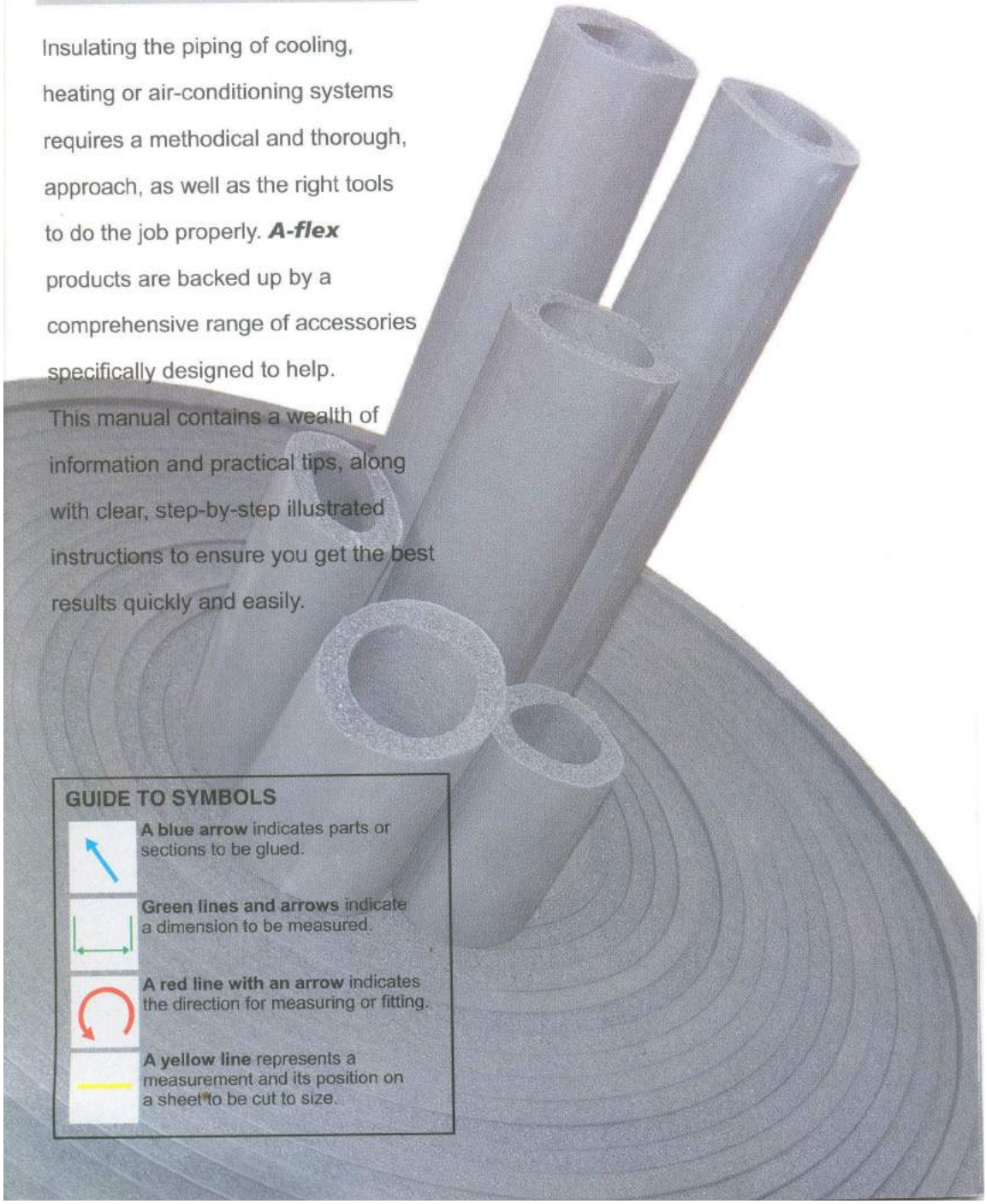
NEW GENERATION SPECIALITY FOAM

A-flex

A-flex

Insulating the piping of cooling, heating or air-conditioning systems requires a methodical and thorough, approach, as well as the right tools to do the job properly. ***A-flex*** products are backed up by a comprehensive range of accessories specifically designed to help. This manual contains a wealth of information and practical tips, along with clear, step-by-step illustrated instructions to ensure you get the best results quickly and easily.



GUIDE TO SYMBOLS

A blue arrow indicates parts or sections to be glued.

Green lines and arrows indicate a dimension to be measured.

A red line with an arrow indicates the direction for measuring or fitting.

A yellow line represents a measurement and its position on a sheet to be cut to size.

General Instructions

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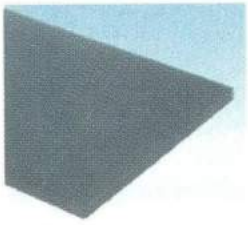
A-flex
INSULATING PRODUCTS

TUBING

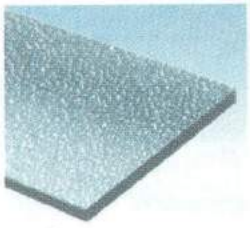
PRE-CUT SELF-ADHESIVE TUBING

1000 mm & 1200 mm ROLLS

1000 mm & 1200 mm SELF-ADHESIVE ROLLS



SHEETING CUT TO SHAPE FOR VARIOUS SURFACES FOR MEDIUM AND LARGE DIAMETER PIPING AND FOR DUCTING



ALUMINIUM FOIL EMBOSSED SHEET AT THE CLIENT'S REQUEST

A-flex produces flexible insulating tubing and sheeting made of black synthetic, vulcanized foam. Self-adhesive versions are also available.

A variety of product types, from tubing to flat sheeting, is available with specific technical characteristics for individual applications.

Where the tubing has to be cut for applications purposes, its thermal insulating characteristics are maintained using ***A-flex*** A-919 glue.

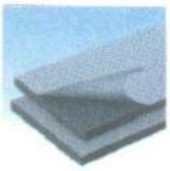
With large diameter pipes or conduits, lagging is carried out using elastomeric sheeting which can be cut to size.

For technical information on A-flex products and details of sizes available, please refer to the individual specification sheets which are available from A-flex.

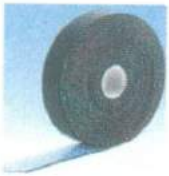
A-flex recommends that fitting be carried out to the highest possible standards to optimise the insulation effectiveness.

A-flex ACCESSORIES

A-flex **A-919 GLUE**
A-flex A-919 glue is specifically designed for use with ***A-flex*** products and provides secure bonding. The glue hardens on drying and is thus resistant to ageing and is weatherproof.

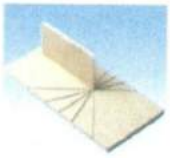


A-flex
SELF-ADHESIVE STRIPS
Elastomeric foam strips are available in a selection of lengths, widths and thicknesses that can beused on surfaces where sheets would normally be cut down to size, thus avoiding the waste of off-cuts.



A-flex **ADHESIVE INSULATING TAPE**
Special, 3mm-thick, self-adhesive, 5-cm wide insulating tape for covering gaps or sealing insulated sections.

A-flex **CUTTER**
It features a special, anatomic grip, and makes accurate longitudinal cuts easy in ***A-flex*** insulation tubing so that they can be installed of fitted pipes.



A-flex **CUTTING BOARD**
This practical accessory enables you to cut A-flex tubing at angles precisely and easily..

USING PRODUCTS AND ACCESSORIES

CLEANING SURFACES

The surfaces to be glued must be perfectly clean and free of grease (use thinner). Ensure that the surface of the ***A-flex*** insulating material is also clean, otherwise it will not stick properly.

COATED SURFACES

Where surfaces have previously been painted, ensure that the glue is compatible and will adhere to the paint. Do not use the glue on surfaces that have been treated with products containing asphalt, bitumen or linseed oil. Use only chrome-zinc rust inhibitors and removers.

USING THE GLUE

Preparation and storage. Before use, stir the ***A-flex*** A-919 glue thoroughly.
To store the glue, close the lid tightly to prevent the solvents evaporating.
If the glue should become too hard (eg. when stored in contact with the air or in extreme temperatures), dilute with A-flex thinner.
Method of application. When using a large quantity, pour a small amount out into a separate container and top up when necessary.
When applying A-flex insulation to metallic or other surfaces, the A-919 glue must first be applied to the insulating material, then to the corresponding surface.
Conditions for use. Do not apply to systems that are in use. Do not use in sunlight.
The insulation should be left to dry for 36 hours before turning the system back on.
The ideal working temperature of the glue is +20° C. Do not use the glue at temperatures below +5° C as drying times are excessive. At temperatures above +30° C, the glue dries very rapidly.

HARDENING TIME	: 36 hours
STORAGE	: in cool conditions, away from cold and heat
SHELF LIFE	: Five year or more if stored properly.
QUANTITIES USED	: with insulation sheets, from 0.2 to 0.3 litres per m^2.

CHOOSING *A-flex* INSULATING MATERIALS

Before starting, choose the right type of ***A-flex*** insulation for the parts to be lagged. Use the thicknesses and sizes which are most suitable for the individual parts of the installation. Don't forget - your ***A-flex*** dealer can give expert advice.

CHOOSING *A-flex* INSULATING MATERIALS

Insulating tubing that is oval or flattened (eg. the larger cross-sections) should be cut along the flattened surface.

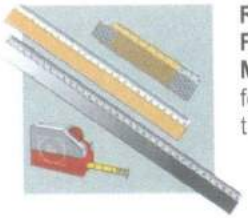
REFRIGERATION PLANTS AND AIR-CONDITIONING SYSTEMS

- Treat steel surfaces with rust inhibitor prior to applying insulation. The paint should be left for a minimum of 24 hours to dry.
- Take special care over glueing critical areas such as curved sections, flanging and support brackets. Ensure that the ends of the insulating material are always firmly attached to the piping.
- Do not apply insulation where parts are too close together, as this will result in the insulation becoming squashed and losing some of its properties.

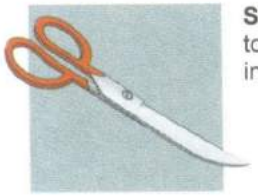
When carrying out particularly complicated installations on nickel steel, refer to our Technical Office.

TOOLS

A selection of good tools is essential for carrying out jobs to the highest standards.



RIGID AND FLEXIBLE TAPE MEASURE
for measuring and tracing lines to cut.



SCISSORS
to facilitate cutting insulating material.

CHALK AND COMPASS
to draw reference lines for measurements and cuts.

METAL BAND
to help cut insulating sheets at the end of large diameter pipes

CUTTERS AND KNIVES
use both long and short bladed knives, with spare blades.

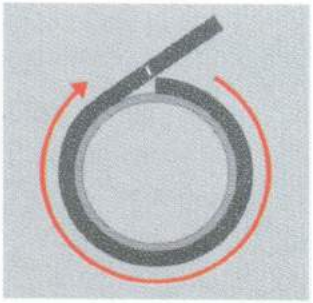
BRUSHES (VARIOUS) AND FLEXIBLE SPATULA
for spreading glue and painting.

CALLIPER
for measuring the external diameter of surfaces to be insulated.

CIRCULAR PUNCHES
with a cutting edge to hole insulation in a range of sizes.

PRACTICAL TIPS

Many tasks encountered when insulating a system are repetitive. We have attempted to provide examples which can help bring optimum results straight away, saving time and effort

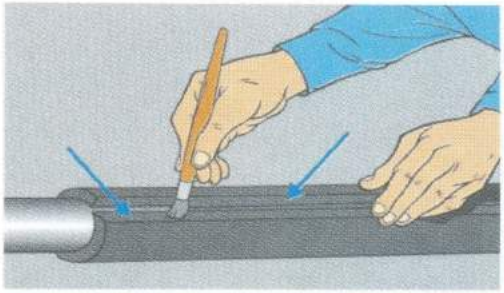


MEASURING A CIRCUMFERENCE

The measurement is obtained by using a strip of ***A-flex*** of the same thickness to be used as the insulation. This gives you the measurement of the circumference, including the thickness of the insulating material itself. Do not stretch the strip when encircling the pipe, as this will alter the measurement. Mark the strip with chalk where the two edges overlap.

GLUEING THE EDGES OF A TUBE CUT ALONG ITS LENGTH

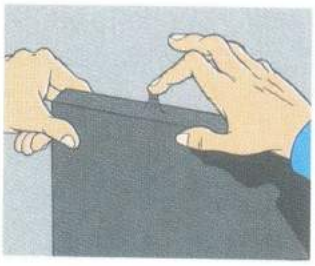
To glue the edges, wrap the tube around a larger diameter pipe so that the edges do not overlap and apply the glue. Then slide the tubing over the pipe to be insulated laking care to avoid the edges sticking before the tube is in place.

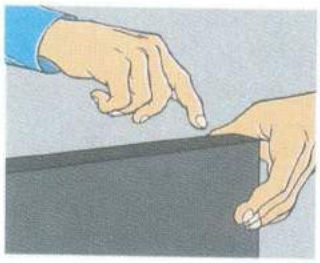


If the tube is not very long, or is not very thick, it can be rolled up and glued. This way, the tube can be quickly and easily applied to the pipe.

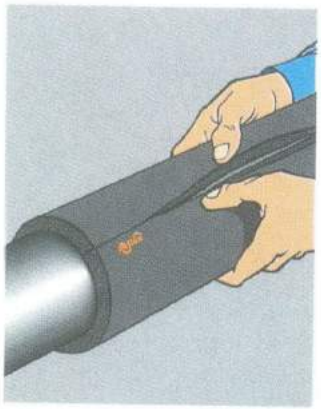
GLUEING THE EDGES OF ***A-flex*** SHEET

When insulating large diameter pipes, sheeting should be cut to fit and both edges glued. For the best results, a thin, even layer of ***A-flex*** A-919 should be applied using a brush with short, hand bristles.





After spreading the glue, ensure that it has dried properly before attempting to stick the edges together
The best test is by touching the surface with your finger, if ***A-flex*** A-919 no longer sticks to your finger forming threads, it is ready to be positioned.



When attaching the two surfaces, press them together firmly with your fingers, starting at the far ends, then the centre and lastly along the intermediate points to avoid an irregular joint.

Use a straight-edged spatula to spread the glue over larger areas. If the whole of the surface is to be insulated, first apply the glue to the ***A-flex*** sheet, then to the surface it is to be stuck to. When the glue has dried sufficiently, apply the sheet to the surface.

PAINTING INSULATION FITTED OUTDOORS

We recommend painting insulation outdoors with appropriate finish to protect it from the weather and form UV rays. To complete the protection, apply two layers of top coat. Allow at least 36 hours (or a maximum of five days) between the first and second coats. An extra layer of paint should be applied every two years.

USING OFF-CUTS

Off-cuts from ***A-flex*** tubes and sheets can be re-used when filling in gaps, or where smaller quantities of material are required.

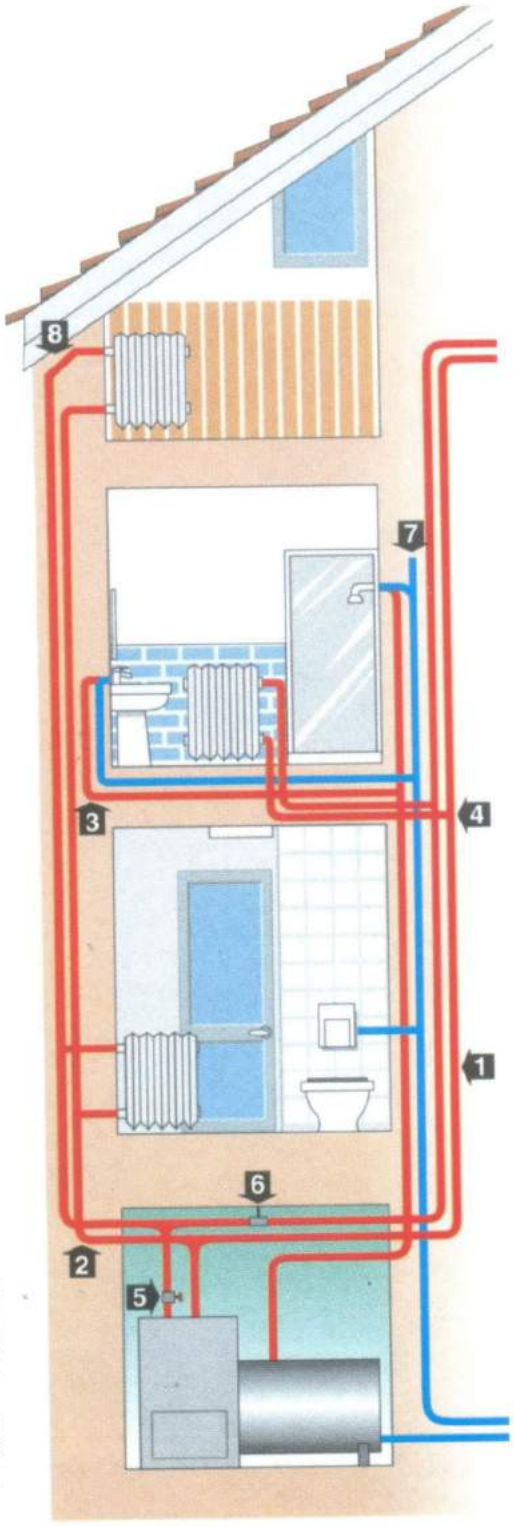
THERMAL INSULATION

A-flex can be used to lag heating, air-conditioning, hot water and refrigeration systems. The objective of insulation is to save energy, and it also protects householders from scalding hot pipes.

The size of piping makes a big difference to the amount of energy lost. Similarly, increasing the thickness of the insulating material employed reduces energy loss.

Many international building codes lay down the guidelines for procedures regarding technical regulations, design constraints, calculation and installation requirements, indicating the thicknesses required.
In compliance with these requirements, ***A-flex*** provides a range of thickness ratings in each type of insulation.

Pictured here are three areas where ***A-flex*** products are typically employed.



Hydro-thermal-sanitary installations
The methods of insulating the individual sections are amply illustrated in the first section of the manual.

1) Straight pipes 2) Bends 3) 90° elbow fittings 4) T-fittings 5) Stopcocks 6) Support brackets 7) End pipes 8) Angled sections.

Diagram of a simple extraction ventilation system in a high-rise building. The internal and external piping can be insulated using ***A-flex*** sheets. (See Lagging of pipes over 125 mm in diameter).

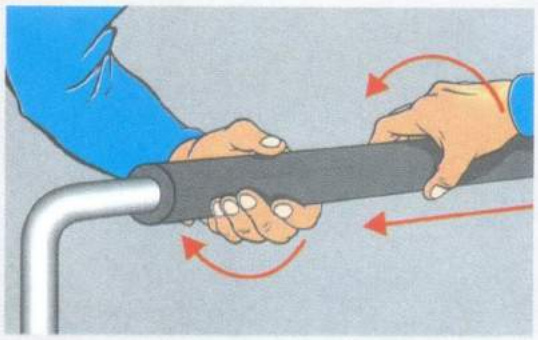
The existing ventilation ducting (A and B) in this edifice has been transformed into an air-conditioning system.
The walls of the ducting can be insulated using self-adhesive ***A-flex*** sheeting. (See relevant chapter).

LAGGING PIPES UP TO 125 mm IN DIAMETER WITH A-flex TUBING

Around 80% of piping used in civilian buildings can be insulated before fitting. This simplifies the task and saves time, taking advantage of the wide range of applications offered by an elastomeric product like ***A-flex***

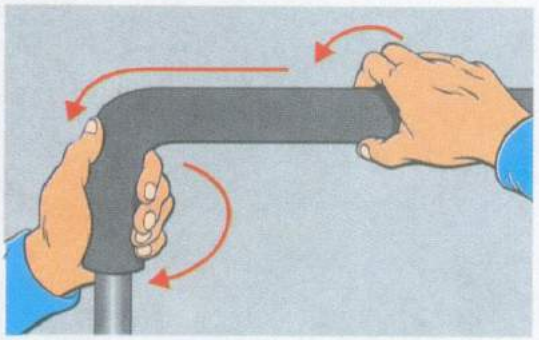
PIPES TO BE FITTED

Slide the ***A-flex*** tube directly over the pipe from one end. 1

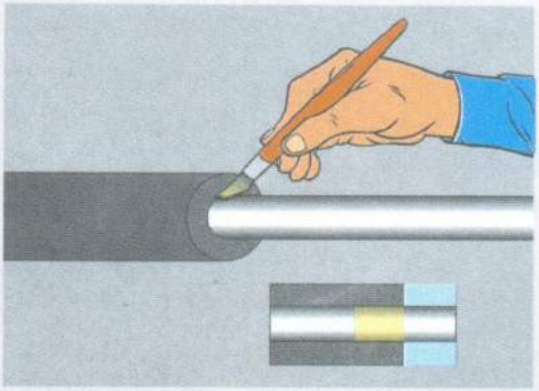


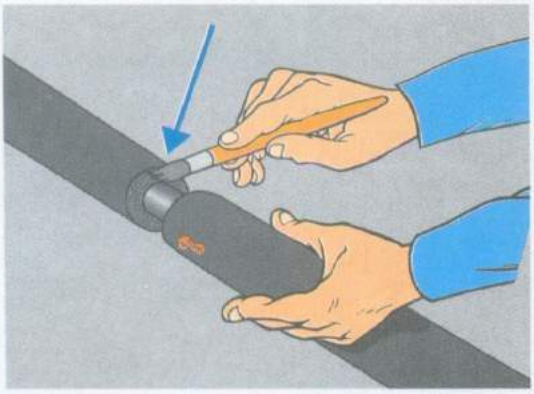
Do not force the tube while fitting as this will deform the material. 2

Instead push it smoothly without exercising undue pressure. This will ensure that it grips to the surface of the pipe naturally, especially around the all-important curved sections.

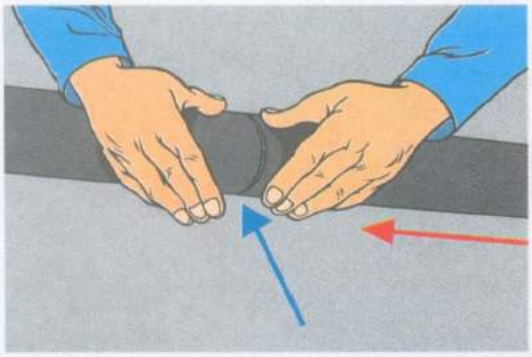


When a section of tubing has been positioned satisfactorily, stick at least one extremity to the pipe with ***A-flex*** A-919 glue. 3

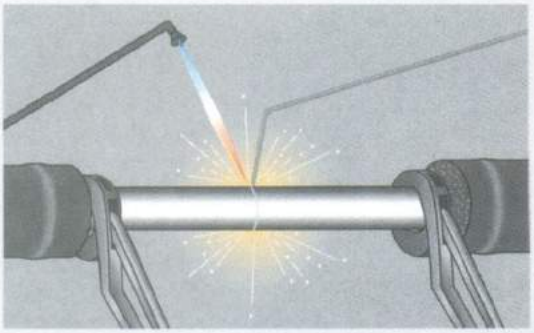




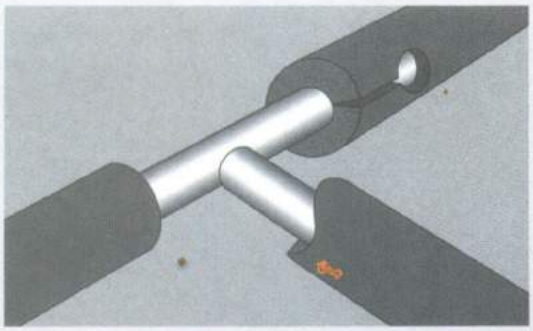
4 Apply glue to the edge of the tubing already in place and the edge of the next section of tubing to be positioned.



5 Bring the edges of the tubing to be glued together and press tightly.



6 If the underlying pipe has to be brazed, free an area 25/30 cms long between the part to be soldered and the edge of the tubing. Once the pipe has cooled, the insulation can be completed.



7 Test for strength around critical stress points in the pipes, such as elbow joints, branches or stopcocks, before proceeding to glue the tubing around them.

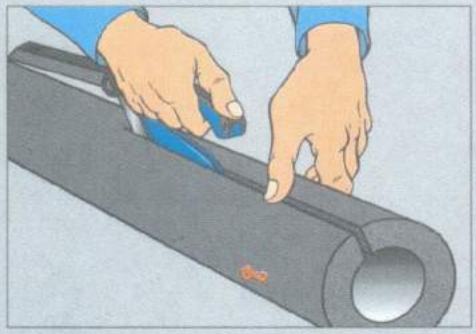
FITTED PIPES

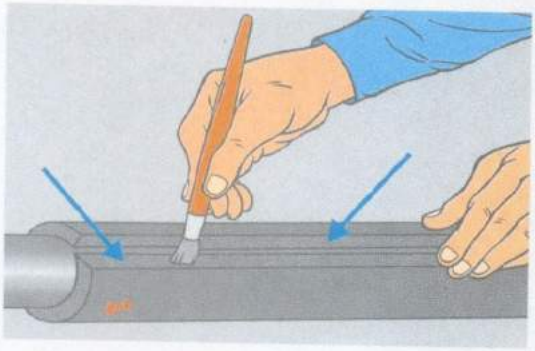
If the piping has already been installed, the ***A-flex*** tubing must be cut along its length to fit it.

1

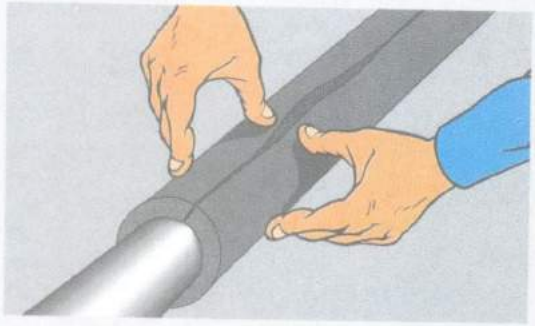
*Use only the sharpest knife for cutting - this makes the subsequent glueing far easier. We recommend using the **A-flex** cutter which is ideal for longitudinal cuts.*

The use of the cutter is illustrated in these two diagrams. Let the blade run along the tube without the tool's surfaces touching it to get a neat, clean cut.

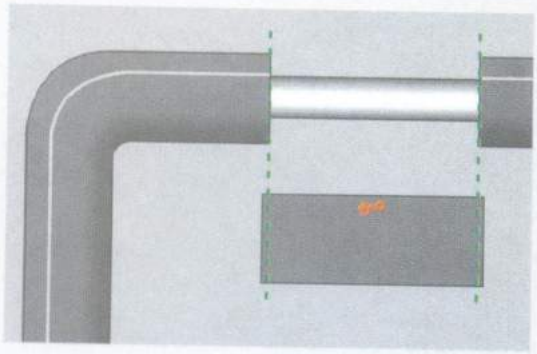




2 Position the tube so that the edges are separated, and apply an even layer of ***A-flex*** A-919 glue.

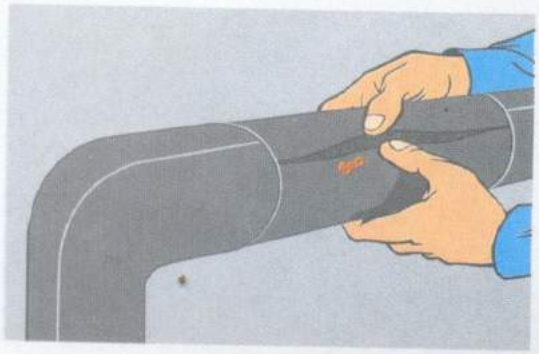


3 Once the glue has dried, reseal the tube, pressing the edges firmly together.



4 When making a joint between two lengths of tubing, cut the insert a little longer than necessary (a couple of millimetres).

