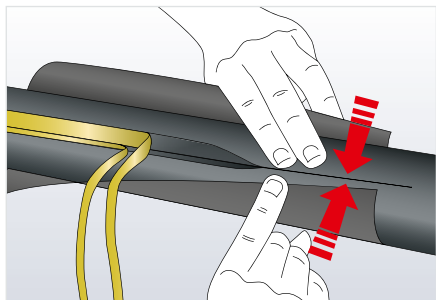
The Arma-Chek Juna pre-covered tube range is available for pipes with an outer diameter of up to 168 mm.

Note: Due to the semi-flexible nature of the products, sleeving around bends is not possible!

Insulating straight pipes (OD ≤ 168 mm)

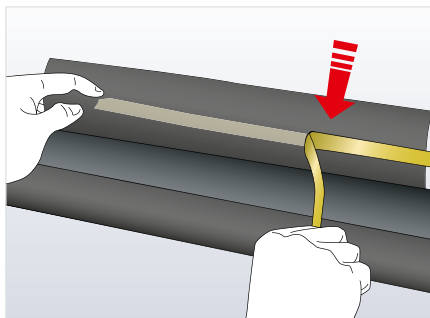


1. Clean the pipe surface with ArmaFlex cleaner removing any dust or other contamination.
2. Snap the tube onto the pipe.

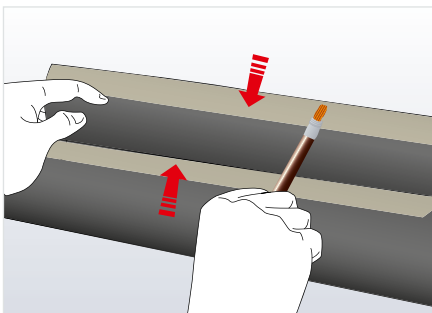
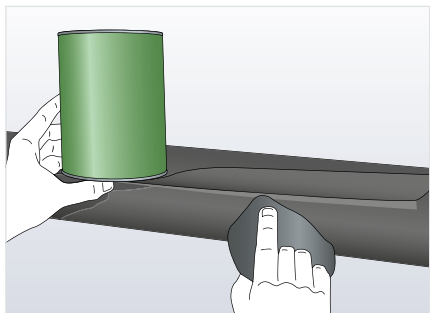


3. Peel back both release paper strips step by step, 200 mm at a time. Align the seam joints and apply very firm pressure to the complete seam to ensure that it is properly closed.

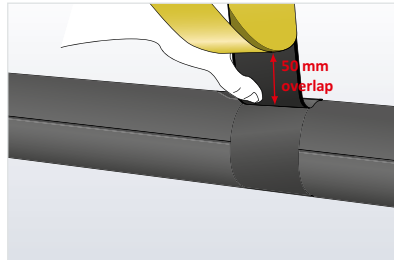
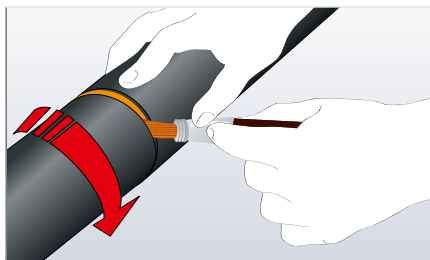
Note: Always check the seam is fully bonded before proceeding to the next steps.



4. Lay the covering tightly round the tube and fix using the factory-applied adhesive strip.
5. Use the correct ArmaFlex adhesive to secure the longitudinal overlapping of the covering. Apply the adhesive on both sides. Always remember to stagger longitudinal seams.



6. Secure the butt end on the under face of the Arma-Chek tube with the ArmaFlex adhesive and also provide a wet seal to the adjoining tube.
7. After the installation the butt joints must be additionally secured with the matching 50 mm wide self-adhesive Arma-Chek Juna tape.

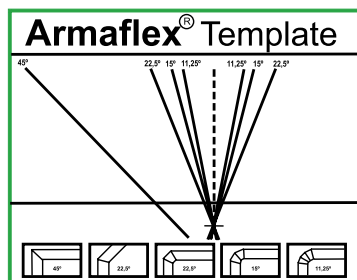


8.

Using the ArmaFlex template

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

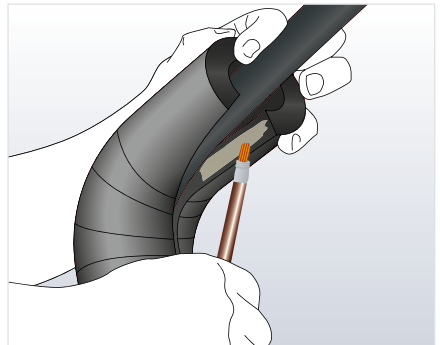
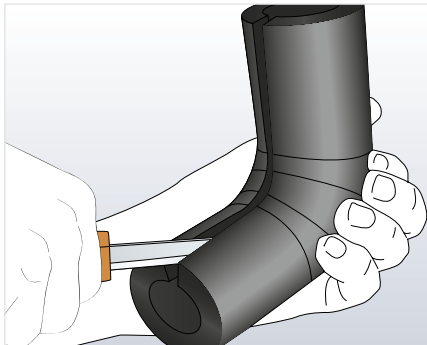
1. Place a copy of the ArmaFlex template face up on a table or worktop.
2. Line a tube of Arma-Chek across the template parallel along the horizontal base line.



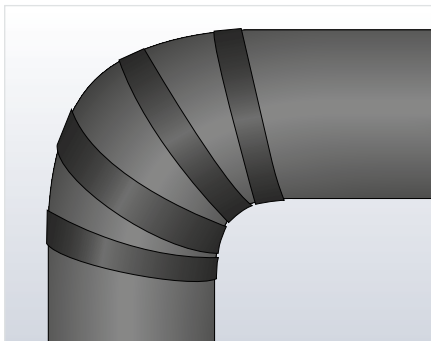
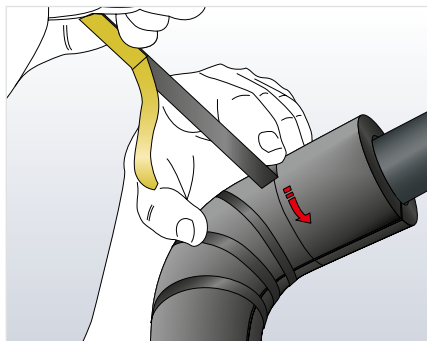
3. Select the required angle cut from the template and cut along this line.

Insulating fittings with pre-covered tubes

1. Cut the pre-covered tube to the correct length for the bend.
2. Carefully close the longitudinal seam of the tube.
3. Carefully peel back the covering where it is fixed. Apply adhesive on both surfaces (all-over coverage). Once the adhesive is touch dry, fix the covering to the piece of tube.
4. Fabricate fitting pieces as indicated in the drawings below. See also the ArmaFlex Application Manual! The procedure for this is the same as for ArmaFlex tube material.
5. Apply ArmaFlex adhesive to all segment seams.

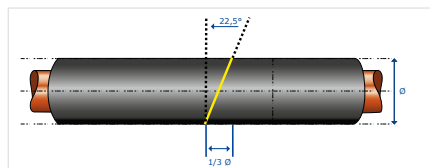


6. Cut the fitting piece open along the inside throat. Install the fitting piece on the pipe. Apply the appropriate ArmaFlex adhesive on the throat seam.
7. Cover the joints between successive tube segments and the seam of the throat using Arma-Chek Juna self-adhesive tape in approx. 10 mm width.



Note: In some circumstances it may be preferable to fabricate segment fittings from standard, non-covered ArmaFlex with the Arma-Chek covering applied in a second step.

BEND WITH 45° ANGLE USING ARMA-CHEK TUBE

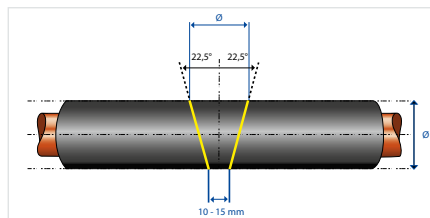


* The diameter details to achieve the 45° angle are approximate values!

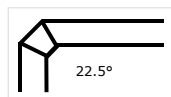
Note: Yellow lines indicate where cuts are to be made. For correct angle measurements please use the ArmaFlex template located on each tube box.



