



THERMAFLEX®

Insulation Installation Manual



Installation Manual | EN 2026

Disclaimer:

The information in this document is based on our current state of technical knowledge. Due to the wide range of possible factors influencing installation conditions and product combinations, the installer is responsible for verifying the suitability and applicability of the information for each specific application.

For current technical product specifications, please refer to the relevant product documentation and datasheets.

We recognise that each project may have unique requirements. For project-specific support or additional technical guidance, including assistance with thickness selection, please contact your local Thermaflex representative or email us at: **international@thermaflex.com**

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General Information Manual

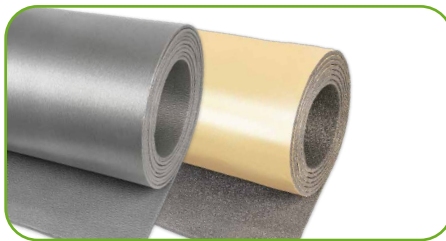
General

Thermaflex insulation products are revolutionary solutions, tackling all challenges of efficient and sustainable building design. Our full range of products offers a complete insulation solution for domestic hot and cold water as well as chilled water and refrigeration applications, securing safety, and long-term performance, when installed in accordance with this manual and the relevant product datasheets.

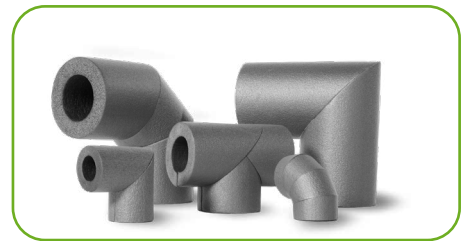
Product range



ThermaSmart® PRO tubes



ThermaSmart® PRO sheets



Prefabricated Components
(ThermaSmart® PRO,
ThermaEco FRZ and ZZ).



ThermaSmart® ENEV tube



ThermaEco FRZ HF tube



ThermaEco FRZ sheet



ThermaEco ZZ tube

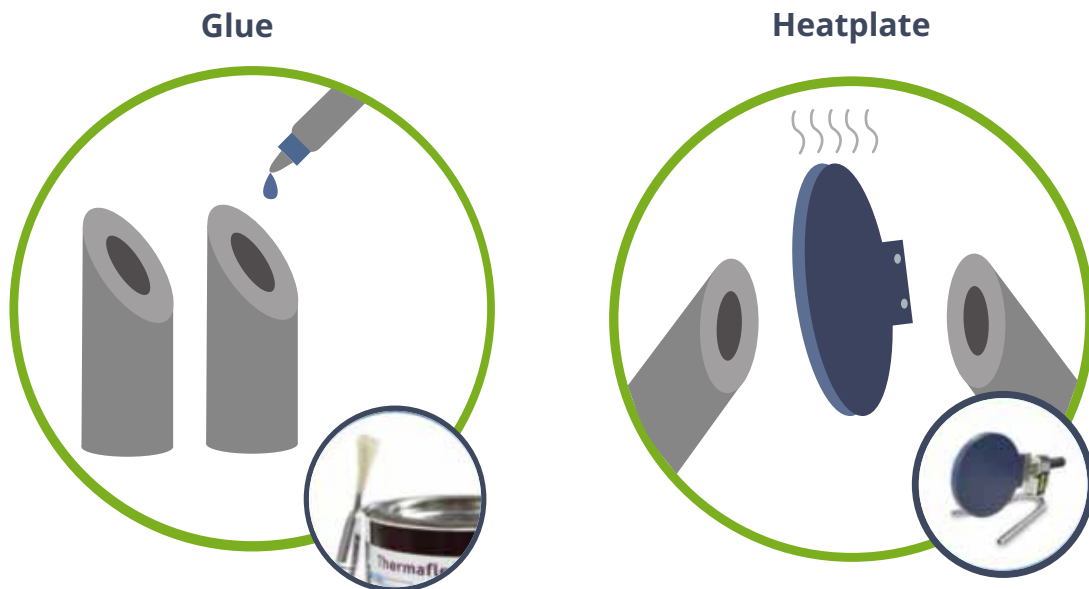


Tools & Accessories

For further information about our product range visit our website: thermaflex.com or contact us directly: international@thermaflex.com

Joining techniques

We offer two main joining techniques to seal off your system! These include our long-proven ThermaGlue as well as our heatplate tool for tubular prefabrications to simply and swiftly prefab-it-yourself, on-site or in your workshop.



Both techniques can be used with all products mentioned on p. 6.

Design & preparation

Good design and preparation are 90% of the success when it comes to high-quality installation with high, secure and sustainable performance.

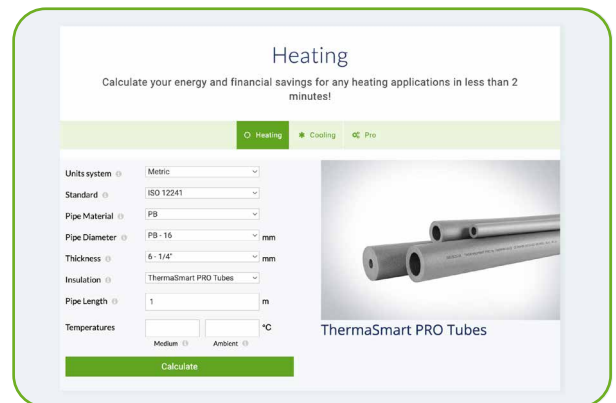
The right product

1. Insulation Calculator

Use our online “Insulation Calculator” to find the insulation thickness you need, and discover the future energy savings straight away! Good design and preparation are essential for high-quality installation with reliable and sustainable.

Calculation tool

<https://thermaflex.com/calculator/>

The image shows a web-based calculator interface for heating applications. At the top, it says "Heating" and "Calculate your energy and financial savings for any heating applications in less than 2 minutes!". Below this are three tabs: "Heating" (selected), "Cooling", and "Pro". The form includes several dropdown menus and input fields: "Units system" (Metric), "Standard" (ISO 12241), "Pipe Material" (PB), "Pipe Diameter" (PB-16), "Thickness" (6-1/4"), "Insulation" (ThermaSmart PRO Tubes), "Pipe Length" (1), and "Temperatures" (Medium and Ambient). A green "Calculate" button is at the bottom. To the right of the form is an image of two grey pipes labeled "ThermaSmart PRO Tubes".

Important!

Regulations differ from country to country as well as between applications. Contact your local Thermaflex distributor for more information.

2. Select the right product

The right choice of products and sizes is essential for perfect-fit insulation in light of its tolerances. For technical specifications, measures and tolerances, please refer to our technical product datasheets.

Right quantities

Do not forget to allow quantity for offcuts, compression joining as well as fitting insulation.

Tip!

You can also contact your local insulation specialist to help you choose the right products, thicknesses, and quantities for your project.



Choose the method

How you deal with the on-site insulation of connections and fittings has a great influence on the speed and quality of installation.

For tubular insulation, we have the following options:

Glue



Ease & time savings

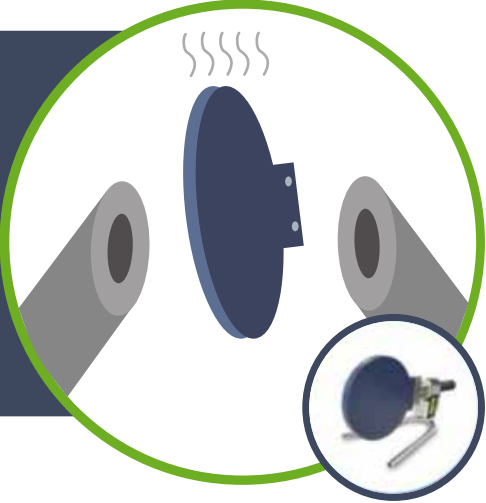
Reliability

Health

Sustainability

Prefabrication with glue technology

Heatplate



Ease & time savings

Reliability

Health

Sustainability

Prefabrication with polyfusion technology (heatplate)

Ready-made prefabs



Ease & time savings

Reliability

Health

Sustainability

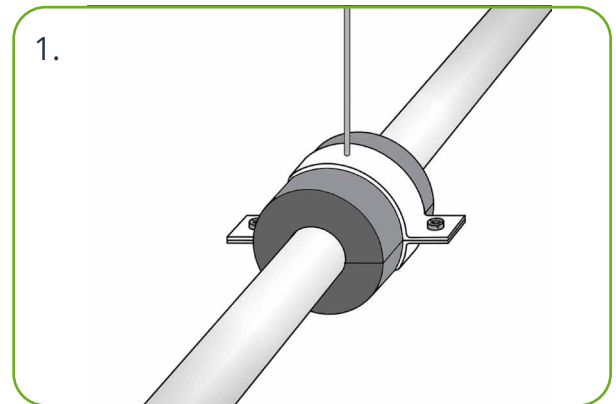
Ready-made prefabricated components

Pipe fixation

The choice of the pipe fixation system and the insulation thickness greatly affects the spatial design during the pipework installation. Bracket spacing depends on the pipe system!

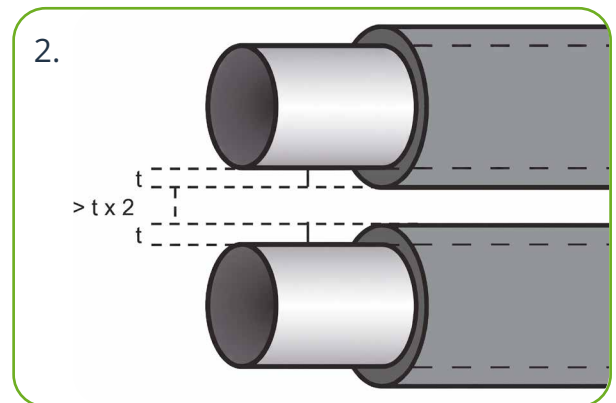
1. Thermaflex pipe hanger

Pre-insulated pipe hangers are installed together with the pipes. So designers / project planners must ensure selecting the right pipe hangers in the design process. That is the only way to guarantee that the right components are available on-site for the pipework installation.



2. Ensure space between insulated pipes

When it comes to chilled water lines or refrigeration systems, space should be allowed between the insulated system components to ensure free convection. We recommend using at least twice the insulation wall thickness as an additional safety measure against condensation.



t Wall thickness of the insulation material.

Important!

For chilled water lines and refrigeration systems we recommend Thermaflex pipe hangers only to guarantee a vapour-tight insulated system without thermal bridges.

Outdoor application

All Thermaflex insulation material is robust. However, to ensure this resistance in outdoor applications, when exposed to various weather conditions and ultraviolet radiation, we recommend applying a protective layer to the insulation.

1. Protective layer

The insulation material must be either painted, covered or clad.

Cladding

In order to ensure a permanent resistance of Thermaflex insulation to weather conditions and ultraviolet radiation, we recommend a cladding solution, such as aluminium cladding.

UV-resistant paint

An easier, yet less permanent option is the use of a UV-resistant paint suitable for insulation materials. In this case, the outdoor insulation system must be inspected on a yearly basis. Repainting is necessary depending on the environmental conditions.

For information regarding the number of layers and waiting times, please refer to the label or technical datasheet. We recommend at least 2-3 layers, depending on the local climate, and a paint with an elasticity between 350 - 400%.

Important!

Apply paint only after using ThermaGlue, and leave at least 24 hours in between.

2. Place of installation

Outdoors, the insulation material must be protected against direct sunlight. Indoors, take special care when installing behind windows, as reflection and concentrated light can overheat the insulation.

Avoid strong reflection or magnifying conditions to prevent overheating of the material above the melting point.

Important!

Do not expose the connections of the insulation system to direct sunlight after joining!



Cladding



UV-resistant paint



UV-resistant paint is not applicable for ThermaCompact.



Outdoors



Indoors

Training for Professionals

“PRO” does not only stand for professional materials, but also professional skills. Thermaflex offers training and certification for insulation professionals to ensure ease of handling and installation efficiency in upcoming projects.

Your benefits

- Become well-equipped for Thermaflex projects.
- Increase the quality of installation.
- Investment in the insulation skills of your employees.



Transport, storage & handling

1. Transport

- Parcel service.
- Truck transport.
- Container transport.
- ThermaGlue and liquid cleaner may require an MSDS and SDS.

Tip!

We are happy to help you with efficient packaging and loading. Just get in touch with your local Thermaflex office!



2. Handling

- Avoid direct sunlight on unpacked Thermaflex products.
- Do not wrap the insulation in foil. Only special UV-stable foil is suitable for Thermaflex insulation.
- Open boxes at perforation and lay them down for easier material access.



3. Storage conditions

- Store on pallets.
- Do not expose to sunlight and rain.
- Store in a ventilated warehouse.
- Do not store close to heat sources.
- Keep clean.
- Recommended storage temperature -20°C to +50°C.
- Cardboard boxes – tubular insulation:
 - For longer periods, store in an upright position.
- Sheet rolls:
 - Store the rolls in an upright position. Avoid compressing of the lower layers.

Accessories:

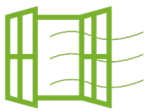
- Respect datasheets and description on packaging.



Environment, health and safety

Safety first!

Insulation works should only be performed by skilled professionals who have the required training, experience and knowledge of relevant regulations. Persons with the corresponding qualification should be informed about the job safety requirements and must have read and understood the installation manual before carrying out the assigned work. The equipment used for the job must meet all local regulations, must be clean and fully functioning.



Ventilation

Make sure to have good ventilation when you are working with glue joining technology in confined spaces.



Safety regulations

Respect the relevant safety regulations for the workspace.



National laws

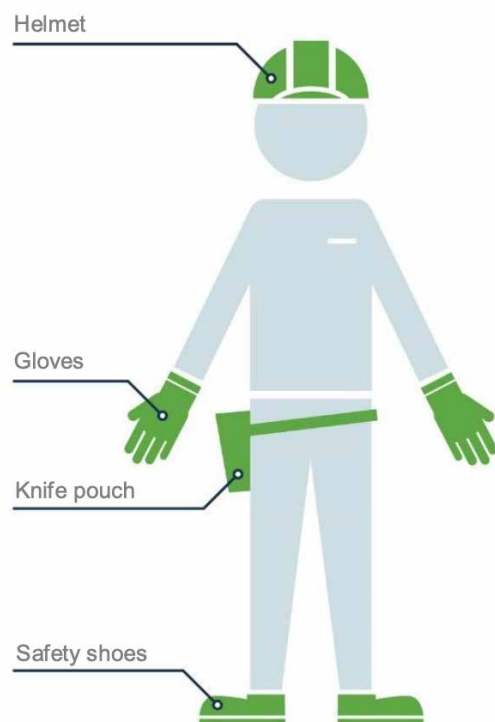
Make sure all tools used on-site meet national regulations.



Certificate

Only instructed people should carry out installation works to avoid accidents.

Recommended workwear:

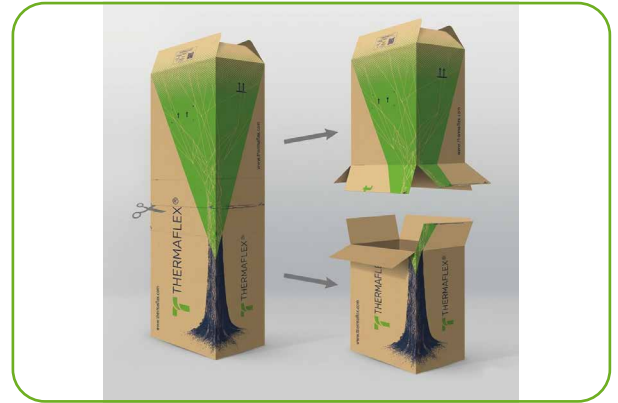


Taking care of energy and the environment

As the first Cradle to Cradle Certified® technical insulation materials, ThermaSmart® PRO and ThermaEco fully comply with our vision of a circular economy, and are 100% recyclable upon reclaim. This makes them an ideal solution for green building projects. You can check out a precise breakdown of ThermaSmart® PRO for LEED and BREEAM specifications on our website as well as the Cradle to Cradle Certified® Certification and Environmental Product Declarations (EPD).

1. Reclaim

We believe in a circular economy. That is why in most countries we now have a Reclaim programme, with the aim to close our product cycles, and eliminate waste wherever possible. Our specially designed ThermaSmartBox allows the repackaging of residual insulation waste, such as cut-offs, which will be fully recycled in our production process to serve its original purpose.



2. Save material

- Save glue by performing polyfusion welding for tube prefabrication - the most environmentally friendly and secure joining technique.
- Save glue for sheet insulation due to the stability of the product – no full surface bonding required for all diameters.
- Ready-made prefabricated parts.



Save glue



Save time

Installation

For a professional high-quality installation, the following installation conditions must be respected.

Installation conditions



System decommissioned

The system must be decommissioned. The pipe must be at ambient temperature (above dew point for cooling). Heating system is cooled down completely.



Windy conditions

Installation should not be carried out in windy conditions.



Ambient temperature

+5 °C to 40°C



Clean

Clean working environment.



Safety regulations

Clear local safety regulations.



Ventilation

When working in confined space ventilation must be provided.

Important!

An insulated system may only be used 24 hours after the work has been carried out and the ThermaGlue is at full strength.

Installation steps

The following instructions are recommendations and may vary with different pipe materials and fittings.

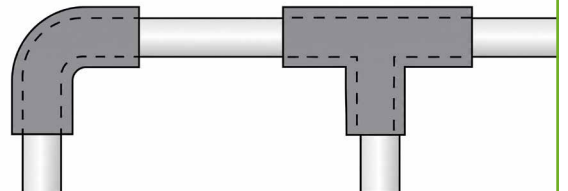
1. Insulate bends & T-pieces

- Install the insulation on the bends and T-pieces.

Tip!

For tubular insulation connections, end pieces can be made longer to speed up installation.

1.



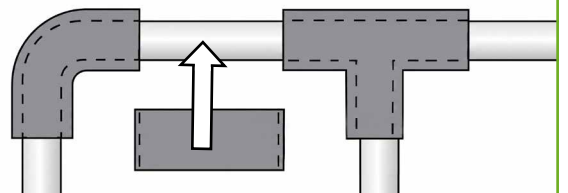
2. Insulate straight length & remaining items

- Insulate straight lengths.
- Insulate remaining pipework / ventilation system elements such as reducers.

Important!

Allow excess length for thermal expansion / contraction at joints to ensure compression joining.

2.