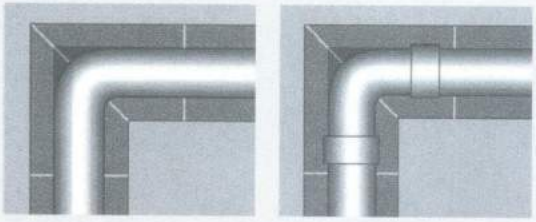
If the insert is not long enough, the insulating properties in that area will be reduced.



5 Cut the insert along its length and glue into place.

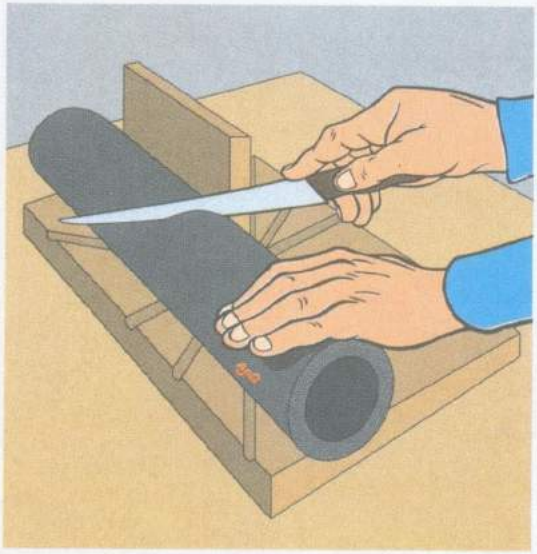
90° ELBOW FITTINGS

An elbow is pipe with a 90° bend, either curved or fitted. The attachment points themselves may present a different diameter to the pipes either side. There are thus two solutions to insulating them: a right-angled section, or a segmented section.



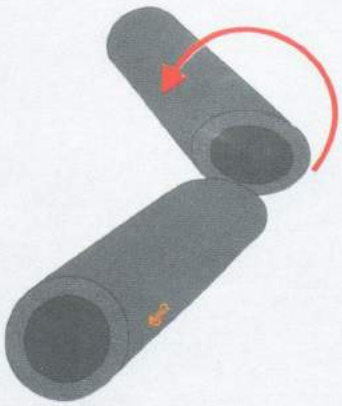
INSULATING AN ELBOW FITTING with tubing of the same diameter 1

Cut a ***A-flex*** tube to the right length to cover the elbow. Cut it in the middle at an angle of 45°.



*Use the **A-flex** cutting board as a template for the angle of the cut. A long-bladed knife is required.*

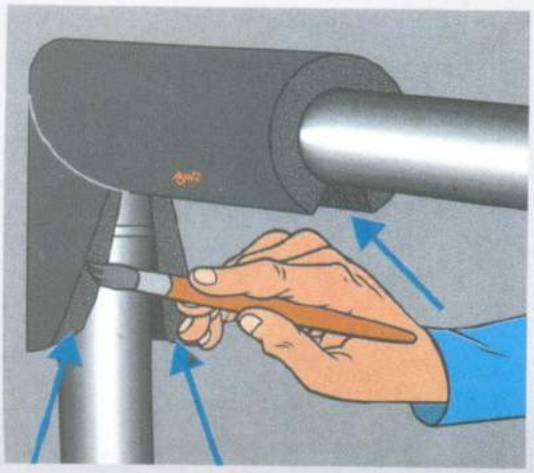
Twist one of the pieces of tube until you form a right angle... 2



90° ELBOW FITTINGS

3 ... then glue the two sections with ***A-flex*** A-919.

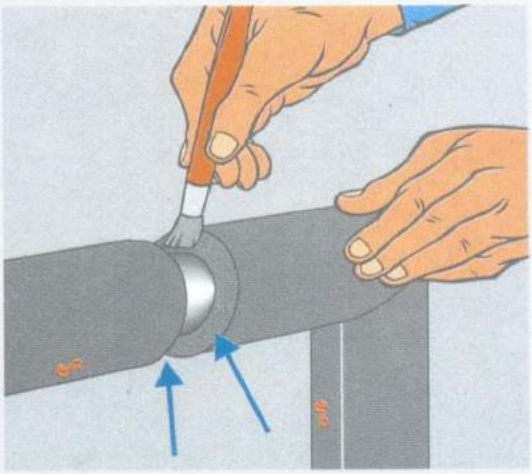
4 After letting the glue dry, cut the right-angled section along its length on the inside.



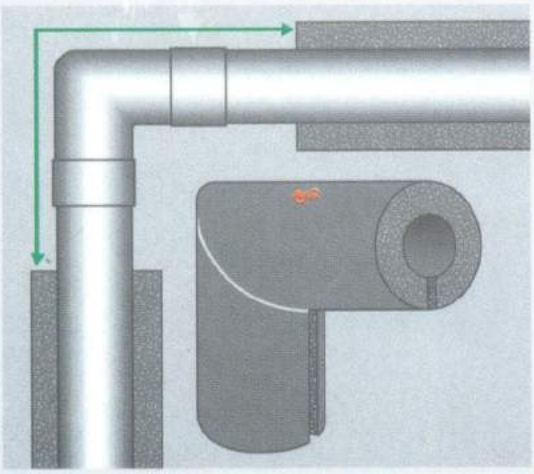
5 Position it on the pipe and glue the two edges.

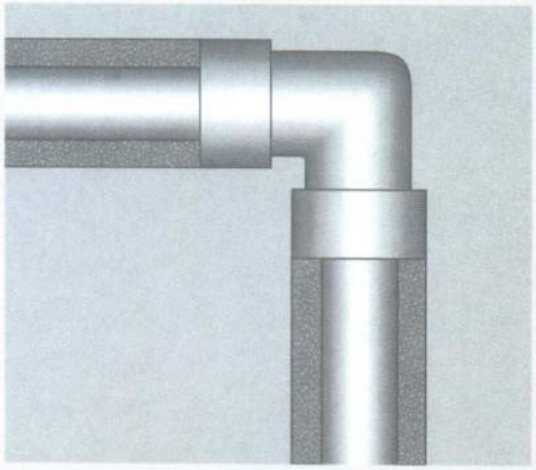
Press the edges together to seal. 6

Carefully glue the edges of the elbow section to the straight tubes to be positioned either side. 7



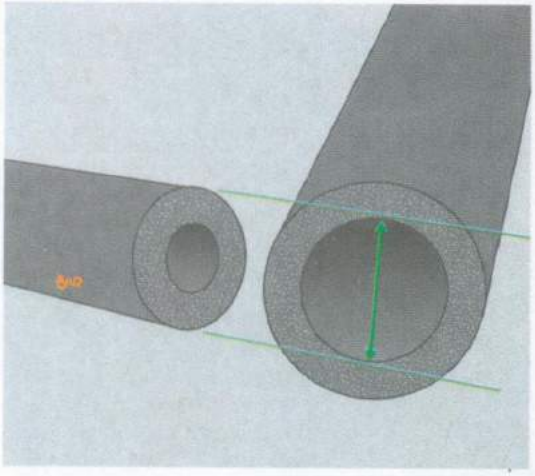
If the straight sections have already been glued into place, the right-angled section will have to be accurately measured to fit.



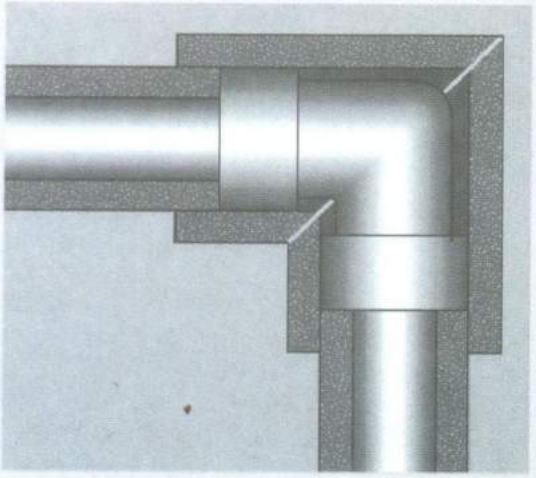


INSULATING AN ELBOW with tubing of different diameters

Should the elbow fitting be substantially different in size to the pipes either side, the latter should be insulated first.



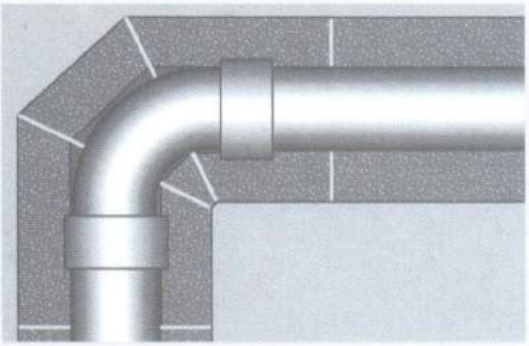
Then find a section of tubing with an internal diameter that is the same as the extenal diameter of the smaller ones either side.

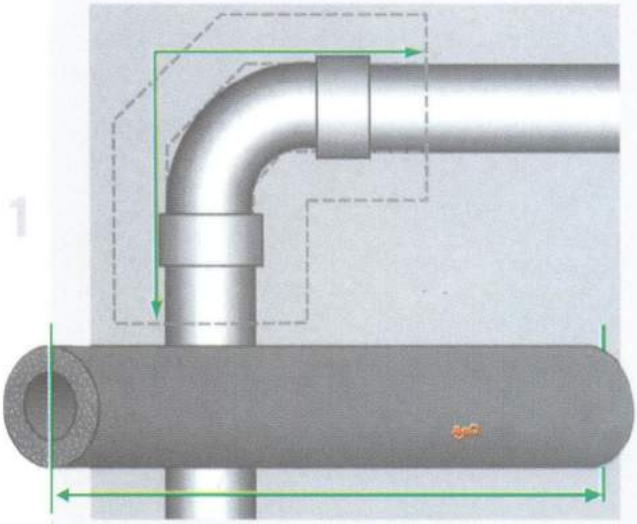


... and cut the right-angled joint so that it overlaps the ends. (see illustration). The steps are identical to those on pages 16, 17 and 18.

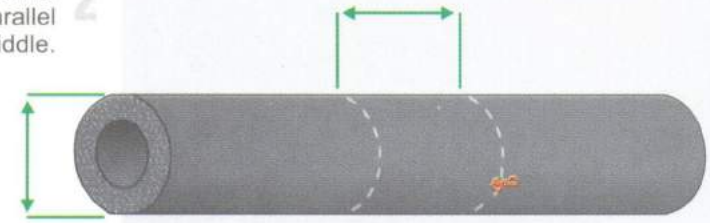
SEGMENTED INSULATION OF AN ELE\BOW FITTING with tubing of the same diameter

An elbow can also be insulated using jointed sections of tubing. This requires two angled cuts to be made.



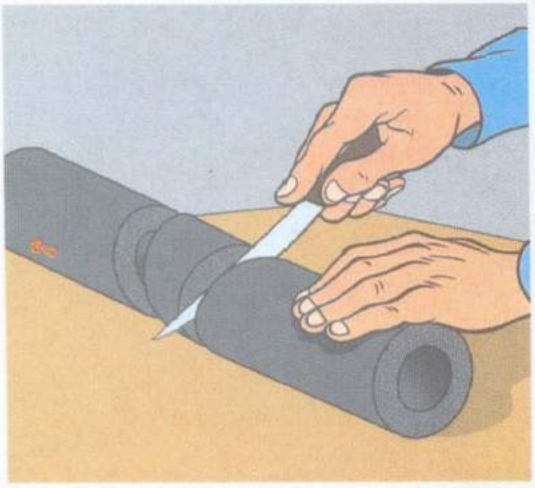


1 Cut a piece of ***A-flex*** tubing to the right length to cover the elbow.

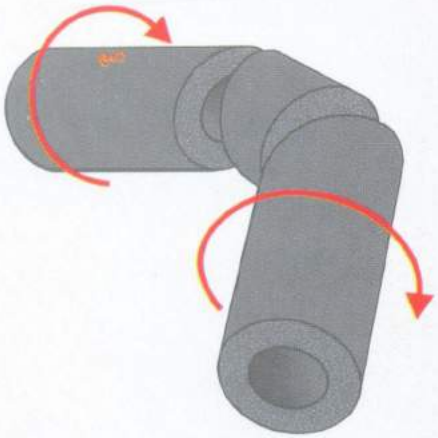


2 Calculate the tube's external diameter and trace two parallel lines this far apart in the middle.

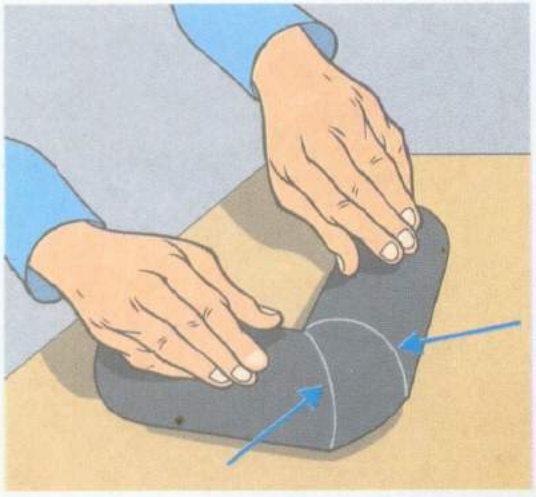
3 Draw a line between the two to mark the centre line. Then make two marks (C and D) either side of the centre line one centimetre from it, and draw two lines running A to C, and B to D (see diagram).



4 Cut along lines AC and BD.



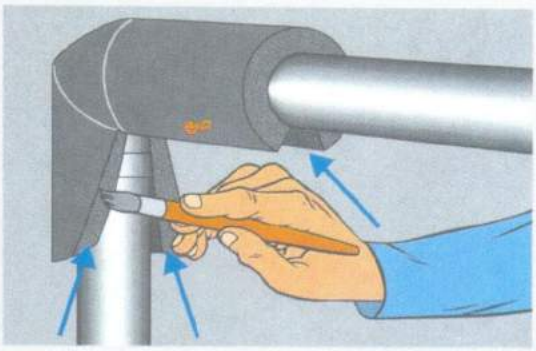
5 Rotate the two ends to obtain a right-angled section.



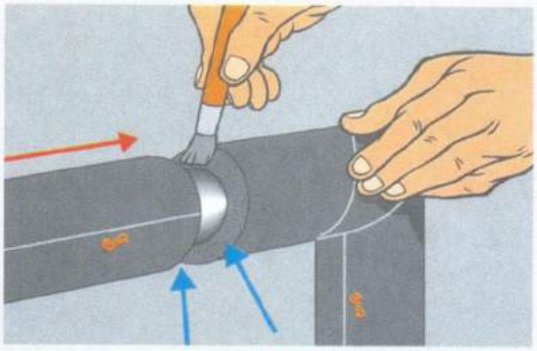
6 Glue the three sections together.

Cut the segmented elbow section along its length on the inside surface only. 8

Slide the elbow section over the pipe and carefully glue the edges together. 9

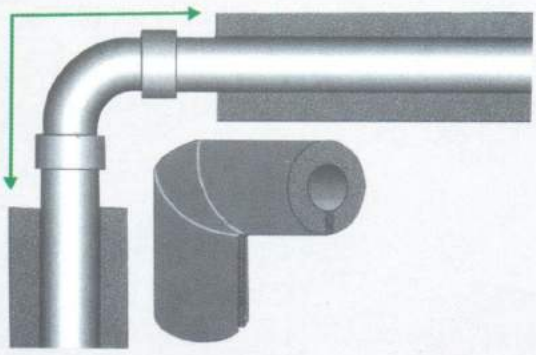


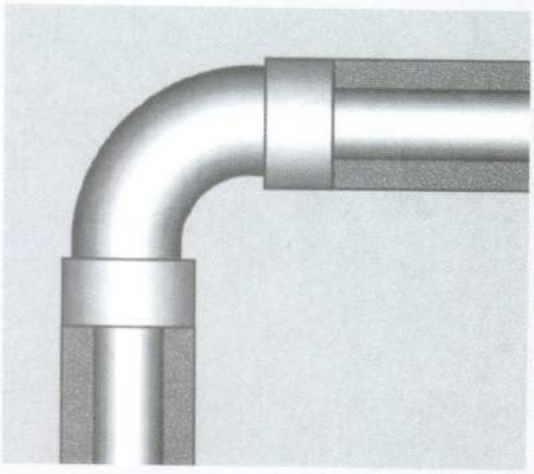
After completing this stage, fix the elbow section to the tubing either side with ***A-flex*** A-919 glue. 10



If the adjacent tubes are already in place, the length of the elbow section will have to be accurately measured. 11

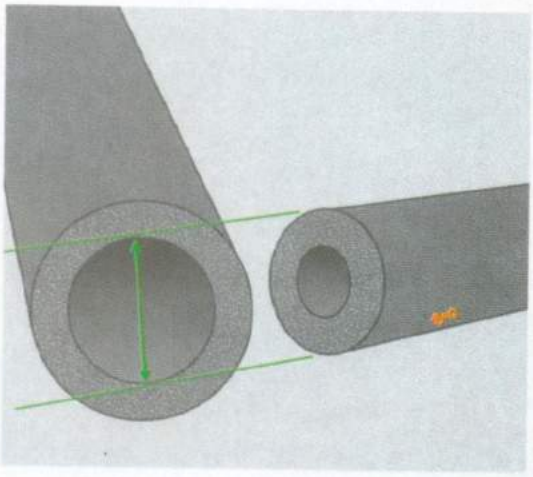
Cut the length of tube required a little longer that it should be and trim it if necessary.



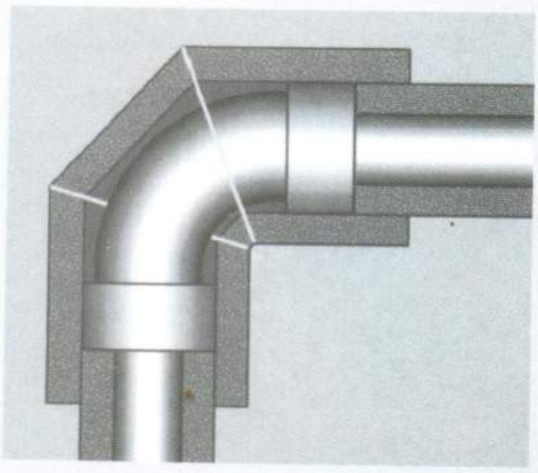


SEGMENTED INSULATION OF AN ELBOW FITTING with tubing of different diameters

if the pipes either side of the elbow are smaller in diameter, first insulate the straight pipe sections.

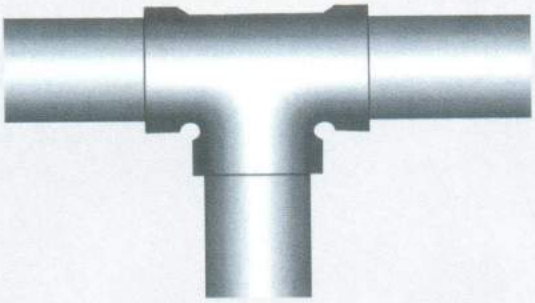


Then find a tube with an internal diameter the same as the external diameter of the neighbouring insulation.



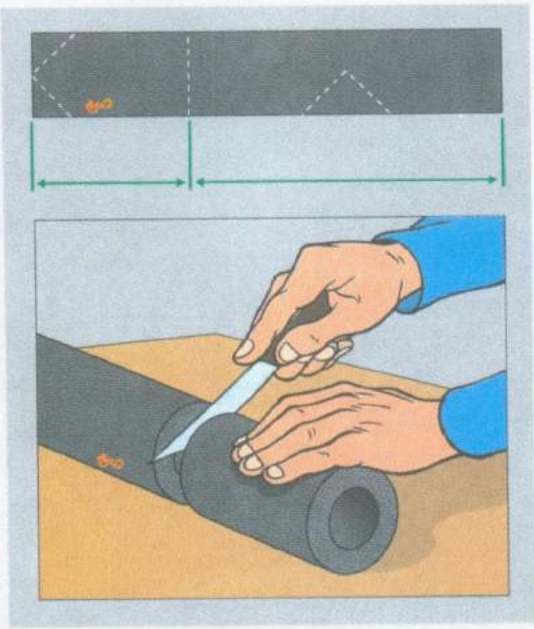
In this way, the segmented elbow section will overlap the edges of the insulation either side. See pages 20, 21 and 22 for further details.

T-FITTINGS



The T-fitting can be lagged with or without the tubing either side having been applied. The latter is the simplest method, and is thus the one illustrated here.

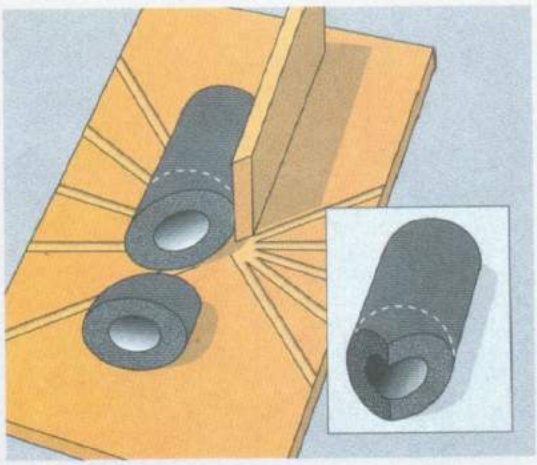
There are two methods of insulating a T-fitting: by dovetailing two tubes with a 90° cut-out, or by punching a circular hole.

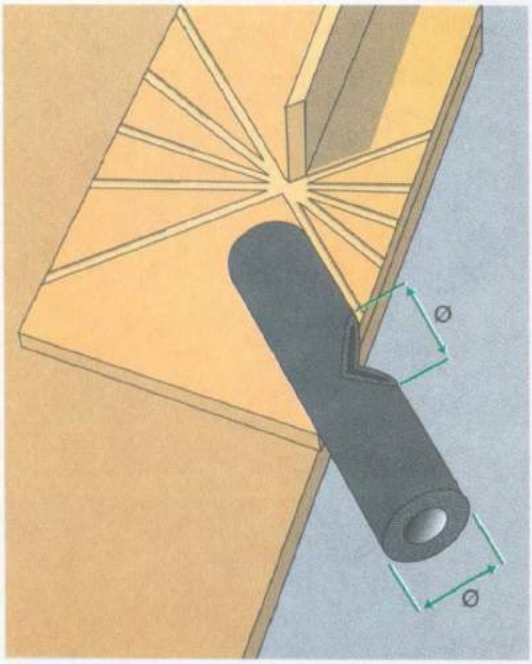


INSULATING A T-FITTING with a 90° cut-out

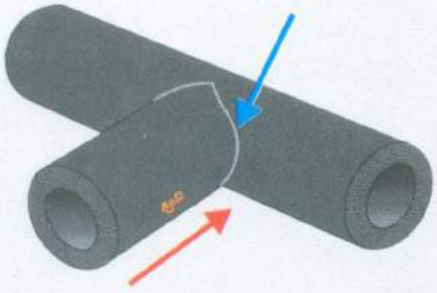
1 Cut a section of A-flex tubing into a third and two-thirds of its original length respectively. The overall length should obviously be sufficient to cover the three pipes leading from the fitting.

2 Using the ***A-flex*** cutting board, cut the end of the shorter tube twice at an angle of 45°.

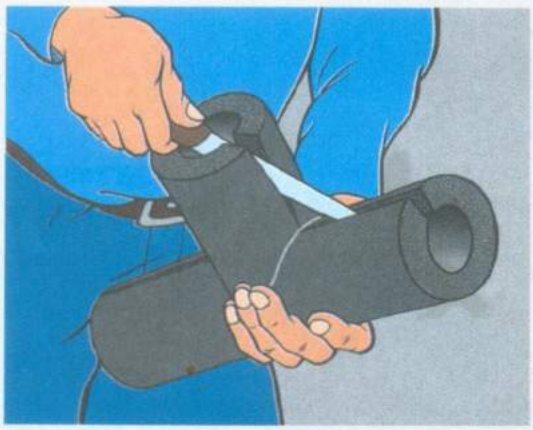




3 Taking the second, longer segment, make two 45° cuts in the middle. The cut-away section should have the same cross-section as the outside of the tube so that the two sections (see 2) dovetail perfectly.



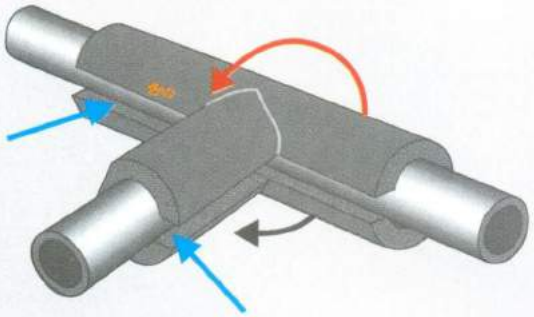
4 Glue the cut edges and stick them together in the shape of a "T".



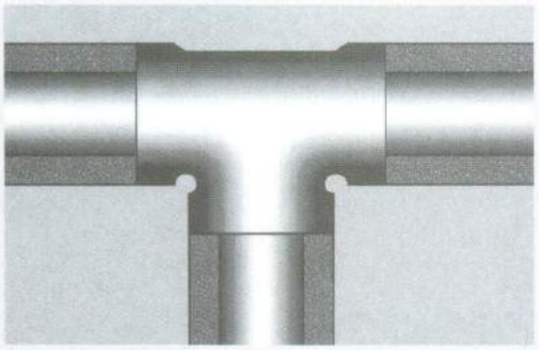
5 Cut the lower half of the "T" along its entire length so that it fits snuggly over the T-junction. Then once more apply a layer of A-flex A 919 glue to the edges.

6

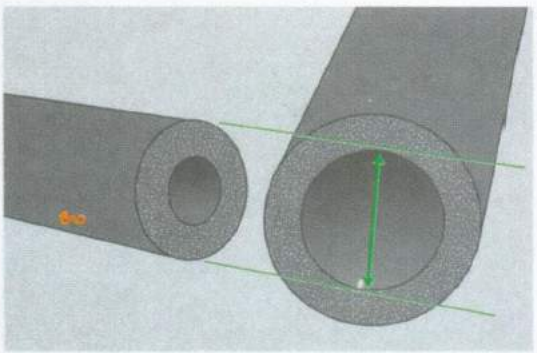
Stick the insulation to the T-junction. Then the three straight tube sections can be attached and glued together.