SEGMENT BEND WITH 1 MIDDLE PART - 2+1 USING ARMA-CHEK TUBE

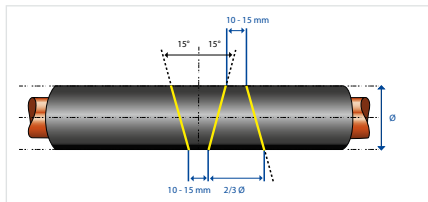


Note: Yellow lines indicate where cuts are to be made. For correct angle measurements please use the ArmaFlex template located on each tube box.

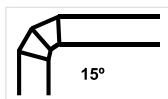




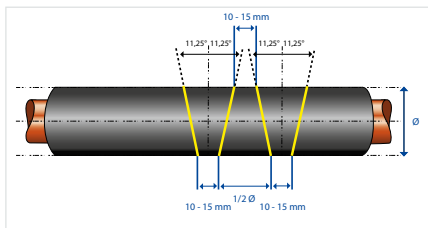
SEGMENT BEND WITH 2 MIDDLE PARTS - 2+2 USING ARMA-CHEK TUBE



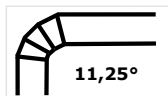
Note: Yellow lines indicate where cuts are to be made. For correct angle measurements please use the ArmaFlex template located on each tube box.



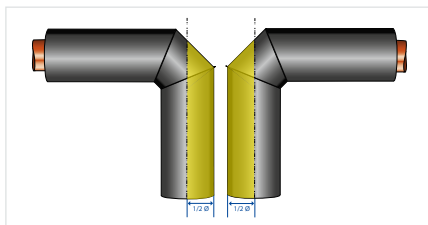
SEGMENT BEND WITH 3 MIDDLE PARTS - 2+3 USING ARMA-CHEK TUBE



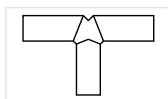
Note: Yellow lines indicate where cuts are to be made. For correct angle measurements please use the ArmaFlex template located on each tube box.



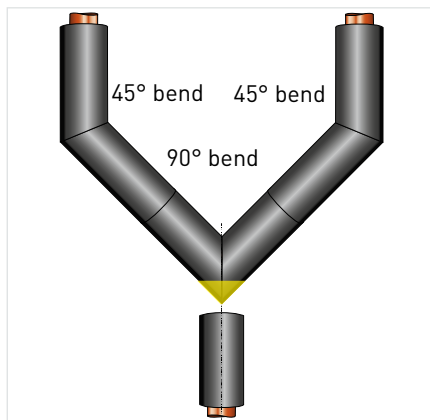
SWEPT T-PIECE USING ARMA-CHEK TUBE



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

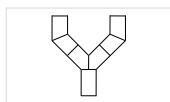


Y-TUBE USING ARMA-CHEK TUBE

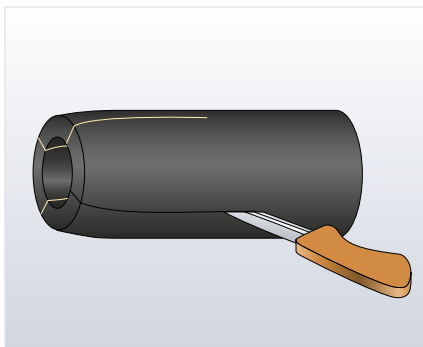
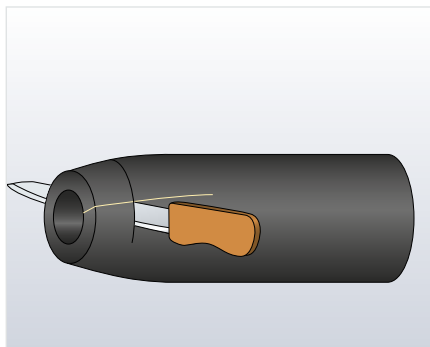


Note: Yellow lines indicate where cuts are to be made. For correct angle measurements please use the ArmaFlex template located on each tube box.

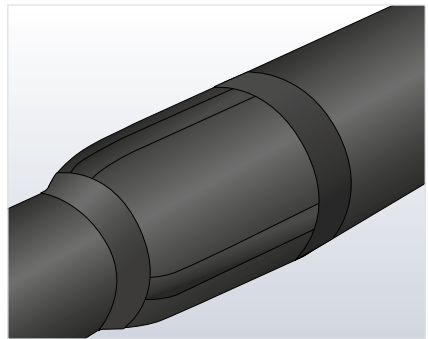
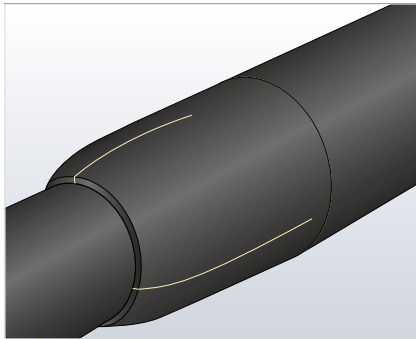
Further fabrication of the 45° bend (two) and the 90° bend (one).



Insulation of pipe reducer using Arma-Chek Juna precovered tubes



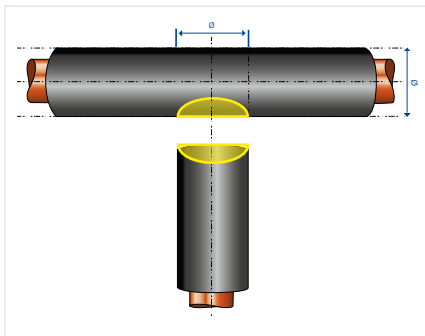
To seal the overlap, cut reducer to size - allow compression of 5 mm at each end. Slit fitting on the flat side.



Install and glue seam and butt joints. For indoor applications: Cover the segment fitting joints of the tube and the seam of the throat using Arma-Chek Juna self-adhesive tape.

T-SECTION

Cut a hole in the non-covered ArmaFlex tube for the main pipe with a sharpened section of a copper pipe of the right diameter. Prepare a saddle-cut at the end of a Arma-Chek pre-covered tube and glue it together positioned over the hole of the main pipe insulation. Afterwards install the T-piece section on the pipe and cover the main pipe insulation with Arma-Chek Juna covering material.

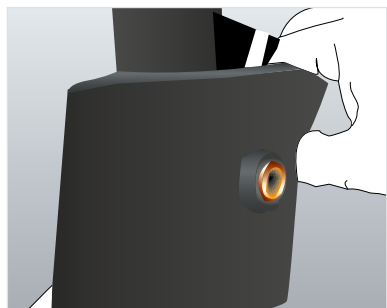
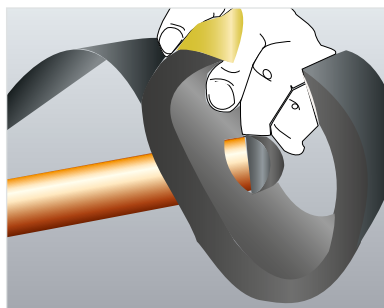
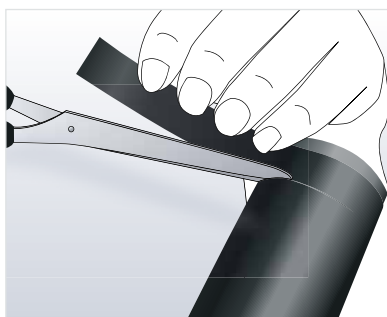
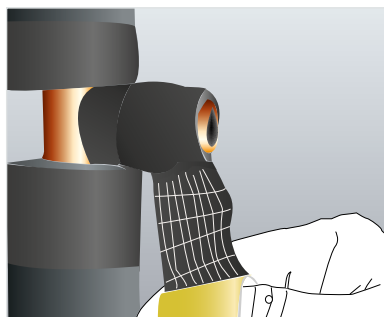


Insulation jacket cover

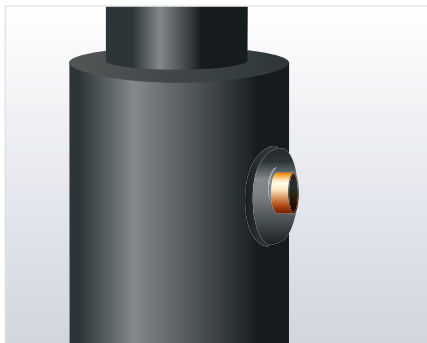
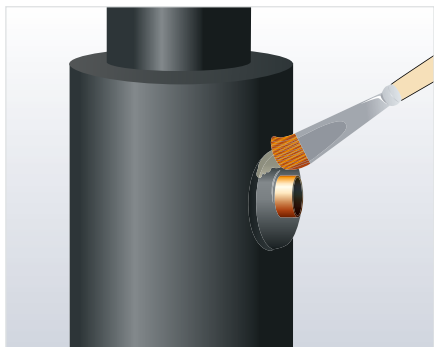
(small bore valves/unions etc., all valves/unions etc.)