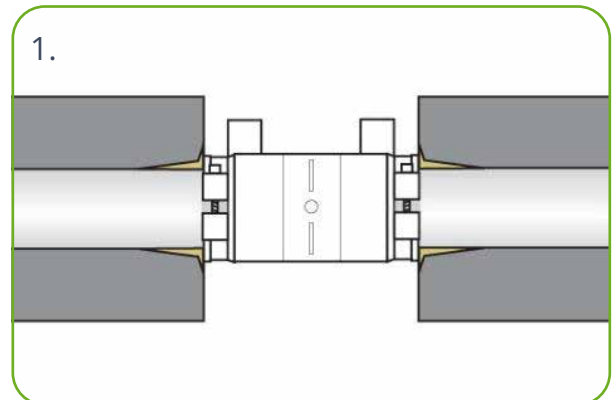


Oversized fitting insulation

The following instructions are recommendations and may vary with different pipe materials and fittings.

1. Insulate straight lengths

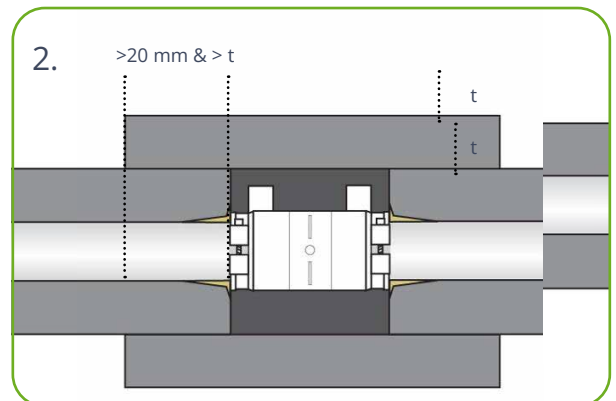
- Insulate all straight lengths between fittings.
- Apply compression joining towards fittings and ensure compartmentation.



2. Insulate the fittings cover

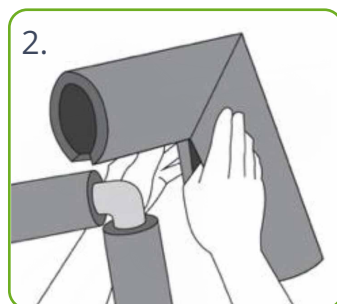
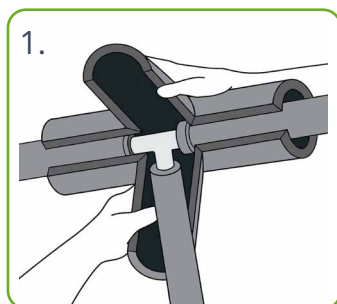
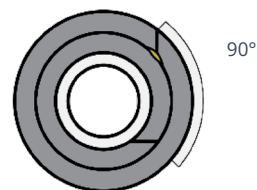
- Prepare oversized fitting insulation.
- Cut open the insulation cover and rejoin over the fitting.
- Use the wet sealing technique to join the insulation fitting cover towards the straight length insulation.

t Wall thickness of the insulation material



Important!

Overlap should be $> 20 \text{ mm}$ and at least the same wall thickness (t). Use the same insulation thickness for the cover



Golden rules

When installing professional high-quality foam insulation material, the goal is to secure a hermetically sealed system to prevent condensation, water vapour permeation and energy loss.

1. Shut down the system

- Never insulate systems that are in operation.
- Start systems at least 24 hours after the last glue is applied so it is fully cured.

1.



2. Good-quality tools

- The right and sharp knives.
- Suitable brush.

2.



3. ThermaGlue fresh & well-mixed

- Check the expiration date and ambient condition of the ThermaGlue.
- Make sure that the ThermaGlue is well-mixed at all times!
- At lower temperatures, place in a bucket of warm water for easier application.
- Use small cans to avoid thickening. Refill from larger cans and keep them closed when not in use!

3.

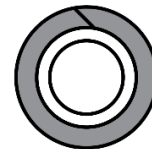


The glue MUST NOT be used after the expiration date. See the bottom of the can.

4. Maximise joining surface

- Increase the joining surface as much as possible in order to reach the most secure connection possible. It also makes joining easier.

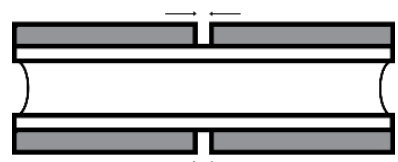
4.



5. Compression joining

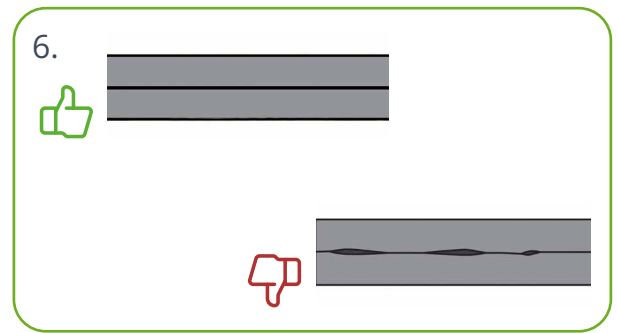
- Always allow excess length for butt joints and large surface joining. This is necessary for the thermal expansion / contraction caused by temperature differences in the system.
- Always push the glued joints together, never pull the glued joints!

5.



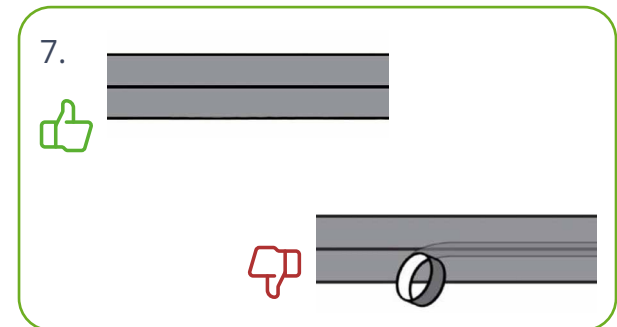
6. Hermetically sealed system

- Make sure the insulation is 100% sealed at the seams so no air can enter in between the insulation and the pipe / duct.



7. Check & Show your work

- All your work (seams) should be visible. At least until the final inspection and after the glue has reached final strength.



Measurement & Marking

High-quality and clean tools are a precondition for professional insulation work. We offer and recommend a wide range of tools for effectively measuring diameters, lengths, angles.

Measure circumference for sheet application

When dealing with pipes or circular ducts with a diameter of more than 114 mm, use sheet insulation. When applying sheet insulation, avoid tension at all costs. To guarantee the correct measurement the required excess length, we recommend using a strip of insulation of the same thickness to determine the circumference, including excess length.

Important!

Do not stretch the strip!

Required tools (See the Tools section, p. 40)



Marker

For marking we recommend the following:

- Black permanent marker
- White permanent marker

Compass

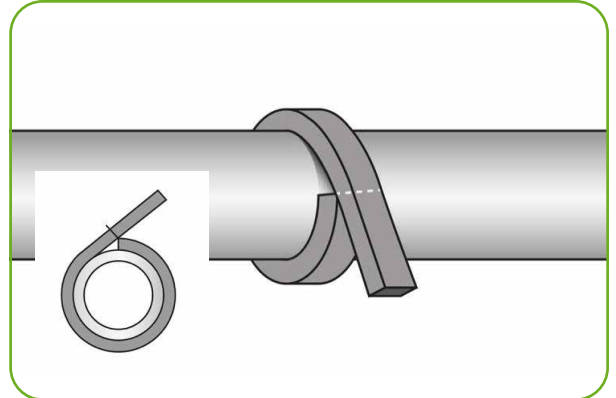
For circles marking we recommend using a compass or a tape measure for larger circles.

Important!

When marking with a compass, make sure to hold it at a skewed angle so as not to damage the surface. Mark only the necessary parts on the sheet.

Important!

Before drawing, make sure the corners of the insulation sheet are 90° angles and that the bending of the sheet follows the direction of the object to be insulated.



Tip!

Use the Thermaflex cutting mat for marking rectangular guidelines!

Cutting

The quality and angle of the cut have an enormous influence on the quality of material bonding. Make sure to use the right knives and cutters with sharp blades. Due to its stability, Thermaflex insulation provides optimal conditions for clean and easy cuts, even with large diameter tubular insulation and guarantees that the knife stays sharp for longer. For more details about cutting tools, see the Tools section of this installation manual.

Knives Cutting

- Perform long strokes when cutting, using a knife with a long and stiff blade.
- Do not put too much pressure on the knife. Let the blade do the work to ensure a clean cut.



Sharpening

We recommend using a whetstone for sharpening the blade.



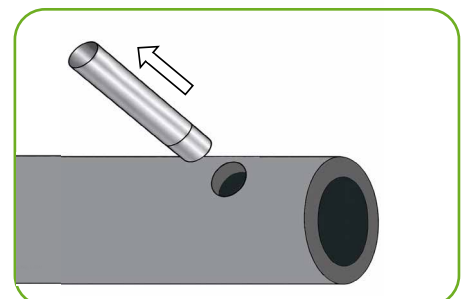
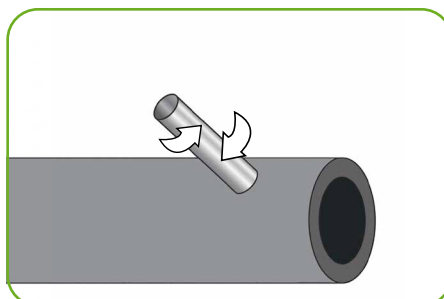
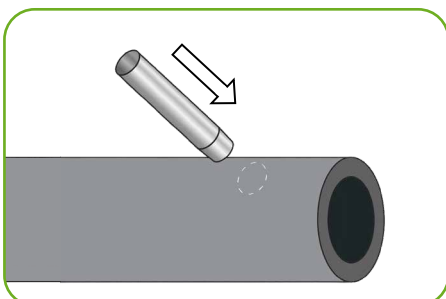
Important!

A sharp knife is essential for high-quality cuts and work progress! Make sure to use the right knife for the right job!

Hole cutting Hollow punch set

The hollow punches are mainly used for small branching pipes and fixed-point brackets for the threaded rod.

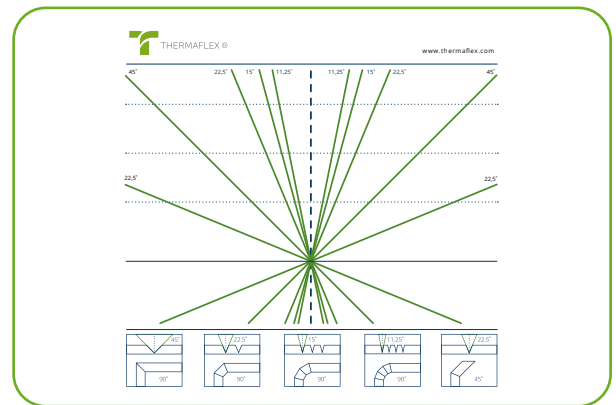
- Select the right pipe diameter.
- Push the hollow punch with light pressure into the insulation material while in a circular motion.



Mitre cutting Cutting mat

The Thermaflex cutting mat offers angular lines for high accuracy and easy assembly of bends and T-pieces. You can also find the angles printed on tube insulation ThermaSmartBoxes.

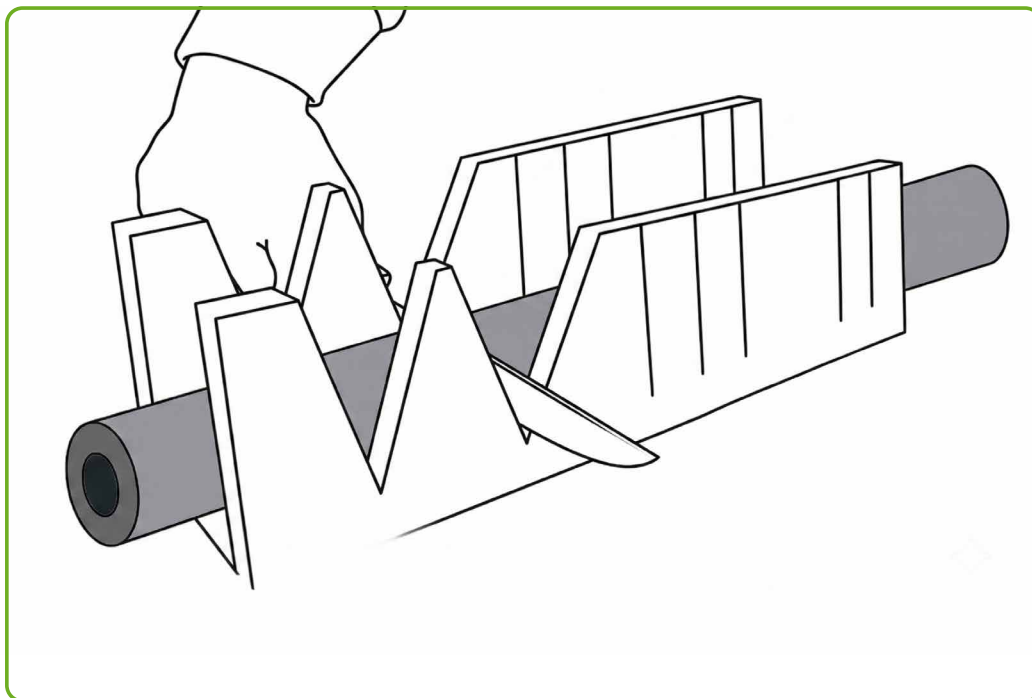
- Align tube insulation along the horizontal dotted line.
- Select the required angle and cut through the tube insulation on the selected angular line.



Mitre box

Alternatively, you can use the Thermaflex mitre box, designed for cutting tube insulation at 22.5°, 30°, 45° and 90° angles. The blade of the knife should cover the entire width of the mitre box to get a precise cut.

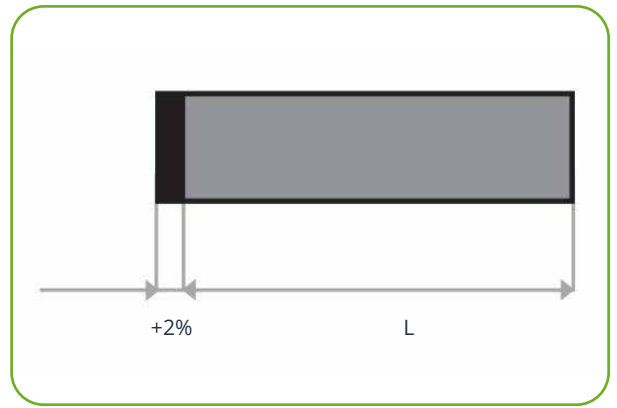
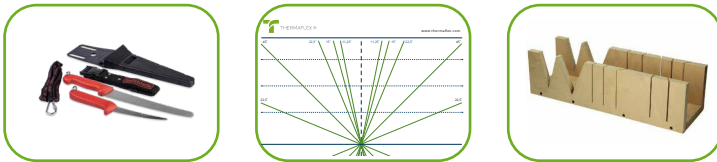
- Position the tubular insulation in the mitre box.
- Select the required angle and cut through the tube insulation in a long stroke.



Tube cutting Cut to length

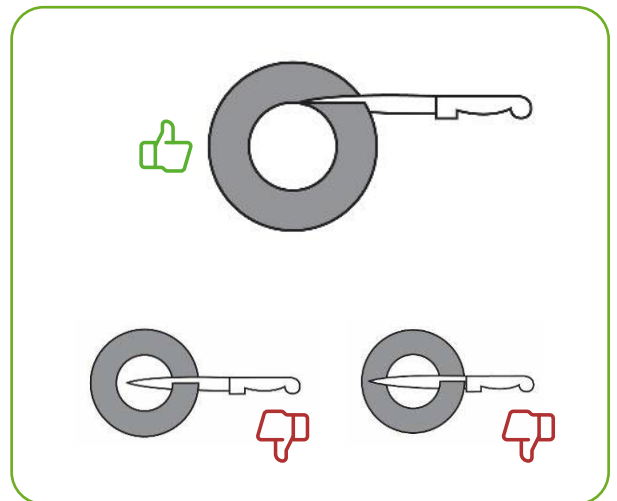
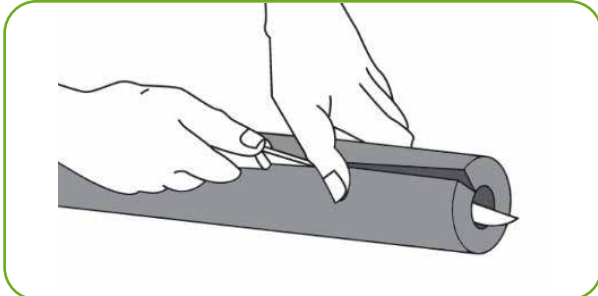
- Add 2% extra length to compensate for thermal expansion.
- Use the mitre box for easier and more precise straight and angular cuts.

Required tools (See the Tools section, p. 40)



Longitudinal cut

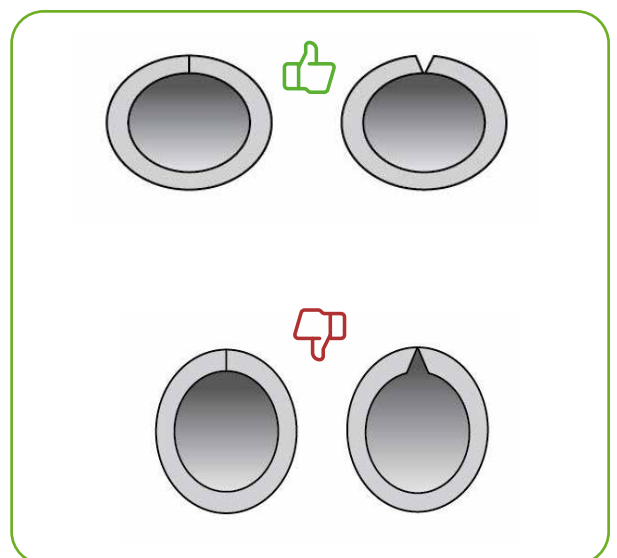
- Make sure to maximise the joining surface as shown in figure, for optimum bonding and save, vapour-tight joining.
- Always cut tubes on flat side to minimise the tension on the seam.



Important!

Reduce the ovality of the tube insulation by pressing on it.