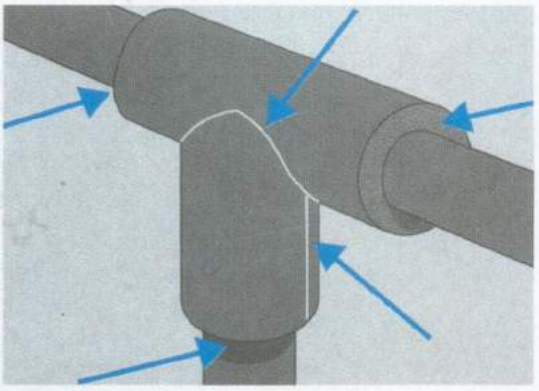
Where the adjacent pipes are smaller in diameter than the T-junction, these can be insulated before the T-junction itself.



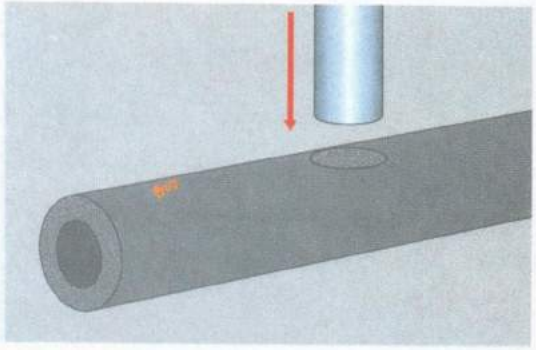
Make a T-section joint as before (see pages 24-25), using, however, a tube with an internal cross-section the same as the external diameter of the neighbouring tubes.



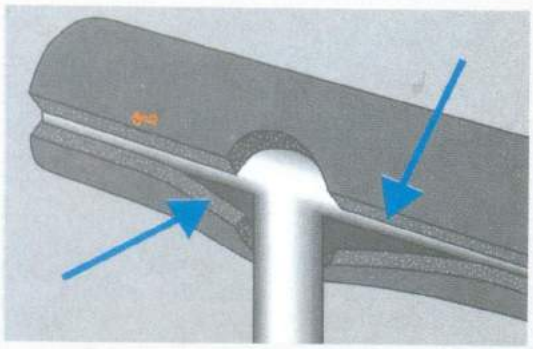
Apply the joint which should overlap the edges of the other insulating tubes. carefully glue and stick the edges and those surfaces in contact with the other tubes.



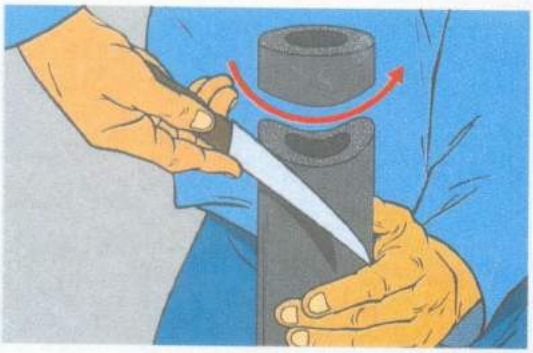
INSULATING A T-FITTING with a round insert



1 Using a punch or metal tube with a cutting edge of the same diameter as the tubing, make a hole in the insulating tubing at the point where the "T" is to be formed.



2 Cut the tube along its length and slide it onto the pipe so that the hole is positioned around the third pipe. Then stick the edges back togther.

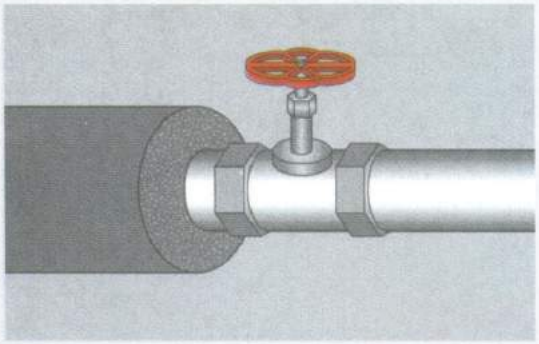


3 The joint for the lower branch is created by cutting a U-shaped section from a second piece of tubing.

4 Align the lower tube so that it fits the hole in the upper section snuggly and glue the whole together.

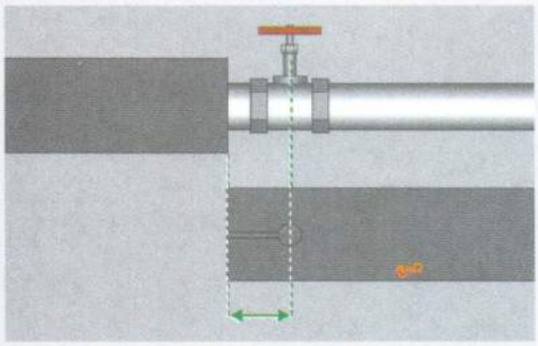
STOPCOCKS

These can be insulated in a number of ways, depending on the type of stopcock.

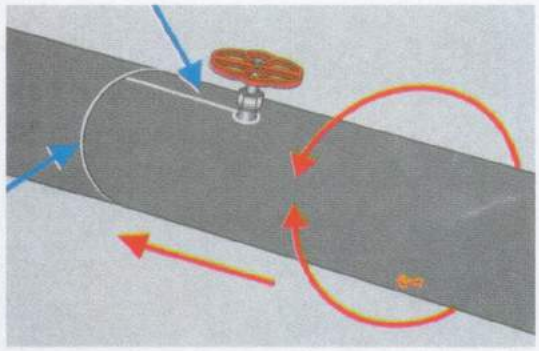


Small valve stem

1 From the edge of the ***A-flex***, make a cut long enough to house the stopcock and punch a hole to fit the stem.

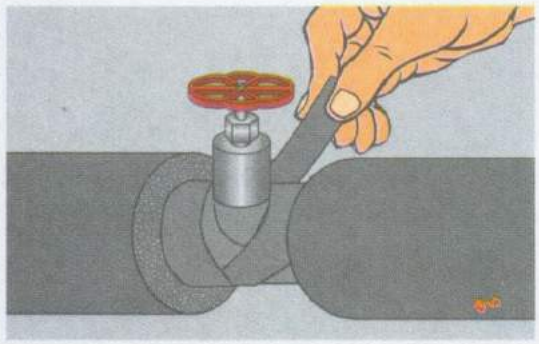


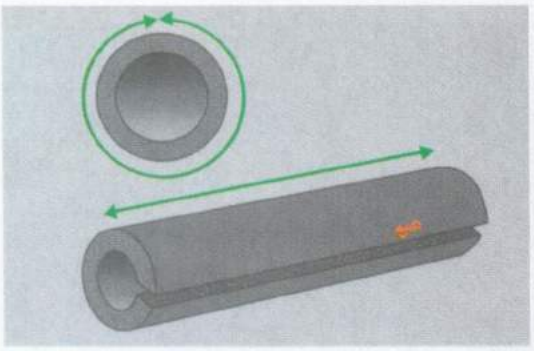
2 Fit the tube snuggly round the stopcock and glue the edges together with ***A-flex*** A-919 glue. Then attach the edges of the insulating tubing to the next section.



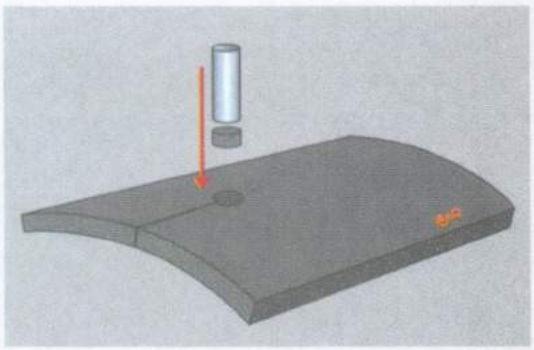
Large diameter valve stem

1 Insulate the pipe right up to the stopcock on both sides. Wrap ***A-flex*** self-adhesive insulating tape around the base of the stopcock.

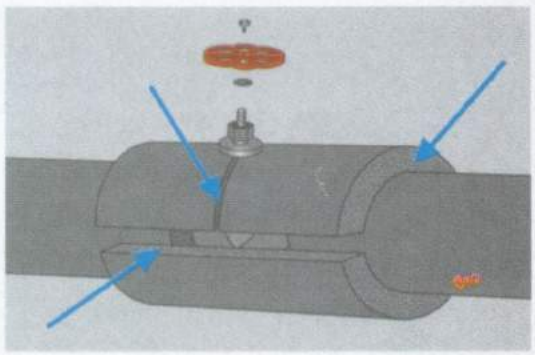




2 Cut a section of ***A-flex*** tubing as long as the circumference of the tubing already in place, and cut it along its length.

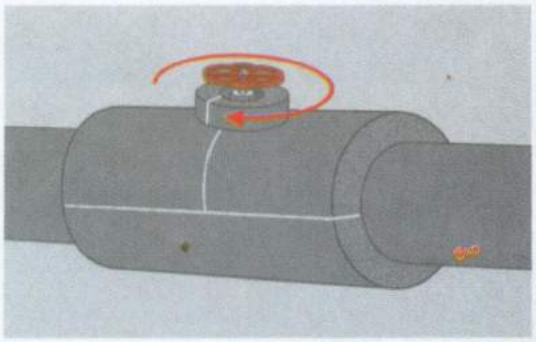


3 Flatten the tube out and make a longitudinal cut with a hole punched at its end to take the stopcock housing.



4 Position this around the stopcock so that the sleeve overlaps the ends of the two underlying tubes.

If necessary, remove the stopcock if this gets in the way.

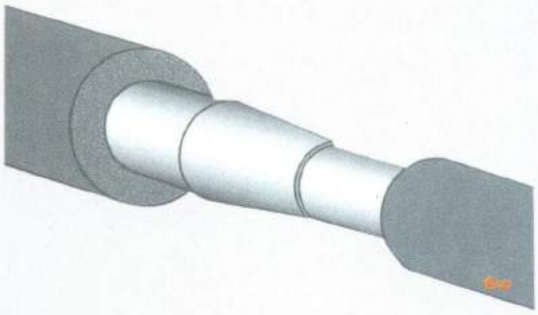


5 Glue and stick the sleeve's edges. If necessary, the stem of the stopcock can also be insulated by applying a ring-shaped section from one of the off-cuts.

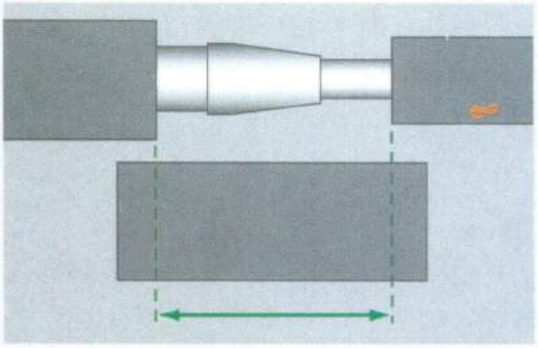
SPECIAL APPLICATIONS

INSULATING A COLLAR

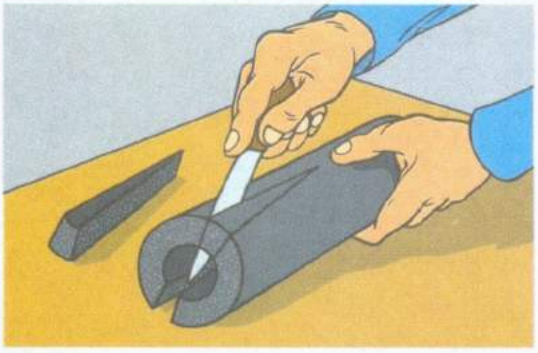
1 When insulating a collar that connects two pipes of different diameters, leave sufficient space between the sections of insulating tubing either side of it.



2 Take a piece of ***A-flex*** the same diameter as the larger of the two pipes, and cut it slightly longer than the space left between the two sections of tubing already in place.

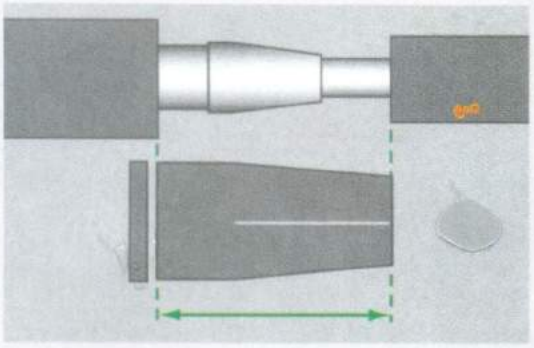


3 At one end, cut out two equally sized wedges opposite each other to create a reduction in circumference that will fit the smaller tube.

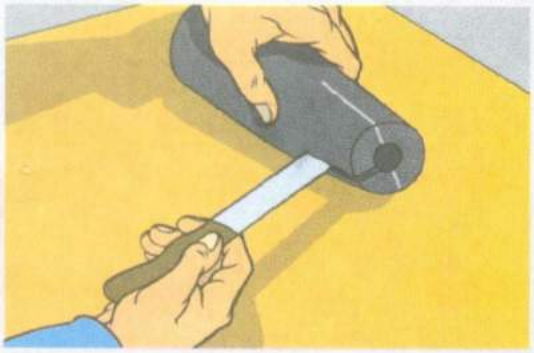


4 Glue the edges of the cut-outs together so that the diameter of the tubing reduces.

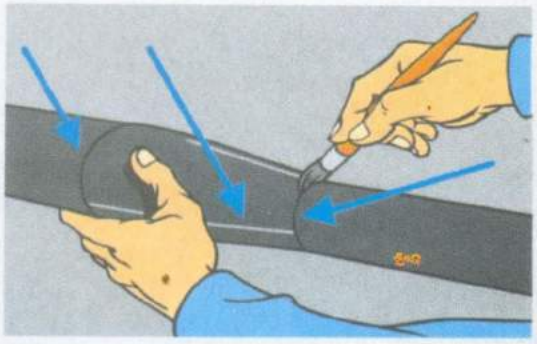
5 Trim the smaller end to the length at which its diameter matches that of the smaller tube.



6 Shorten the other end, too, so that the coupling can be inserted neatly into the space left between the two existing sections.



7 Cut the coupling along its length to install it on the pipe.

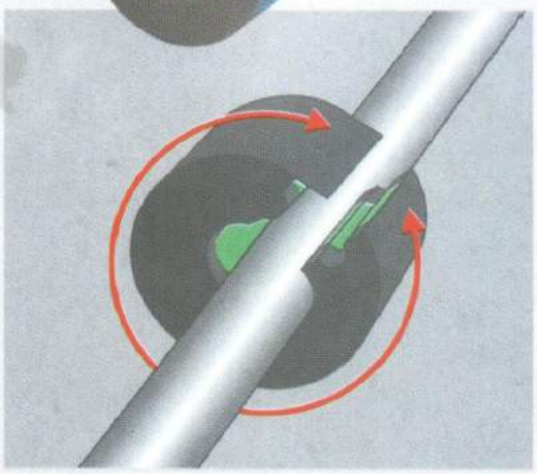


8 After positioning it on the pipes, glue the edges of the lengthwise cut with ***A-flex*** A-919 glue and bond the edges of the sleeving to the other two sections of tubing.

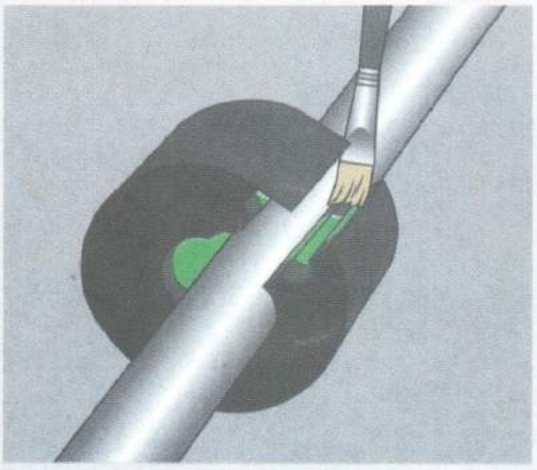
INSULATION FOR PIPE SUPPORTS

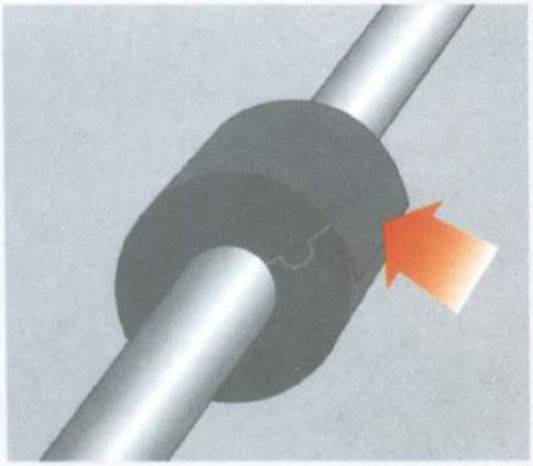
To grant perfect insulation continuity through areas interested by suspension devices ***A-flex*** *suggest to installers the use of a specific support designed for the function with a wide range of diameters in order to allow easy and efficient installation.*

1 Open the two halves of the support and place it around the pipe in correspondence with the suspension point.

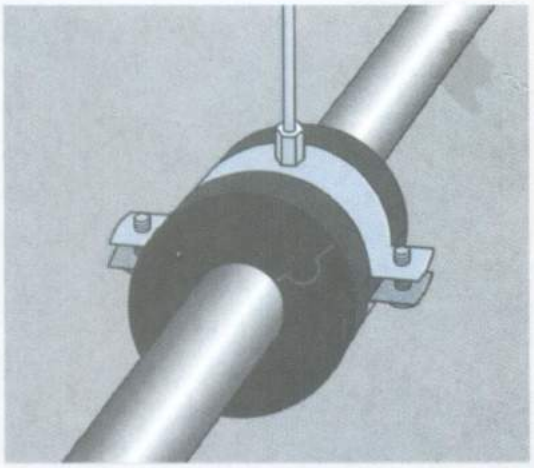


2 Glue support edges with ***A-flex*** A-919 glue and join the two halves on the pipes.

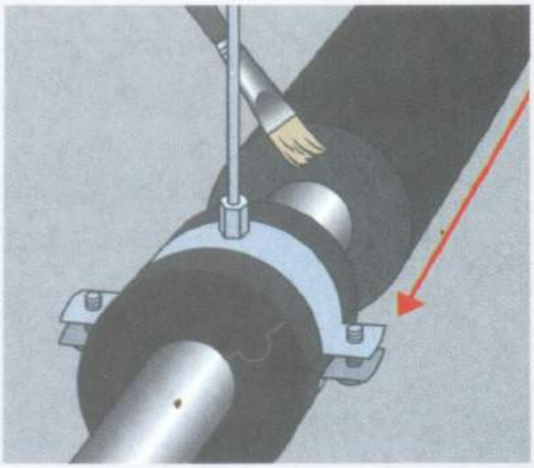




3 Seal the support by overlapping the self adhesive band.



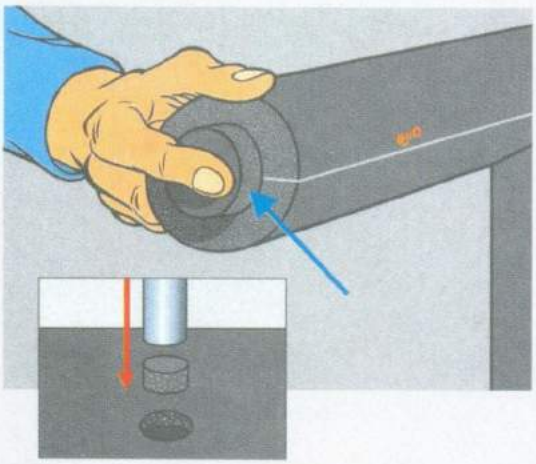
4 Fix clamp to suspension system.



5 Join after gluing with ***A-flex*** A-919 the edges of ***A-flex*** pipes with the support.

BLOCKING OFF ENDS OF PIPES

Using the correct size punch, make a plug from a spare piece fo ***A-flex*** sheeting. Glue all the facing surfaces and insert in the open end of the insulating tube.



INSULATING "Y" BRANCHES

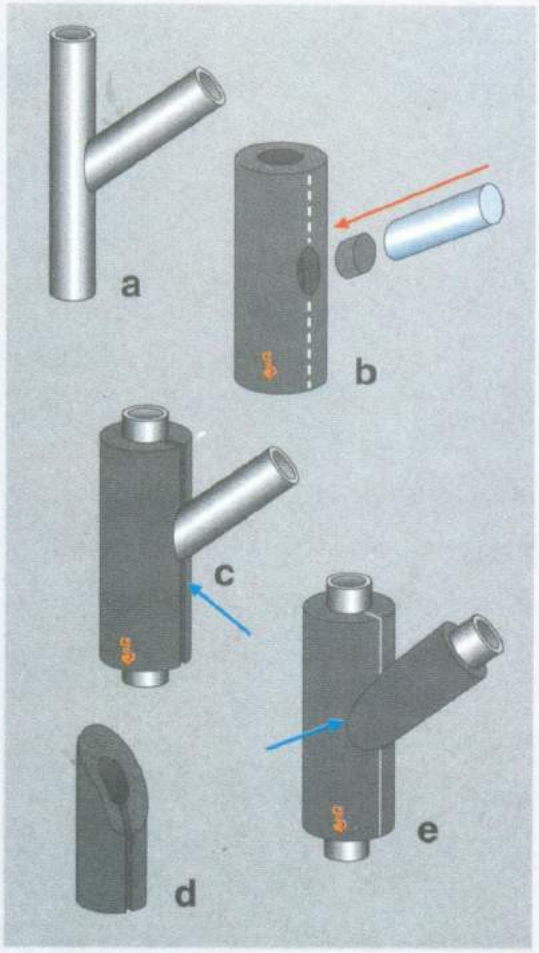
a) Cut a section of ***A-flex*** tubing to the right length.

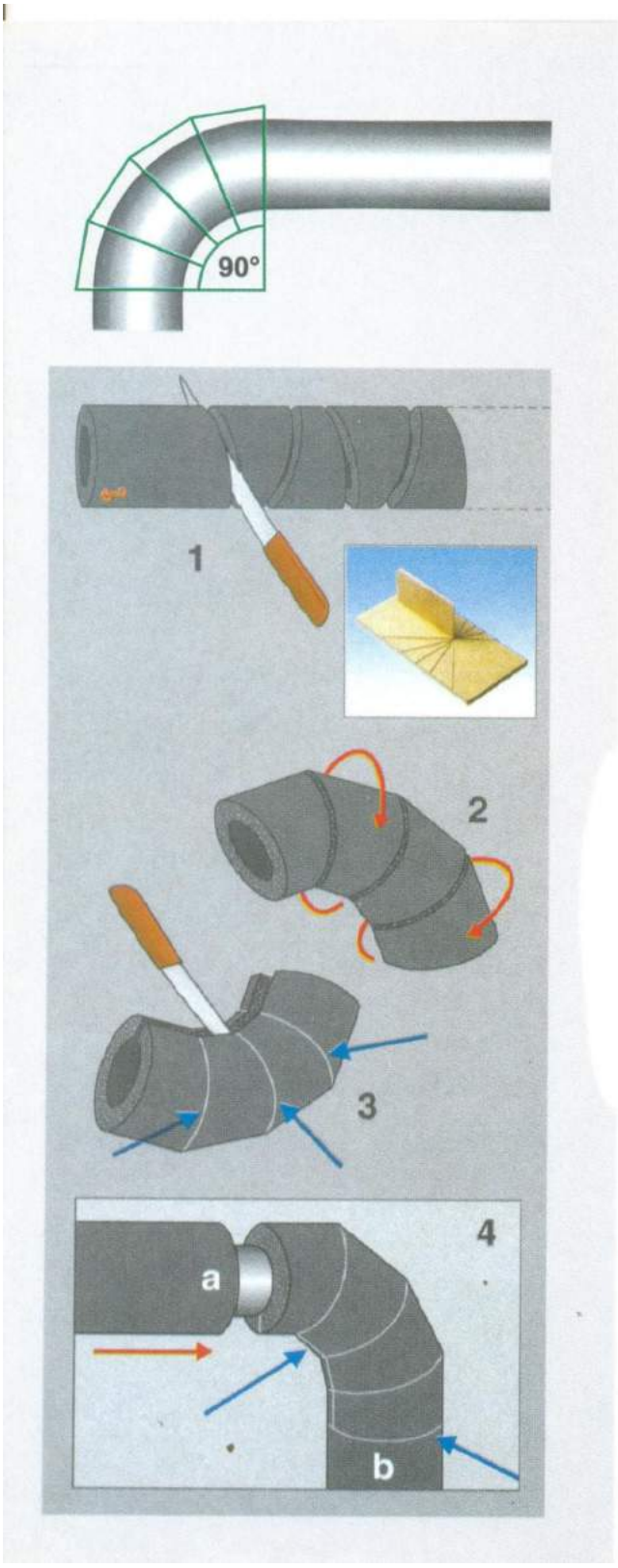
b) Use a punch to pierce a hole at the angle required.

c) Cut the tube along its length position it on the "Y" branch and glue the edges together with ***A-flex*** A-919.

d) Using a second piece of tubing, cut out a U-shaped indent at the correct angle and cut the tube along one side to attach it to the branch.

e) Fit the tubing on the Y branch and glue it in place with ***A-flex*** A-919.





SEGMENTED CURVES

When it is not possible to slide the tubing around bends in the piping, a segmented curve can be made.

1 Take a section of tubing of the correct diameter and cut it either three or five times at the same angle at 90° to each other.

*Use the **A-flex** cutting board to ensure accurate results.*

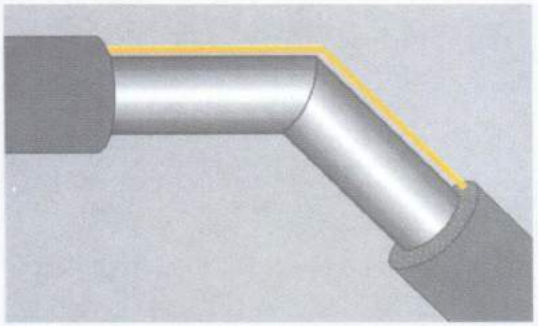
2 Twist every other segment thus obtained through 180° and assemble them together to get a curved section.

3 After sticking all the sections together with ***A-flex*** A-919 glue to complete the bend, make a lengthwise cut in the lower half so that it can be fixed onto the piping.

4 Position the insulating tubing over the bend in the pipe and bond the edges of the lengthwise cut with ***A-flex*** A-919 glue.
The side sections (a-b) must be positioned so that they match the extremities of the tubing on either side.

ELBOW FITTINGS (over 90°)

This is joint created by welding two sections of pipe at an angle over 90°.