1. On cold lines, apply a small piece of ArmaFlex tube completely glued on the spindle (or ArmaFlex self-adhesive tape).
2. Ensure the ArmaFlex is butted up to the face of the oversize fitting. Apply over-size pre-covered Arma-Chek tube over the fitting. The over-size fitting should extend by the wall thickness of the oversize fabrication (a minimum of 25 mm is required) over the adjoining insulation. On the butt end of the adjoining insulation remove the pre-applied covering by the amount of the overlap.

The hole for the spindle should be 5 mm smaller than the actual size of the insulated spindle diameter.



3. Vapour seal all seams and joints together with the penetration area of the spindle.



4. Apply Arma-Chek self-adhesive tape to the ends of the valve covering. Use a minimum width of 50 mm and apply the tape as described in the section “End caps and termination points”.

Arma-Chek Juna sheet installation

General procedures

Arma-Chek Juna pre-covered sheet material is supplied in continuous rolls and can be used for large-bore pipework, ductwork, vessels and flat surfaces application.

Pre-covered Arma-Chek Juna sheet can be fabricated in the same way as regular ArmaFlex sheet, following additional recommendations given in this manual. (For more information on ArmaFlex sheet application, refer to the ArmaFlex Application Manual.)

When insulating pipes with pre-covered sheet material, the following rules apply due to the greater bending stress on the adhesive seams:

Outer pipe Ø mm	Arma-Chek Juna (AF/ArmaFlex)		
	13 mm*	19 mm*	25 mm**
≥ 88.9	●		
≥ 114.3	●	●	
≥ 139.7	●	●	
≥ 168.3	●	●	●
≥ 219.1	●	●	●

* Tolerance of insulation thickness ± 1,5 mm; ** Tolerance of insulation thickness ± 2 mm;

1. This table is valid for ambient conditions of 5 °C. For lower application temperatures the rigidity and tension of the sheet material can increase, thus leading to conditions different to those in this table!
2. In general it is possible to work with two-step method:
 - a) Application of AF/ArmaFlex material on the pipe.
 - b) Covering of insulated pipe with Arma-Chek Juna roll material.
3. Use Arma-Chek Juna tape in distances of 300 mm 90° across to the seams of the Juna covering system as a installation support to make sure that the seams are closed.

4. When insulating bends with pre-covered sheet material, please contact Armacell's Technical Department.

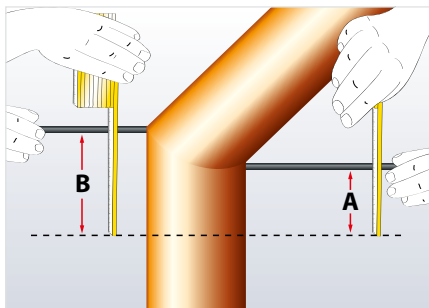
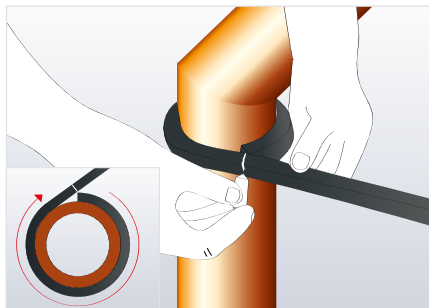
ArmaFlex adhesive and its use on large-bore pipework - OD ≥ 600 mm

When the outer diameter of the pipe/insulation ≥ 600 mm, the adhesive should be applied all over both the surface of the Arma-Chek Juna pre-covered sheet and the pipe to which it is to be bonded.

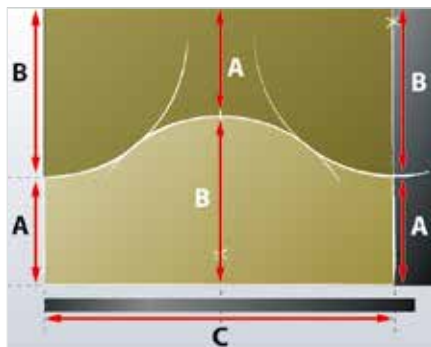
This should reduce the stress present on the main fixing seam and prevent the sheet from "bellowing" by allowing equal distribution of the product weight.

Pipework offset bend angles

1. Determine the circumference of the pipe

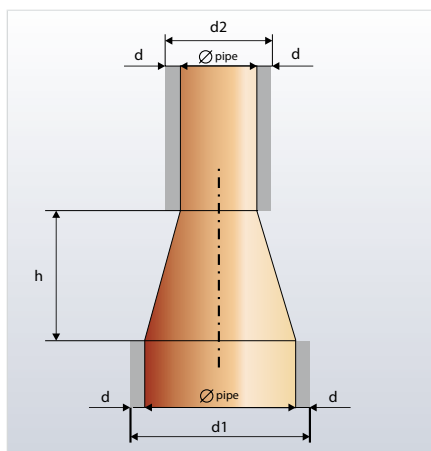


2. Measure the outer height (B) and the inner height (A) of the mitre joint.
3. Transfer the measurements to the pre-covered Arma-Chek Juna sheet material as shown in the diagram.



4. 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 mitre joint.

Concentric reducers



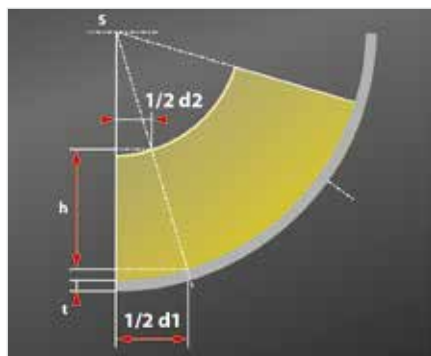
Determine the following measurements

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

d = insulation thickness



Determine the circumferences by placing a strip of precovered Arma-Chek Juna sheet material in the thickness to be used round the larger diameter pipe. Do not stretch the strip.

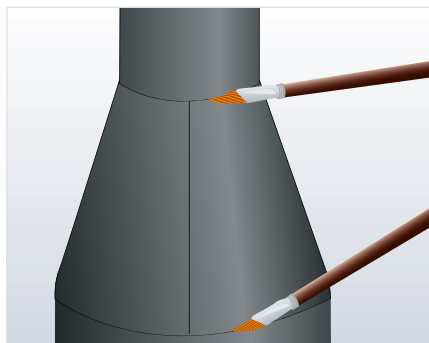
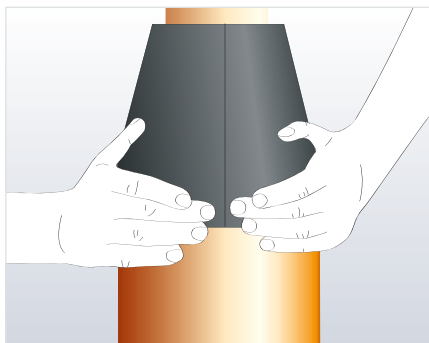
Thickness of ArmaFlex sheet material

t	6 mm	10 mm	13 mm	16 mm	19 mm	25 mm	32 mm	50 mm
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Transfer the measurements determined onto the surface of the Arma-Chek sheet marked as shown in the picture. Minimise material waste by drawing the half-elevation on the edge of the ArmaFlex sheet.

Draw two arcs guided by the height (h) around the S point. Mark the measured circumference on the larger arc. Draw a line connecting the point marked for the circumference with the S point.

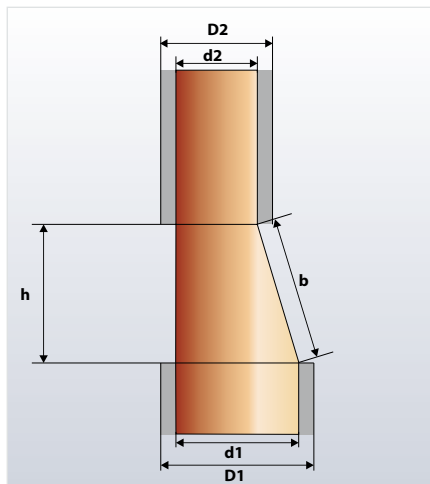
Cut out the reducer piece with a sharp knife (yellow area indicates the cutting lines).



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.