Required tools (See the Tools section, p. 40)

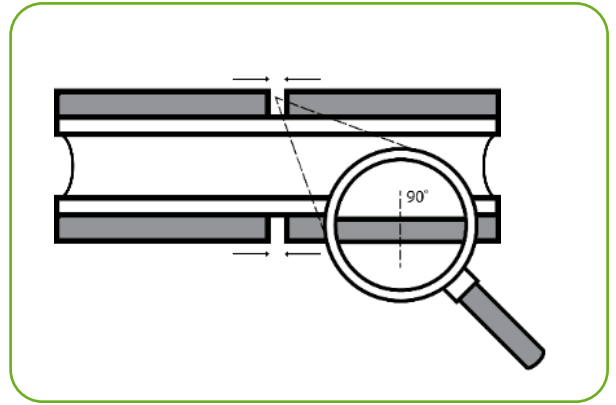


Cut sheet insulation

Rectangular cut

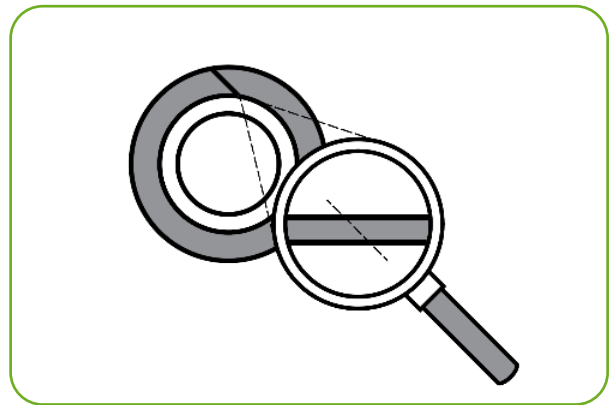
- When cutting sheet insulation, use a knife.

Required tools (See the Tools section, p. 40)



Bevelled cut

- Bevelled angled cuts are key to increase the joining surface for better bonding during the circumferential joining for pipes, circular ducts and large surfaces.
- When cutting sheet insulation, use a mitre cutter or knife for a bevelled cut.



Required tools (See the Tools section, p. 40)



ThermaEco FRZ HF tubes and prefabricated components are pre-slit 2/3.

ThermaEco ZZ tube is partially pre-slit 2/3.

Cleaning & Surface preparation

Thermaflex insulation material should be clean and preferably only unpacked just before installation. Just like the insulation material, the object to be insulated must also be clean. When joining surfaces are contaminated by dust, dirt, oil or water, all contaminants must be removed with Thermaflex cleaner before starting the insulation work. No corrosion should be visible on the object after cleaning for optimum bonding.

Object surface preparation

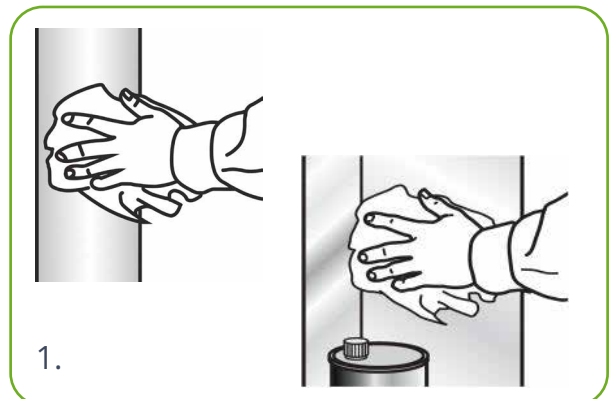
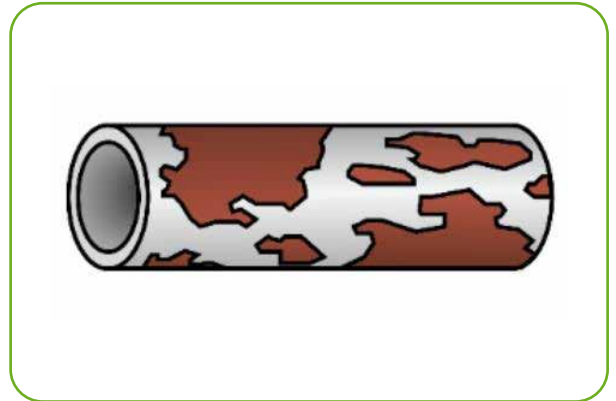
Although our insulation products offer high corrosion protection, condensation may occur before and during installation. Depending on the local climate, we recommend sufficient coating of metal pipes to prevent corrosion before the system is insulated.

- We recommend a liquid cleaner for polyolefin materials (PB, PE, PP) and cleaning tissues. When using liquid cleaner make sure to use lint-free tissues such as kitchen roll.
- Check if the cleaner is suitable for the surface and coating.
- Let cleaner dry before applying glue.

1. Clean the object surface

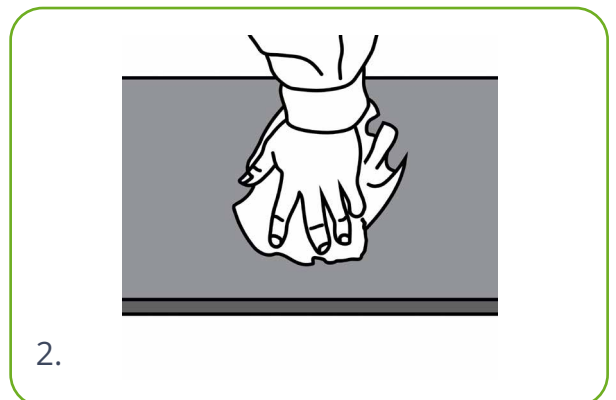
Make sure the material is resistant against the cleaner before cleaning the object surface.

- Object is dry – no moisture
- No corrosion is visible.
- Coating is not damaged.
- Temperature – system is not in operation.



2. Insulation surface

For surface bonding, the surface of the insulation material must be cleaned with the recommended cleaner. This ensures optimal bonding between object and insulation. This is also true for joining insulation materials to each other.



Gluing - ThermaGlue

For gluing Thermaflex insulation, we recommend our ThermaGlue only as it is specifically developed for Thermaflex polyolefin materials for best gluing performance. Please read the information on the cans before use.

Gluing

1. Coating tools

- For applying glue, we recommend using a brush with short, sturdy bristles or Thermaflex Gluemaster.
- For larger areas, use a spatula or spraygun equipment.

2. ThermaGlue

- Do not apply below 0°C.
- Stir the glue well before use. Leave for 5 minutes to allow solids to dissolve; mix well.
- Mix the glue regularly throughout insulation work. If the viscosity is too high, replace it with a fresh can.
- Do not dilute glue under any circumstances!
- Keep closed as much as possible.
- Glue reaches its final full strength after 24h.

Important!

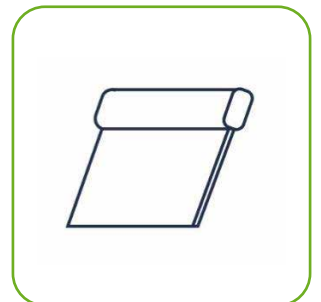
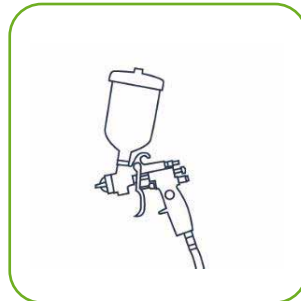
For more details see the product label, technical or safety datasheet.

Joining surface preparation

When gluing a cut surface onto an insulation outer surface, we recommend surface treatment to improve bonding.

1. Open the cells of insulation outer surface

- Mark the joining surface as shown in the T-piece example in Figure 1.
- Open the cells of the outer surface with a knife, by scraping it, or by using emery cloth.
- Clean the surface before joining.



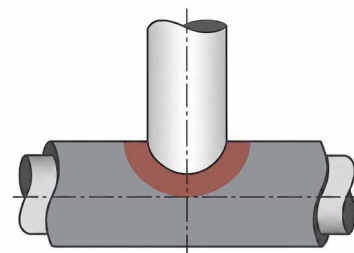
Tip!

When working at lower temperatures place can into a water bath. Use sealable plastic cups for installation to avoid evaporation.



The glue **MUST NOT** be used after the expiration date. See the bottom of the can.

1.

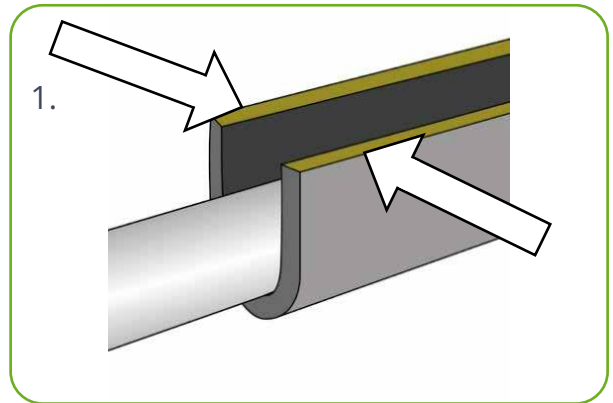


Joining process

ThermaGlue is a solvent-based contact adhesive which bonds best after the solvent has evaporated.

1. Apply ThemaGlue

- Apply a thin and even layer of Thermaflex adhesive on both joining surfaces.
- It is important to cover the entire joining surface area with an even layer of glue.
- Remove all surplus glue.
- When using two different materials, apply the adhesive to the insulation material first.

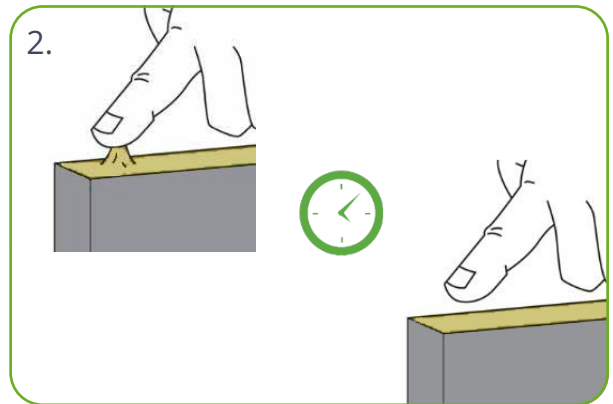


Tip!

When joining onto an object (e.g. metal duct), apply glue to the insulation material first, and then to the object.

2. Let the adhesive dry

- Wait until the ThermaGlue is tack dry.
- Use the fingernail test as shown in Figure 2.

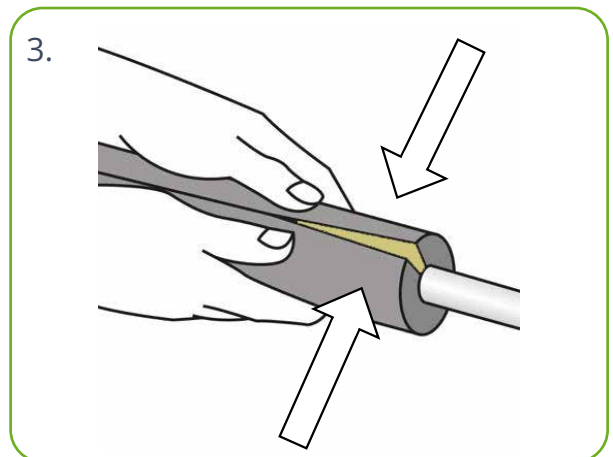


Important!

The time for the adhesive to become tack-dry depends on the ambient temperature and humidity. Do not try to accelerate the drying process by blowing! Avoid windy conditions!

3. Join

- Join the two surfaces using light pressure.

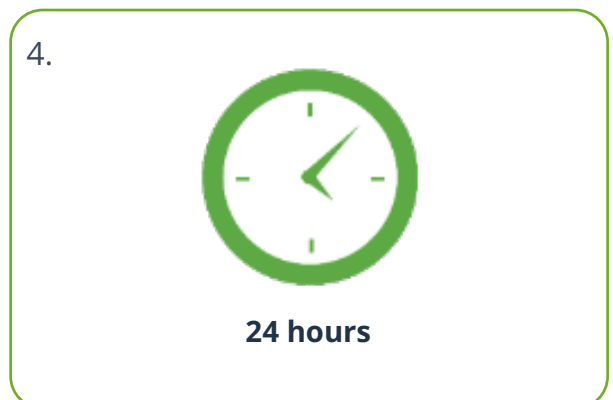


Important!

**Do not stretch the insulation material.
Outdoor: Do not expose the joint to direct sunlight after joining!**

4. Curing time

- ThermaGlue reaches its full strength after a curing time of 24 hours.



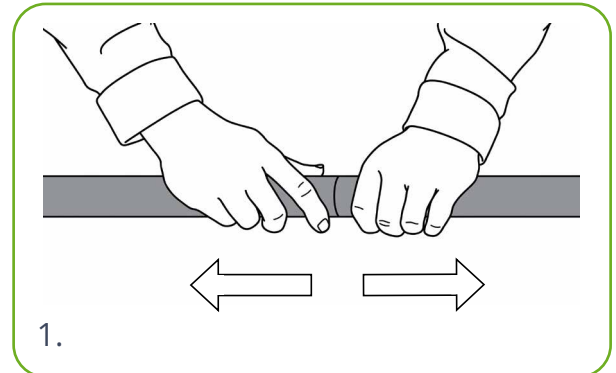
Wet sealing technique

The wet sealing technique is used to seal seams under pressure, but also to make alterations after the joining surfaces are glued together. This technique should only be used when joining seams under pressure. Wet sealing techniques should also be used for sealing under high temperatures and in draughty and humid areas, as a film layer forms on the sealed surface, which prevents the use of dry sealing techniques. Drying time does need not be considered for this method as the joining surfaces can be joined immediately.

Tube (butt joints)

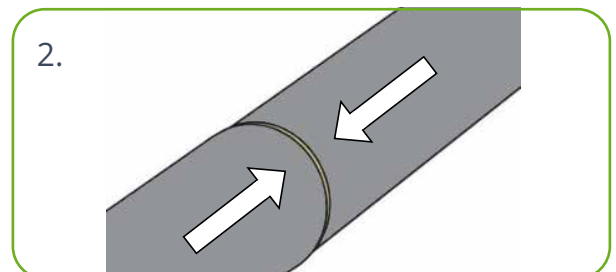
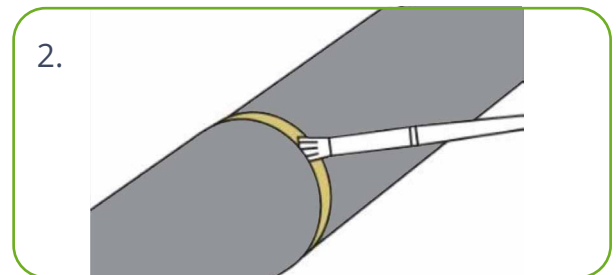
1. Apply ThermaGlue

- Pull the compressed butt joints apart.
- Apply adhesive evenly between the both joining surfaces.



2. Join

- Use light pressure to join the two insulation tubes together for a vapour-tight bond.



Important!

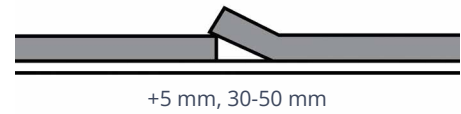
Add +2% excess length to compensate for thermal expansion.

Sheet

1. Apply sheet insulation

- Apply sheet with an excess length of + 5 mm onto the object for compression joining.
- When joining the sheet material onto the object, don't apply glue at the last 30 - 50 mm.

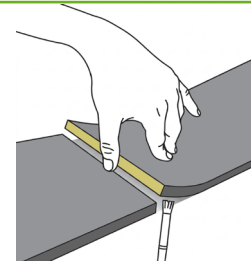
1.



2. Apply ThemaGlue

- Lift the part that's not yet glued and apply adhesive evenly on the bottom of the sheet and the butt joint on all joining surfaces.

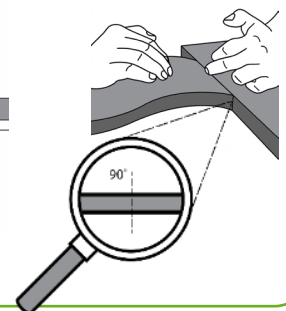
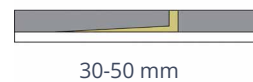
2.



3. Join

- Press the sheet insulation onto the object and onto the existing sheet as shown in Picture 3.
- The joining happens immediately after the glue is applied and still wet.
- Check after 15 min and apply light pressure onto the joined surfaces if required.

3.



Important!

Add +5 mm excess length to compensate for thermal expansion.

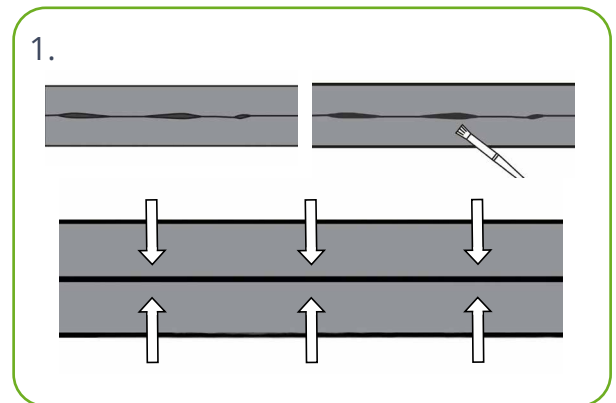
Vapour-tight hermetically sealed system

To guarantee high and hassle-free system performance for chilled water installations without condensation headaches, securing a fully watertight and vapour-tight insulation system is key.

1. Hermetically sealed

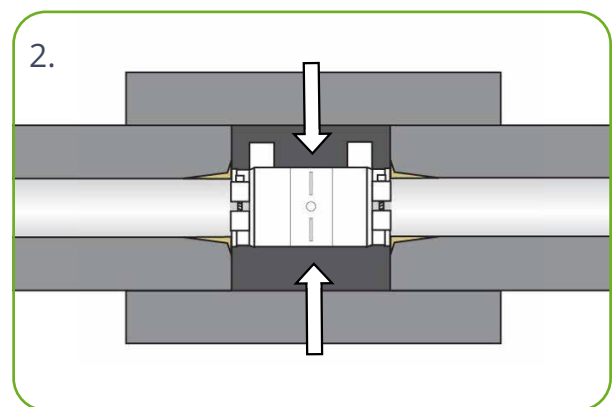
After finishing insulation works, all seams must be checked.

- If a seam is not fully sealed, apply glue to the seam using a brush.
- Let glue dry and press together to tighten the seam.



2. Hollow space

Hollow spaces between the insulation and the pipework are allowed when the insulation system is hermetically sealed.



Important!

For heavy-duty cooling, we recommend avoiding hollow spaces.

Large surface insulation

To guarantee high and hassle-free system performance for chilled water installations without condensation headaches, securing a fully watertight and vapour-tight insulation system is key.