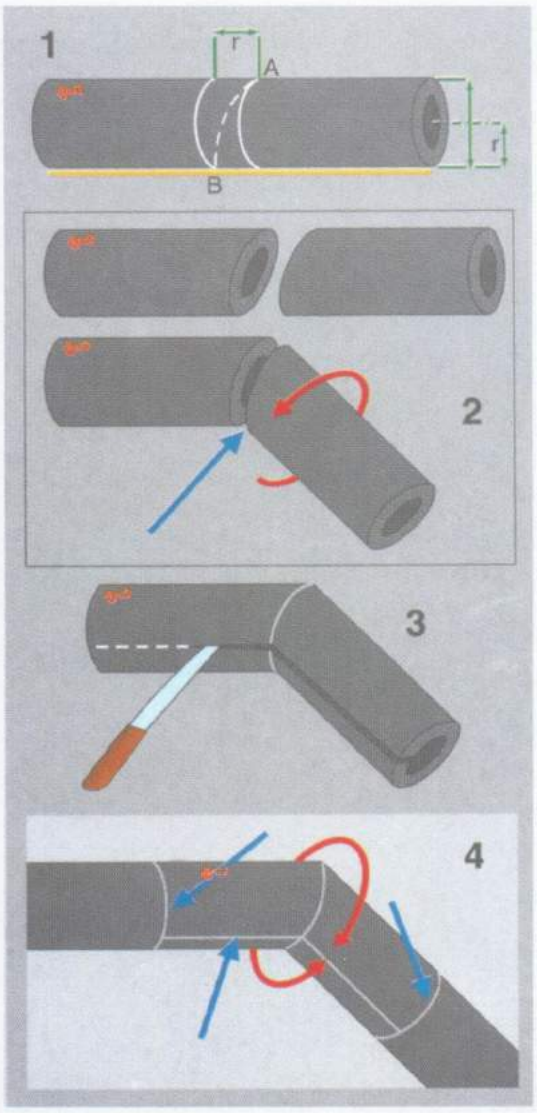


1) The adjacent tubes would normally already be in place when calculating the length of tubing necessary to complete the insulation of the joint. We *recommend cutting the central section slightly longer than strictly necessary so that it can be trimmed down to size when fitting.* Measure the radius of the external circumference and draw two parallel lines that far apart in the middle. Draw a line at an angle between points A and B.

2) Cut along this line and rotate one of the sections until the required angle is obtained. Glue the two parts together with ***A-flex*** A-919.

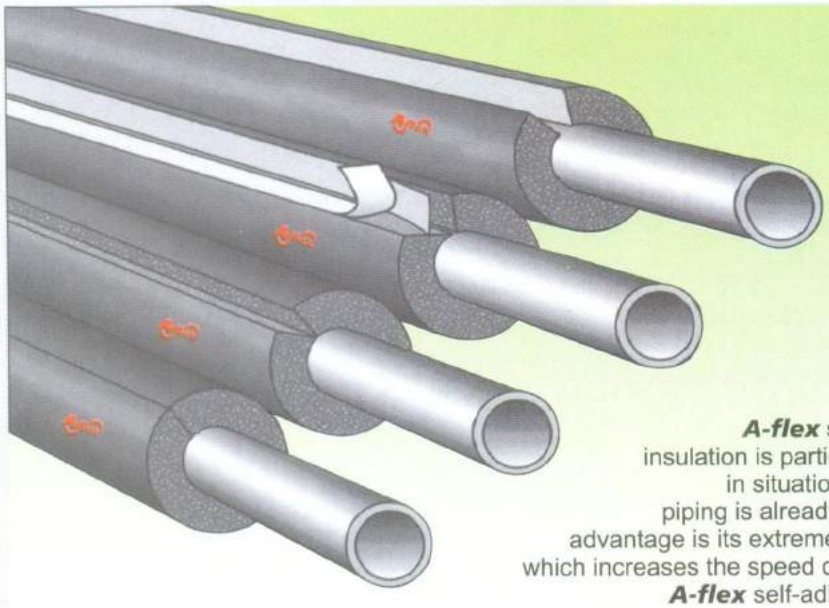
3) Cut along the inner surface of the joint.

4) Trim the joint to fit between the two adjacent tubes and the glue all the edges together.

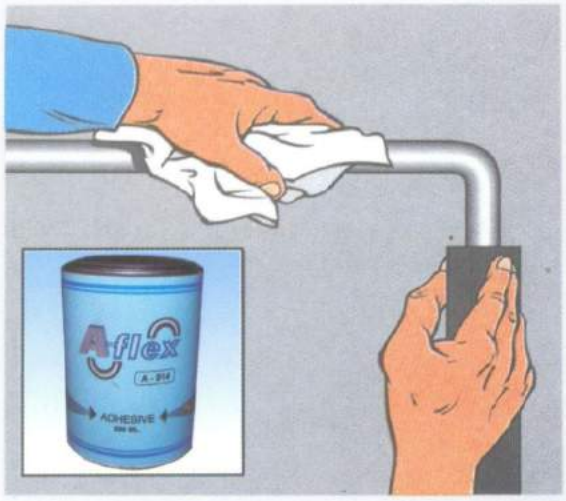


Flexible ***A-flex*** tubing for insulating fitted pipes.

SELF-ADHESIVE INSULATION TUBING

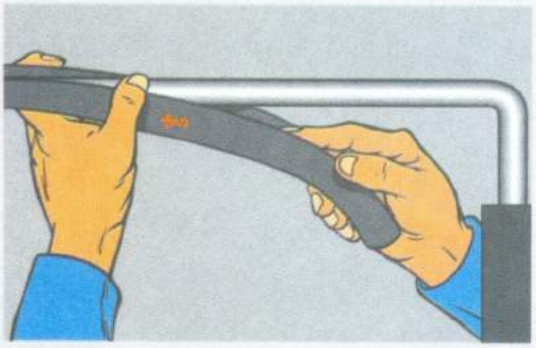


A-flex self-adhesive insulation is particularly useful in situations where the piping is already in place. Its advantage is its extreme ease of use which increases the speed of installation. ***A-flex*** self-adhesive tubing can even be attached to bends in pipes with little effort. Carefully read the installation suggestions that follow.

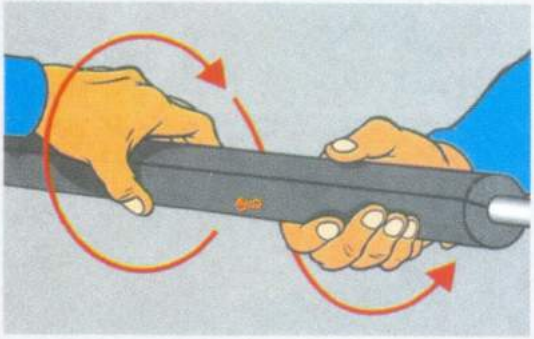


1 Make sure that the surfaces to be insulated are perfectly clean grease-free and dry. For the best results, we recommend cleaning with thinner.

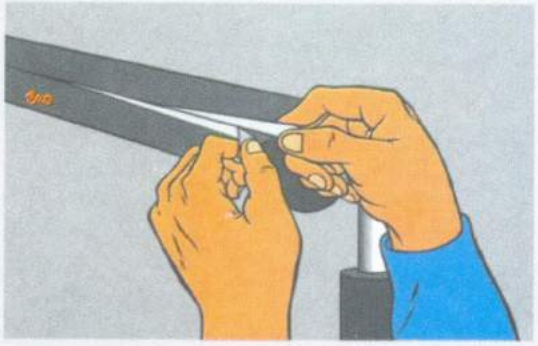
The pre-cut tubes allow them to be positioned easily. 2



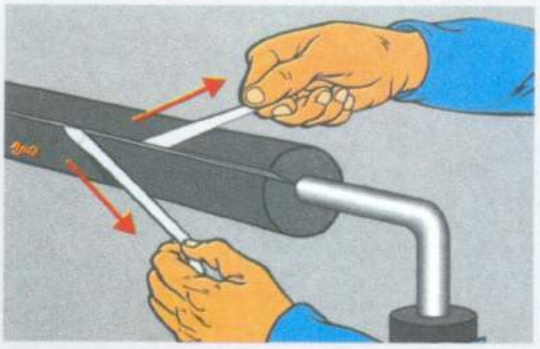
Line the edges up and straighten the tubing. 3

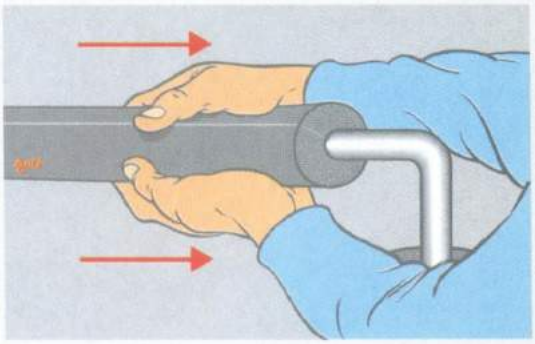


Using both hands, carefully lift the backing strips that cover the self-adhesive edges. 4

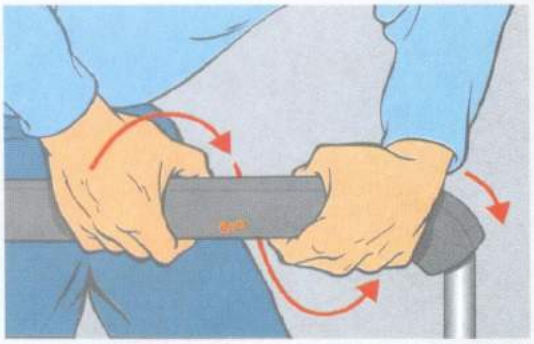


Slowly pull the backing strips away from the tubing, ensuring that the two sticky surfaces match up properly. 5

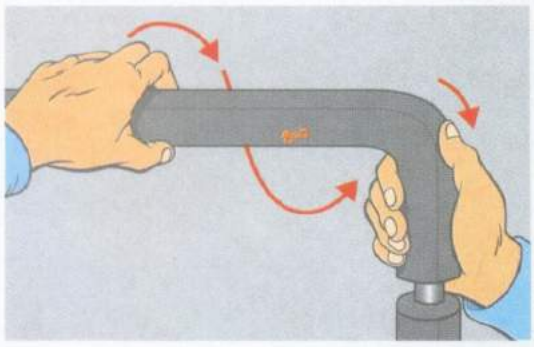




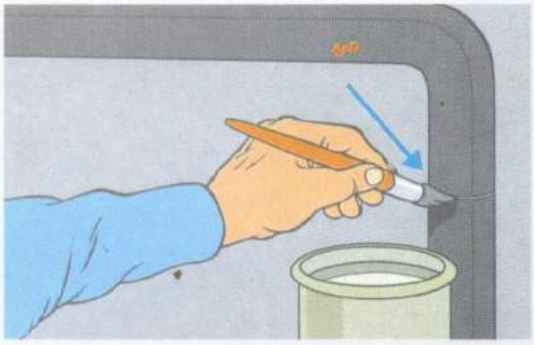
6 Lightly press the two edges together, first from the far ends, then at the center so as to form a neat seal without puckering.



7 To avoid the insulating tube becoming deformed whilst pushing it along the piping, position it without forcing.



8 Be particularly careful when monoeuvring the tubing around bends in pipes.

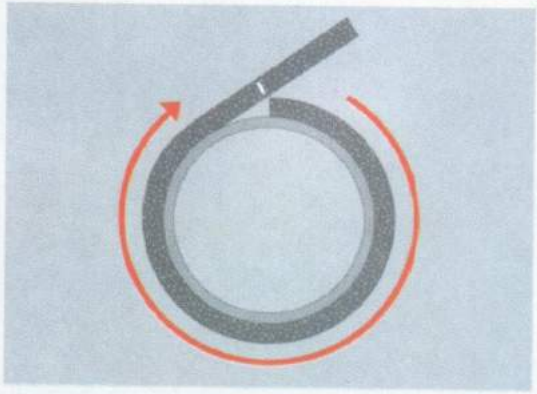


9 Once the tubing is in place, attach it to the neighboring section of insulation tubing using ***A-flex*** A-919 glue.

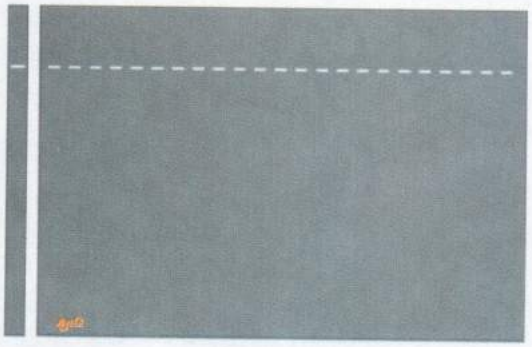
INSULATING PIPING OVER 125 mm IN DIAMETER WITH *A-flex* SHEET

INSULATING A STRAIGHT PIPE

Wrap a strip of ***A-flex*** of the same thickness as that to be used around the pipe to be insulated and measure the exact length required. 1

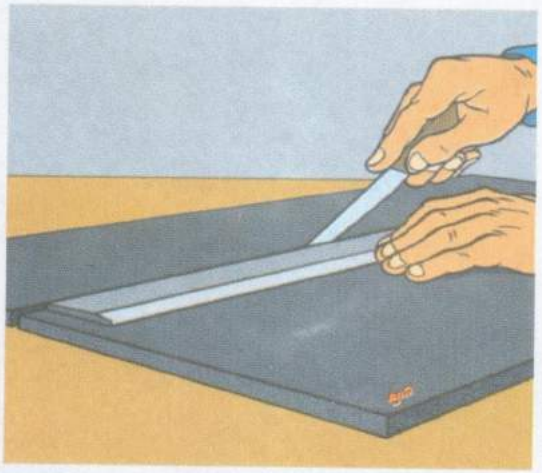


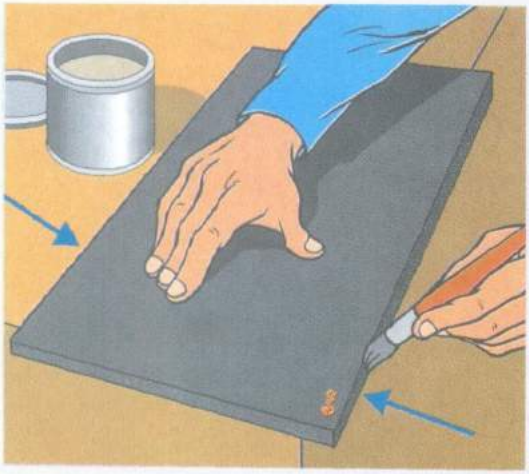
Mark out the length required on a A-flex sheet. 2



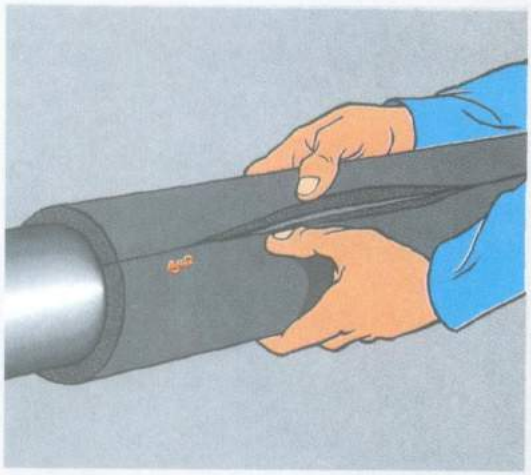
Cut carefully along the line. 3

To ensure accurate results, use a metal ruler.

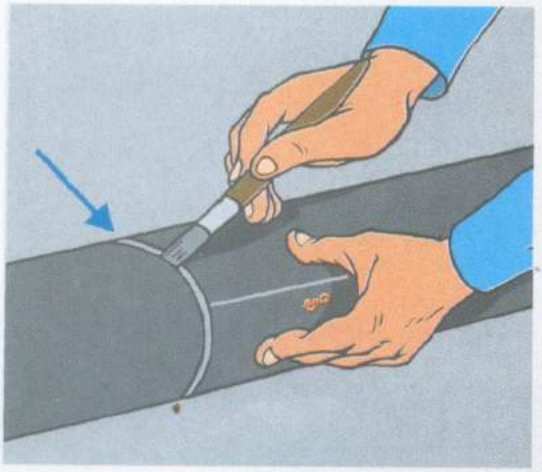




4 Apply an even layer of ***A-flex*** A-919 glue along each edge and allow to dry.



5 Wrap the insulation sheet around the pipe and press the glued edges together starting at the ends, then the centre and then working along the rest of the length.



6 Glue the insulating sheeting to the subsequent sections along the length of the pipe.

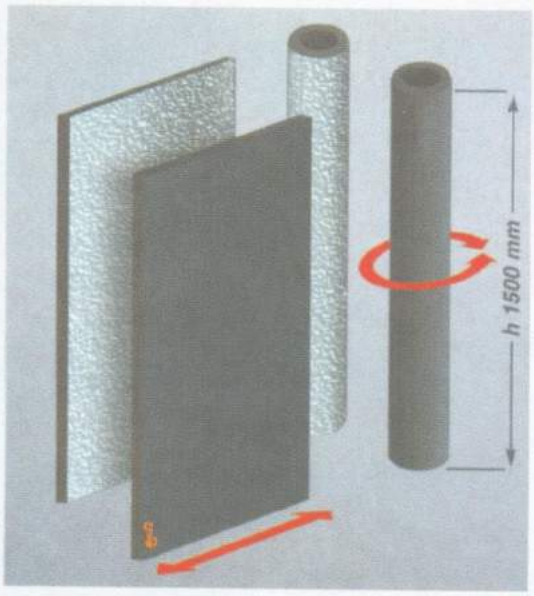
If the tubing thus created is not correctly lined up, push one against the other slipping the brush in the gap and twist until they are aligned.

INSULATING STRAIGHT PIPING WITH LINEAR SHEETING

A-flex supplies a new solution to facilitate insulation of medium and large diameter pipes: LINEAR sheeting is already cut to the size of the surface to be covered.

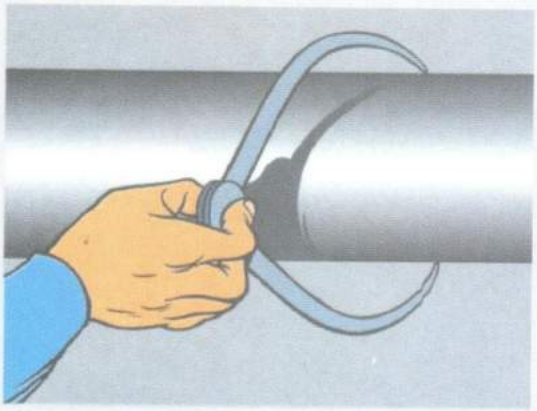
At the client's request, LINEAR sheeting can be supplied with an embossed sheet aluminium finish.

By choosing this sheeting, the client will also see its functional and practical advantages when insulating layered pipes.



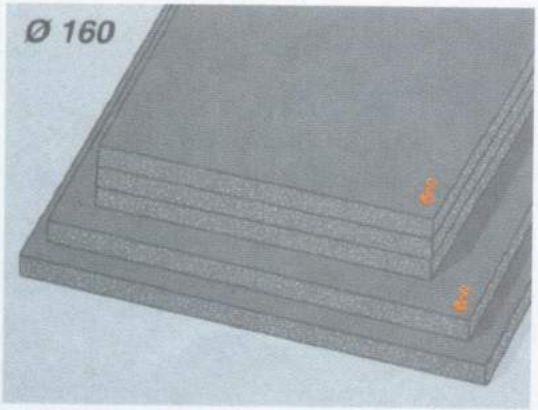
Its application is considerably simplified. Measure the diameter, or the various diameters, of the pipe to be insulated

1



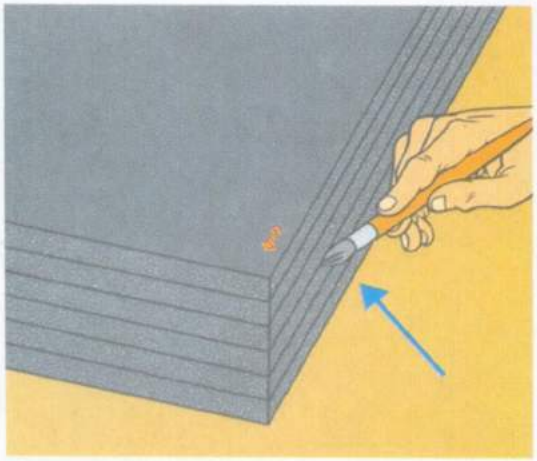
Choose the corresponding LINEAR sheeting at the retailer's.

2

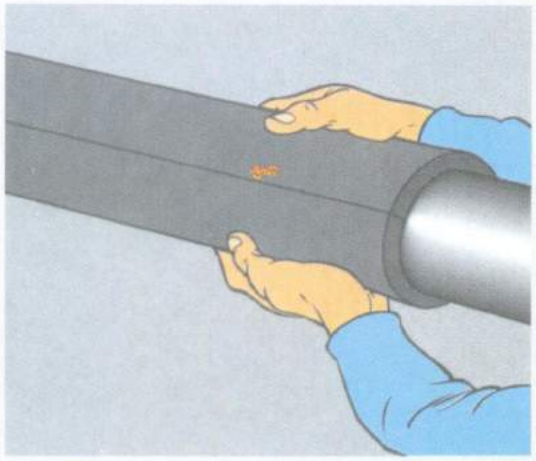


Some examples of product correspondence:

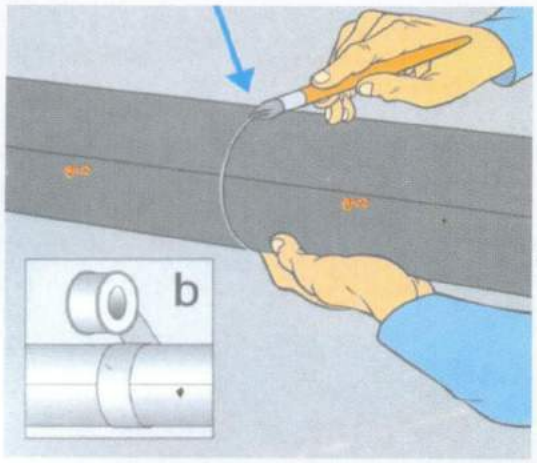
Ø	Thickness 19	Thickness 25
89	*19 x 89*	*25 x 89*
114	19 x 114*	*25 x 114*



3 Glue the lengthwise edges with ***A-flex*** A-919 glue. If necessary, more than one sheet can be aligned so that their edges can be glued simultaneously.



4 Position the sheeting on the pipes and match the edges accurately.



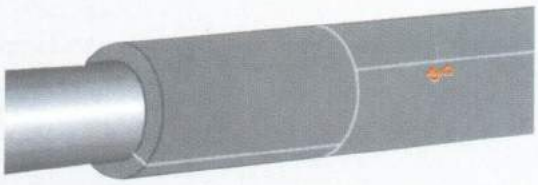
5 Position the next section of A-flex on the pipes and bond it to the previous section.

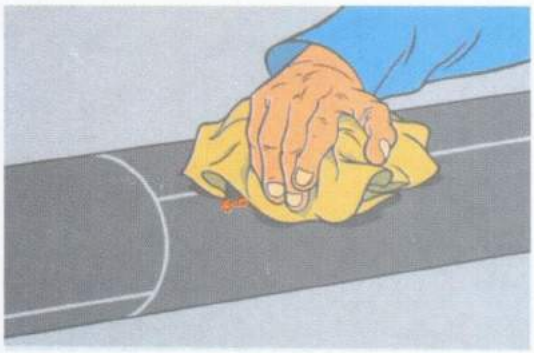
If using sheeting finished in embossed sheet aluminiun (b), bond the joint with ***A-flex*** *adhesive tape.*

MULTI-LAYER INSULATION

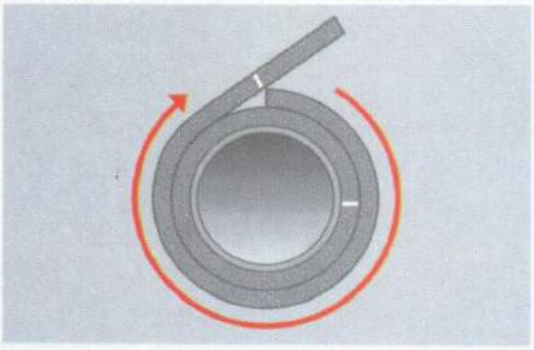
*If it is necessary to apply more than one layer of **A-flex**, one sheet can be stuck on top of another. To install the first, refer to page 40.*

Contact our Technical Office if you have to insulate piping transporting fluids below -40° C.

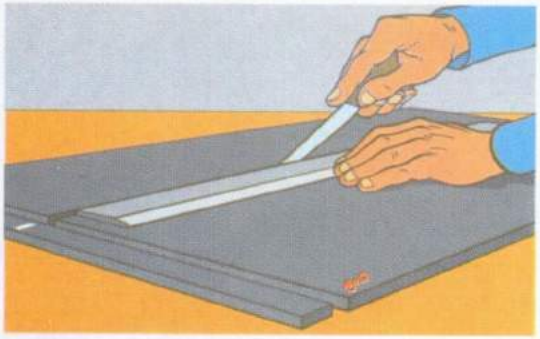




Clean the surface of the first layer of insulation. 1



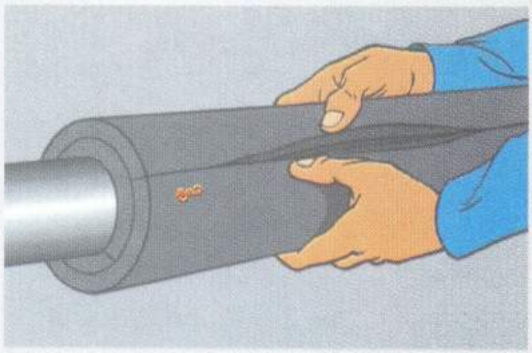
Measure the overall diameter with the first sheet in place. 2



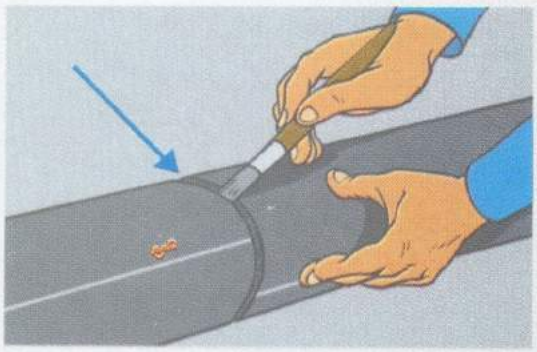
Cut out the second sheet to the size required. 3

4 Glue the edges of the sheet to be fitted.

Do not stick the two layers together, as the individual sheets may be subject to different degrees of expansion or contraction when the plant is operational.



5 Wrap the insulation sheet around the tubing, ensuring that the seam does not overlap that of the underlying insulation.