Excentric reducer



Determine the following measurements:

h = height of the excentric reducer including both welds

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

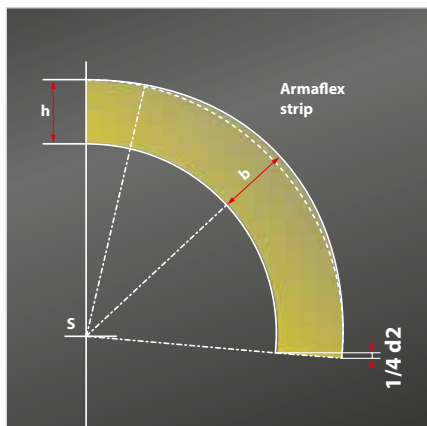
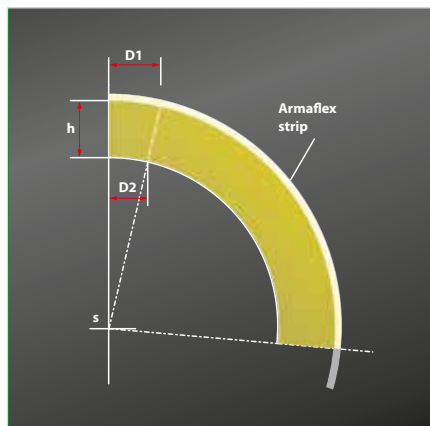
$D2$ = diameter of the smaller pipe + 2x insulation thickness

$d1$ = diameter of larger pipe

$d2$ = diameter of smaller pipe

b = true length of the reducer

Determine the circumference by placing a strip of Arma-Chek sheet material in the thickness to be used round the larger diameter pipe.



Transfer the measurements determined onto the surface of the Arma-Chek sheet material, as shown in the picture.

Modify the pattern as appropriate.

Valve coverings

Insulate the connected pipes to a length of 100 mm and the valve spindle depending on its length using non-covered ArmaFlex.

1. Determine the dimensions -

diameter of the end disc:

a = diameter of the flange + 2 x insulation thickness

height of jacket:

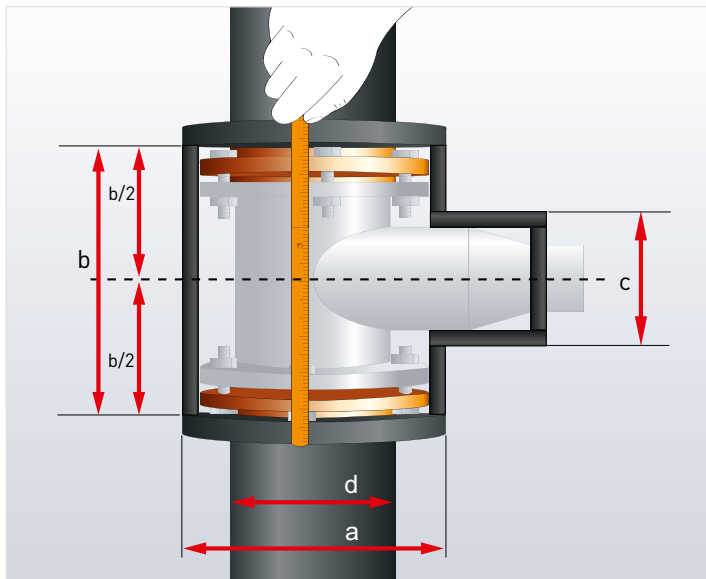
b = from end of screw to end of screw + 5 mm allowance

jacket opening:

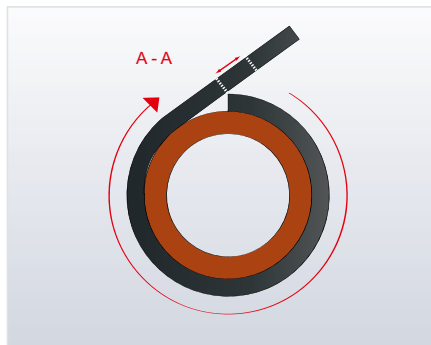
c = diameter of the insulated valve spindle

end disc opening:

d = diameter of the connected pipes + 2 x insulation thickness

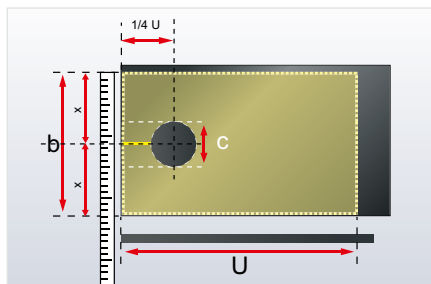


Note: 5 mm must be added to the jacket height determined. 5 mm must be subtracted from all measurements for openings.



2. Determine the circumference of the flange with a strip of Arma-Chek Juna.

3. Transfer the measurements determined to the appropriate pre-covered Arma-Chek sheet.



Install the valve covering and securely bond all areas where there is a risk of penetration with the appropriate ArmaFlex adhesive.

For indoor applications, cover the non-covered insulation on the pipes and the valve spindle with Arma-Chek Juna self-adhesive tape. Use 100 mm wide strips of covering

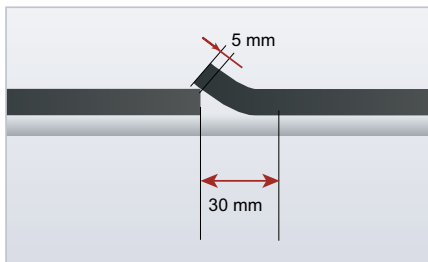
material. Measure and cut the covering for the valve spindle as described in the section "Applying covering material: Valve neck-T / Pipe-Ts" (see page 43).

Flange coverings

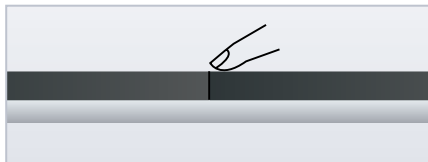
Fabricate flange coverings following the same principles as for valve coverings.

Flat surfaces

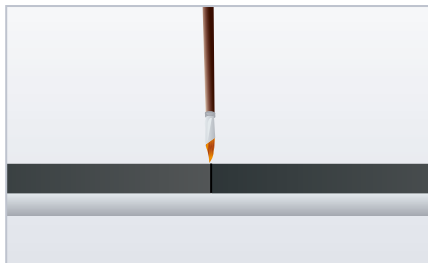
Flat surfaces are always completely covered with adhesive on both the ArmaFlex and metal substrate surfaces. Cylindrical bodies with an outer diameter of ≥ 600 mm (≥ 500 mm for off-shore applications) are treated as flat surfaces.



1. Around the butt joint, leave 30 mm at the edge of the sheet of factory-coated Arma-Chek Juna free of adhesive and place the sheet in position with 5 mm overlap.

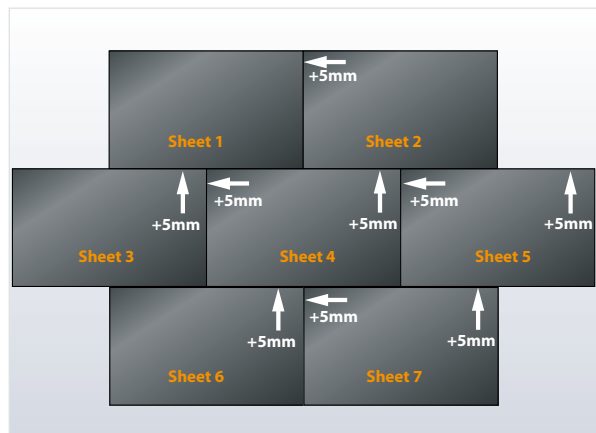


2. Press the overlapping edge of the sheet into position.

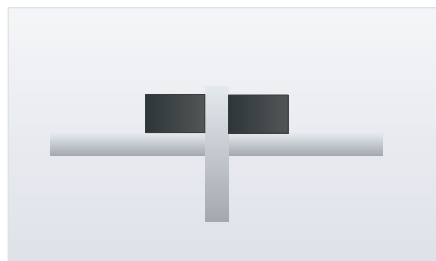


3. Wet seal the butt seam.

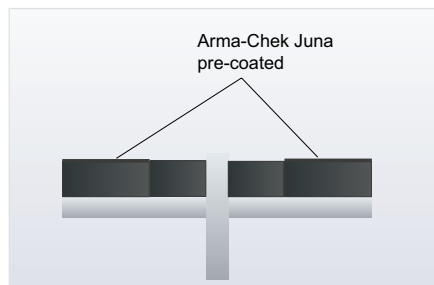
Schedule for gluing insulation to flat surfaces



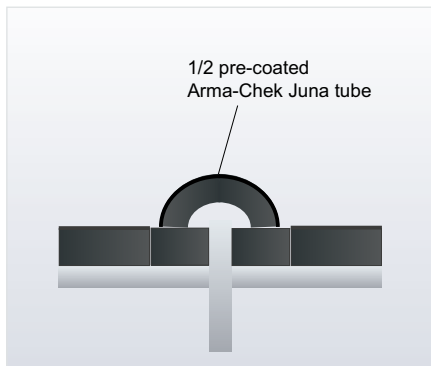
Rectangular ductwork



1. Insulate the area of the ductwork which directly adjoins the flange with a 100 mm wide strip of ArmaFlex. Determine the dimensions of the ductwork surface to be insulated. On bends the inner (throat) and outer dimensions are determined using strips of factory-covered Arma-Chek Juna.