Surface insulation

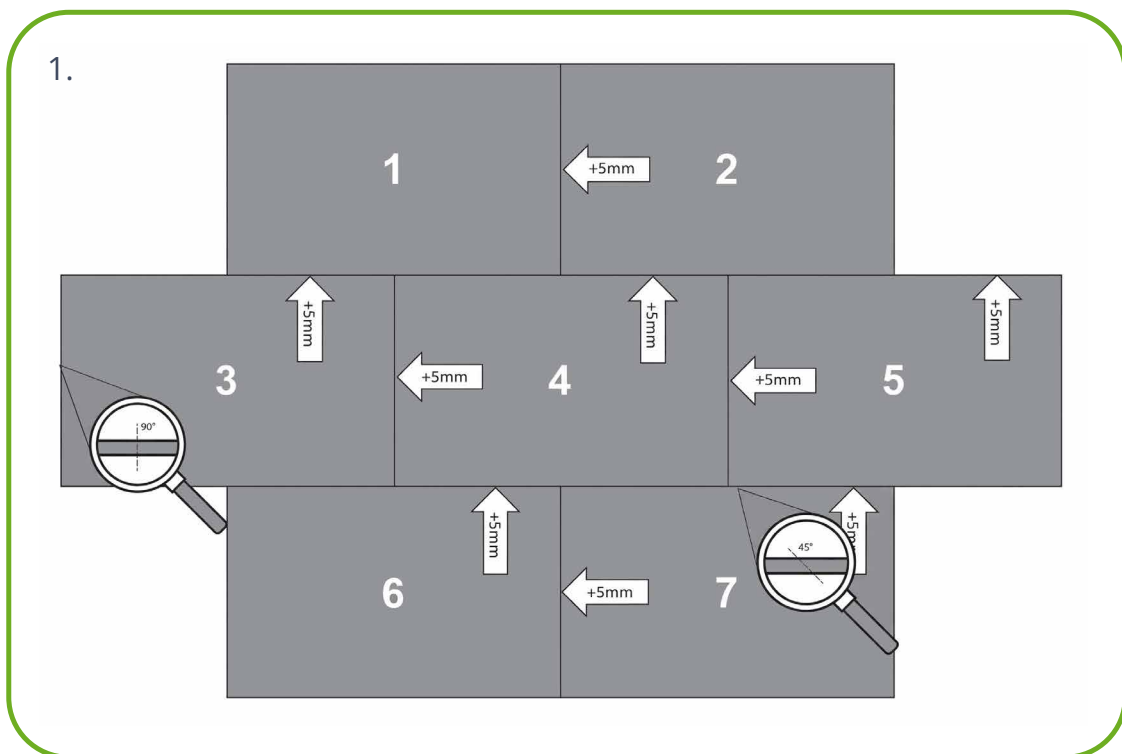
- Join the first sheet (1) toward the object.
- Continue in one direction when joining the second (2) sheet onto the object.
- Use the wet sealing technique to make a vapour-tight bond between the two sheets.
- Continue according to the layout of the sheet segments as shown in Figure 1.

Important!

Always allow additional 5 mm extra length and don't apply glue on the last 30-50 mm of the sheet for wet sealing.

Tip!

For fast & efficient insulation work, prepare an insulation layout for your large object, as shown in Figure 1.



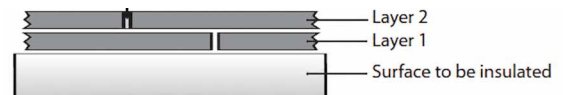
Multi-layer Insulation

The multi-layer technique is used when higher thicknesses are needed or to reduce tension in the material or seams. This technique uses smaller wall thicknesses, but more layers of insulation. The technique is used with tube and sheet insulation, and can be used in combination with any object.

1. Surface insulation

- Join the first layer to the object.
- The second layer should be joined onto the first layer at least at seam level and at the ends of the sheet material to prevent sacking. The gluing layout (where to place glue) depends on the application. See relevant manual.
- The second and any additional layer should be applied in the same manner and the seams of the different layers must not align above each other.

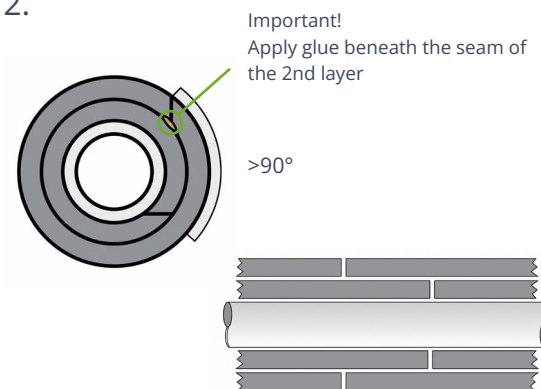
1.



2. Pipes and circular ducts

- After applying the first layer, the second layer should be applied in the same manner.
- Ensure that the two layers are at least 90° away from each other and that the longitudinal seam do not overlap as shown in Picture 2.
- Apply glue below the seam of the 2nd layer.

2.

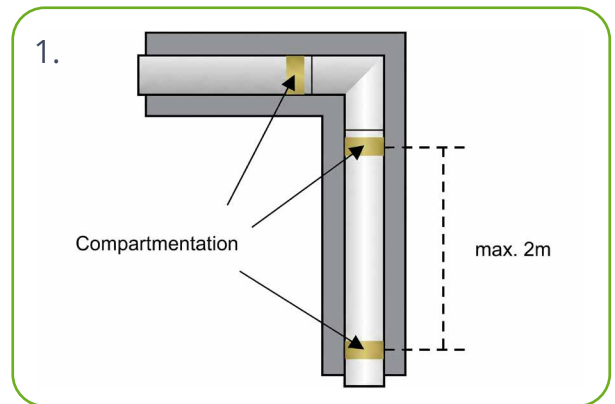


Compartmentation

To avoid the distribution of fluid under the insulation that can occur due to a leaking carrier pipe or condensation due to damaged insulation (not a hermetically sealed system), working with compartments is recommended. The additional advantage of compartments is that allows to quickly locate such problem areas, especially with leaky carrier pipes.

1. General

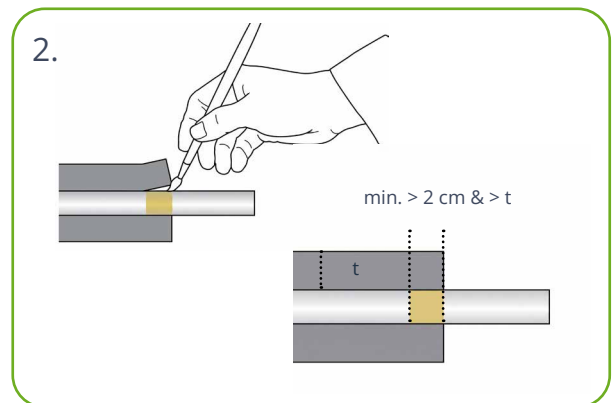
- Compartmentation is recommended at least every 2 m.
- This also applies to each sealed seam when fitting the material.
- For sheet insulation, compartmentation is done automatically during the installation process.



2. Tubular insulation

- With tube insulation, the tube should be glued to the carrier pipe on each end.
- Apply glue around the pipe with a width of at least 2 cm, and of at least the wall thickness of the insulation.

t Wall thickness of the insulation material.

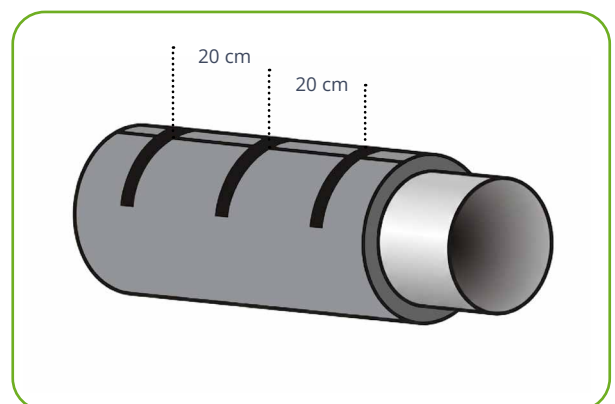


Extreme installation conditions

When working in a high-temperature environment, the solvent in the ThermaGlue evaporates faster, and moisture may occur on the surface of the adhesive. This influences the reliability of joints.

We recommend the following:

- Instead of the normal joining technique, use the wet sealing technique (join surfaces while the glue is still wet). The joining surfaces should be held together whilst wet.
- To prevent possible tension within the material and on the seam, the seams should be held together with strips of insulation glued crosswise every 20 cm.
- Alternatively, self-adhesive insulation tape (ThermaTape) can be used instead. General, we recommend ThermaTape for aesthetic reasons only. Leave the tape onto the seam until after the curing process.



Important!

Due to the fast drying and curing time, the glue should be applied only to a limited area of the joining surface!

Accessories

Pipe support

Thermaflex pipe hanger

For a vapour-tight system

For chilled water applications, pre-insulated pipe supports are recommended to create a fully watertight and vapour-tight system. When opting for alternative pipe hangers, it is difficult to ensure that the clamp will be vapour-tight when used in combination with Thermaflex insulation.

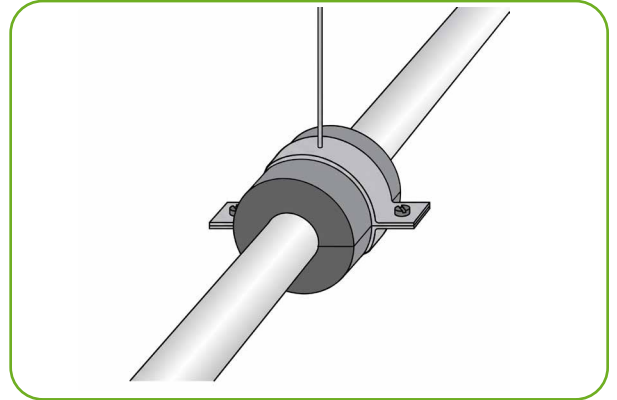
Our pre-insulated hangers prevent:

- Condensation gaps
- Thickness compression of insulation
- Undesirable influence on the system performance of chilled water applications.

Hereby ensuring an optimal, and hassle-free system performance.

Tip!

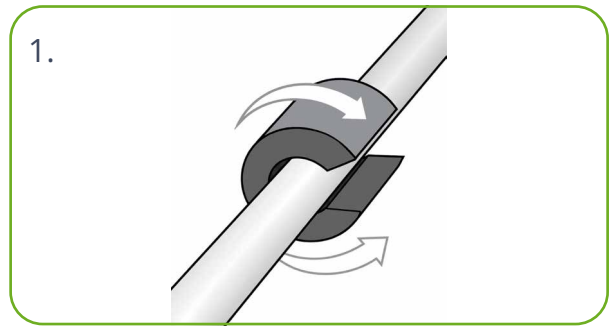
- **Use a nylon locking nut / anti-vibratory fastener.**
- **Apply non-skid pads to the clamps to minimise movement.**
- **Keep in mind pre-insulated hangers should be installed together with the pipes.**



Thermaflex pipe hanger

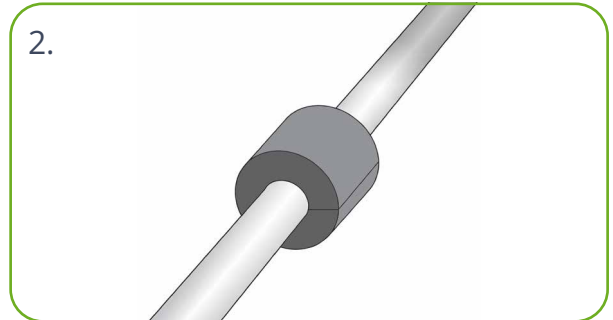
1. Place insulation block

Wrap the insulation block around the pipe.



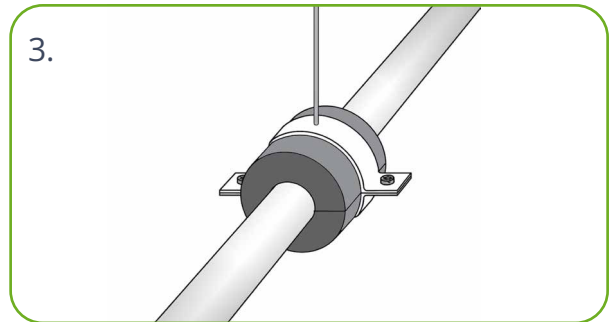
2. Seal insulation block

Seal the block with the self-adhesive strip or tape (depending on the product).



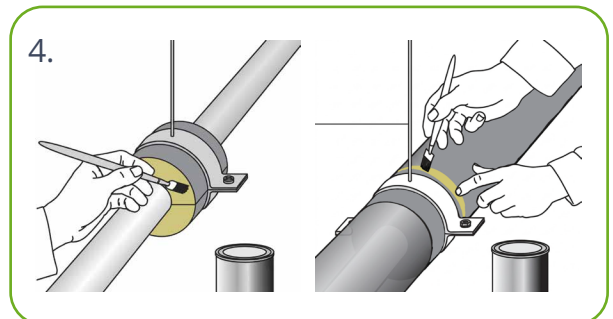
3. Place pipe hanger clamp

Place the pipe hanger clamp on the insulation block.



4. Coat with glue

Coat all joining surfaces of the pipe hanger and insulation tube with glue.



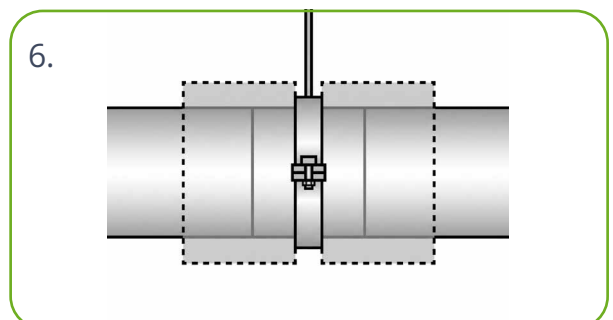
5. Let glue sit and join

Let glue sit until tack-dry (fingernail test) and firmly press the insulation against the pipe hanger insulation block.



6. Heavy duty cooling

For heavy duty cooling installations, it is recommended to insulate the seams with tube or sheet insulation as shown in Figure 6.



Important!

Pipe hangers are not suitable for anchoring! (sliding brackets)

Insulating Fixed point brackets

1. Mount bracket & pipe

- Insulate the pipe as close as possible to the fixing brackets with tubular or sheet insulation on both sides.
- When the insulation thickness is bigger than that of the pipe clamp, seal in the complete clamp and glue together the two pipe ends.

2. Compartmentation

- Seal the ends of the tubular insulation to the pipe with ThermaGlue .

3. Insulation cover

- Depending on the diameter, either use tubes or sheets for the insulation cover. Cut out a small hole for the threaded rod and slit it to fit over the pipe clamp as shown in figure 2.
- Make sure that the insulation overlap from the cover and the pipe insulation is > 20 mm and at least the insulation wall thickness.
- Place the insulation cover over the fixing bracket and cut the actual required circumference.

4. Join

- Join the closure.
- Use wet sealing technique to join the insulation cover onto the pipe insulation.

Important!

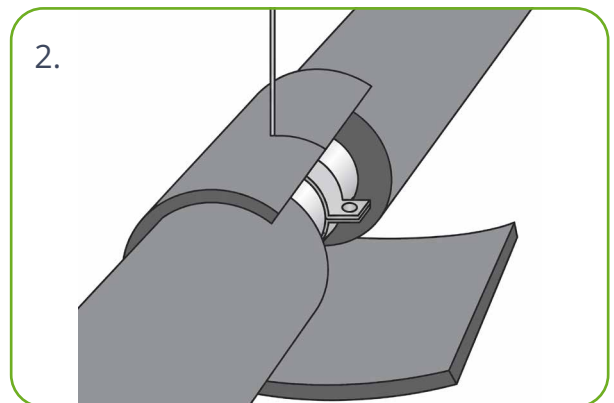
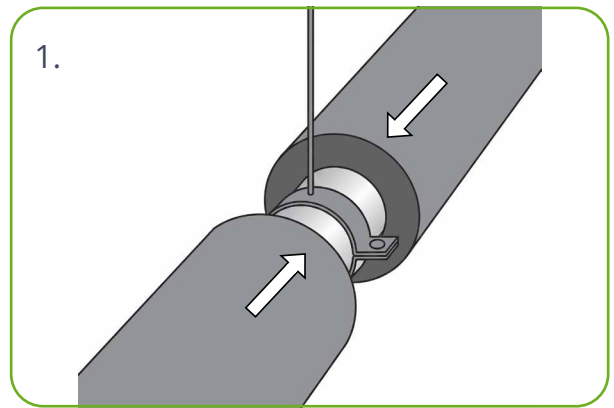
Don't forget to clean and scrape the joining surfaces!

5. Insulate rod

- Insulate the threaded rod and join onto the insulation cover to avoid condensation on the rod!

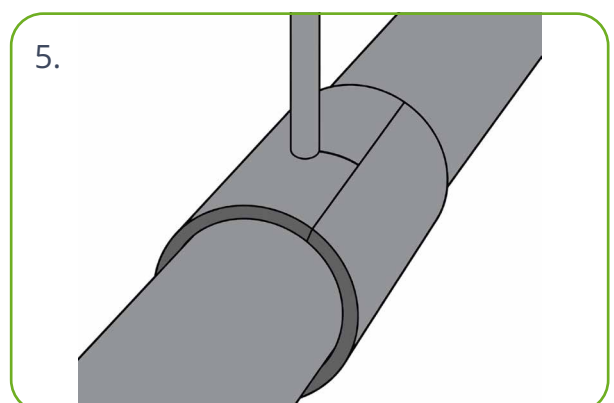
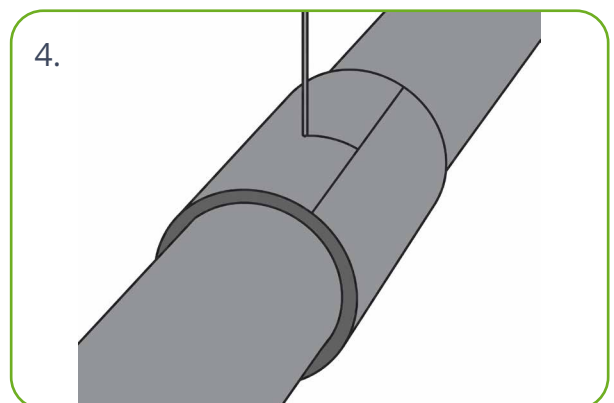
REMARK:

Making this part vapour-tight highly depend on which fixing bracket system is used.



Important!

Use tubular / sheet insulation material with the same insulation thickness.