6 Adjacent sections of insulation should be glued at their respective ends.

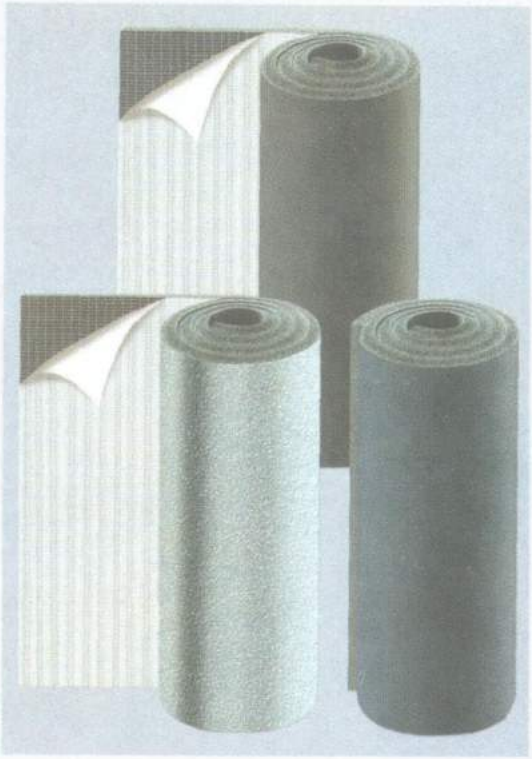
LONGITUDINAL CROSS-SECTION

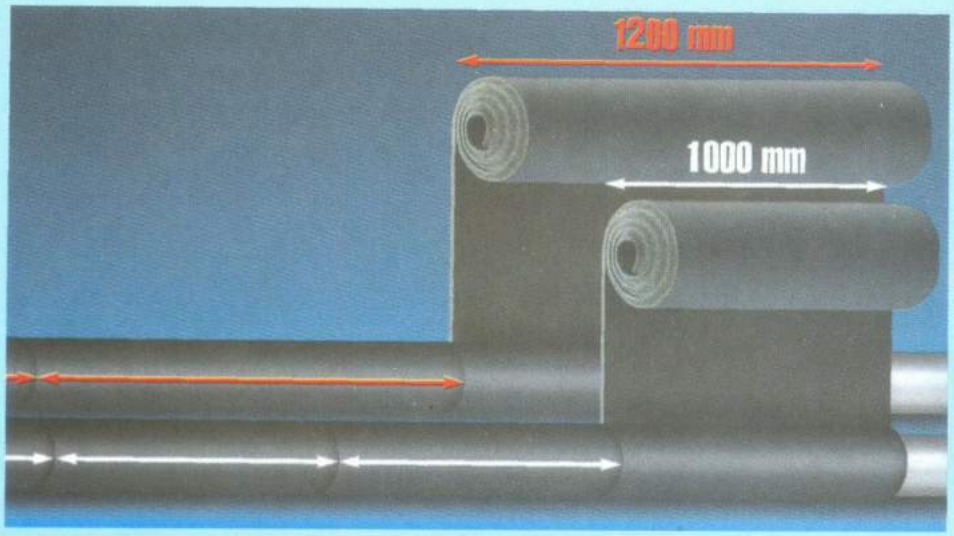
7 When installing the second layer, make sure that the seams do not overlap those underneath (see diagram). This ensures that, when the plant is operational, maximum insulating, properties are maintained as the materials expand or contract.

INSULATING PIPES WITH A-flex SHEET

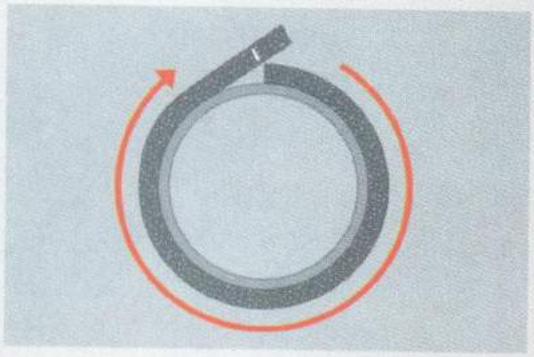
A-flex proposes sheeting, which allows faster application times on straight pipes with large diameters.

A-flex sheeting can be supplied in thicknesses of 6-9-13-19-28 & 32 mm and in the various versions, standard, or self-adhesive with outer coating in aluminum.

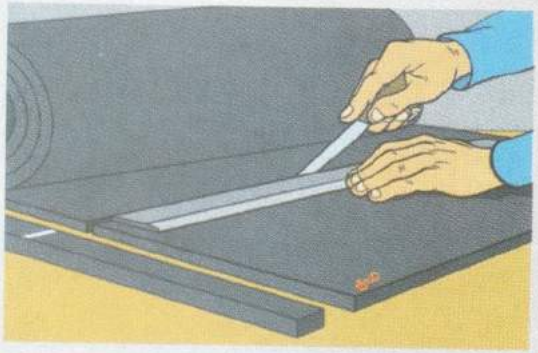




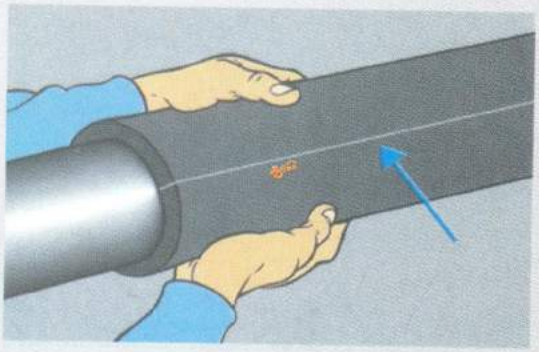
With a wider covering surface than the 1000 mm sheeting, the 1200 mm sheeting has the advantage of requiring fewer segments and, as a result, faster application on long straight sections.



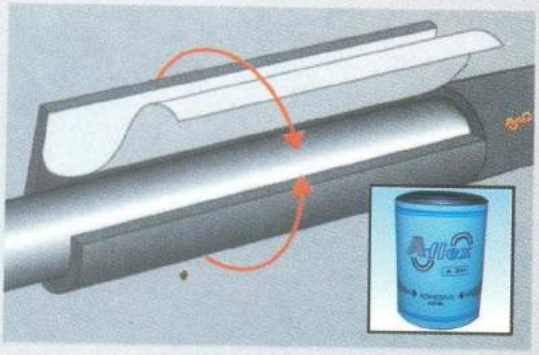
1 Measure the surface of the piping to be covered.



2 Cut the corresponding section of sheeting.



3 Apply the sheeting on the pipe, after glueing the joining edges, and bond the two parts, taking care to position them correctly.



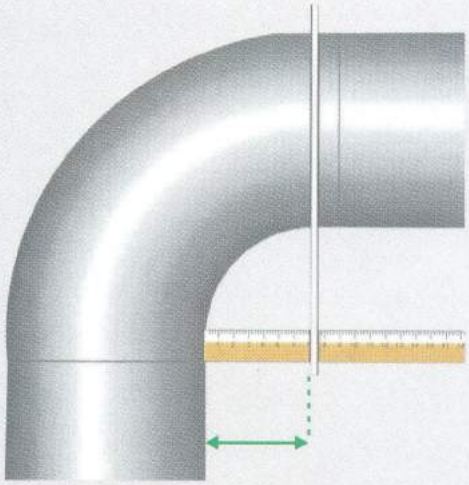
4 If self-adhesive sheeting is used, simply remove the protective film while pressing the insulating sheeting against the surface to be lagged.

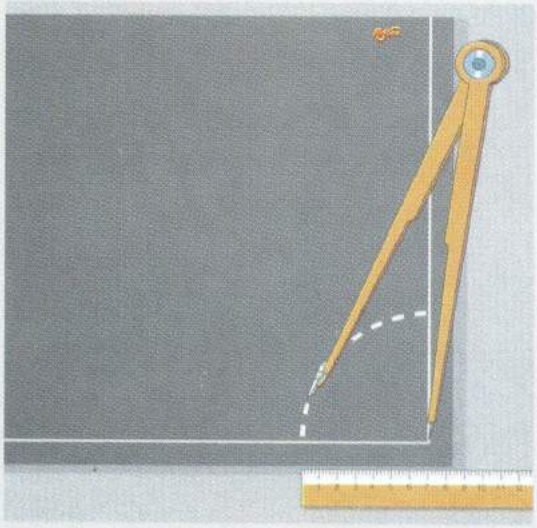
Before starting this operation,the surface of the piping must be thoroughly cleaned, using A-flex detergent.

BENDS

To insulate a bend in a large-diameter pipe, calculate its radius and mark it out on a ***A-flex*** *sheet.*

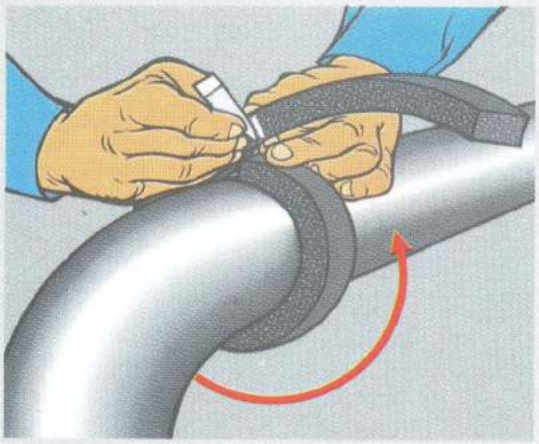
1 First of all, measure the internal radius of the curve using a ruler and a rule lying perpendicular to it, as shown in the diagram.

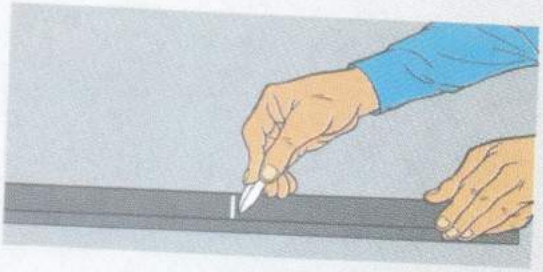




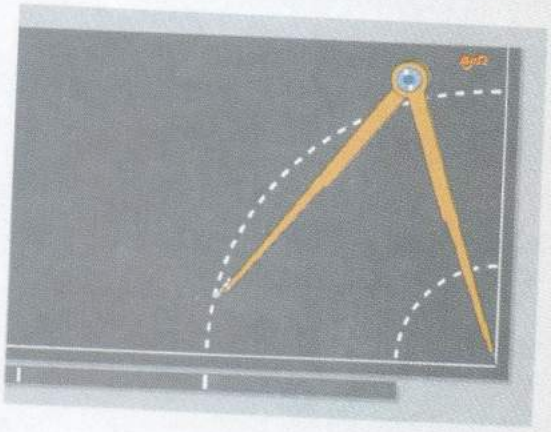
2 Using a compass, mark the outline of the internal radius on the ***A-flex*** sheeting, using the corner of the square marked out on the insulating material as the axis.

3 Measure the exact circumference of the pipe using a strip of ***A-flex*** of the correct thickness (do not stretch the strip).





4 Divide the circumference by two, and mark the middle of the strip accordingly.



5 Add the outer radius to the measurement of the inner radius and, using the same axis, draw a semicircle onto the sheet with the compass.

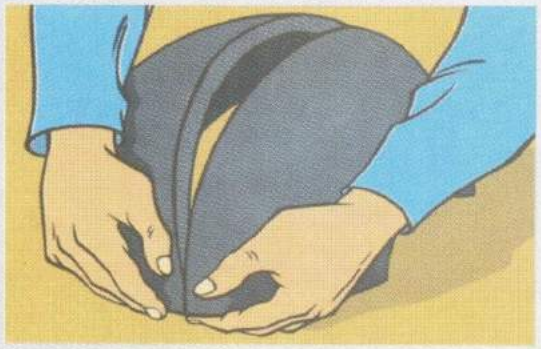
6 Cut the sheeting accurately along the arc of the circle.

If imperfections are found along the cut edges, smooth them slightly to assure a more precise match.

7 Place the section obtained on the reverse side of another sheet and use it as a template to cut out a second, mirror image section.

8 Holding the two sections together with the smooth surface on the outside, apply glue to the outer edges.

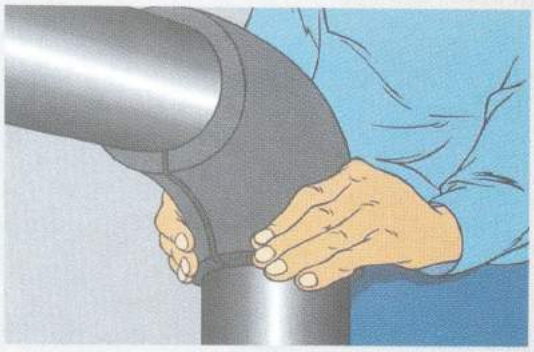
9 Allow the glue to dry and stick the edges together, starting from the two extremities.



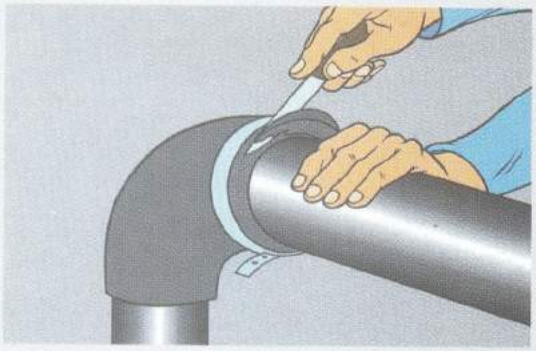
10 Apply pressure in the centre, too.

11 Make sure that the two sections have bonded securely on the inside as well, pressing with your fingers along the joint.

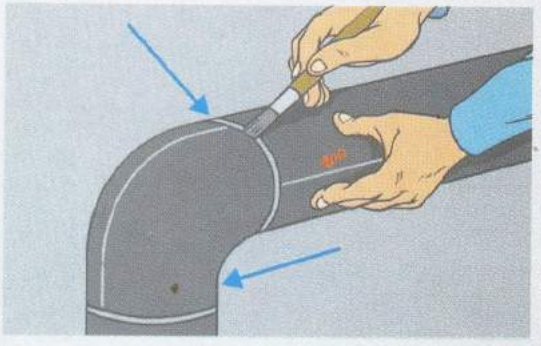
12 Next spread the glue along the inside edges and leave to dry.



13 Wrap the A-flex insulation around the pipe and press the edges tightly together.



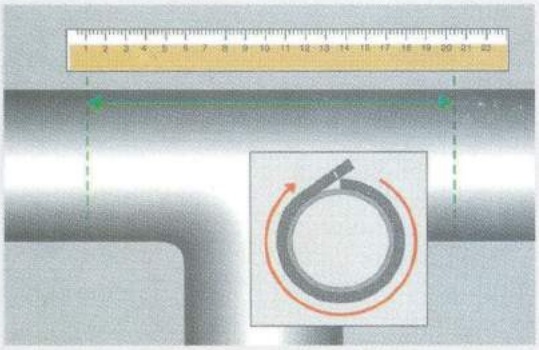
14 Use the metal band as a guide to trim the extremities ...



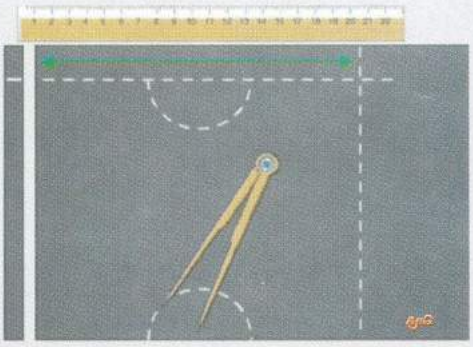
15 ... so that they butt precisely up against the tubing to be fitted either side.

T-FITTINGS

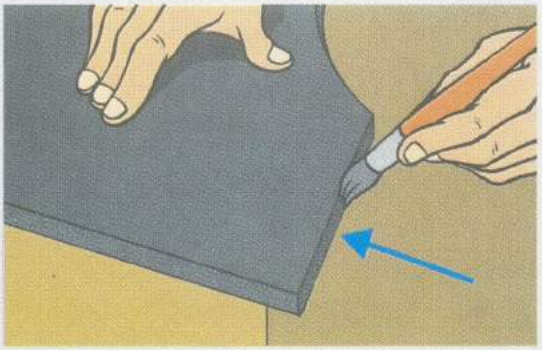
Take the measurements for the shape of the T-fitting. 1

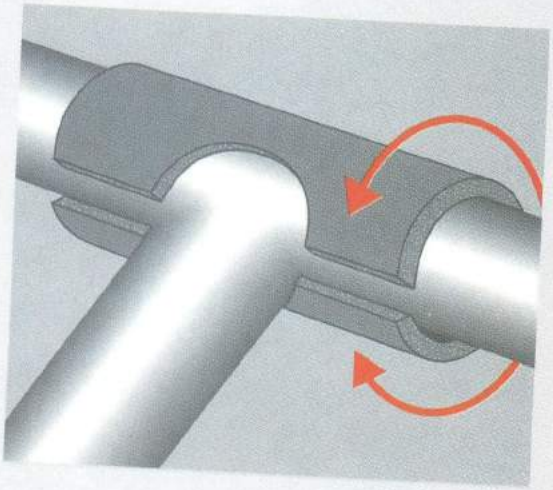


Mark the measurements on the sheet and trace the shape of the through-section. The radius of the semi-circle corresponds to that on the piping. 2

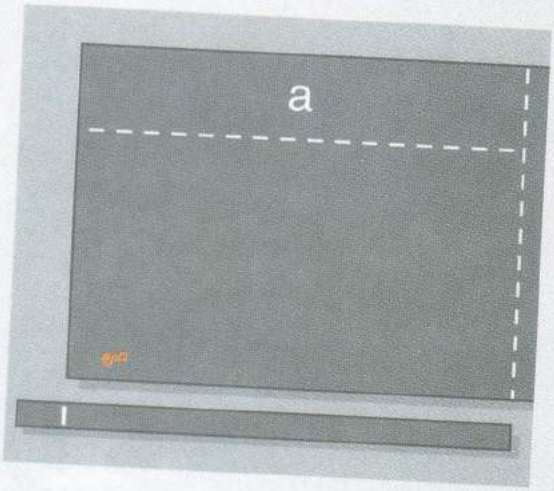


Cut along the outline and glue the matching edges. 3

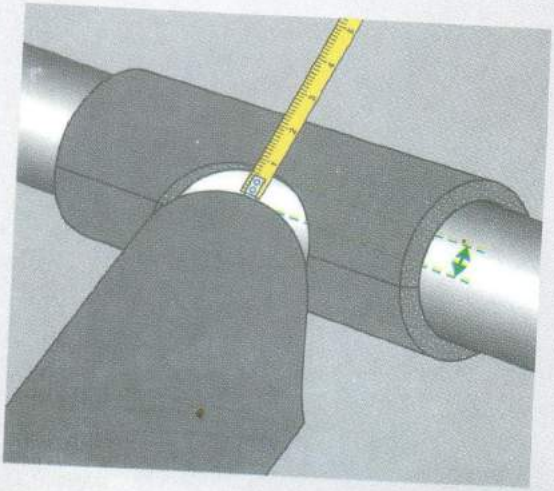




4 position the through-section shape on the piping and join the glued edges.

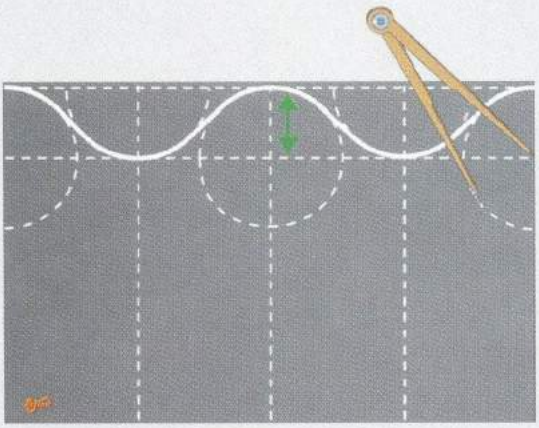


5 On another section of sheeting, trace the shape of the coupling arm, leaving enough overlap for the next section (a).

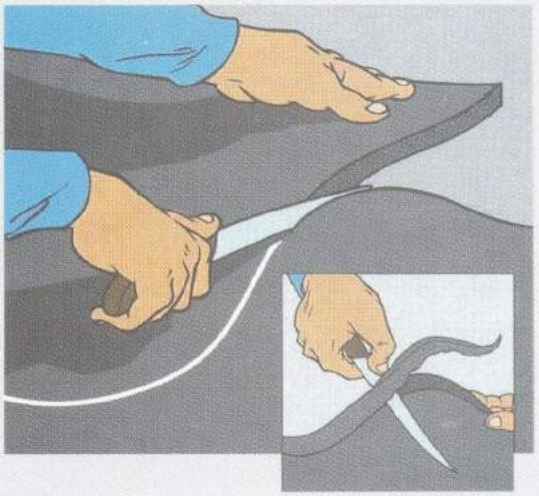


6 Take the measurements of the coupling arm section by resting the cut sheeting on it as a basis for measuring.

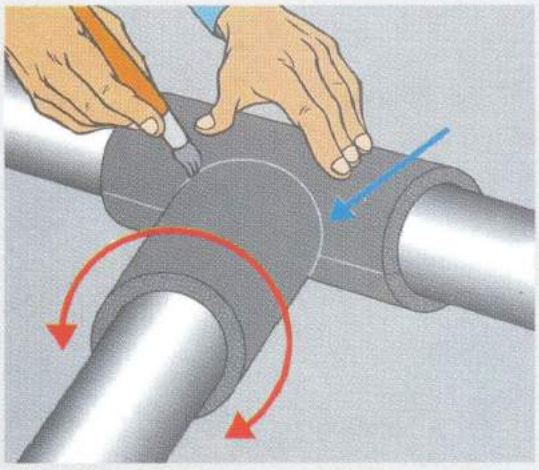
7 Mark the measurements of the section on the overlap of the previous tracing and draw the circles which define the section's curve.



8 Cut along the final outline and glue the matching edges. Chamfer the edges of the upper, convex curves, towards the ***A-flex***'s inner surface.



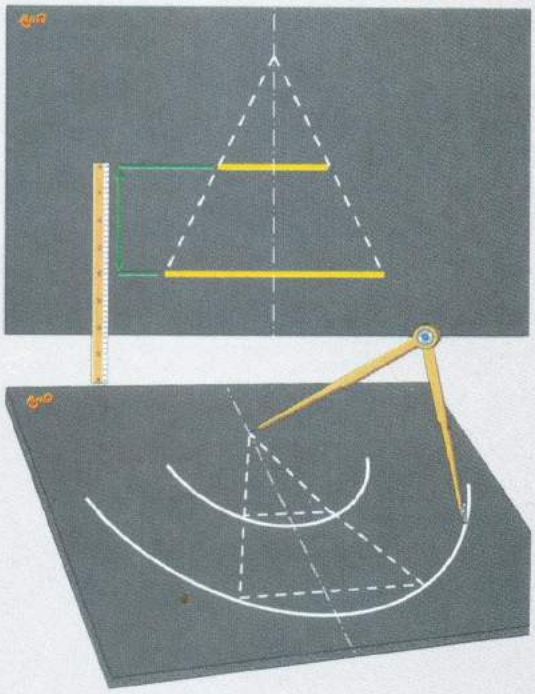
9 Position the prepared section on the coupling arm joining the parts of the T-fitting. Glue the chamfered curves to the through-section.



*To insulate a collar section that connects pipes of different diameters, take measurements and mark them out on a **A-flex** sheet.*

1 Measure the height of the collar section, including the welded joints.

2 Use the calliper to measure the maximum and minimum pipe cross-section and add twice the thickness of the ***A-flex*** to each measurement (see figure1)



3 Carry over all the measurements (maximum diameter, minimum diameter, height) onto the sheet. Draw two lines from the ends of the measurements until they converge on a centre point.

4 Using the compass, measure the distance between the point of intersection and the two diameters and draw two arcs.

COLLARS

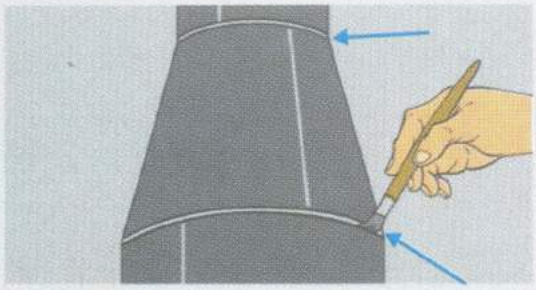
5 Measure the circumference of the widest pipe using a strip of ***A-flex*** of the same thickness as the sheet.

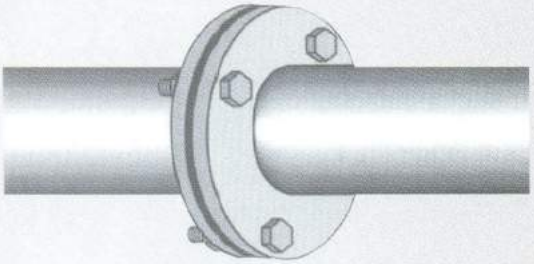
6 Mark the center of the circumference on the strip, and line it up on the larger of the two arcs. Draw two lines from the ends of the strip to the center of convergence.

7 Carefully cut out.

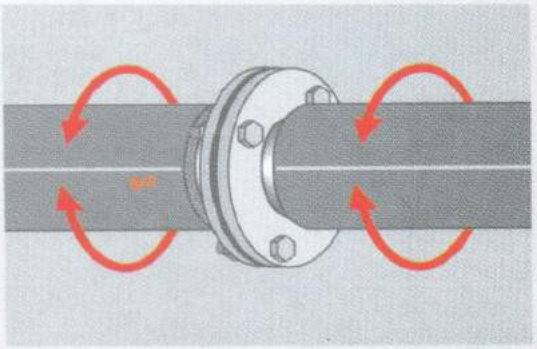
8 Glue the edges and, after they have dried, fit the insulation to the collar. Press the two edges together starting at the far ends.

9 Glue the upper and lower edges and attach the other ***A-flex*** sections.

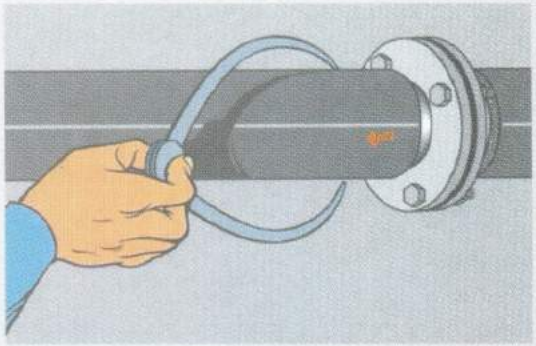




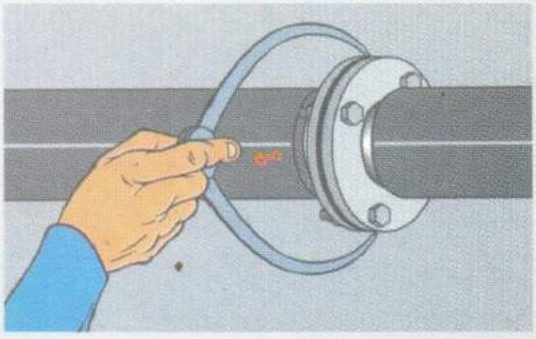
*Insulating a flange is reasonable simple, but requires the **A-flex** sheeting to be accurately cut into two rings.*



1 Firstly, insulate the pipes as far as the flange on either side.



2 Measure the pipes' circumference with the ***A-flex*** around it...



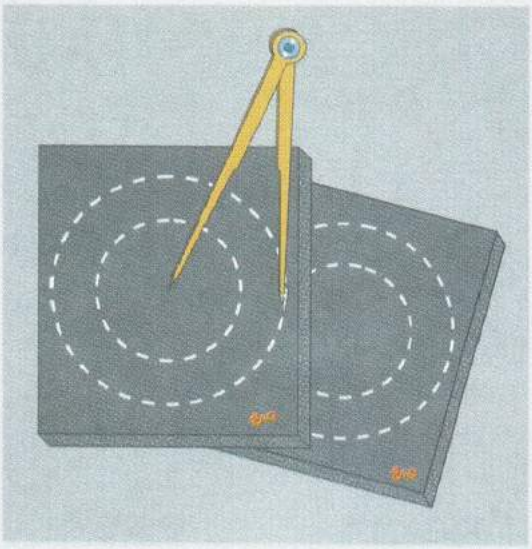
3 ... Along with that of the flange.