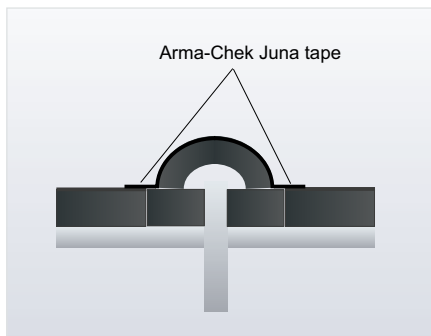


2. Cut and apply Arma-Chek Juna pre-covered sheets, ensuring all-over adhesive coverage as described in the section "Flat surfaces".



3. Use pre-covered Arma-Chek Juna tubes to insulate flanges (rule of thumb: half of tube inner diameter flange overlap).

Install these tubes following the description under “Fabrication of bends with Arma-Chek tubes” points 2 and 3 (see page 14/15).



Cut the tube in half and dimension according to the length of the flange (use 45° mitred cut for the corners of the flange). Install the halved tubes. Be sure to bond carefully!

4. Cover uncoated ArmaFlex strips around the flange with Arma-Chek Juna self-adhesive tape or strips.

Note:

All butt joints must be secured with 50 mm wide self-adhesive Arma-Chek Juna tape. Secure edges with 100 mm Arma-Chek Juna covering material.

Circular ductwork

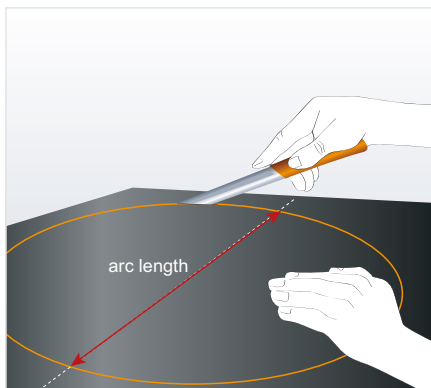
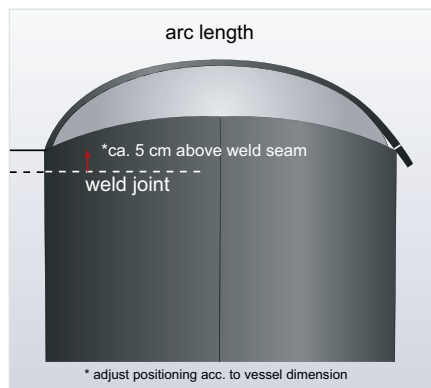
Circular ductwork is insulated with Arma-Chek Juna pre-covered sheets depending on the diameter of the ductwork and the insulation thickness of the insulation material used. (See table on page 20 in the section “Application of sheet material”.)

Hanging ductwork

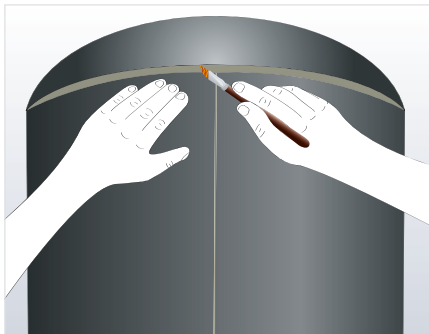
Use the Armafix duct supports to optimize the prevention of thermal bridging and simplify the hanging of ductwork.

Vessels

1. First insulate the vessel jacket with Arma-Chek Juna pre-covered sheet material.
Position the jacket insulation at least 5 cm (positioning mark) above the weld seam of the vessel head (applies to vessels with an outer diameter of up to a maximum of 1.5 m, for larger vessels the positioning mark must be raised accordingly).
Determine the length of the arc of the vessel head and the vessel bottom using strips of Arma-Chek Juna.



2. After fabrication of segments with precovered Arma-Chek Juna sheet material, apply all-over gluing on the vessel cupola (top of the vessel) surface.



Please note: Depending on the diameter and shape of the dome end of the vessel it is necessary to insulate this section with non-covered ArmaFlex and Arma-Chek Juna covering to avoid wrinkles. In this case see page 45 - vessel dome end -.

Application of covering material

General procedures

1. Ensure the ArmaFlex insulation surface is clean, dry, and free from all oils, greases and other contaminants, with all the seams and joints secured with ArmaFlex adhesive. Ensure that ArmaFlex installation procedures are followed; ensure there are no gaps present in any seams or joints.

Note: Refer to the ArmaFlex Application Manual at all times.

2. For Arma-Chek Juna covering adhesive is required to be applied on both surfaces. A short-pile sheepskin paint roller may be preferred on large circular and flat surface areas.
3. It is recommended that the Arma-Chek Juna covering is fully adhered on cylindrical bodies with pipe outer diameter > 500 mm.

Cylindrical bodies

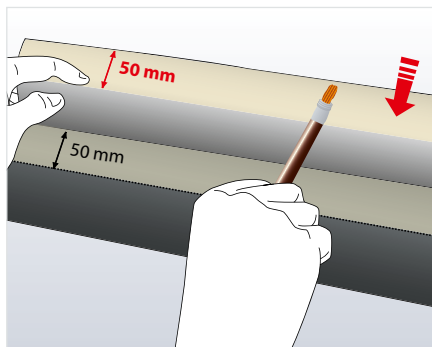
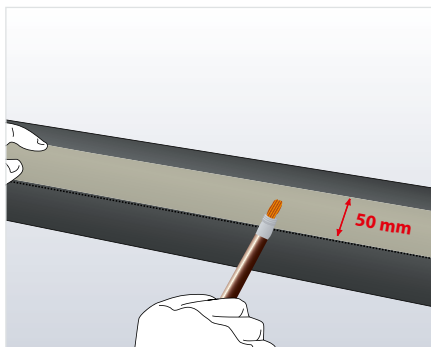
(Pipes, vessels, ductwork etc.)

Determine the circumference measurement of the insulated pipe and allow an additional 50 mm for the overlap. Proceed to cut the amount of pieces required on a clean flat surface.

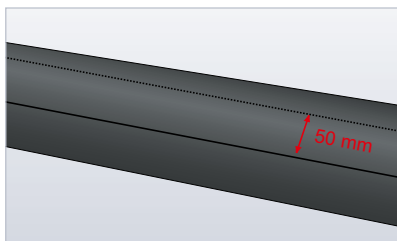
**Procedures for pipework with an outer diameter
(including insulation thickness) < 500 mm**

Positioning the covering material: Using the correct type of ArmaFlex adhesive, apply a line at least 50 mm wide to the surface of the ArmaFlex and the Arma-Chek Juna covering.

Position the Arma-Chek Juna covering along this line and fix to the ArmaFlex. Ensure the covering is correctly aligned and in the desired position. Apply pressure and smooth the covering around the insulation circumference avoiding any air pockets. Use a clean paint roller for this job. (Arma-Chek Juna covering material must overlap by at least 50 mm).



4. When the covering has been smoothed into place, mark the overlap on the underside with a pen and continue to apply adhesive onto the overlap and the covering underneath. Allow to tack dry, use fingernail test, and press down making sure the overlap is completely fixed.
5. Seal the longitudinal seam of the covering with the correct ArmaFlex adhesive. Continue to install the covering along the pipework allowing an overlap of at least 50 mm on all butt joints.



Note:

Allow 36 hours curing time before turning on the equipment.