Adhesive

Polyolefin Surface Cleaner

For optimal bonding between the Thermaflex foam insulation material and the pipe, duct or other objects as well as between the material itself, a suitable cleaner must be used. We recommend a regular liquid cleaner for polyolefin materials (PB, PE, PP). Make sure that the surface to be insulated is resistant against the cleaner.

We offer a perfectly suitable cleaner for polyolefin materials.



ThermaGlue

ThermaGlue is packaged in 0.25l, 0.5l, 1.0l and 20l cans. Gluing the cut edges is an equally important step in installation since it directly affects the durability of the system and hassle-free operation. Thermaflex glues dry quickly and makes a perfect bond between the two edges. Once dry, they also exhibit self-extinguishing properties. The adhesive is characterised by its ease of use, high yield and the soft, durable bonds it creates. It can also be sprayed.



Safety:

- The glue and solvents are volatile substances that may carry health hazards in high concentration.
- When working in confined spaces, ventilation must be provided.

Product features:

- Application temperature > +15°C to +35°C.
- Do not apply below 0°C.
- Time until the glue is tack-dry depends pretty much on ambient temperature and humidity.
- Curing time / maximum final strength after 24 hours.
- Average consumption: 4m² per 1 liter (both sides covered).
- Flammable.
- Temperature resistance -20°C to +95°C (reliable and safe joining).
- Storage and transport temperature max. +35°C.
- Shelf-life 12 months in unopened.



The glue MUST NOT be used after the expiration date. See the bottom of the can.

Foam insulation accessories

Prefabricated Parts

Built for speed

ThermaSmart® PRO and ThermaEco elbows and tees bring you fast, professional results on pipe bends, branches and other places where insulation is difficult to install. Prefabricated to provide easy and efficient assembly, they reduce the number of thermal bridges to ensure maximum system efficiency at minimal operational cost.

For custom-built solutions, please contact your Thermaflex contact. We are more than happy to speed up your project!



ThermaTape

Polish your ductwork

The ThermaTape is a self-adhesive insulation strip. For professional insulation works in general, an additional use of self-adhesive ThermaTape is not necessary after joining. We recommend the usage of our foam insulation tape for professional insulation works for optical reasons in ductworks only. If needed, apply the ThermaTape only after a curing time of 24 hours.



Tools

The following tools have been tailor-made for the installation of Thermaflex sheet insulation, and ensure sustainable functionality and convenience for insulators around the world working with our material. We therefore highly recommend to work with our PRO toolbox, available for purchase from your local dealer. Make sure our tools comply with your national laws and safety standards for building sites.

Knives & cutters

Specialised insulation knife set (25 cm and 12.5 cm)

For serious insulation functionality.

The double insulation knife set has been developed for fast, efficient and comfortable cutting and shaping of Thermaflex insulation. The 2 knives are accompanied by a locking safety holster, belt and lanyard to ensure maximum safety, and convenient transportation.



Small paring knife (8 cm)

For the finer craft.

The 8 cm straight-edge paring knife is for the finer cuts and shapes. Its pointed head makes it ideal for carving, cutting, and shaping for detail and accuracy.



Long Knife (30 cm)

For professional insulation works.

A 30 cm long and thin blade allows for perfect bevelled cuts and easy working in combination with the Thermaflex Mitre Box.



Hollow punch set (5 pcs)

For the perfect circle.

Our universal stainless steel hollow punches are ideal for quickly, and efficiently carving out pipe ends. The 5-piece set covers the standard, most commonly applied diameters: 21 mm, 27 mm, 33 mm, 38 mm, and 60 mm.



Whetstone

Keep it sharp.

A sharpening stone is included to keep your knives razor-sharp, and ensure the best and smoothest possible cuts.



Measurement & marking

Tape measure (3 m)

Measure it. Mark it. Craft it.

The ideal marking measure for insulation craftsmen. This white, impact-resistant steel tape measure has both millimetres and diameters, combining marking and measurement edges so you can quickly and simply measure and mark both internal and external lengths. Superior for marking large diameters.



Outside calipers

Who goes around, knows around.

Need to figure out your exact pipe diameter? Our outside calipers are the perfect way to do so. Just clip them round, and measure the span.



Compass

Mark like a pro.

Our nickel-plated steel compass is accurate and fast adjusting, and marks circles up to 107 cm. Points can be easily re-sharpened or replaced.



Cutting mat

Cut to fit.

Use our Thermaflex-designed cutting mat for optimal angular precision, covering all the cutting angles you need. Perfectly suitable for all your elbows, bends, T and Y pieces, you name it. The cutting mat is made for both right and left handed craftsmen.



Folding ruler

Unfolding precision.

Our folding ruler measures length and angular degrees all in one handy, compact tool.



Marker

Swift and sure.

Draw out exactly where you need to cut, shape, or carve with our black insulation marker.



Mitre box

Cut to fit.

Use the mitre box for optimal angular precision, covering all the cutting angles you need. Perfectly suitable for all your elbows, bends, T and Y pieces, you name it.



Adhesive Tools

Glue master

Solidity is key.

The 0,25l glue master allows for a quick, and efficient application of our specially developed Thermaflex adhesive. Our selection of 3 detachable brushes including a 11 mm, 17 mm and 23 mm brush, makes it applicable for medium and larger surface areas.



Spare brushes

For superb application.

Glue master replacement parts. Our selection of 3 detachable brushes including a 11 mm, 17 mm and 23 mm brush, makes it applicable for medium and larger surface areas.



Brush

For the delicate work.

To perfect the small and narrow gluing work, our professional glue brush is your best bet.



Polyfusion welding

Butt welding unit

For solid and homogenous joining.

Butt welding unit for polyolefin insulation with PTFE-coated heating element 230V, 50-60Hz according to DVS. Available with 110V. Temperature preset for polyfusion welding of tubular insulation at 180°C. Heating element Ø 200 mm and Ø 300 mm. Support stand.



Optional Tools

The following tools are relatively standard, but also recommended. As they tend to be already widely included in standard insulation toolkits, we do not include them in our PRO toolbox, and can be easily acquired locally.

Cutting aid

For perfect bevelled cutting.

Use a cutting aid with 130 cm length for long, perfect 45° bevelled cuts with sheet insulation.

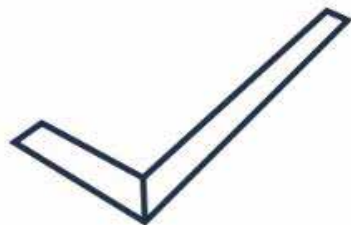


Measurement & marking

Steel framing square

Angular precision.

Use a steel framing square for perfect 90° precision marking on sheet insulation.



Tip!

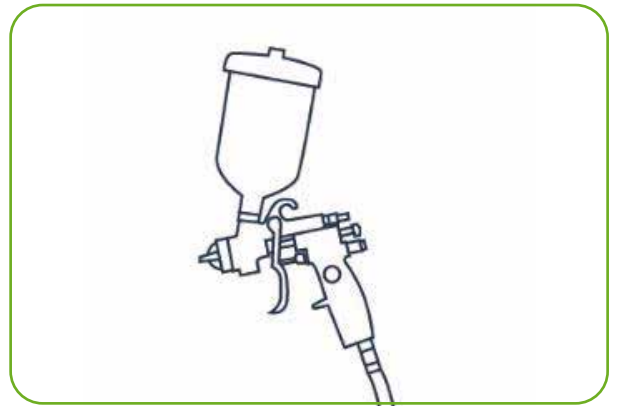
Use the Thermaflex cutting mat instead!

Adhesive Tools - large surfaces

Spray glue gun

Rapid application.

A spray gun offers rapid application of Thermaflex adhesive for large surfaces.



Glue roller

Fast application.

A glue roller ensures rapid application of ThermaGlue to bigger surfaces.



Spatula

Fast application.

A smooth spatula ensures rapid application of ThermaGlue. Suitable for bigger surfaces.



Tube Insulation

General

This part of the installation manual will guide you in professional pipe and circular duct insulation for outer diameters over 114 mm with Thermaflex sheet insulation as well as the most commonly used fittings. For the insulation of specific fittings not covered in this installation manual, please contact your Thermaflex partner and our insulation specialists will be happy to assist you. Tailoring to all possible needs, we offer 3 main connection solutions to seal off your system! This includes, basic glues, factory prefabricated connections, and our heatplate tool to prefab-it-yourself at the speed of light!

Whether your insulation challenge is retrofit, new construction or prefabrication, we offer complete toolsets and installation training programs to ensure maximum peace of mind for the owner, installer and end-user.



Solidifying your system

Craftmanship in the forefront

Connections are often the most vulnerable and time-consuming part of an insulation system. So, when it comes to efficiently insulating an installation, the type of connections should be carefully considered. To tailor to all possible needs, we offer 3 main connection solutions to seal off your system: from your basic glues, to factory prefabricated connections, and a heatplate tool to prefab-it-yourself at the speed of light.

Glue



Ease & time savings



Reliability



Health



Sustainability



Prefabrication with glue technology

Heatplate

Ease & time savings



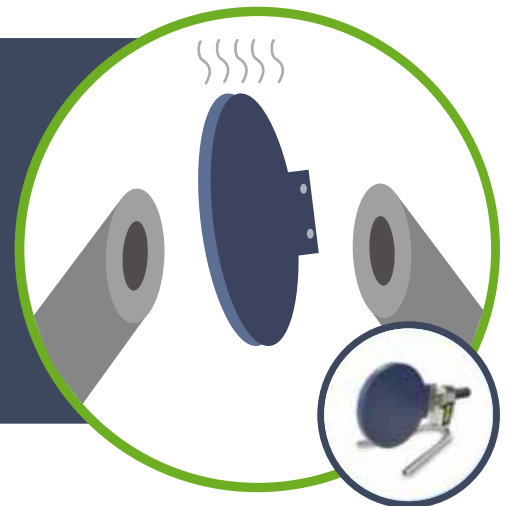
Reliability



Health

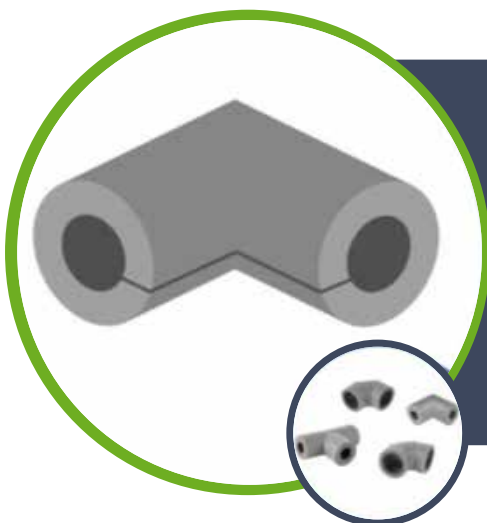


Sustainability



Prefabrication with polyfusion technology (heatplate)

Ready-made



Ease & time savings



Reliability



Health



Sustainability



Ready-made prefabrication parts

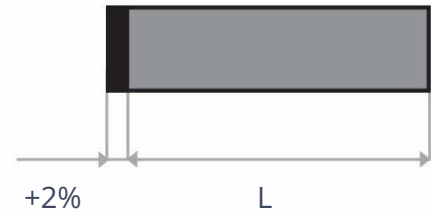
Straight length

Measurement & Cutting

1. Measure length

- Measure the length needed for the tube insulation.
- Add 2% extra length to compensate for thermal expansion.

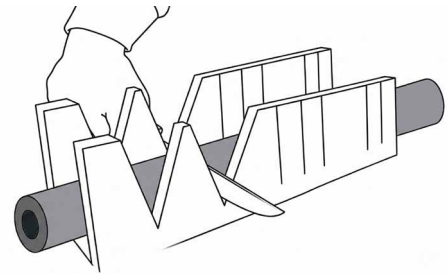
1.



2. Cut to length (Butt joint)

- Cut the insulation tube at a 90° angle. (depending on the product).

2.



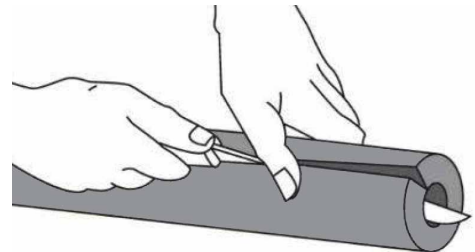
Tip!

Use a mitre box for a perfect 90° cut!

3. Longitudinal cut (Circumferential joining)

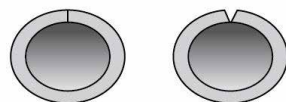
- Cut open tubular insulation along the longitudinal direction using a knife.
- Maximise the joining surface as shown in Figure 3. For optimum, save and vapour-tight joining. block.

3.

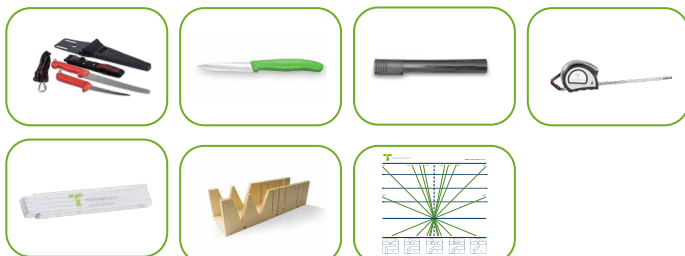


Important!

Reduce the ovality of the tube insulation by pressing on it. Always cut tubes on the flat side to minimise tension on the seam.



Required tools (See the Tools section, p. 40)



Important!

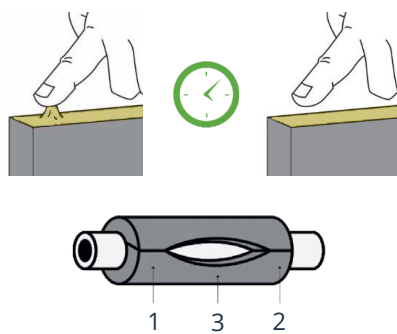
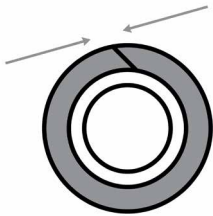
Make sure to use the right product with the right inner diameter.

- ID too small = tension in the seam.
- ID too big = hollow space.

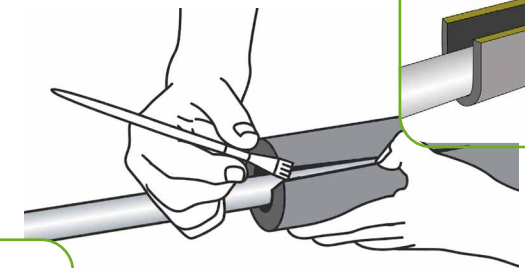
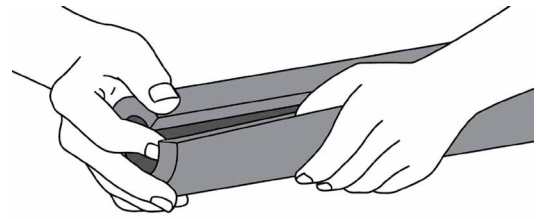
Apply glue & join

1. Circumferential joining

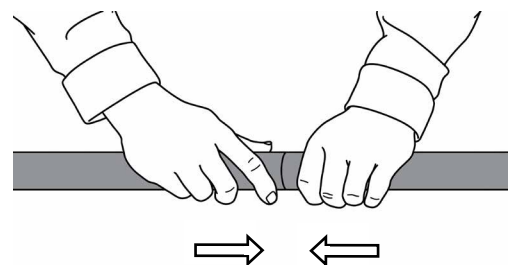
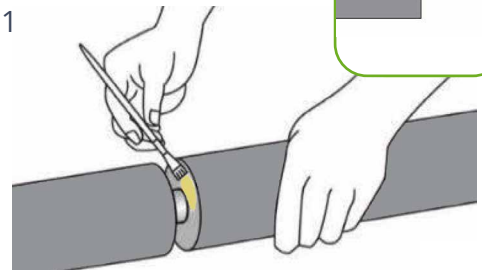
- After making the longitudinal cut, open the insulation using your finger.
- Wrap around the pipe.
- Cover both joining surfaces with ThermaGlue.
- Let the glue dry and perform the fingernail test.
- Press seam together:
 - First join edges (1,2).
 - Then join the middle part (3) to prevent misalignment.
 - Join the remaining parts applying light pressure.



1.

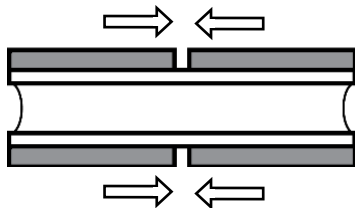


2.1



2.1 Butt joint (Option 1.)

- Ensure compartmentation on the yet to be installed tube end.
- Apply glue on both, the surface of the installed tube end as well as on the new insulation tube.
- Wait until glue is tack-dry.
- Join both insulation tubes using light pressure onto the yet to be installed tube.



Required tools (See the Tools section, p. 40)

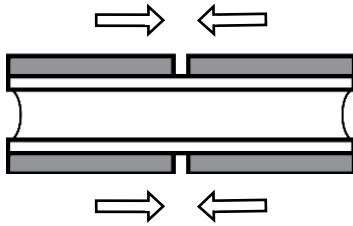


Important!

Make sure to allow an excess length of +2% for compression joining to compensate for thermal expansion!

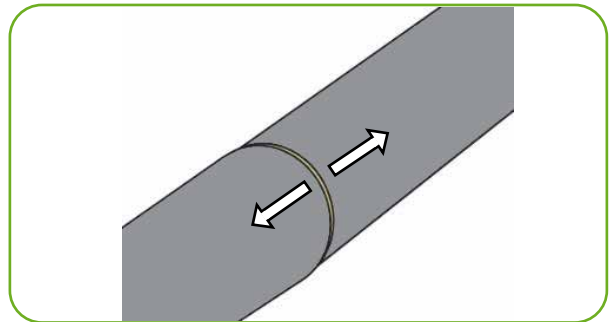
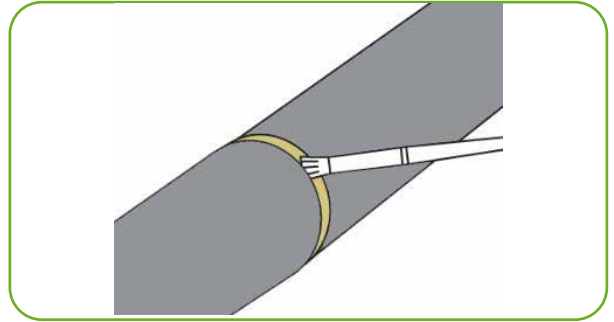
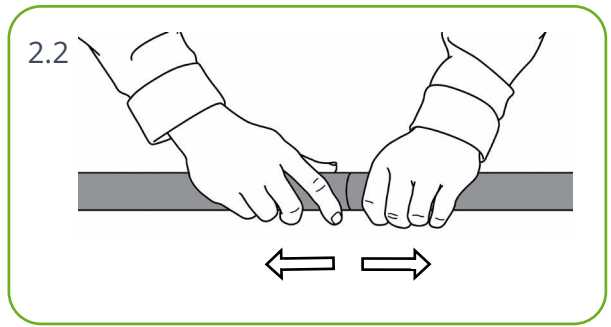
2.2 Butt joint - wet sealing (Option 2.)