Use the measurements of the two diameters to calculate the respective inner and outer radii.

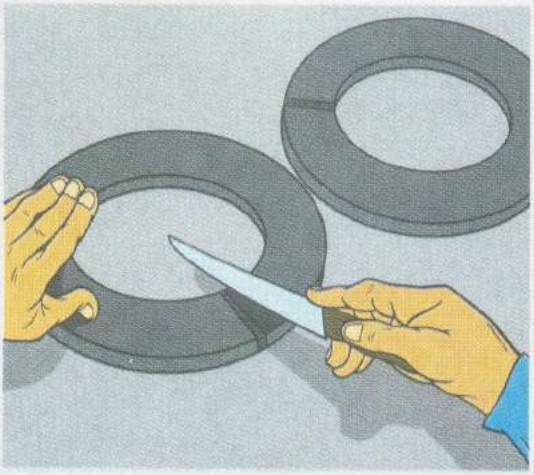
FLANGES

4 After calculating the two radii, draw the inner and outer circumferences of the rings on two separate squares of ***A-flex***.

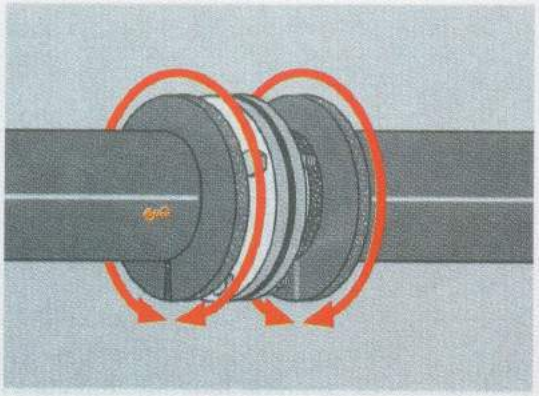
Attaching a sharp blade to the tip of the compass allows the first incision to be made so that a knife can then be used to cut out the ring. However, a knife alone can give acceptable results.

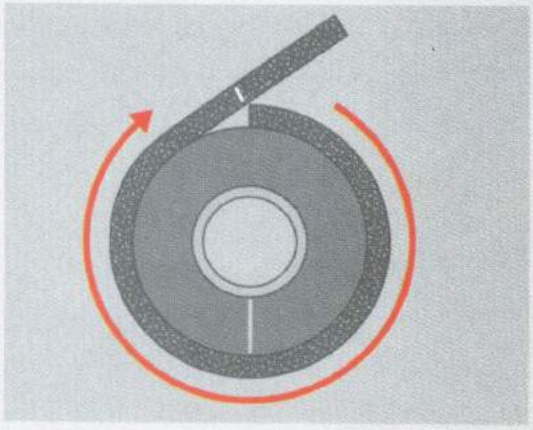


5 Cut the rings out and make an opening on one side to attach them around the pipes

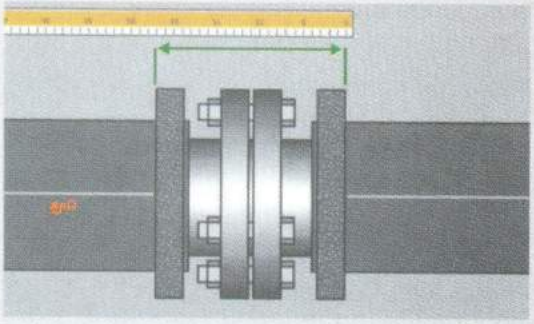


6 Position the rings around the ends of the insulating tube and glue the opening with ***A-flex*** A-919

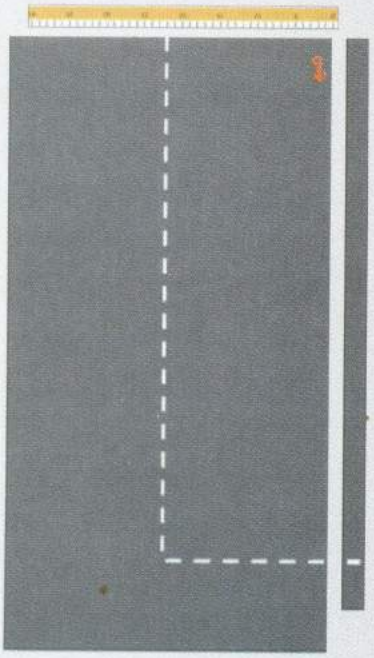




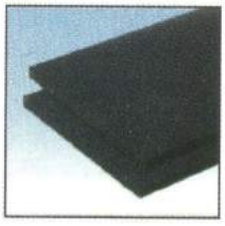
7 Use a strip of ***A-flex*** of the same thickness to measure the circumference of the insulating rings.



8 Measure the distance between the two rings, including the thickness of the insulating material itself.

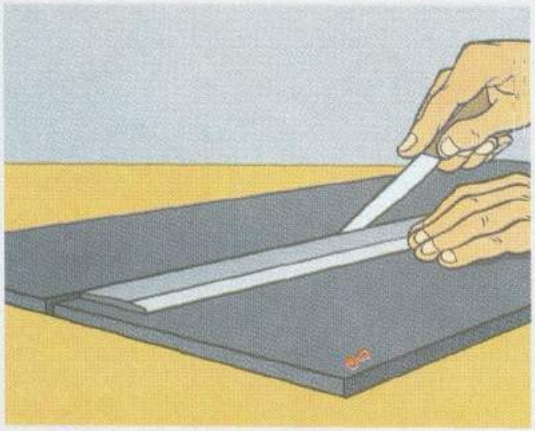


9 Draw the measurements out onto a ***A-flex*** sheet to get the outline of the sleeve that will complete the flange's insulation.

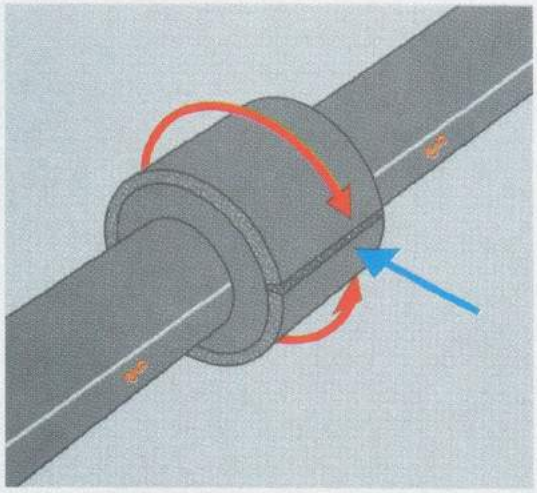


FLANGES

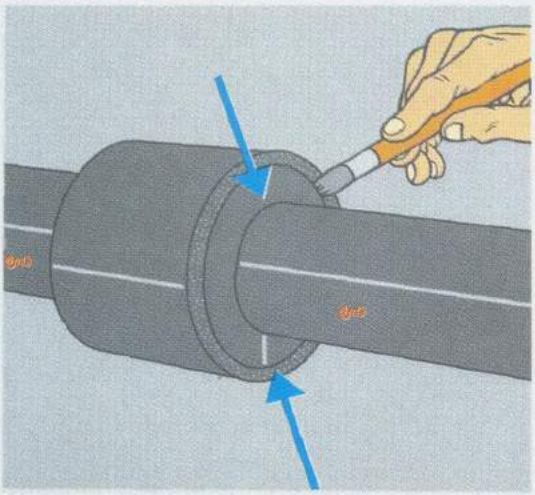
Cut the sleeve section out. **10**

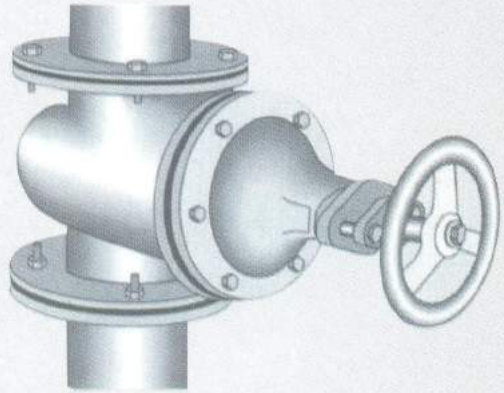


Mount it around the rings and glue the edges. **11**

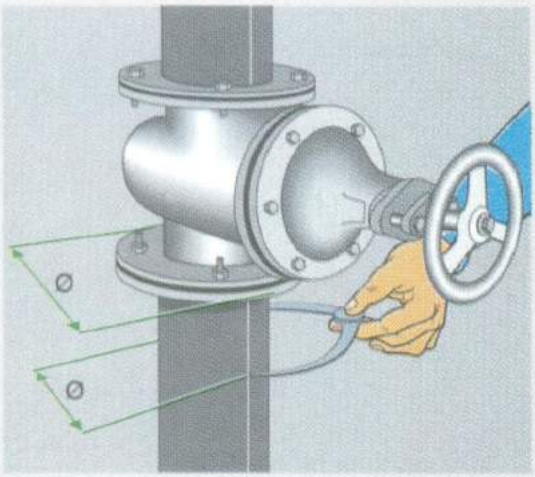


Stick the sleeve section to the outer edges of the rings, then stick the inner surface of the rings to the ends of the adjacent tubing. **12**



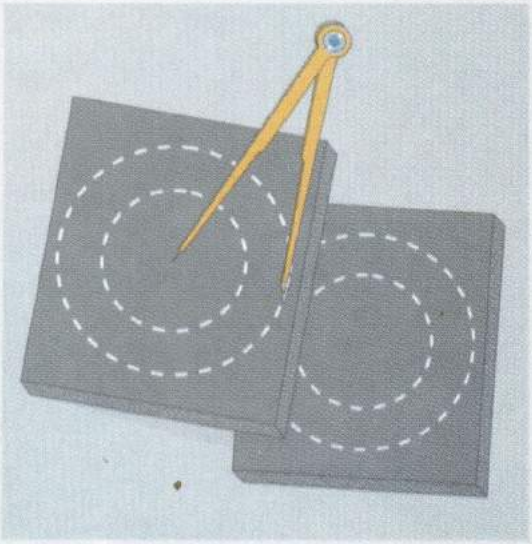


Before starting to insulate the stopcock housing, first fit tubing to the pipes either side of it.



1 Measure the diameter of the insulated pipes and the flanges.

Use these measurements to calculate the relevant radii.

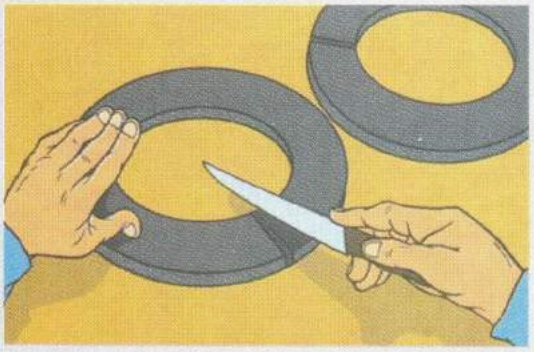


2 After calculating the radii, mark out the respective inner and outer circumferences on two separate squares of ***A-flex*** of the same thickness.

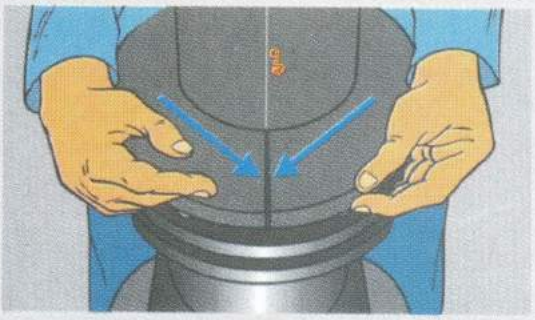
STOPCOCKS

3 Carefully cut out the rings.

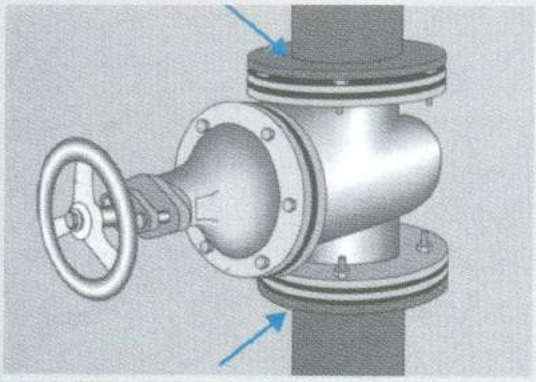
4 Make an opening so that they can be fitted over the pipes.



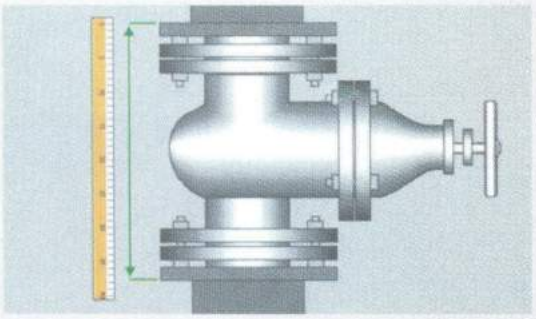
5 Put a ring on the outside of each flange and glue their edges together with ***A-flex*** A-919.



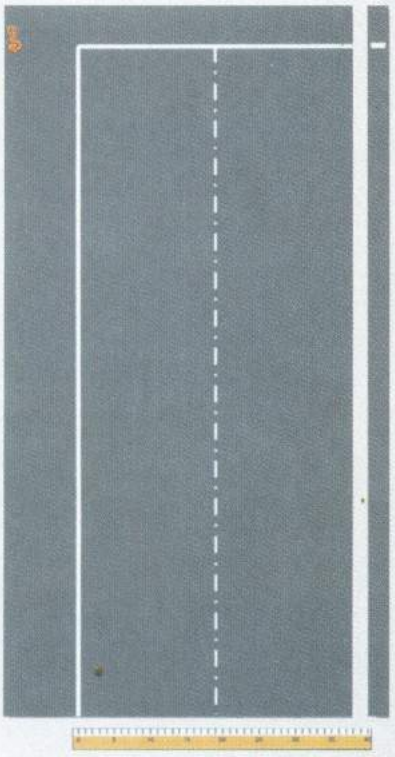
6 Stick the inner surfaces of the rings to the ends of the insulating tubing covering the pipes.



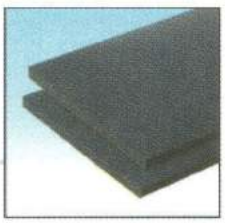
7 Using a strip of insulation of the same thickness, measure the circumference of the rings.



8 Measure the distance between the rings, including the thickness of the rings themselves.

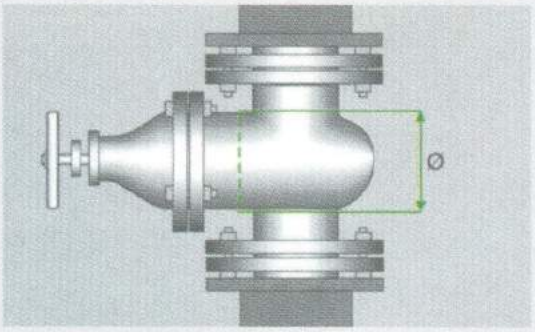


9 Draw the outline of the sleeve section measurements onto a sheet of ***A-flex*** and draw a line down the middle.

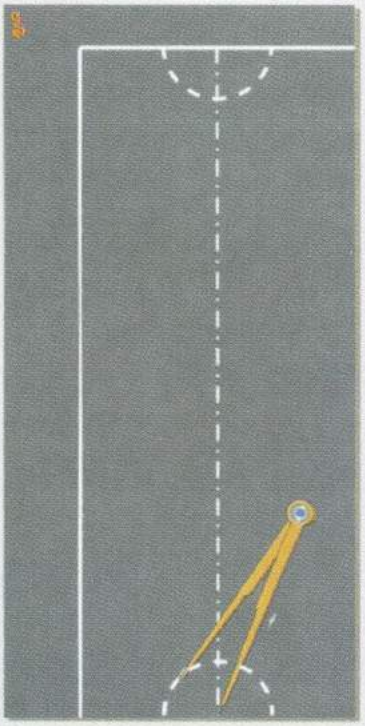


STOPCOCKS

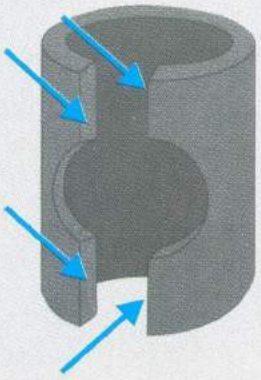
10 Measure the diameter of the stopcock housing.

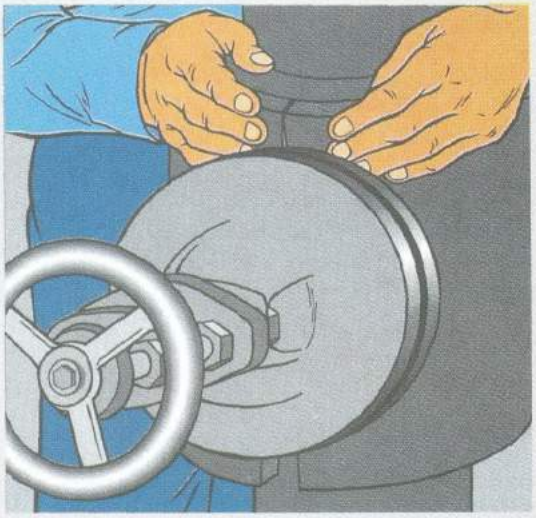


11 Divide the diameter by two to get the radius. Place the compass at the end of the sleeve's centre line and draw a semicircle at each end.

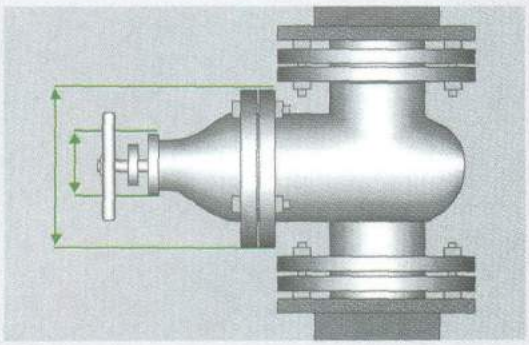


12 If there are any imperfections along the cut edges, smooth them slightly so that they bond precisely.

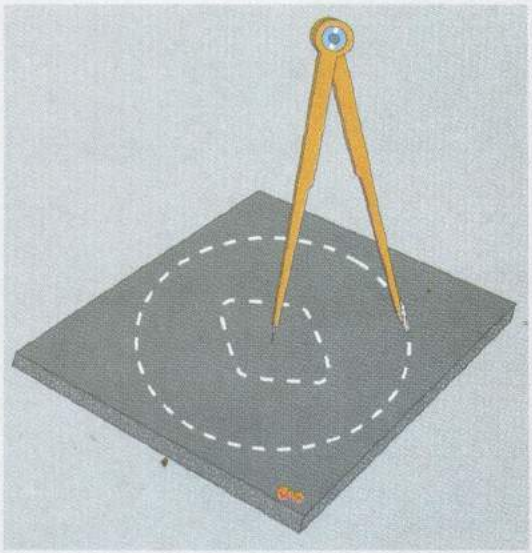




13 Once the glue is dry, fit the sheeting around the rings and stick the edges together.



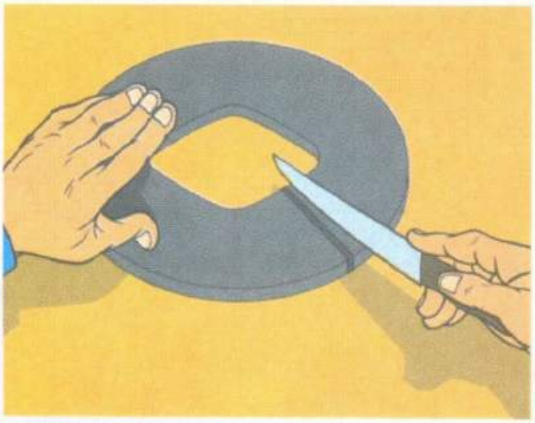
14 Next, calculate the shape of the disc for the front flange. Measure the circumference of the supporting flange and the form of the face plate around which the disc must fit.



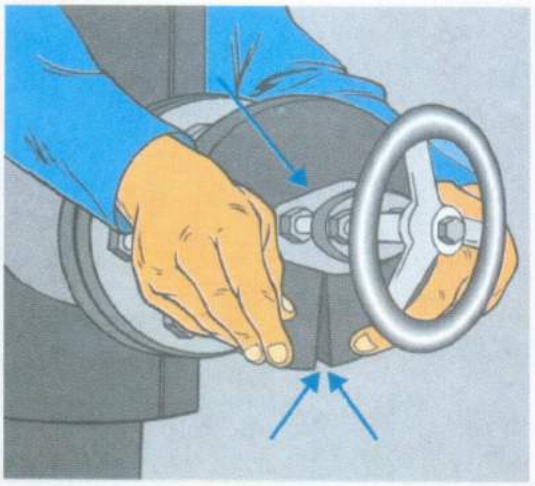
15 Mark out the measurements on a piece of ***A-flex*** and cut the disc out.

STOPCOCKS

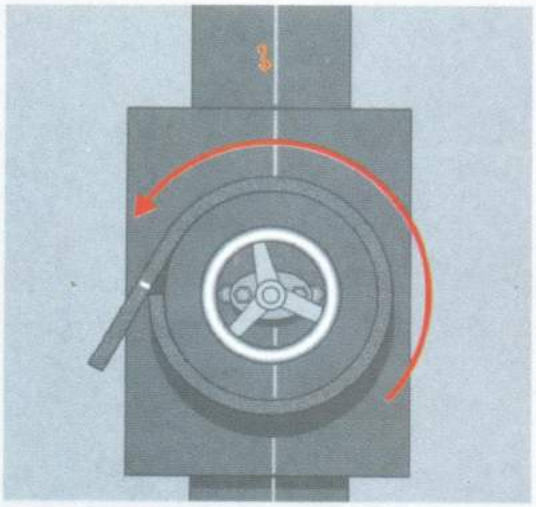
Make an opening so that the disc can be fittled over the face plate 16

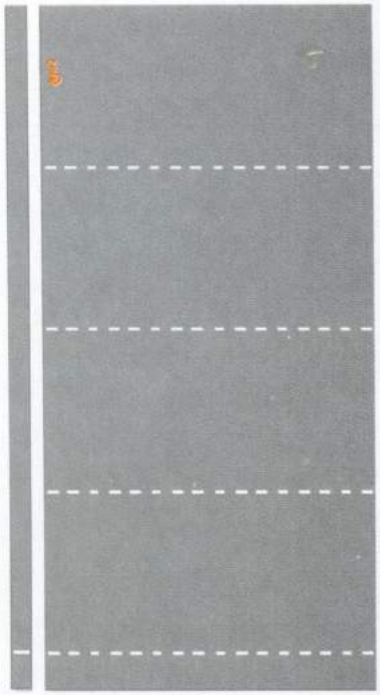


Position the disc and stick the edges together with ***A-flex*** A-919 Make sure to stick the inside edges to the face plate, too. 17

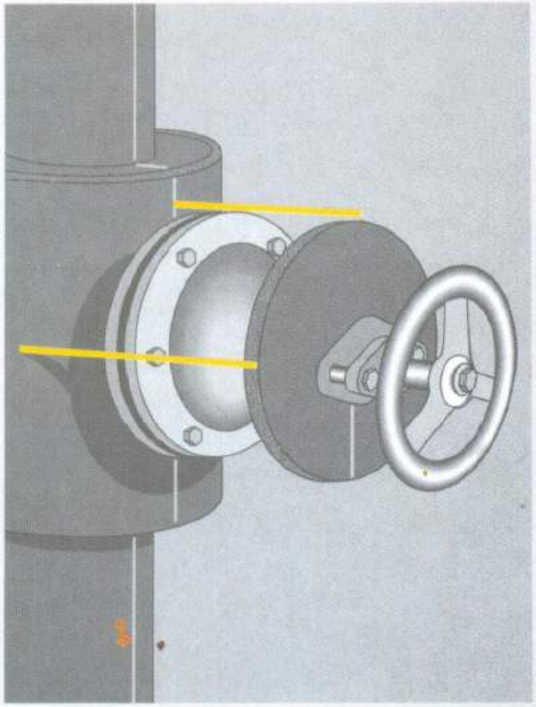


Once it is in position, measure the circumference of the disc. 18





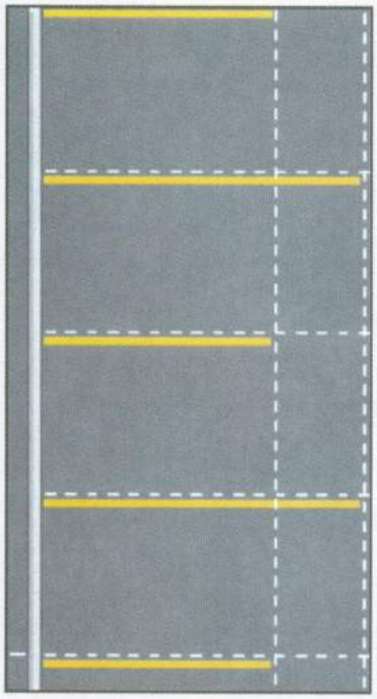
19 Mark the measurement out on a piece of ***A-flex*** of the same thickness and divide its length into four equal parts.



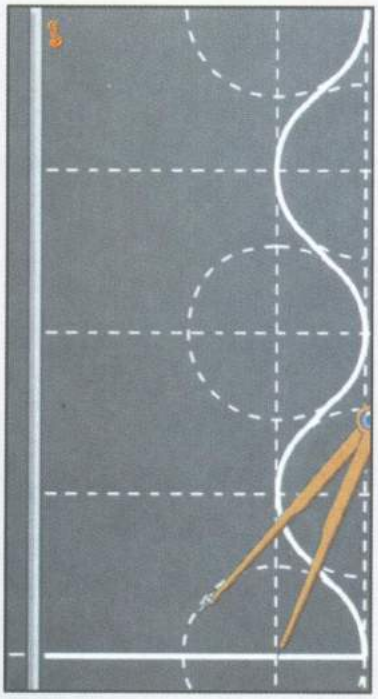
20 Measure the distance between the disc and the existing lagging at its nearest and further points.

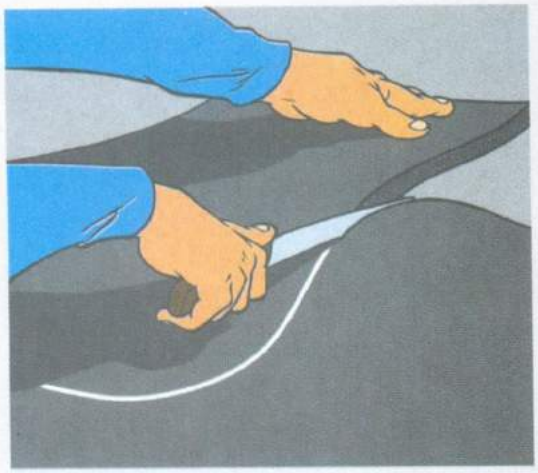
STOPCOCKS

21 Mark the two different measurements on the dividing lines of the tracing, as illustrated, then draw the intersecting lines from one extremity of the shape to the other.