Procedures for pipework with an outer diameter (including insulation thickness) $\geq$ 500 mm

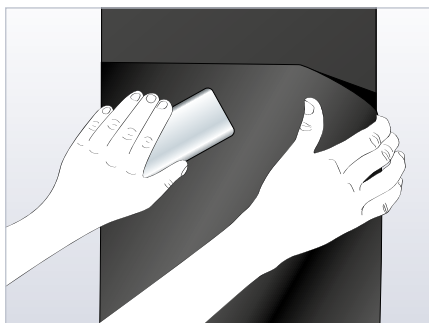
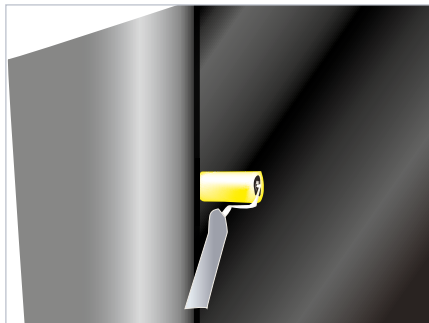
Same application as for outer diameter $<$ 500 mm, but: all-over adhesive coverage is required. Please also heed point 3 in the section “General procedures” on page 21.

Rectangular bodies

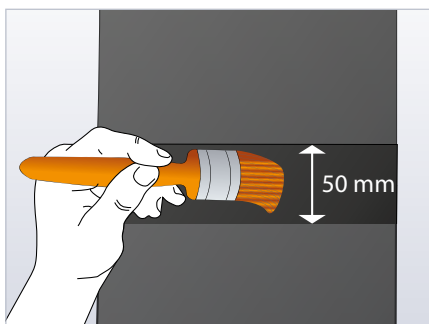
[Ductwork, vessels]

To reduce labour time we recommend installing the Arma-Chek Juna coverings to the ductwork in one complete “wrap-around” application:

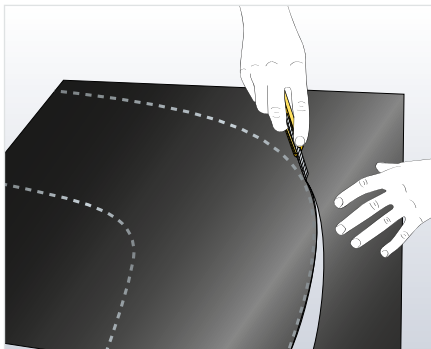
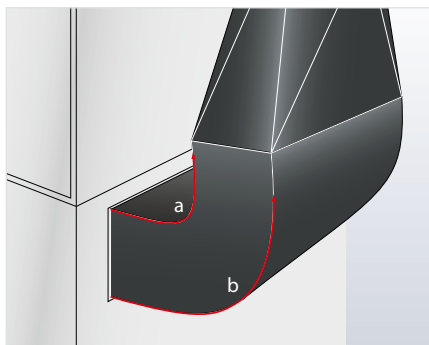
1. Measure the circumference of the ductwork and cut the Arma-Chek Juna covering to the correct size, allow for a 50 mm overlap of the fixing seam. (Tip: For larger duct surfaces step-by-step application of the coverings in 2 or 4 sections may be the best option if only one installer is working on the application.)
2. Follow “General procedures” (application of covering material) step 2 (see page 21).
3. Allow the adhesive to tack dry (use fingernail test). Position the Arma-Chek Juna covering and fix to the ArmaFlex, ensure the covering is aligned and in the desired position. Apply pressure and smooth the covering around the insulation circumference avoiding any air pockets. Use a clean paint roller for this job.



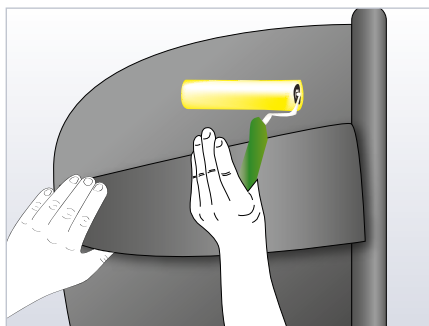
4. Seal the longitudinal seam of the covering with the correct ArmaFlex adhesive. Continue to install the covering along the ductwork allowing a 50 mm overlap on all butt joints.



Ductwork bends & irregular shapes



1. Measure the length of the inner and outer ductwork bend. Cut the Arma-Chek Juna covering to the correct shape.
2. Glue following “General procedures” (application of covering material) step 2 (see page 33).



3. Apply the cut pieces following the procedures described above (see the section “Rectangular bodies”).
4. Apply an adequate piece of covering on the lateral face of the insulated ductwork bend. Cut this covering along the edges of the duct channel.
5. Glue the butt ends of the covering material with the correct ArmaFlex adhesive.

Note:

For areas/locations where high ambient temperatures can be expected we recommend using the “feathering technique” with 50 mm overlap. Allow 36 hours curing time before turning on the equipment.

Circular ductwork

Apply the Arma-Chek Juna covering as you would for large-bore pipework installations. (Refer to the section on large-bore pipework installations on page 22.)

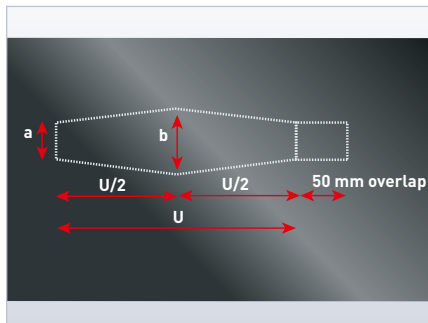
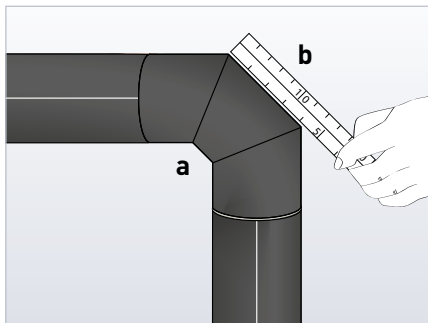
Fittings made of covering material

The following fittings can be fabricated using traditional sheet metal cladding working practices (leaf/segmentation techniques). As an alternative to these time-consuming methods, easy step-by-step descriptions for fabricating templates are given below. The examples below together with the ArmaFlex Installation Manual and the ArmaFlex cutting templates located on all our ArmaFlex tube cartons should help you.

Segmented bends

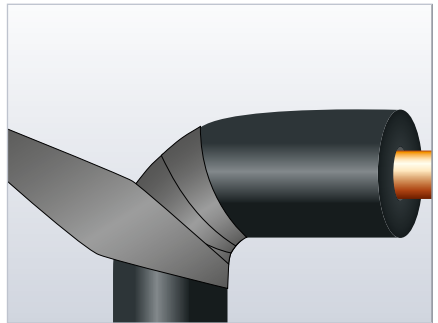
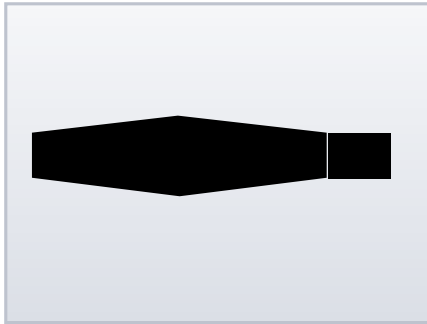
When using ArmaFlex tube on bends the following fabrication technique could be used:

1. Measure the width of the throat **a** and back **b** of a segment of the assembled segment bend and determine the circumference.
2. Transfer the circumference measurement (U) to the Arma-Chek Juna covering material and draw in a line dividing it in half. Now add a 50 mm wide overlap on one side.



3. Draw in the segment width for the throat seam at each end of the circumference, and the segment width for the back of the bend at the midpoint of the circumference. Add an allowance of 5 – 10 mm (depending on the outer diameter of the insulated pipe) to each side for the butt overlap.
4. Connect the throat and back width measurements (to which the allowances have been added). Cut out the segment shape.
5. Optimize the shape of the curve at the widest point of the cut-out segments by rounding slightly with a pair of scissors or a craft knife.

Remark: In order to cut out the same segment shape several times we recommend making a cardboard or metal template so that the shape can be transferred to the covering material optimally. The template can be halved lengthways to make the pieces for the beginning of the bend.



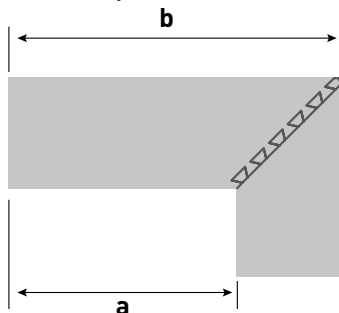
6. Install the segments, beginning with the appropriate ArmaFlex adhesive.

Note: To ensure that the overlap sits tidily, the material can be feathered.