- Both insulation tubes are already installed.
- Pull the the two insulation ends apart.
- Use the wet sealing technique by applying adhesive evenly between both joining surfaces.
- Use light pressure to join the two insulation tubes together while the glue is still wet for a vapour-tight bond.



Important!

Don't forget to ensure compartmentation by gluing one pipe end onto the carrier pipe.

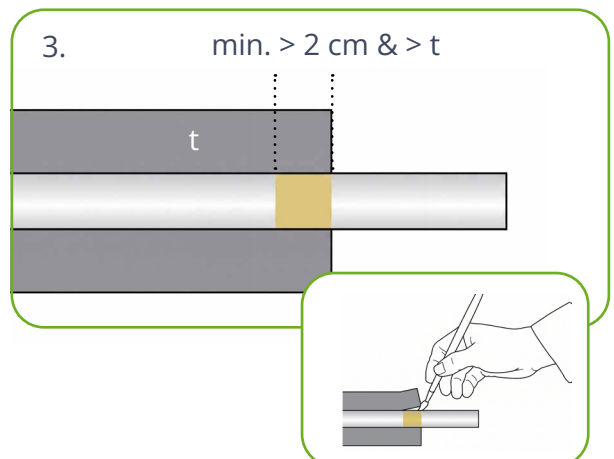


3. Compartmentation

- Apply at least 2 cm of glue around the pipe and the tube, and of at least the wall thickness of the insulation.
- Wait 15 min and apply light pressure onto the tube insulation for final joining.

Important!

The tube insulation should be glued to the carrier pipe on each end.



Required tools (See the Tools section, p. 40)



4. Multi-layer insulation

Ensure that the two layers are at least 90° apart from each other and that the seams in longitudinal direction don't overlap as shown in Figure 3. After applying the first layer, the second layer should be applied in the same manner.

Important!

The multi-layer technique is also needed if a higher insulation thickness is required. Apply glue below the seam of the 2nd layer.

Required tools (See the Tools section, p. 40)



Self-adhesive tube

1.

Open pre-slit Thermaflex SA Tube and install onto pipe.

Important!

The release foil is still protecting the self-adhesive strip

2.

Adjust fitted Thermaflex SA Tube to ensure slit is easily accessible.

3.

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

4.

Remove the white protection backing foil on both sides, by pulling it away from the insulation.

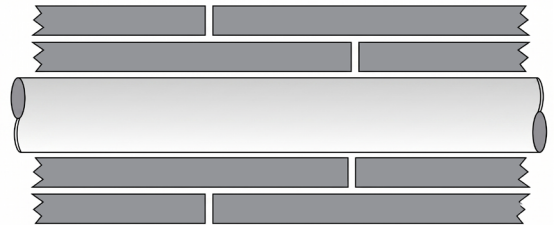
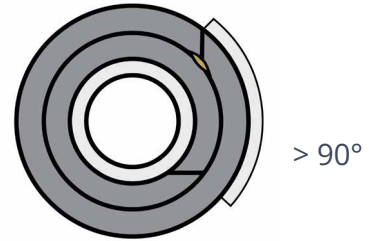


Remove protective release paper strip from both sides!

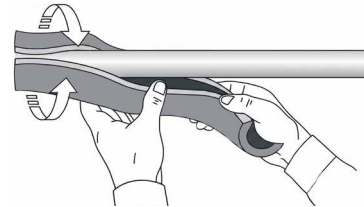
5.

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

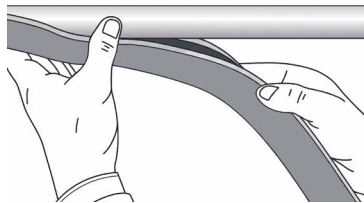
4.



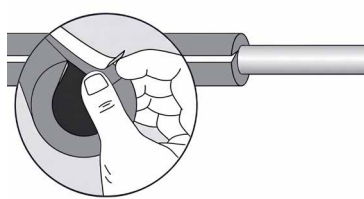
1.



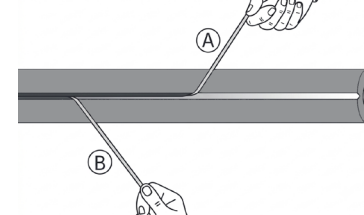
2.



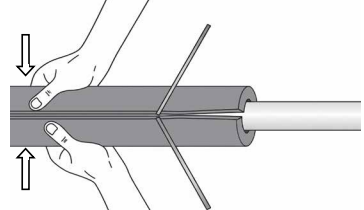
3.



4.



5.



Slide over insulation

The tube insulation can be slid onto pipes and bends. For bends up to 42 mm outer diameter, tube insulation with an insulation thickness of a maximum 13 mm can be slid over.

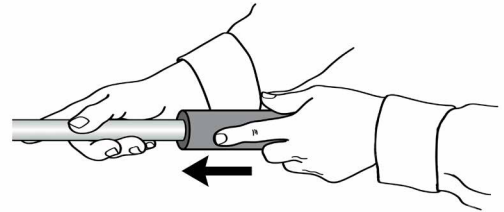
1. Slide on straight length

- Slide insulation tube into position.

Important!

Don't use pre-slit material for cooling applications!

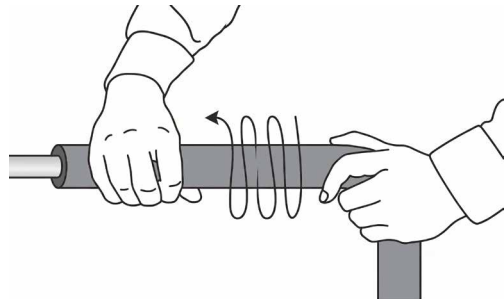
1.



2. Twist over bend

- Twist the tubular insulation while sliding it over the bend.

2.



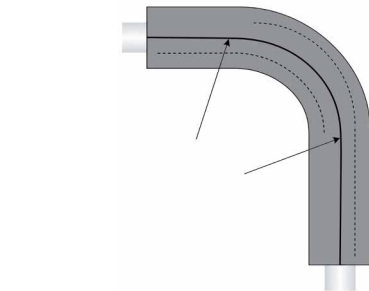
3. Reduce tension

- Move seams to the side to reduce tension.

Important!

If the tube insulation creases during this application, use segmented insulation bends instead!

3.



Fitting prefabrication

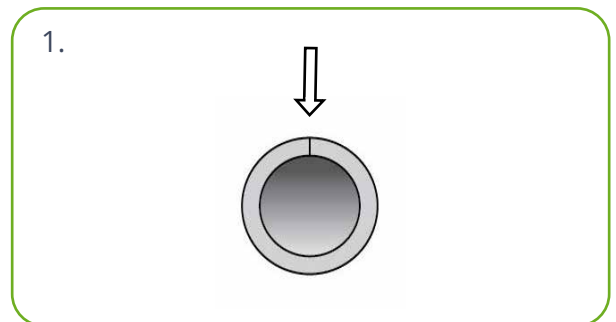
For the fabrication of tubular insulation fittings we offer two main joining techniques: our long-time performance proven ThermaGlue, and our heatplate tool for tubular prefabrications to simply and swiftly prefab-it-yourself, on-site or in the workshop.



Preparation tips & tricks

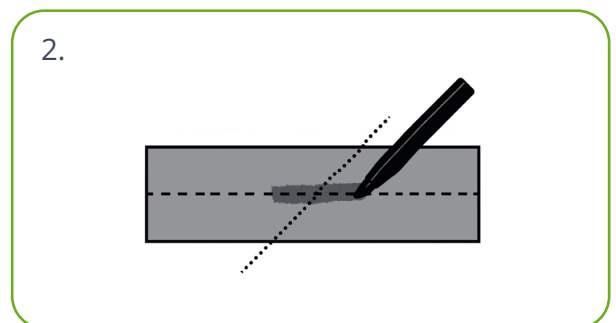
1. Round tube

- Ensure a round shape of the tubular insulation by applying pressure.



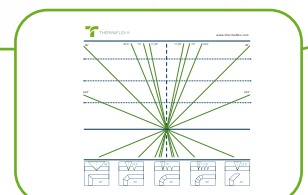
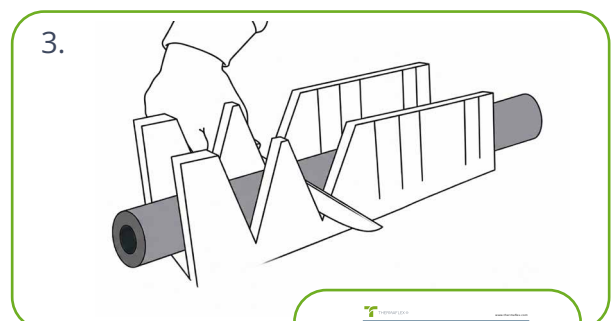
2. Mark before cutting

- Make longitudinal marks before cutting on both sides for oval tube insulation to ensuring easier joining.



3. Precise angular cut

- Use a mitre box for precise angular cuts.
- Alternatively, use the Thermaflex cutting mat.



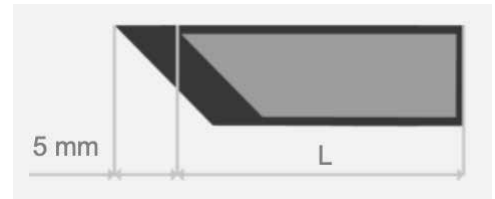
Joining

Welding (Heatplate)

1. Length allowance

- For melting provide an additional length of + 5mm to the original length.

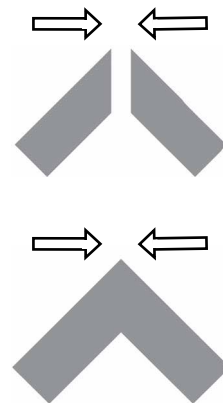
1.



2. Join segments

- Equalise and heat up the joining surfaces before placing the segments on the table.
- Join together within 2 seconds.

2.

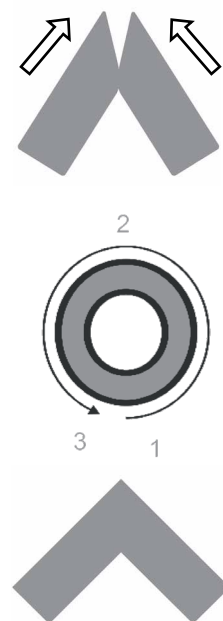


Gluing (ThermaGlue)

1. Join segments

- Make sure the glue is tack-dry on both joining surfaces.
- Join the two segments together, starting at one point on the surface and continuing with the rest in a circular movement.
- Apply light pressure on all seams.

1.



1. Bend 90°

Prefabrication & installation

1. Cut

- Cut the tube insulation at the required length at an 45° using the mitre box or cutting mat.

L Leg length

Important!

Heatplate: allow an additional 5 mm length to the tube for melting.

2. Join segments

- After cutting the segments, coat surfaces on both sides with ThermaGlue.
- Wait until the glue is tack-dry.
- Join both parts applying light pressure.

Alternatively, use the heatplate for joining!
See manual Prefab it yourself.

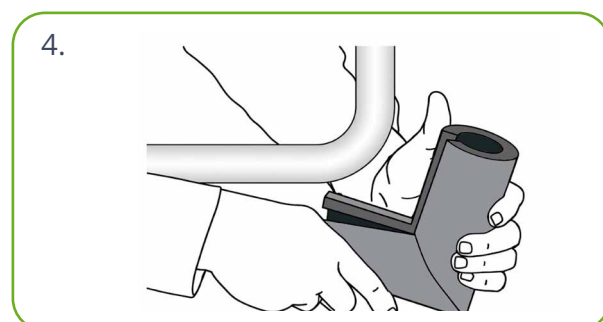
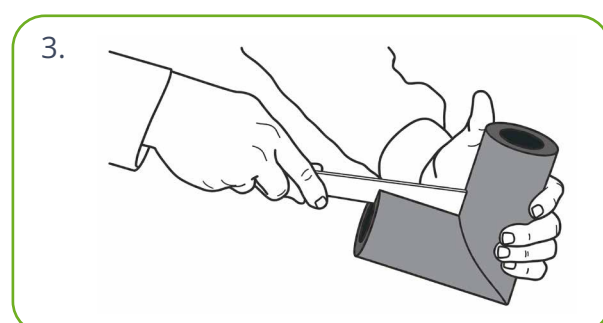
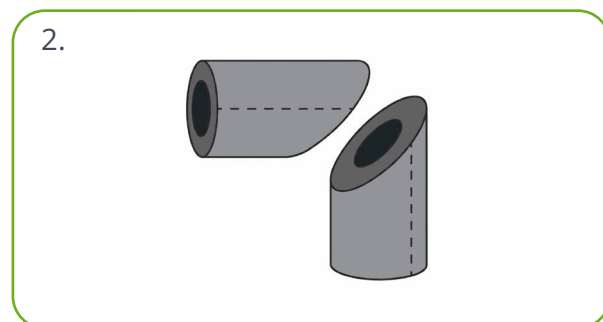
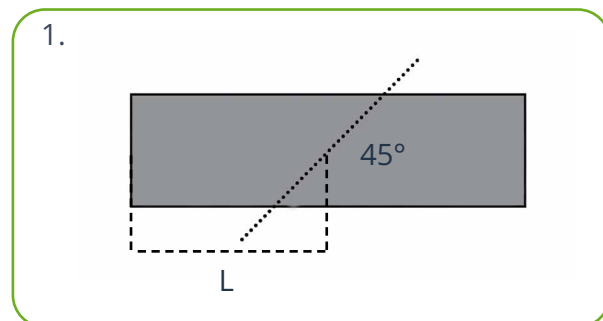
3. Cut open

- Cut open tubular fitting at the shortest possible distance and avoid tension in the seam, as shown in Figure 3.

4. Install

- Apply glue on both sides, let dry and rejoin the cut surfaces over the pipe.
- The pipe ends of the insulation tube should be glued to the carrier pipe for compartmentation.

Required tools (See the Tools section, p. 40)



2. Bend 90° segmented

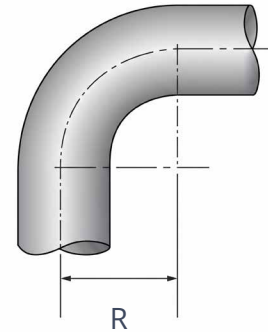
For a perfect fit of insulation on 90° bends, we recommend segmented insulation bends.

1. Curve radius

- Measure the curve radius (R) using a tape measure, folding ruler or metal ruler.
- Measure the outer diameter of the pipe ($\varnothing_{\text{pipe}}$).

$\varnothing_{\text{pipe}}$ Outer diameter pipe
R Curve radius
t Tube insulation thickness

1.

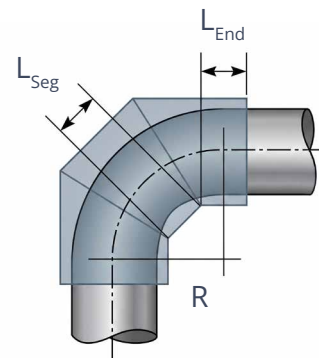


2. Calculation

The number and measures of the segments depend on the curve radius of the pipe bend.

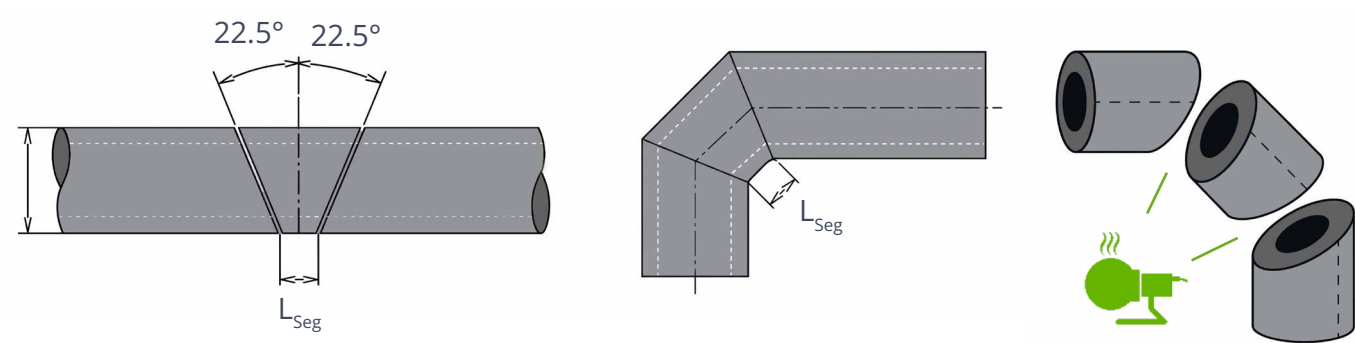
L_{Seg} Segment length inside
 L_{End} Length end piece

2.