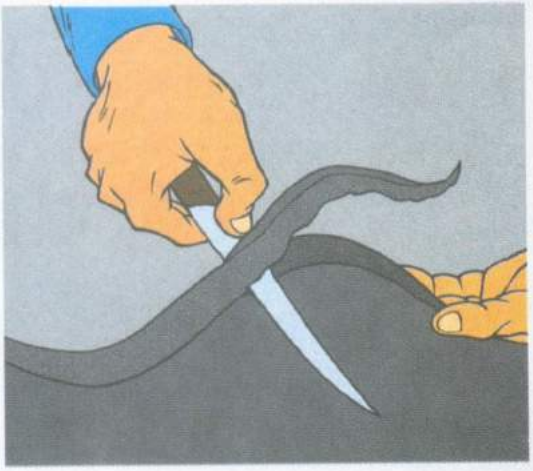


22 Using the difference in the two lengths as a radius, draw circles around the ends of the lines. Using the arcs of the circles, draw a continuous line linking them up, as illustrated.

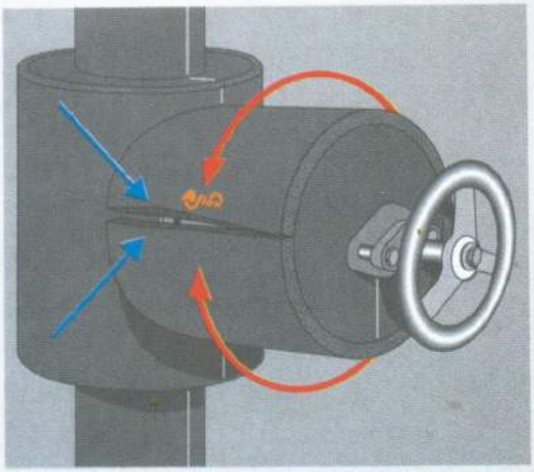




23 Carefully cut along the line.



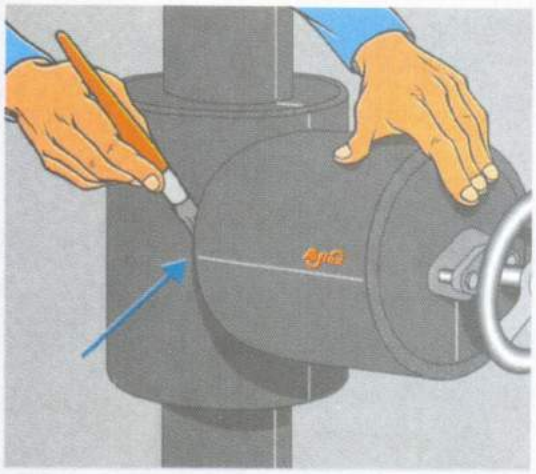
24 Chamfer the edges of the upper, convex curves towards the ***A-flex***'s inner surface.



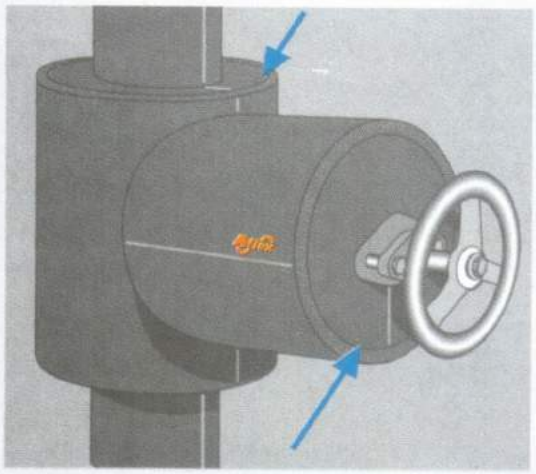
25 Glue the leading, straight edges, let them dry, then fit the resulting sleeve around the disc.

STOPCOCKS

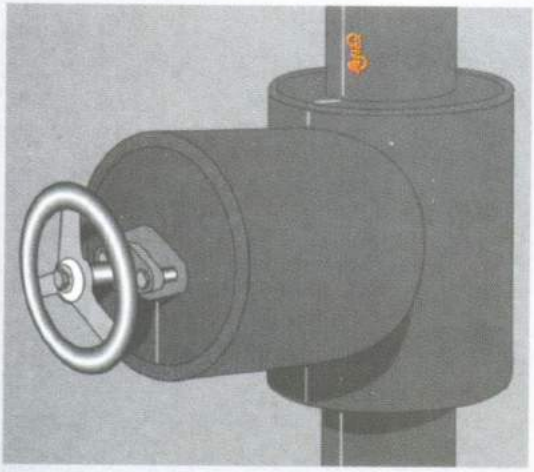
Stick the sleeve onto the insulation around the main stopcock housing using ***A-flex*** A-919. **26**

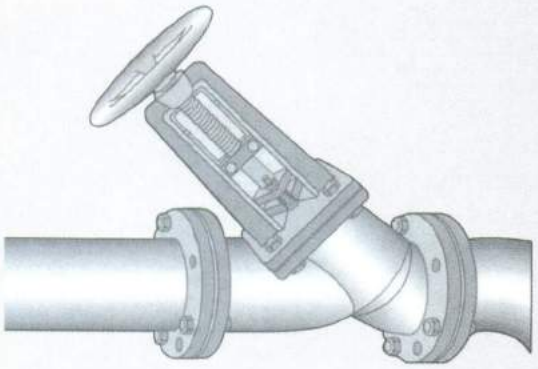


Check the various parts which haven't been stuck together yet. Use a brush to insert glue between the surfaces to be stuck together and press them together. **27**

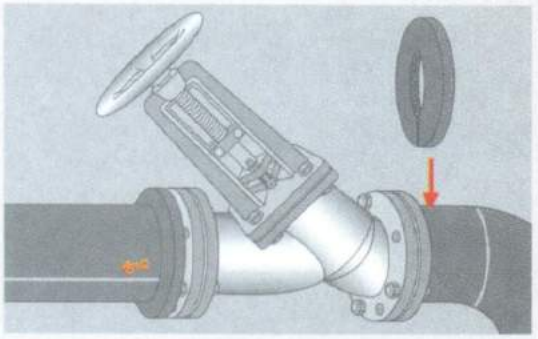


The stopcock is now completely sealed. **28**

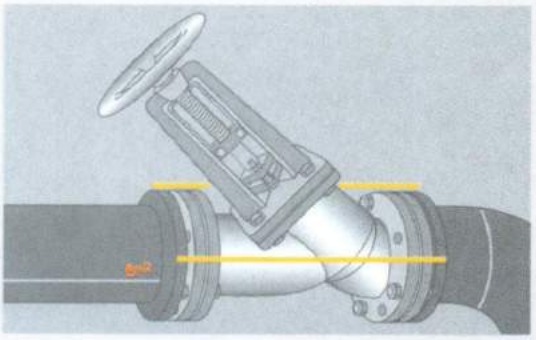




Before insulating an angled stopcock, first lag the pipes either side of the flanges.



1 Following the same procedure as on page 57 (insulating flanges), make two rings of ***A-flex*** and fit them over the tubing next to the flanges.

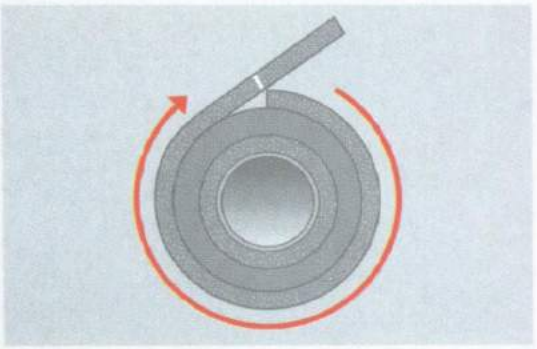


2 Measure the distance between the two ***A-flex*** rings, including the material itself, and the distance between each ring and the stopcock housing.

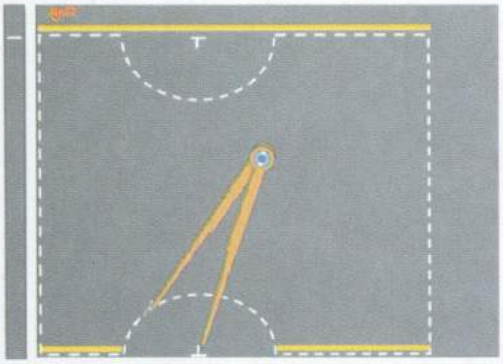
3 Measure the diameter of the base of the stopcock housing. Use this to calculate the radius needed to draw the circumference in point 5.

ANGLED STOPCOCKS

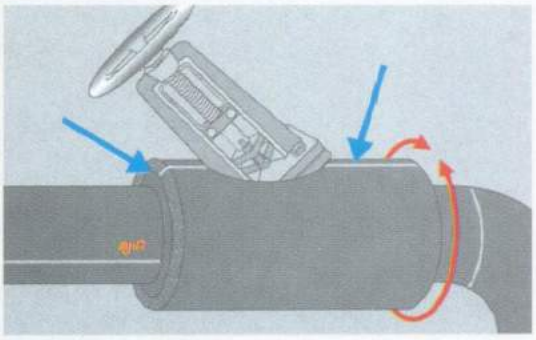
Measure the circumference of the rings. 4



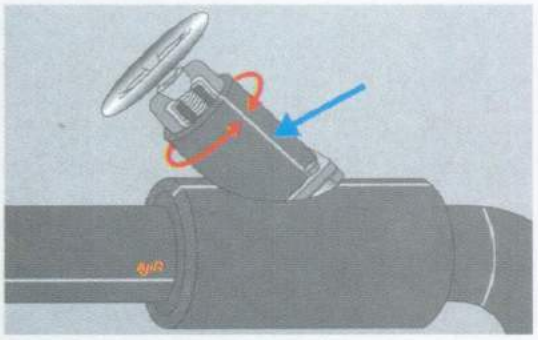
Mark the measurements of the rings' circumference out on a sheet of ***A-flex*** (figure 4), along with the semicircles for the base of the housing (figure 3) positioned along the length of the sleeve according to the measurements taken in figure 2. 5

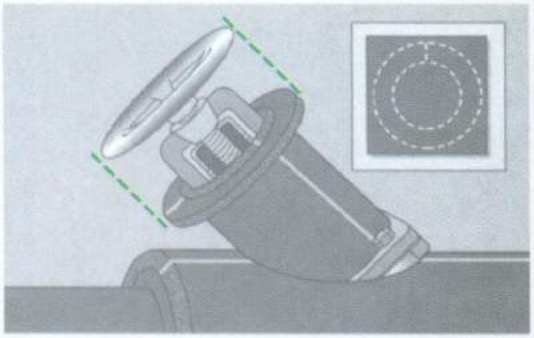


After cutting the piece out, wrap in around the rings to seal the central stopcock housing, then stick the edges together using ***A-flex*** A-919. 6

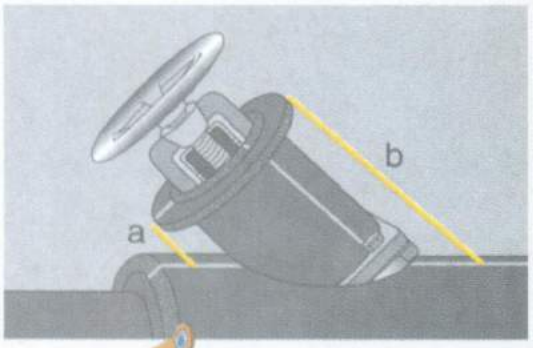


Cut out a second sleeve section to fit around the stopcock mechanism. 7

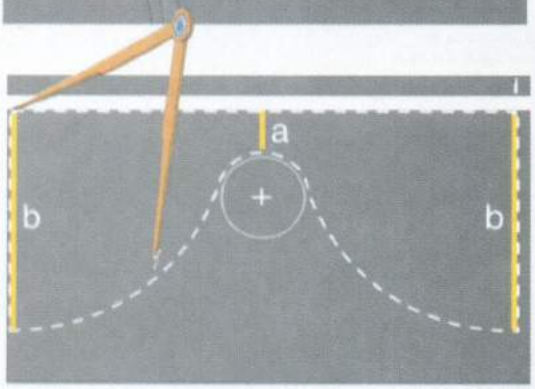




8 Cut out a ring of ***A-flex*** the size of the stopcock wheel. The inner diameter should be the same as the outer circumference of the sleeve already attached.



9 Measure the distance between the ring and main housing insulation at the two points, **a** and **b**.

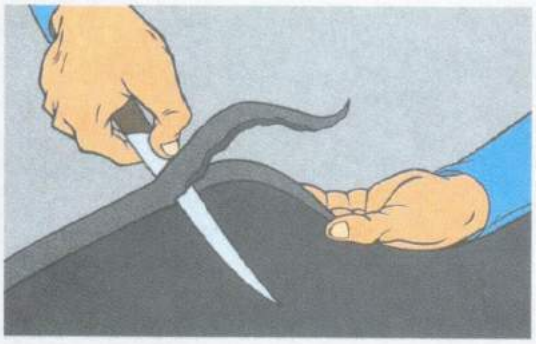


10 Draw the shape of the sleeve on a A-flex sheet, using a compass and the measurements taken. The reference circle in the middle has a radius equivalent to a quarter of the diameter of the stopcock housing already insulated (see figure 6).

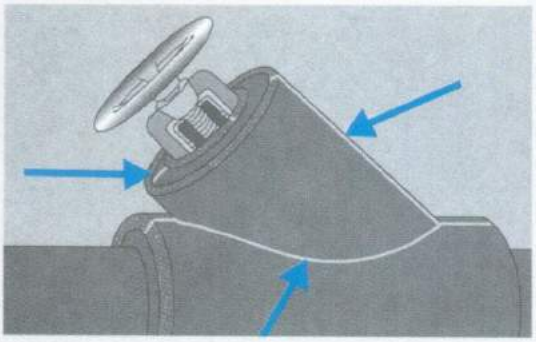
11 Join the two semicircles and cut along the line.

ANGLED STOPCOCKS

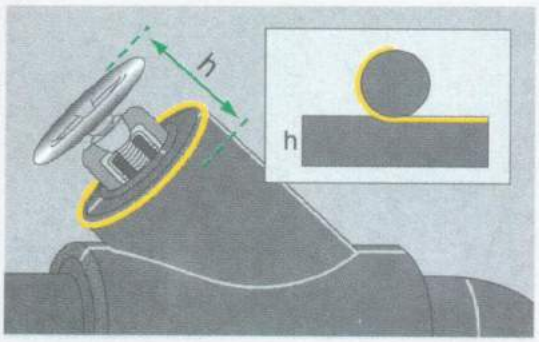
12 Chamfer the curved edge towards the inner surface.



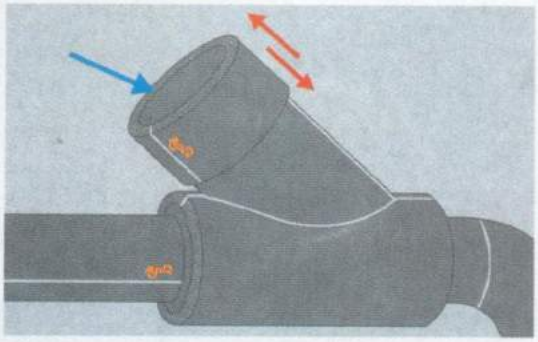
13 Attach the insulation material around the ring and glue all the surfaces it comes into contact with.



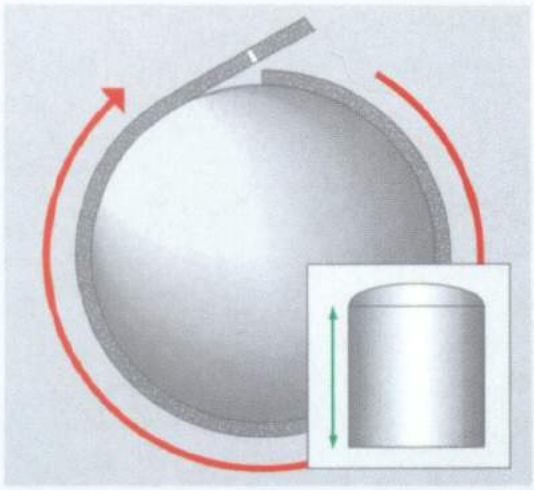
14 Make a cylindrical, removable cap with a strip of ***A-flex.*** The dimensions to use are shown in the figure.



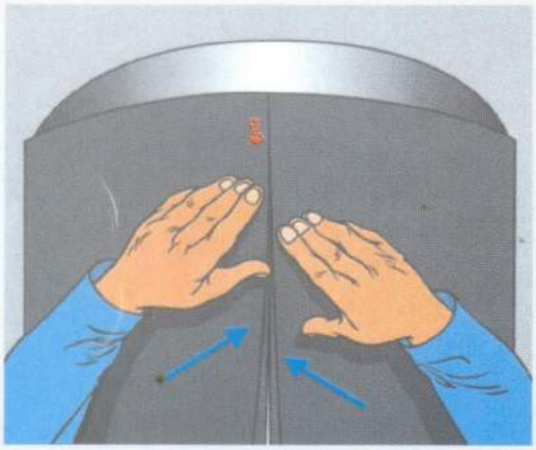
15 The cap should slide on and of easily. Once this is ensured, stick the edges together with ***A-flex*** A-919 glue.



Before insulating, clean the whole surface carefully with thinner.



1 First of all, lag the tank walls. Use the same method as with piping. Measure the circumference of the tank with a strip of ***A-flex***, and measure the height.

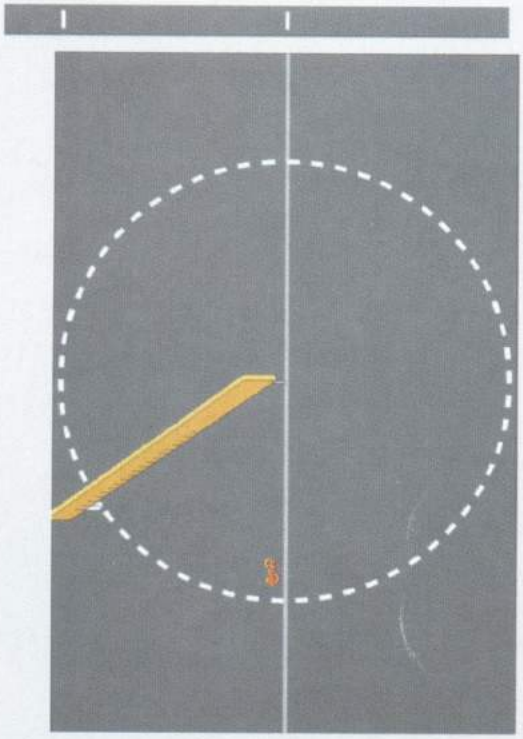


2 Mark the dimensions out on ***A-flex*** sheet and cut out. Spread ***A-flex*** A-919 glue over the entire surface of the sheeting with a flexible spatula and, with a brush, over the walls of the tank. Glue the edges of the sheet, then stick the insulation to the tank, joining the edges together.

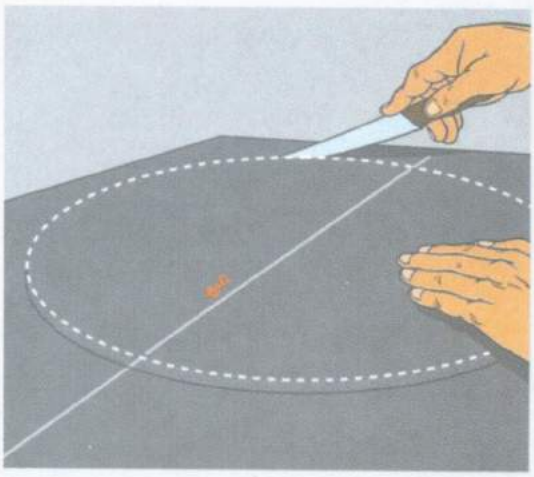
TANKS

To insulate the domed surface, first measure its overall diameter with a strip of the same ***A-flex.*** 3

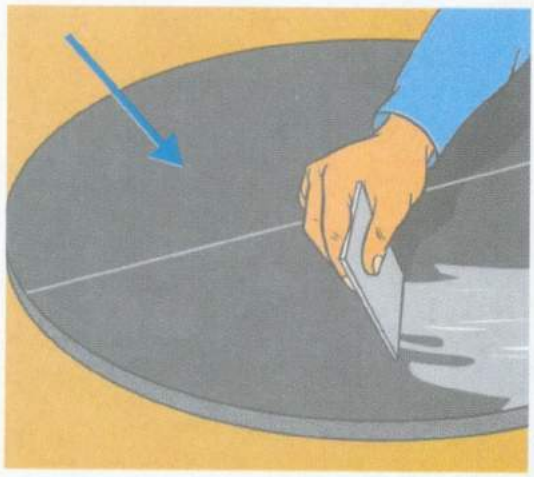
As the area to cover is substantial, ensure you have enough insulating material and glue sheets together if necessary.



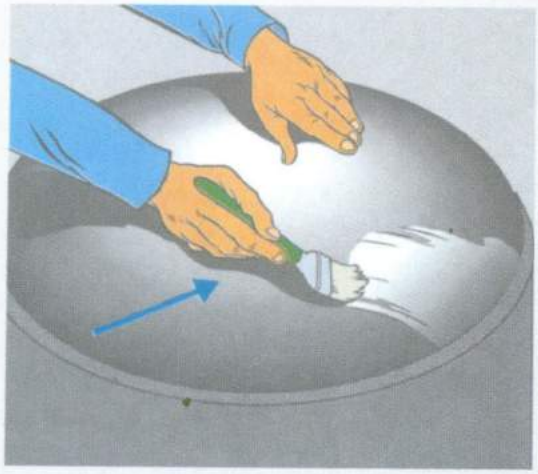
Use the diameter to calculate the radius and draw the complete circumference. 4



5 Cut the circle out accurately.

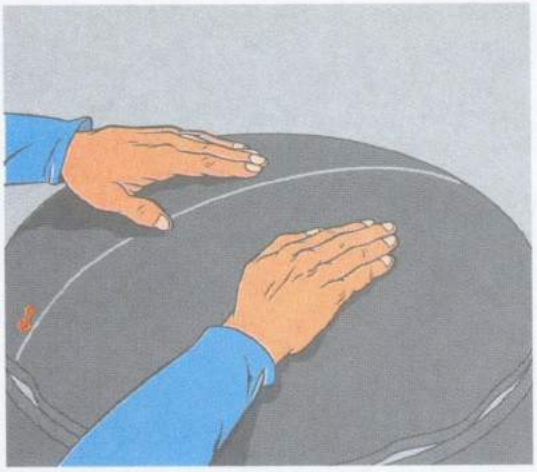


6 Coat the disc ...

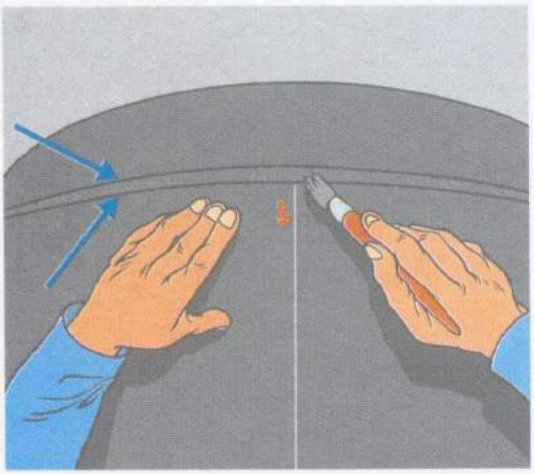


7 ... and the top of the tank with ***A-flex*** A-919 glue.

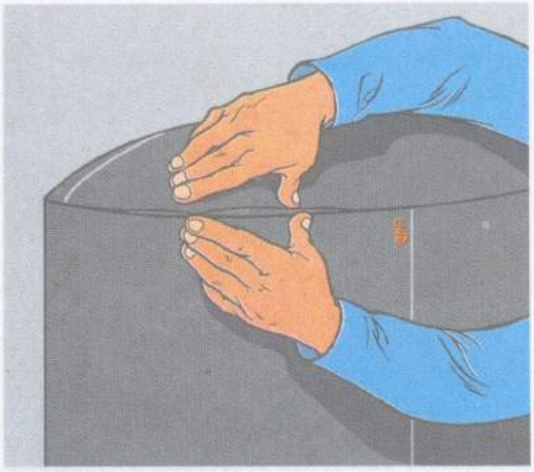
8 Place the ***A-flex*** disc on the top of the tank and press it down firmly from the center outwards to avoid it moving.



9 When the sheet has stuck, glue the edges all the way round.

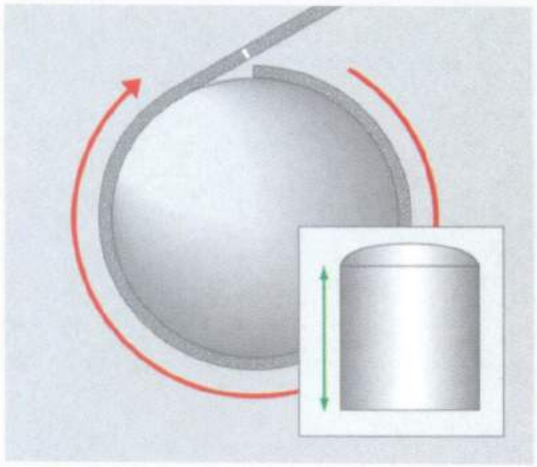


10 Leave to dry, then press firmly together.

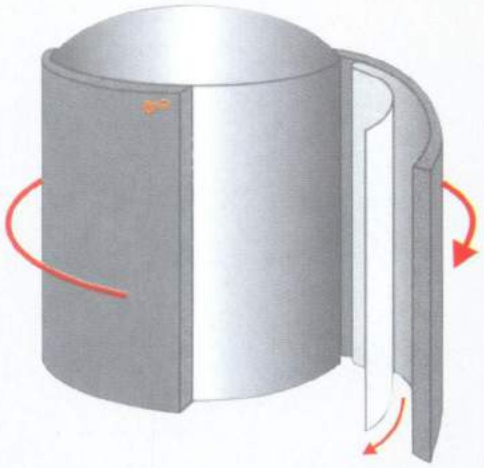


INSULATING TANKS WITH SELF-ADHESIVE A-flex SHEETING

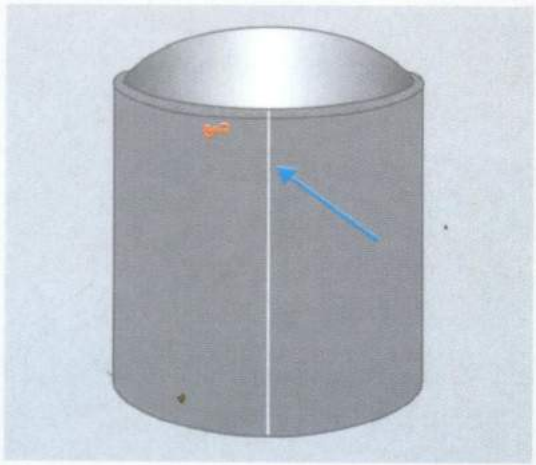
The fitter can choose appropriate size from A-flex self-adhesive sheeting, depending on the particular requirements.