Angles

1. Measure the maximum and minimum length of the angle segment (a) and determine the circumference.
2. Follow the same procedure as described in points 2 - 6 "Segmented bends". [Point 2: Instead of the segment width for the throat seam, measure/draw in the minimum angle segment length. Instead of the segment width for the back of the bend, measure/draw in the maximum elbow segment length (b)].

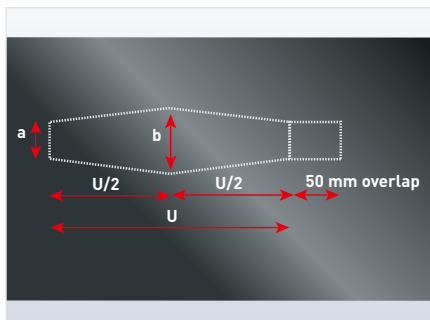
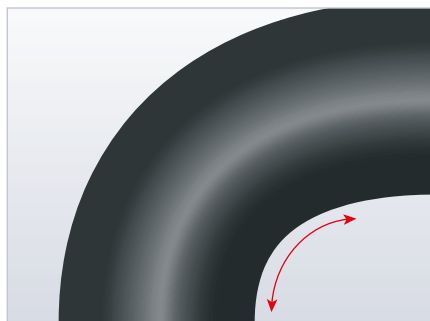
Note: Draw in these lengths on one side only!! Add allowance of 5 – 10 mm for the butt overlap to one side only.)



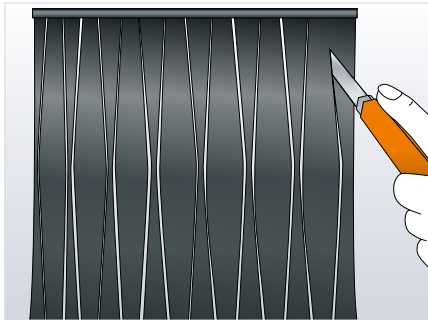
Two-piece bends

(Fabricated from ArmaFlex sheet material)

1. Measure the length of the inner (throat) seam of the bend and determine the number of segments. The number of segments should be chosen to achieve an exact fit on the outer side (back) of the bend (recommendation: minimum segment width in the throat area > 20 mm.)



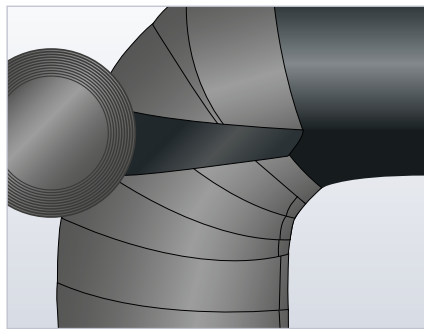
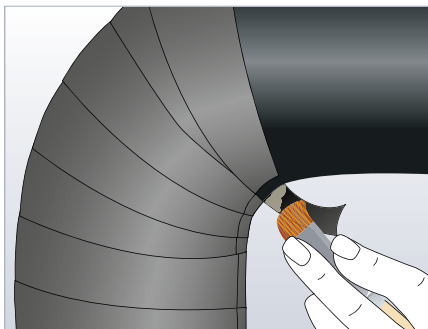
2. Determine the circumference (U) of the insulated pipe and transfer this to the covering material. Halve the circumference (U/2).
3. Transfer segment width for the throat seam to each end of the circumference drawn, and the segment width for the back of the bend to the mid-point of the circumference.
4. Connect the determined segment widths to each other - taking into account the additional allowance for an overlap of 5 to 10 mm at each end.
5. Extend the circumference on one side by the overlap measurement of 50 mm.



6. Cut out the finished segment which can be used to fabricate further segments.
7. Fabricate initial pieces for the beginning of the bend with a half segment and possibly the additional allowance of an appropriate bend extension.
8. Assemble the segments, first taking one of the initial pieces.

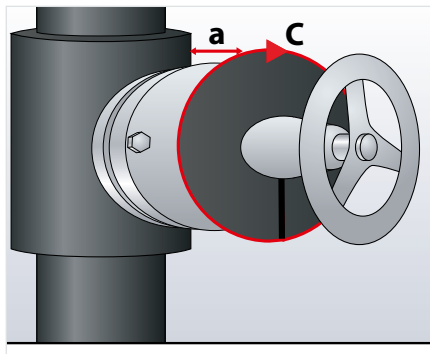
Note: All overlap areas require all-over coverage with the appropriate ArmaFlex adhesive. On large-bore “pulled bend” pipework (hydraulically bent pipes) use what is known as the wrap-around technique as a simpler alternative to the procedure described here. Always allow for 50% overlap when using the wrap-around technique.

For this technique it is possible to use the Arma-Chek Juna covering bandage or self-adhesive tape material (available on rolls).



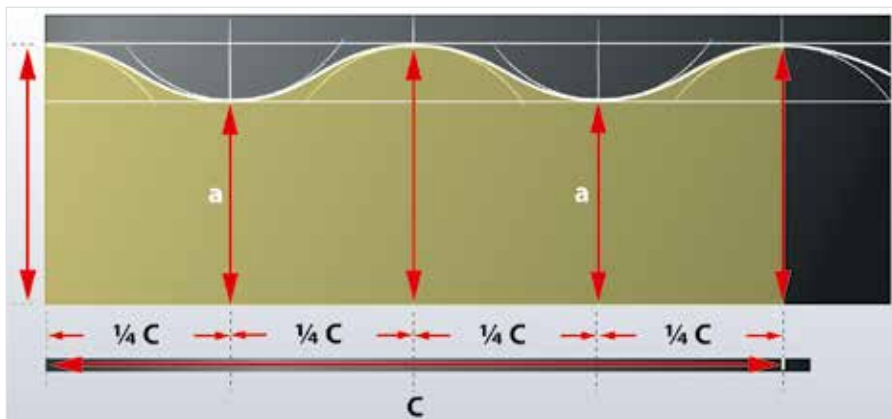
Valve neck-T / pipe-T

1. Determine the circumference of the ArmaFlex insulated T-branch.



2. Transfer the circumference measurement onto the Arma-Chek covering and divide the circumference into 4 equal sections. Add an additional 50 mm overlap on one side of this section.

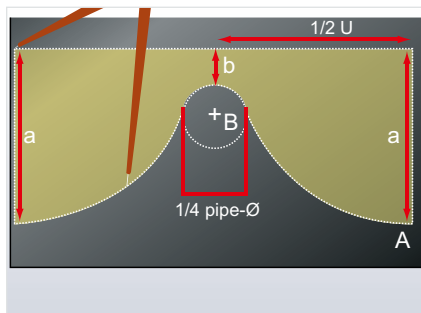
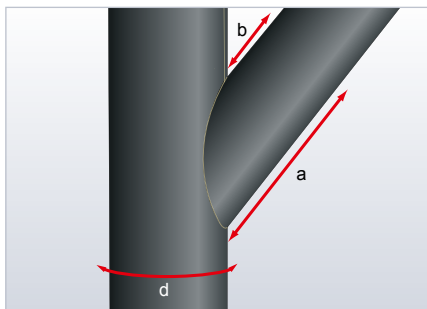
3. Measure the minimum height (a) of the insulated T-branch. Transfer this height to the marked out covering.



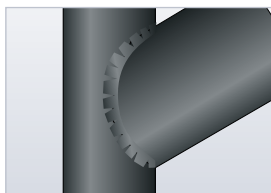
4. Measure the outer diameter of the insulated main pipe. Take the half of this measurement (radius r) with a pair of dividers, mark out 2 arcs round the intersections of the second and fourth line touching the termination point of (a). Take the same measurement (radius r) and mark out three arcs around the intersections 1, 3 and 5 touching the first two arcs. This leads to arcs joined with a continuous line.
5. Add an additional 10 mm overlap to allow for “feathering” on the master pattern. Cut the pattern out with a pair of scissors.

Offset angles

1. Determine the circumference (U) of the ArmaFlex-insulated offset angle, the maximum (a) and minimum (b) height, and the ArmaFlex-insulated outer diameter of the pipe (d) to which the offset angle connects.
2. Transfer the circumference (U) to the Arma-Chek Juna covering material. Halve the circumference.



3. Mark the minimum height (b) of the offset angle on the halving line and thus determine the termination point B. Mark the maximum height (a) on each of the side lines and thus determine the termination point A.
4. Draw a circle which stands vertically on point B and only touches it at one point. (Note: If the halving line is extended it runs through the centre of the circle.) The diameter of the circle is a quarter diameter of the ArmaFlex-insulated diameter of the main pipe (d).
5. Add an overlap of 50 mm to one side.
6. Draw the jacket line by marking two arcs (radius = half circumference) between a tangent of the circle standing on termination point B and the termination points A (continue the arc into the 50 mm overlap).