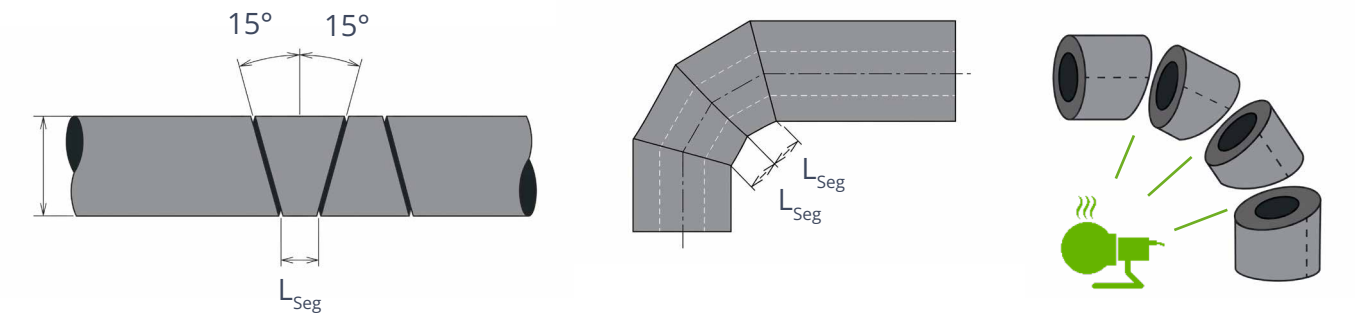


Prefabrication

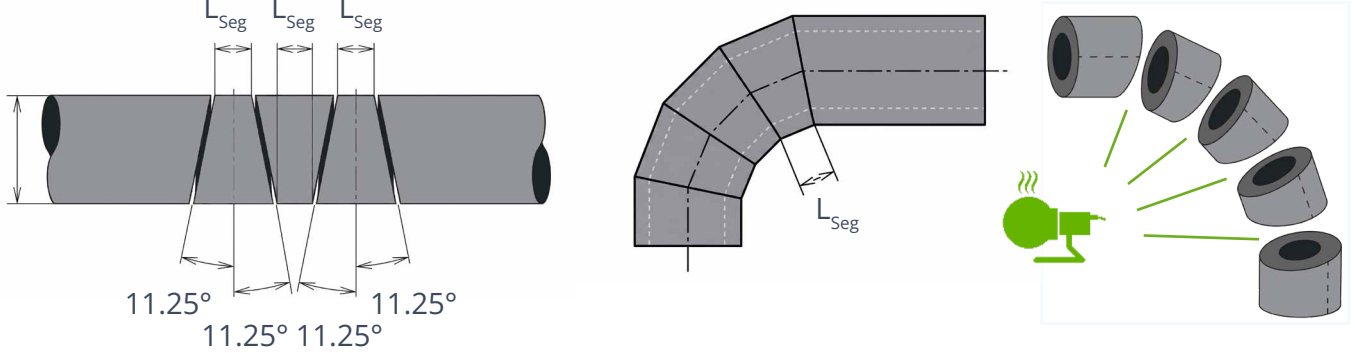
Bend 22.5° segmented



Bend 15° segmented



Bend 11.5° segmented



3. Bend 45°

Prefabrication & installation

1. Cut

- Cut the tube insulation at the required length at an 45° using the mitre box or cutting mat.

L Leg length

Important!

Heatplate: allow an additional 5 mm length to the tube for melting.

2. Join segments

- After cutting the segments, coat surfaces on both sides with ThermaGlue.
- Wait until the glue is tack-dry.
- Join both parts applying light pressure.

Alternatively, use the heatplate for joining!
See the "Prefab-it-yourself" part of this manual.

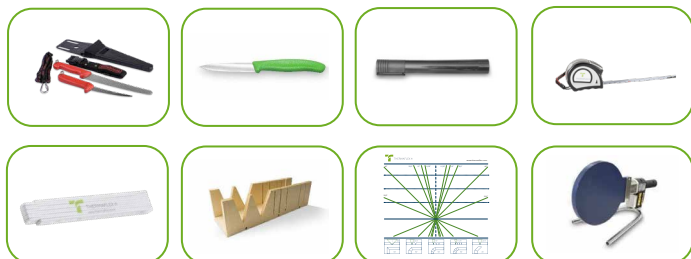
3. Cut open

- Cut open tubular fitting at the shortest possible distance and avoid tension in the seam, as shown in Figure 3.

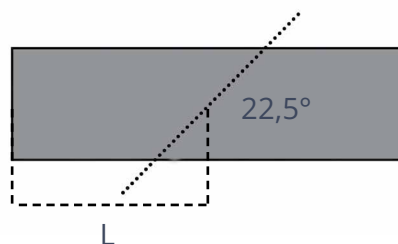
4. Install

- Apply glue on both sides, let dry and rejoin the cut surfaces over the pipe.
- The pipe ends of the insulation tube should be glued to the carrier pipe for compartmentation.

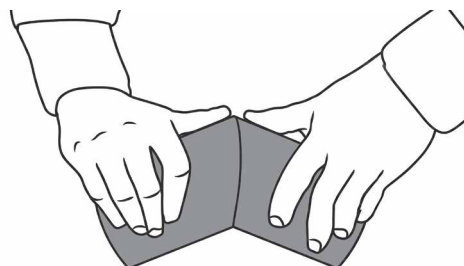
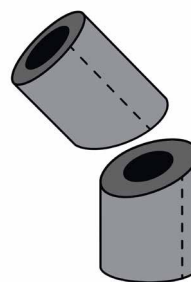
Required tools (See the Tools section, p. 40)



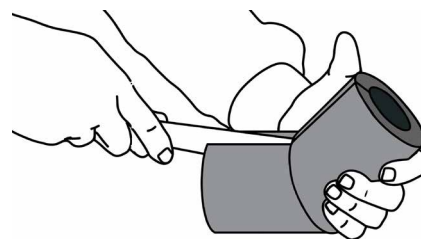
1.



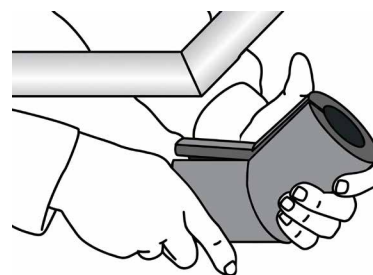
2.



3.



4.



4. T-piece 90°

Prefabrication & installation

1. Make 90° bend

Start with making a 90° bend piece.

2. Cut

- Cut off the corner at a 45° angle as shown in Figure 2.
- Cut an additional piece of tube insulation at a 45° angle.

$\varnothing_{ins}$ Outer diameter (pipe + 2x Insulation thickness)

Important!

Heatplate: allow an additional 5 mm length to the tube for melting.

3. Join segments

- After cutting the segments, coat surfaces on both sides with ThermaGlue.
- Wait until the glue is tack-dry.
- Join both parts applying light pressure.

Alternatively, use the heatplate for joining!
See the "Prefab-it-yourself" part of this manual.

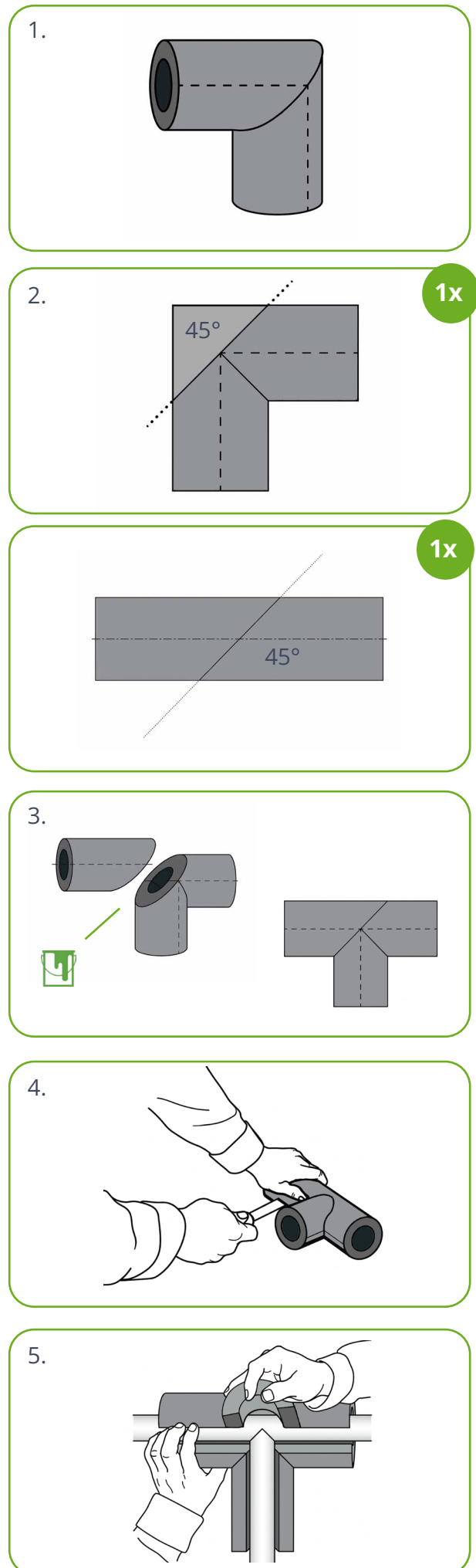
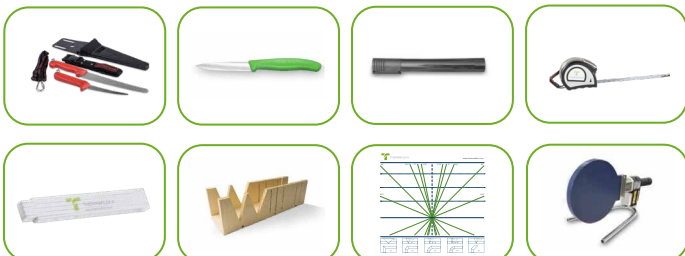
4. Cut open

Cut open tubular fitting at the shortest possible distance and avoid tension in the seam, as shown in Figure 4.

5. Install

- Apply glue on both sides, let dry and rejoin the cut surfaces over the pipe.
- The pipe ends of the insulation tube should be glued to the carrier pipe for compartmentation.

Required tools (See the Tools section, p. 40)



5. T-piece 45°

Prefabrication & installation

1. Make 135° bend

- Start with making a 135° bend as shown in Figure 1.

2. Cut

- Cut off the corner at a 45° angle as shown in Figure 2.
- Cut an additional piece of tube insulation at a 45° angle.

$\varnothing_{ins}$ Outer diameter (pipe + 2x Insulation thickness)

Important!

Heatplate: allow an additional 5 mm length to the tube for melting.

3. Join segments

- After cutting the segments, coat surfaces on both sides with ThermaGlue.
- Wait until the glue is tack-dry.
- Join both parts applying light pressure.

Alternatively, use the heatplate for joining!
See the "Prefab-it-yourself" part of this manual.

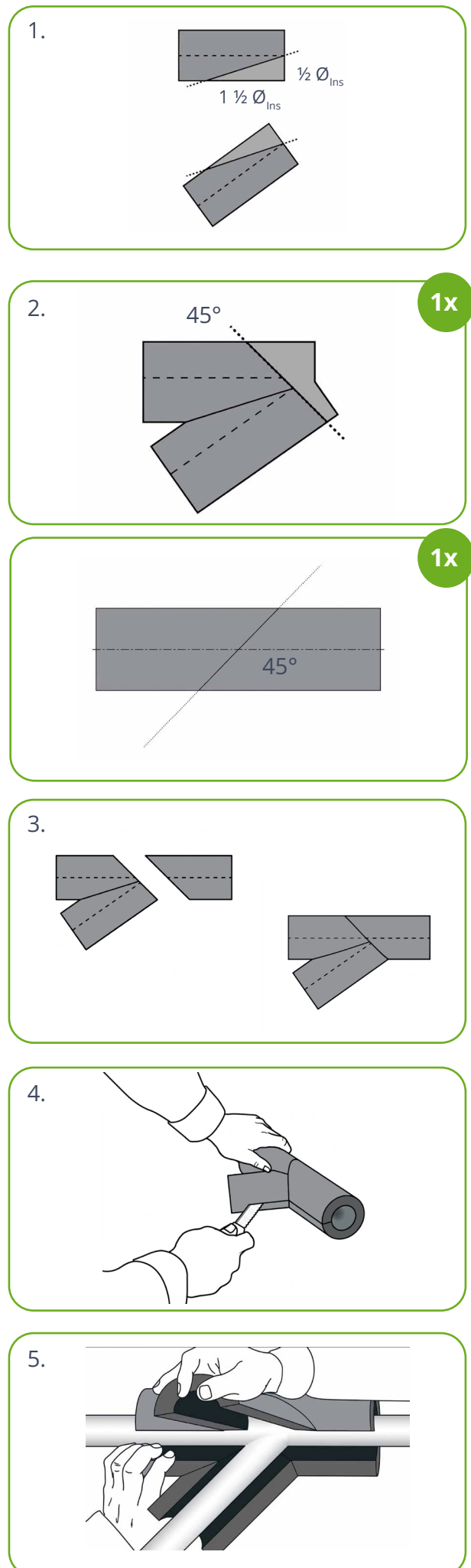
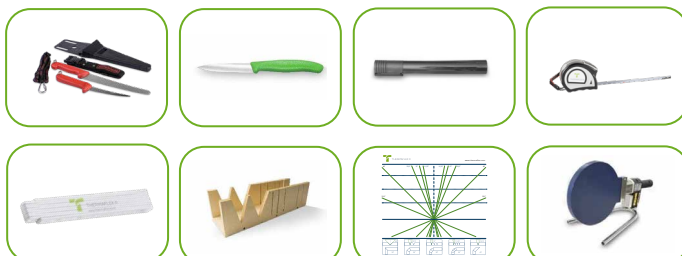
4. Cut open

- Cut open tubular fitting at the shortest possible distance and avoid tension in the seam, as shown in Figure 4.

5. Install

- Apply glue on both sides, let dry and rejoin the cut surfaces over the pipe.
- The pipe ends of the insulation tube should be glued to the carrier pipe for compartmentation.

Required tools (See the Tools section, p. 40)



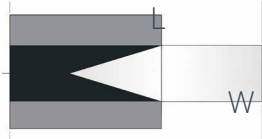
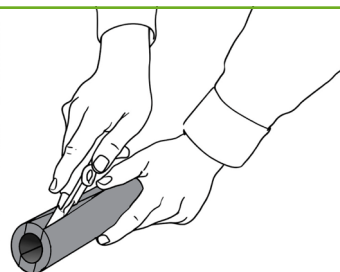
6. Reducer

Prefabrication & installation

1. Cut

- Cut out 2, 4, 6 or max. 8 wedge-shaped segments from the tube insulation at length (L) of the reducer.
- The number of segments depends on the difference between the circumference of the small pipe and the large pipe.

1.



L Length reducer
W width piece to be cut out

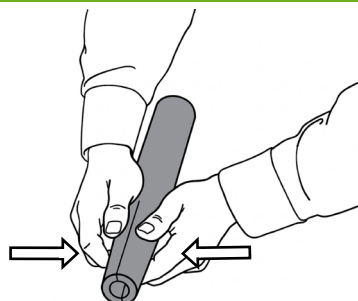
Tip!

The width of the wedge-shaped pieces should be maximum 20 mm.

2. Join together

- After cutting out the wedge-shaped segments, coat all joining surfaces with ThermaGlue.
- Wait until the glue is tack-dry.
- Join using light pressure.

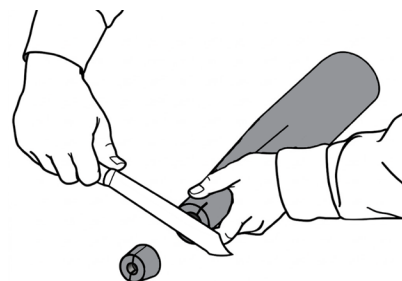
2.



3. Cut straight

- Cut the reducer end at a 90° angle to fit the smaller pipe insulation.

3.



4. Cut open

- Cut open pipe fitting on the flat side to avoid tension in the seam.

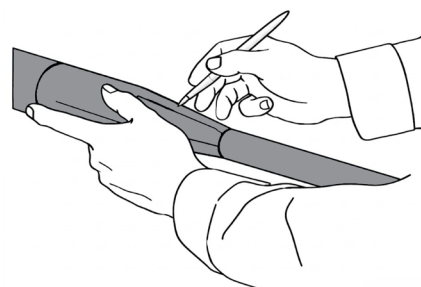
4.



5. Install

- The ends of the installed tube insulation should be glued to the carrier pipe for compartmentation before installing it on the reducer piece.
- Apply glue on both sides, let dry and rejoin the cut surfaces over the pipe.
- Use the wet sealing technique for the two butt joints.

5.



Required tools (See the Tools section, p. 40)



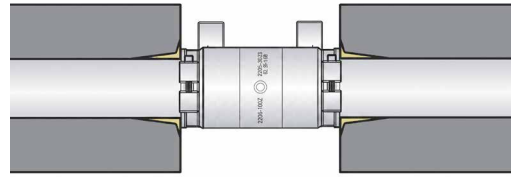
7. Insulating oversized fittings

Prefabrication & installation

1. Insulate pipe

- Insulate the pipes up to the oversized fitting.
- The ends of the tube insulation should be glued on both sides of the fitting for compartmentation.

1.

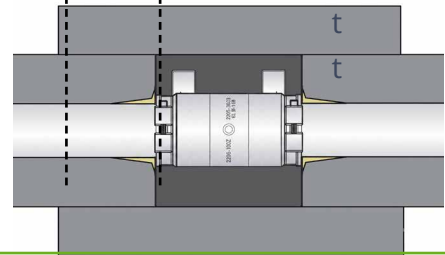


2. Place oversized fitting cover

- Place the oversized fitting insulation cover around the fitting.
- The inner diameter of the insulation cover should be at least the size of the outer diameter of the tube insulation around the pipe.

2.

>20 mm & > t



t Outer diameter (pipe + 2x Insulation thickness)

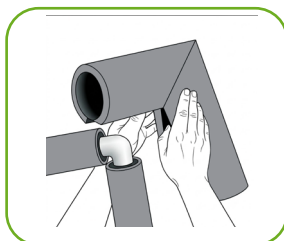
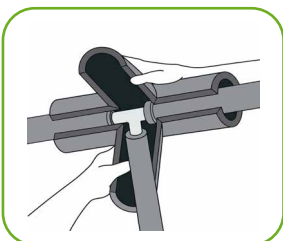
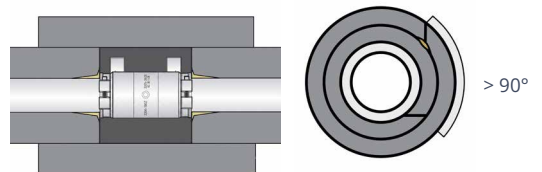
Important!

Overlap should be > 20 mm and at least the same wall thickness (t). Use the same insulation thickness for the cover.

3. Insulate

- Cut open insulation cover and rejoin over the fitting.
- Use the wet sealing technique to join the insulation fitting cover onto the straight length insulation.
- Ensure the seams don't overlap as shown in Figure 3.

3.



Sheet Insulation - Pipe & Circular ducts

General

This installation manual will guide you in professional pipe and circular duct insulation for outer diameters over 114 mm with Thermaflex polyolefin sheet insulation as well as the most common used fittings. For the insulation of specific fittings not covered in this installation manual, please contact your Thermaflex partner and our insulation specialists will be happy to assist you. Whether your insulation challenge is retrofit, new construction or prefabrication, we offer complete toolsets and installation training programs to ensure maximum peace of mind for owner, installer and end-user.