1 Measure the height and circumference. After marking the dimensions on the self-adhesive sheeting. Cut out the portion needed to lag the tank.



2 Fix one end at the starting point and remove the backing paper, while gradually pressing the adhesive sheeting onto the cylindrical surface.



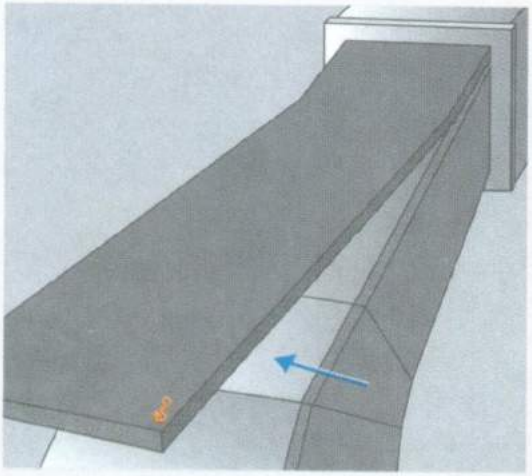
3 When the cylindrical wall is completely covered, join the edges with ***A-flex*** A-919 glue. The domed surface will be insulated following the indications for non self-adhesive sheeting (pages 65, 66). The only difference lies in removing the backing paper.

DUCTINGS

INSULATING DUCTINGS FOR AIR-CONDITIONING SYSTEMS WITH *A-flex* CONTINUES SHEETING

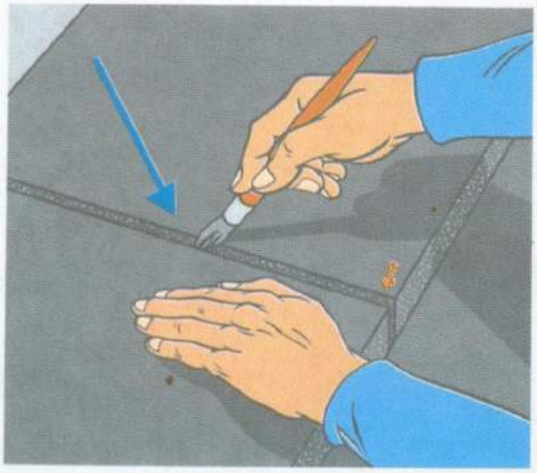
1 Clean the surface to be insulated thoroughly. Insulation is not recommended where there is incrustation or other flaws which could prevent the sheeting from sticking perfectly.

2 Mark the measurements of the surface to be lagged on the sheeting and cut the required size out of the roll.



3 Apply ***A-flex*** A-919 glue to the surface which has to adhere to the conduit, and to the conduit surface.

In the example given, for the best results we recommend first lagging the lower surface of the conduit, then the side walls and lastly the top. This will prevent the penetration of humidity.

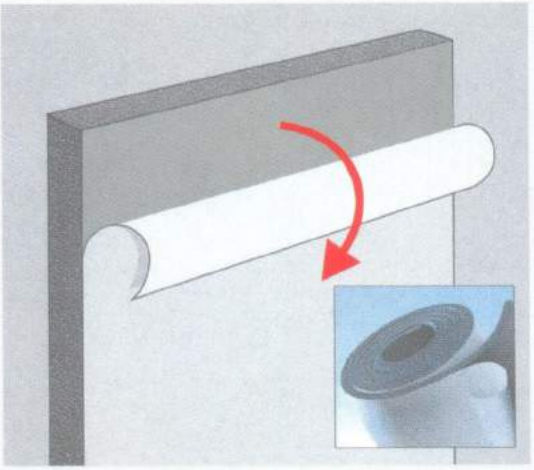


4 Use ***A-flex*** A-919 glue to join the edges together.

DUCTINGS

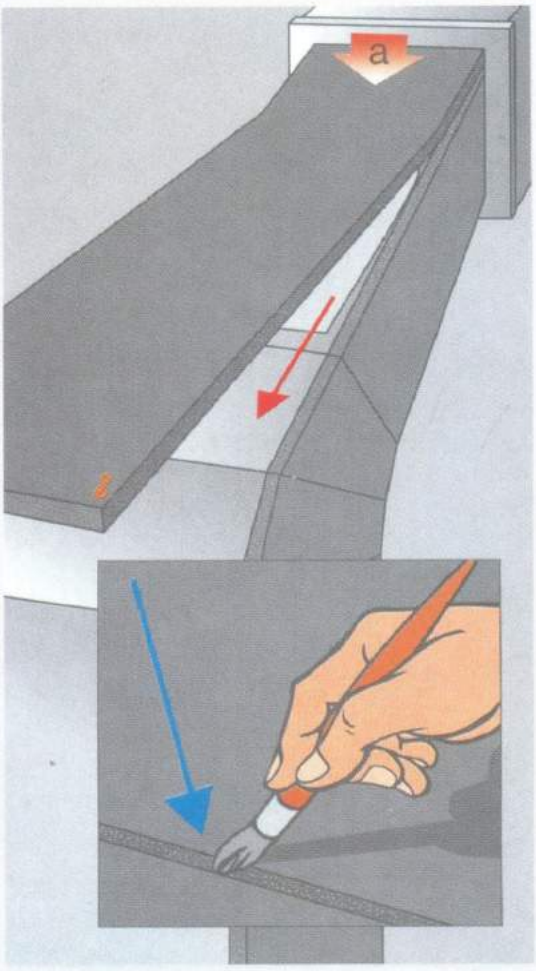
INSULATING DUCTING WITH SELF-ADHESIVE *A-flex* SHEETING

1 Using self-adhesive sheeting, carry out the same cleaning and cutting procedures as indicated for standard sheeting. The backing paper must be removed from the adhesive side before sticking it to the conduit surface.

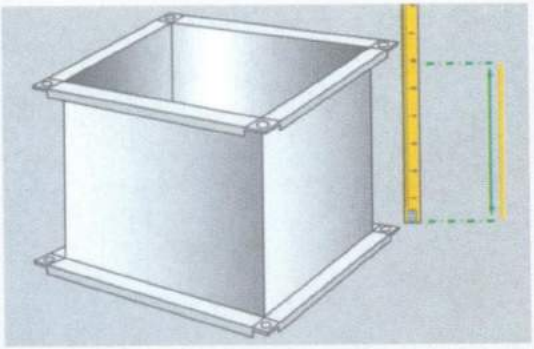


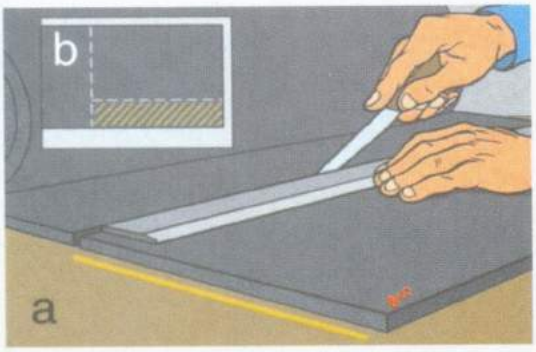
2 Position the uncovered edge at the starting point (a). Pull the backing paper off gradually, pressing the material down as you go.

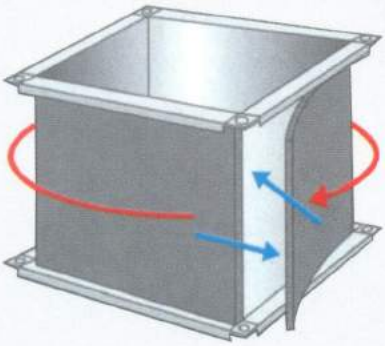
In the example given, for the best results we recommend first lagging the lower surface of the conduit, then the side walls and lastly the top. This will prevent the penetration of humidity.

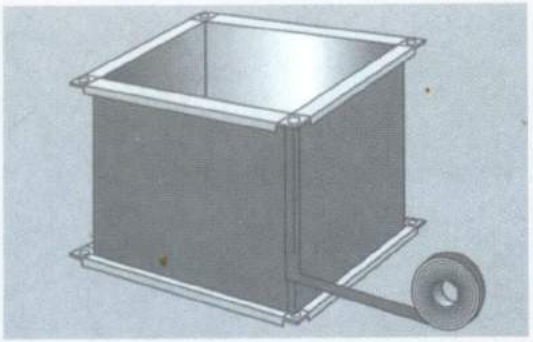


3 Use ***A-flex*** A-919 glue to join the edges together.









INSULATING DUCTING WITH 1000 mm SHEETING

There are considerable advantages in using ***A-flex*** *sheeting for ducting, which has the same height as the sheeting.*

1 Take the measurements of the ducting section to be lagged.

2 Cut the corresponding portion out of the roll.

There is an obvious saving in material by cutting the sheeting along its height (a) rather than along the length of the 1000 mm sheeting (b)

3 Glue the side of the sheeting to be stuck to the conduit and glue the conduit surface, then apply the sheeting, keeping it taut at the corners.

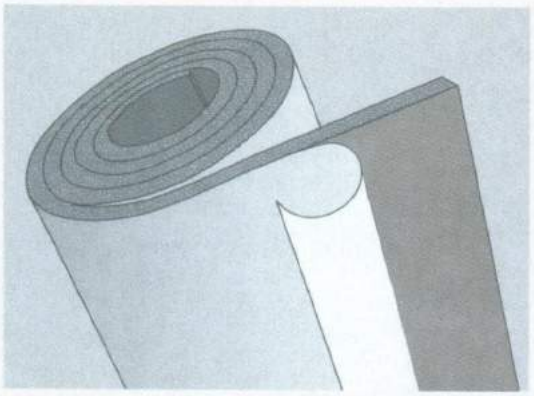
4 Cover the corner where the edges join with adhesive insulating tape.

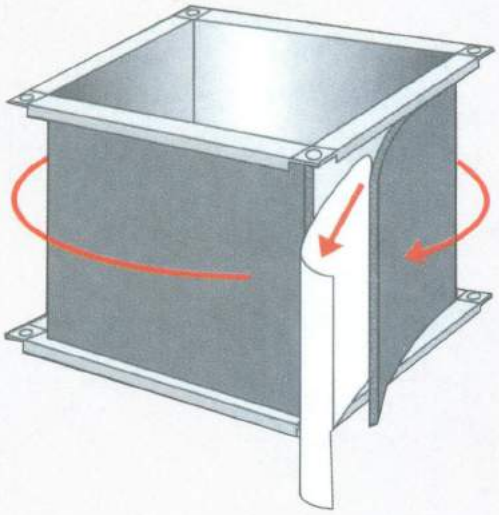
Compared to a similar operation carried out with 1000 mm sheeting, as well as the saving in material, there has only been one cut in the application.

DUCTINGS

INSULATING DUCTING WITH SELF-ADHESIVE *A-flex* SHEETING.

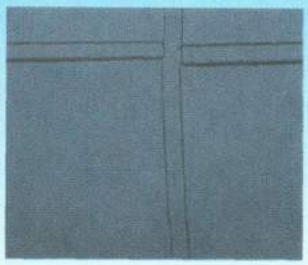
*The use of **A-flex** sheeting is effectively labour - saving as there is no need to glue the surfaces.*





After cutting out the corresponding portion, remove the backing paper from the sticky side while applying the sheeting to the conduit walls.

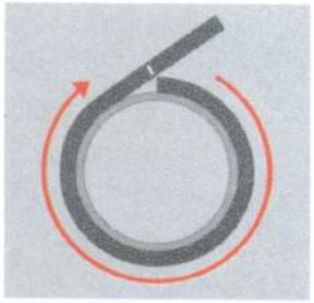
Precut portions of Sheets



Further time-saving can be obtained by using pre-cut portions of ***A-flex*** sheeting, on the market through ducting manufactures, in a single package. these portions, which are prepared by computer methods, give a much more precise cut than can be achieved by hand.

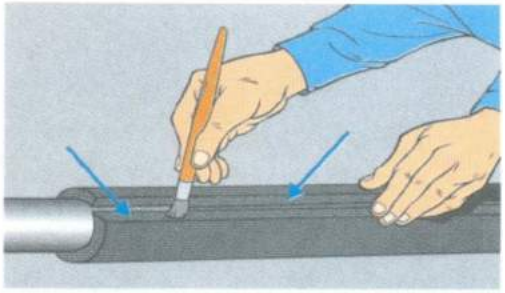
PRACTICAL TIPS

Many tasks encountered when insulating a system are repetitive. We have attempted to provide examples which can help bring optimum results straight away, saving time and effort



MEASURING A CIRCUMFERENCE
The measurement is obtained by using a strip of ***A-flex*** of the same thickness to be used as the insulation. This gives you the measurement of the circumference, including the thickness of the insulating material itself. Do not stretch the strip when encircling the pipe, as this will alter the measurement. Mark the strip with chalk where the two edges overlap.

GLUEING THE EDGES OF A TUBE CUT ALONG ITS LENGTH
To glue the edges, wrap the tube around a larger diameter pipe so that the edges do not overlap and apply the glue. Then slide the tubing over the pipe to be insulated laking care to avoid the edges sticking before the tube is in place.



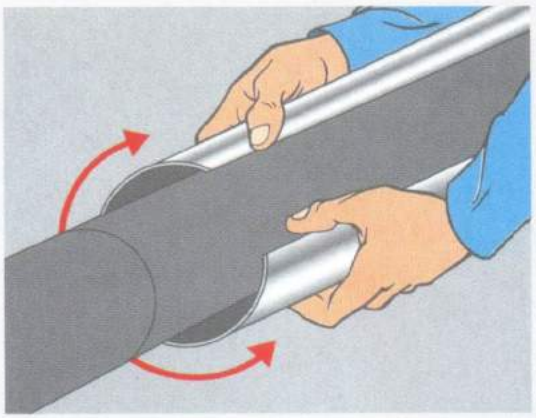
If the tube is not very long, or is not very thick, it can be rolled up and glued. This way, the tube can be quickly and easily applied to the pipe.

GLUEING THE EDGES OF *A-flex* SHEET
When insulating large diameter pipes, sheeting should be cut to fit and both edges glued. For the best results, a thin, even layer of ***A-flex*** A-919 should be applied using a brush with short, hand bristles.

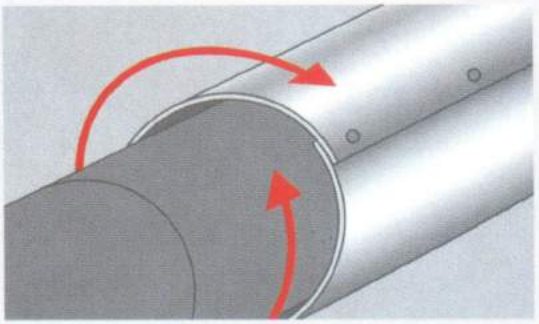
PROTECTING INSULATING TUBING WITH METAL CLADDING SYSTEM

Prepare metal cladding covers of the required diameters and with the number of male/females necessary. The diameter of the cover should be slightly larger than the pipe so it can be easily fitted.

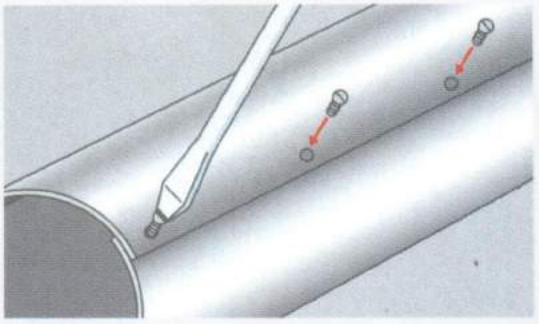
1 Open the cover lengthwise enough to fit it over the piping.



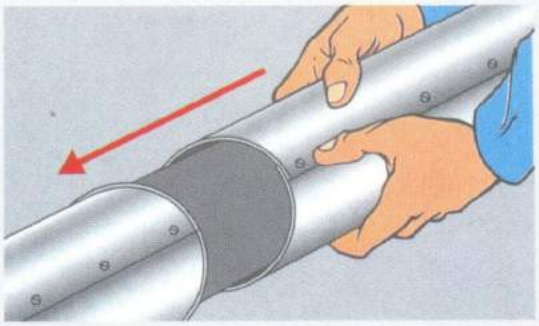
2 Release the cover so the edges close over the piping. The overlapping edges are for fixing.



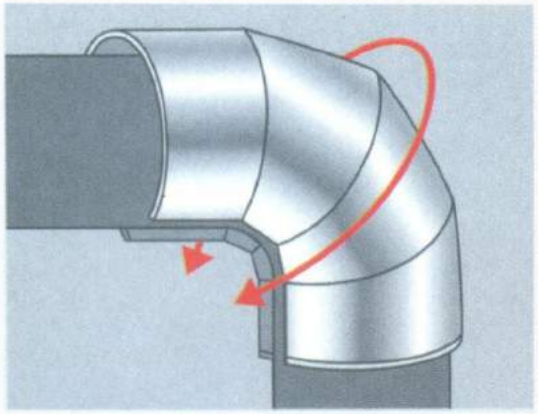
3 Close the edges with short screws in the ready-made holes.



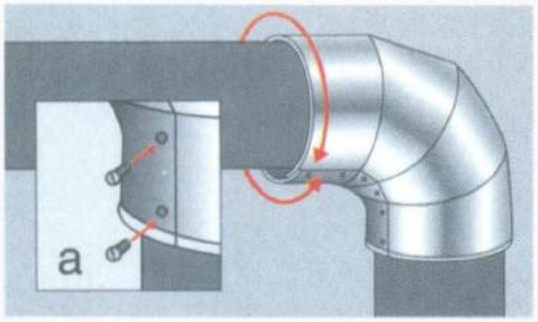
4 Put the next section on and join to the previous section with the male/female edges.



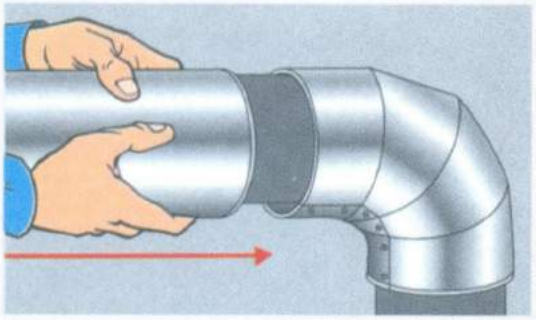
PROTECTING INSULATING BENDS WITH METAL CLADDING



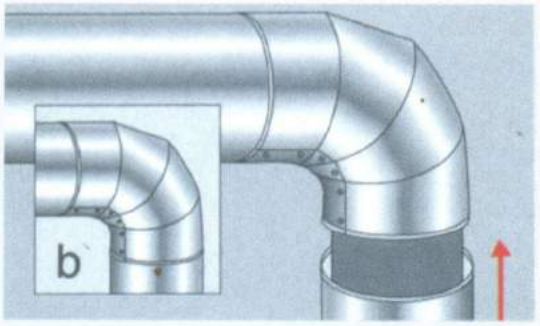
1 Open the bend lengthwise enough to fit it over the piping.



2 Release the bend so it closes over the piping. The overlapping edges are for fixing. Then close the edges with short screws in the ready-made holes (a).



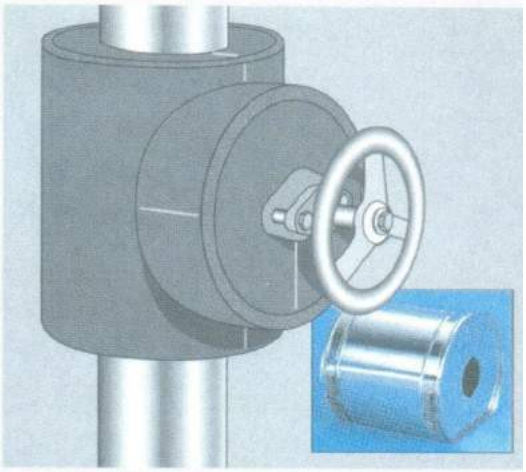
3 Put the next section on and join to the previous section with the male/female edges.



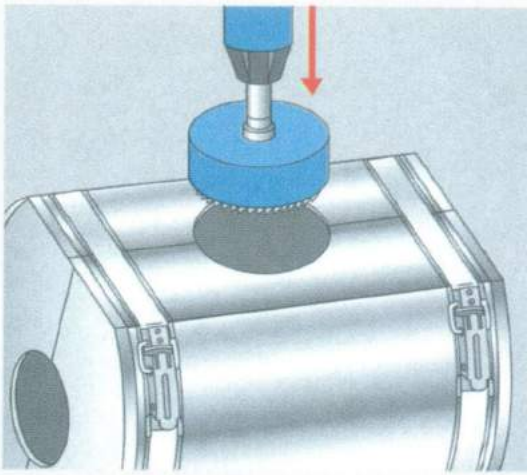
4 Repeat the same operation with the opposite section, completing protection of the bend (b).

PROTECTING BOTH INSULATED AND PROTECTED FLANGES WITH METAL BOXING

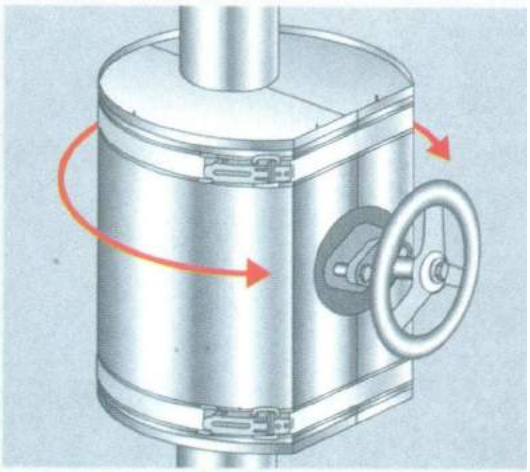
1 Prepare the right size of Metal Box to contain the flange block which has already been insulated.



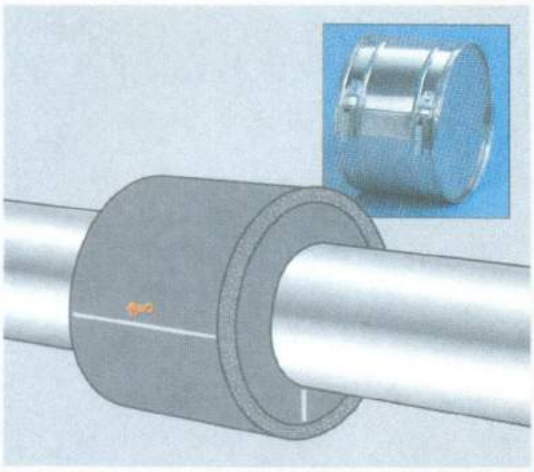
2 Make a hole in the centre of the two circular bases so the insulated piping can go through it.



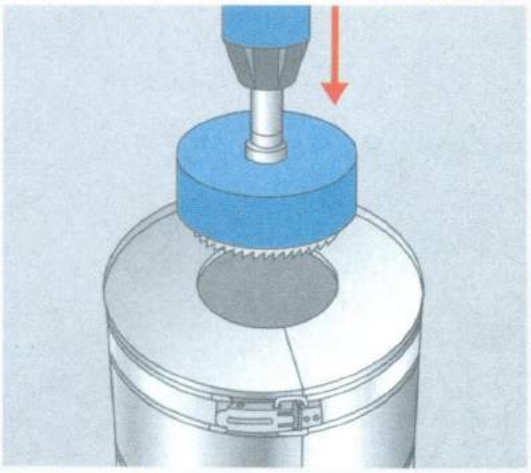
3 Unhook the clamps and separate the metal box. Close the two parts around the flange block and re-hook the clamps.



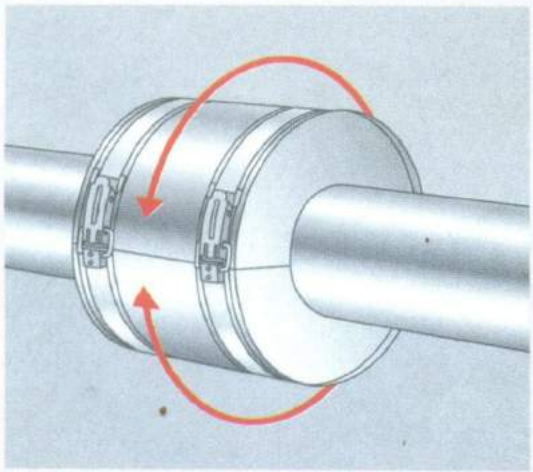
PROTECTING BOTH INSULATE AND PROTECTED FLANGES WITH METAL BOX



1 Prepare the right size box to contain the flange block which has already been insulated.



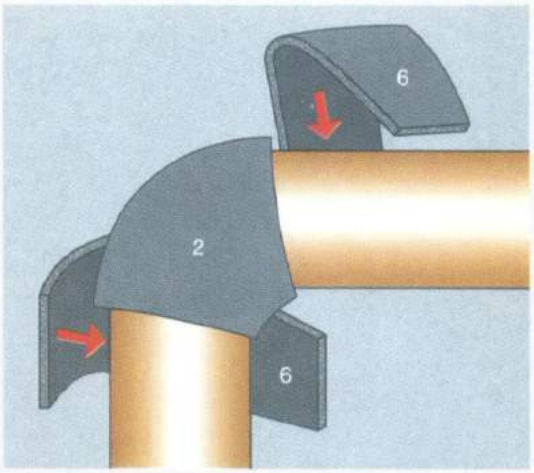
2 Make a hole in the centre of the two circular bases so the insulated piping can go through it.



3 Unhook the clamps and separate the two parts of the metal box. Close the two parts around the flange block and re-hook the clamps.

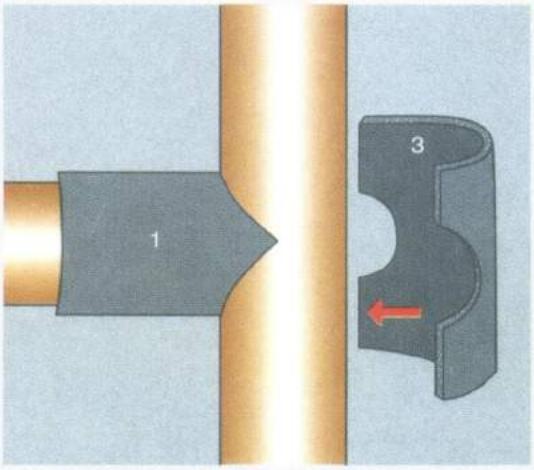
90° BEND

First, apply piece no 2 onto the bend. Then, place the two no 6 pieces with the chamfered sides towards the bend to complete the covering.



90° BRANCHES

Piece no 1 is first applied onto the horizontal part of the piping; next, piece no 3 closes over the branch.



45° BRANCH

Piece no 4 is applied onto the oblique arm of the branch. Piece no 5 completes the lagging.