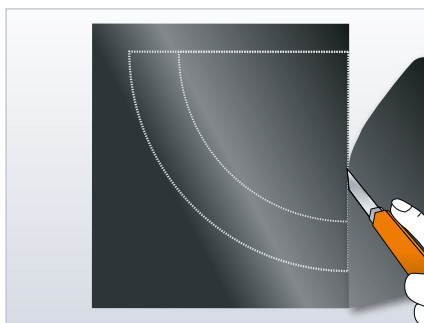
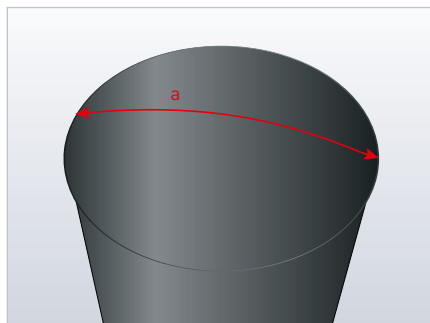


7. When using the feathering technique it is necessary to allow at least 10 mm parallel to the jacket line. Cut out the pattern using a pair of scissors or a craft knife.

Vessel dome end

When covering an ArmaFlex-insulated vessel dome end with Arma-Chek Juna covering material it is necessary to cut out segments. (Use enough segments to ensure that the material can be applied without wrinkles.)

1. Determine the arc length **a** of the vessel dome end using a tape measure.
2. Calculate the circumference $U = \text{arc length} \times \pi$ and divide the circumference by the number of segments to be used.
3. Draw the first segment on the covering material.



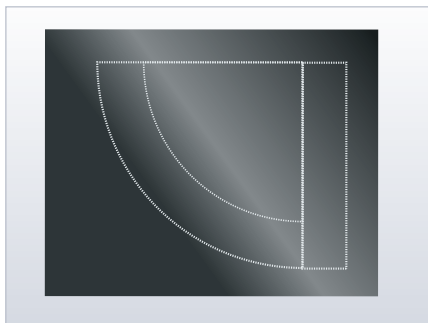
Version 1:

Cut out the segments adding an overlap of 50 mm to one side (segment to segment). All-over adhesive coverage should also be used on the overlap.

Version 2:

Draw the outline of the segments without the 50 mm overlap. Using all-over adhesive coverage and butting the segments against each other, apply the covering material to the insulation material. Secure the seams with Arma-Chek Juna self-adhesive tape.

4. Make a template by gluing the first segment onto a piece of cardboard, for example.
5. Now use this template to draw and cut out the other segments. In general, an overlap of at least 100 mm should be added, which is then feathered and applied to the ArmaFlex-insulated vessel dome end using all-over adhesive coverage.

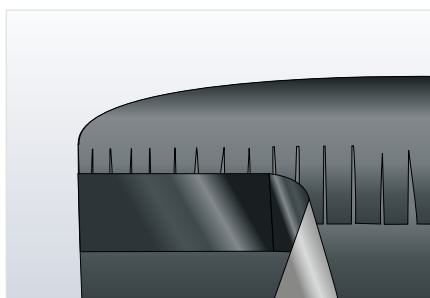
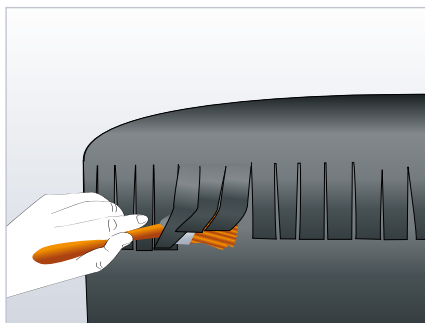
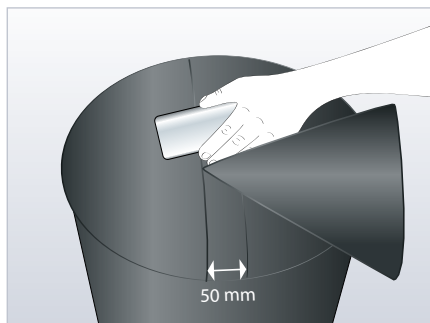


6. To achieve a tidy finish, a circular piece of the covering material can be used to cover the ends of the self-adhesive tape or strips in the middle of the vessel dome end.

7. Finally, covering material is applied to the ArmaFlex-insulated vessel (jacket), beginning at the concentric 100 mm overlap of the

vessel dome end. When covering the vessel observe a vertical overlap of 50 mm for the covering material.

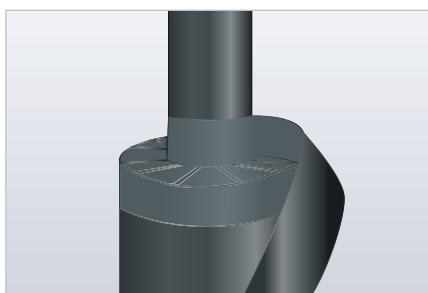
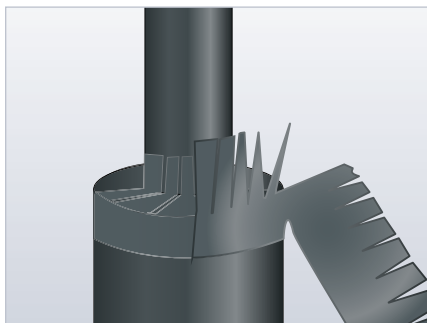
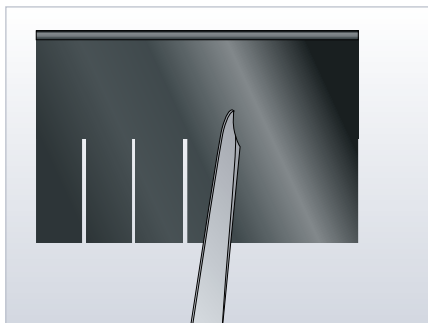
8. In the area where the coverings of the vessel jacket and vessel dome end overlap, an aesthetic finish can be achieved by applying Arma-Chek tape.



End caps and termination points

Using self-adhesive Arma-Chek Juna tape / bandage:

Self-adhesive tape or bandage can be used to cover the cut-to-size cells of the ArmaFlex on oversize insulation covers. The feathering technique can be used. (See picture below. Using the feathering technique is optional). The length of the feathering should be twice the thickness of the insulation cover. The edges of the feathering should be reinforced using additional self-adhesive tape or bandage material on both ends. (Note: Bandage must be glued with the correct type of adhesive!)



Using covering:

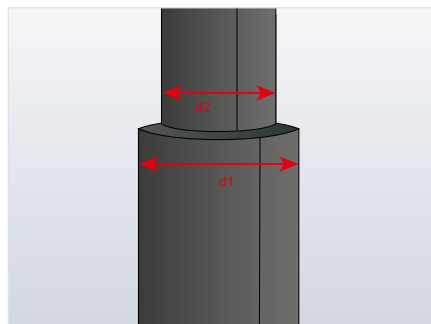
Method 1:

1. Measure the following diameters of the end cap:
 - a) small (insulated) pipe diameter and
 - b) the large-bore insulated body.
2. Using Arma-Chek covering as a template, mark out 2 half-semi circles which have the following measurements:
 - a) small-bore insulated pipe outer diameter and
 - b) large-bore insulated diameter of insulated body.

Allowance should be added to both the inner side of the small diameter and the outer side of the large diameter for feathering overlap. The length should be at least equal to the insulation thickness of the non-covered area!

Method 2:

1. Measure the following diameters of the end cap:
 - a) smaller (insulated) outer diameter of insulated body and
 - b) the large outer diameter of insulated body.
2. Using Arma-Chek covering as a template, mark out 2 circles with the same centre and the following measurements
 - a) outer diameter of small insulated body and
 - b) large-bore diameter of insulated body.



Allowance should be added to both the inner side of the small diameter and the outer side of the large diameter for feathering overlap. This should be at least equal to the insulation thickness of the non-covered area.

3. Cut out and modify the covering, fabrication using the feathering technique. When installing use the correct type of ArmaFlex adhesive!
4. For the quadrant overlap use Arma-Chek Juna self-adhesive tape, it can be cut into an approximate trapezium shape for the best fit.

[illegible]

[illegible]

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