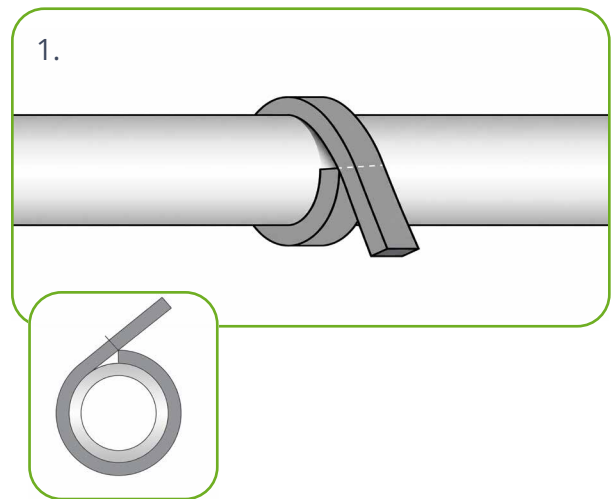


Pipes & circular ducts

Measurement & cutting

1. Measure

- Determine the circumference (C) of the pipe using a strip of the insulation material of the same thickness to be used for the insulation.



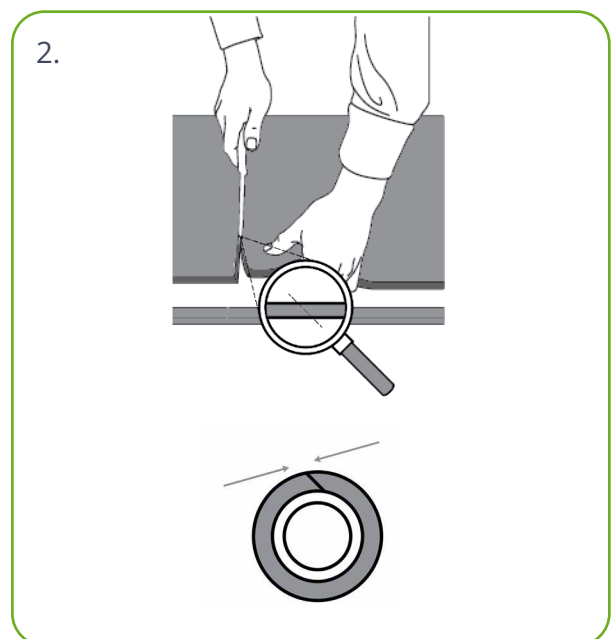
2. Outline guides & cut (Circumferential joint)

- Plot the circumference on the sheet insulation and cut accordingly.
- For circumferential joining, cut the sheet material in a bevelled manner to maximise the joining surface.

C Pipe circumference
L Length

TIP!

Before start marking, make sure the curve of the sheet material follows the curve of the pipe / circular duct for easy application.



Required tools (See the Tools section, p. 40)

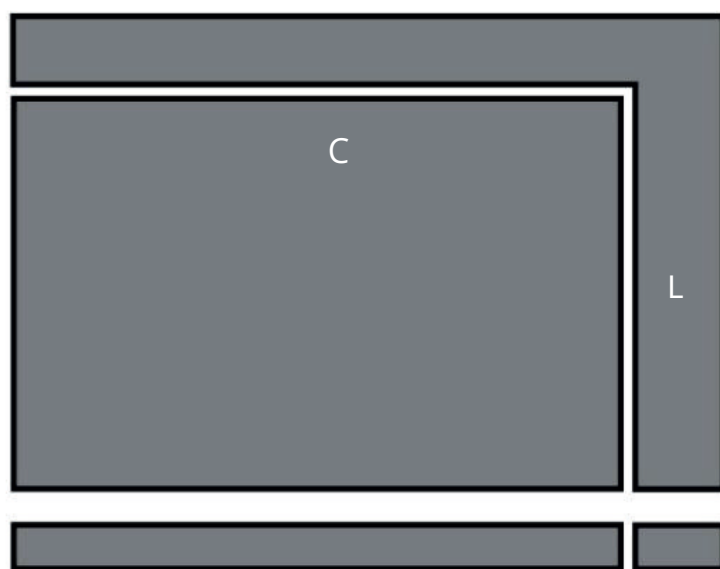
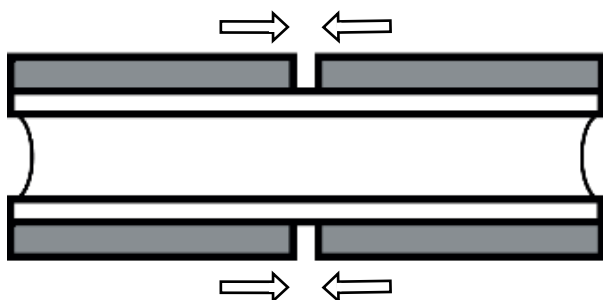
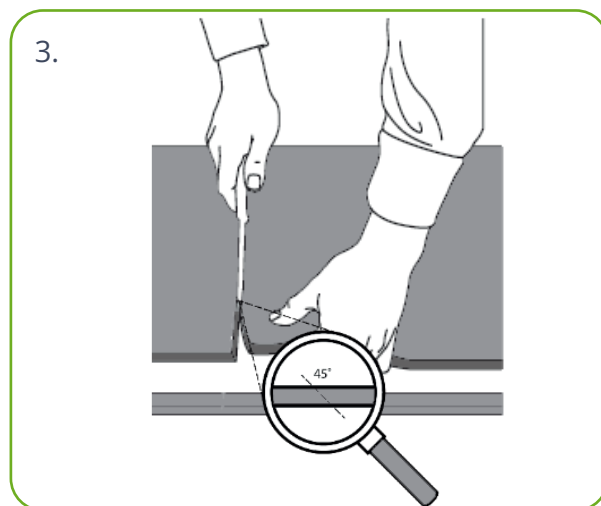


3. Cut (Butt joint)

- Cut the sheet insulation to length (L) for butt joining if necessary.
- For longitudinal joining cut with a 90° angle by using a knife.

Important!

Don't forget to allow an excess length of 5 mm for wet sealing.



Insulation strip (C)

Required tools (See the Tools section, p. 40)



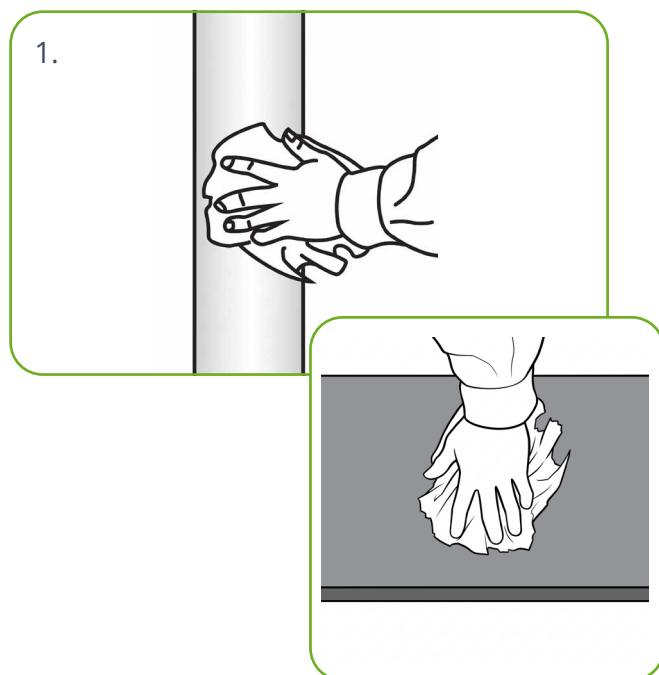
Surface preparation

1. Clean surfaces

- Surface of the pipe / duct and the insulation material must be free of contamination such as dust or grease and free of moisture prior the application of ThermaGlue.

Important!

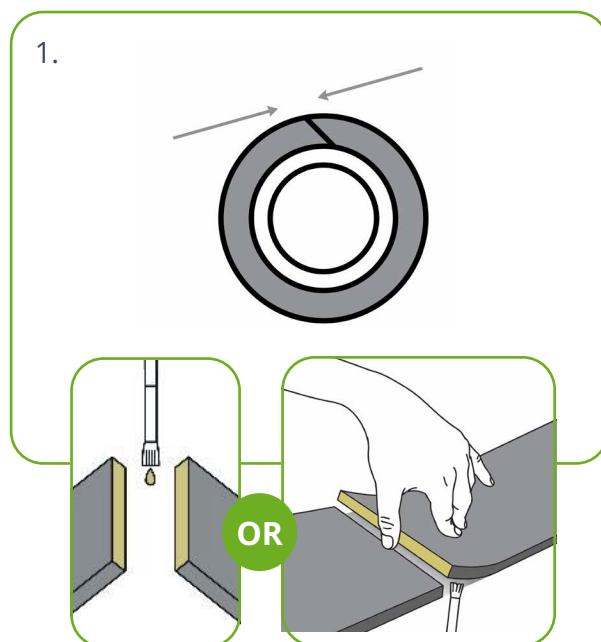
Clean the surfaces with polyolefin cleaner (PB, PE, PP) and make sure that the surface to be insulated is resistant against the cleaner.



Apply glue

1. Join insulation

- Coat both surfaces for circumferential joining with glue and let sealant dry before application (tack-dry consistency).



Required tools (See the Tools section, p. 40)



2. Apply glue (join to object)

- Due to the excellent stability of the Thermaflex polyolefin insulation materials, the risk of sacking is limited so it is not necessary to glue the entire sheet onto the pipe / duct with diameters up to 800 mm.
- Coat or Spray at a strip of > 10 cm thickness at the ends, one strip in the middle and at seam level with Thermaflex adhesive (Figure 2.1).
- Make sure to leave ~ 3 - 5 cm free for wet sealing.
- For pipes / ducts with diameters > 800 mm, full surface bonding is necessary (Figure 2.2).
- Apply glue on both the Thermaflex sheet insulation and the pipe / duct surface. Ensure Thermaflex adhesive is tack dry before joining.

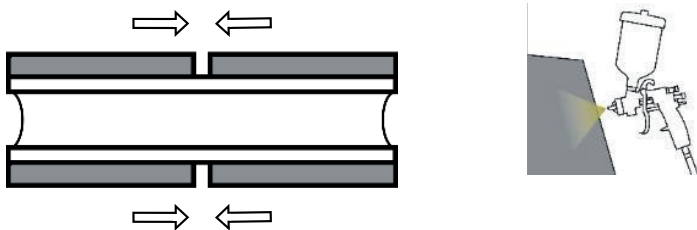
Important!

< 800 mm Ø - 3x 10 cm + seam

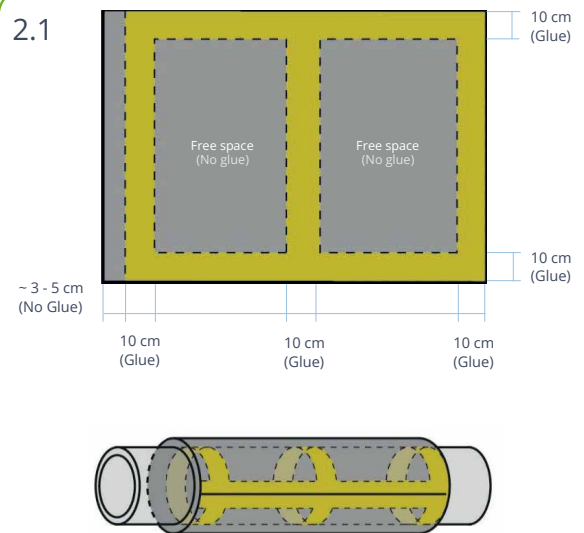
> 800 mm Ø - full surface bonding recommended

Tip!

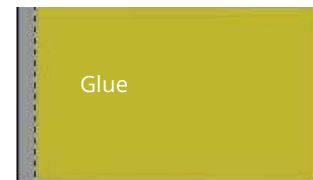
When applying glue on large surfaces, we recommend using a spatula or spray gun.



2.1



2.2



Required tools (See the Tools section, p. 40)



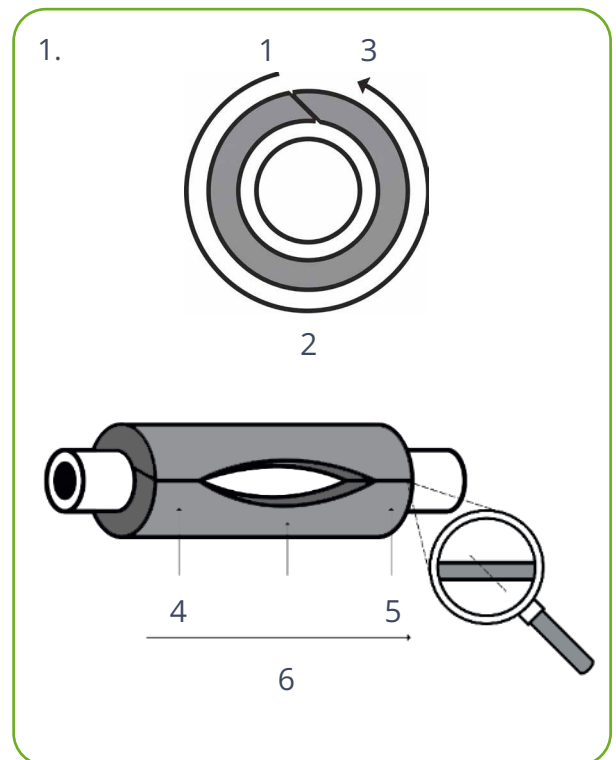
Apply insulation

1. Circumferential joining

- Wrap sheet insulation around the pipe (1,2,3).
- First join the edges (4,5) and then the middle part (6) to prevent misalignment of the ends.
- Join the remaining parts applying light pressure.

Important!

When securing sheet insulation material, care should be taken to avoid high tension on the sealed seam caused by the bending of the sheet. See 3. multi-layer insulation.

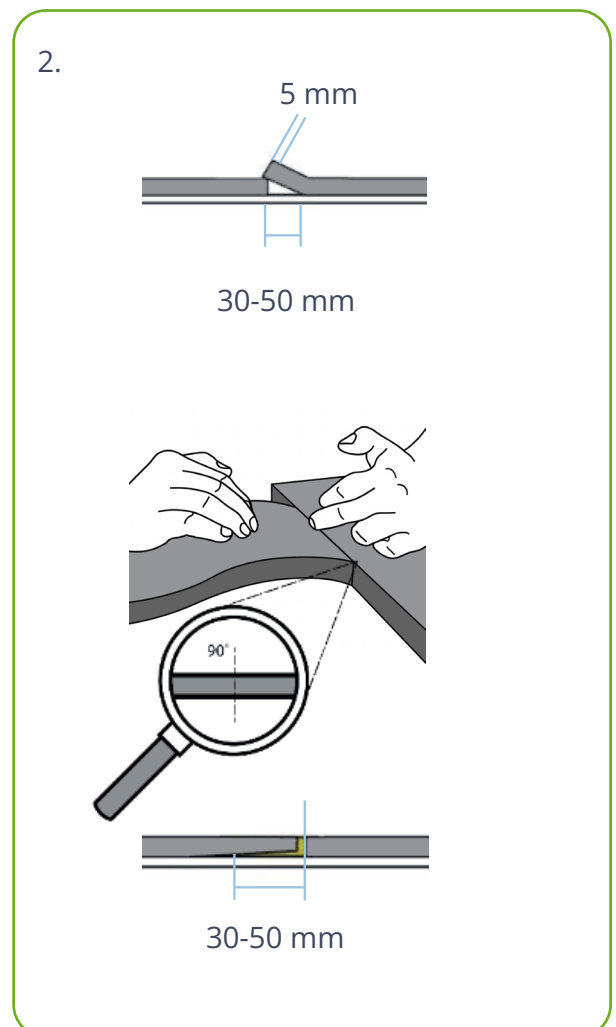


2. Butt joining

- Apply the insulation sheet material in longitudinal direction with an excess length of +5 mm.
- Use the wet sealing technique for the butt joint.

Important!

Make sure that the seam is in visible area for correct installation work and quality inspection!



Required tools (See the Tools section, p. 40)



3. Multi-layer insulation

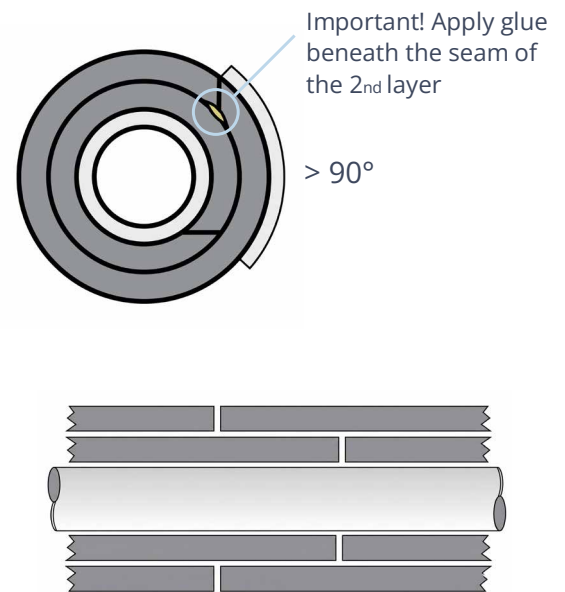
Ensure that the two layers are at least 90° apart from each other and the longitudinal seams don't overlap as shown in Figure 3. After applying the first layer, the second layer should be applied in the same manner.

Important!

The multi-layer technique is also needed if higher insulation thicknesses.

Apply glue beneath the seam of the 2nd layer.

1.



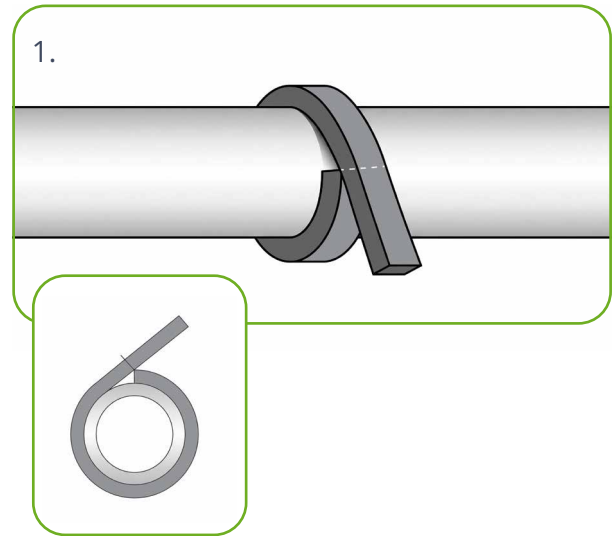
Fittings

1 Segment bend 90°

Measurement

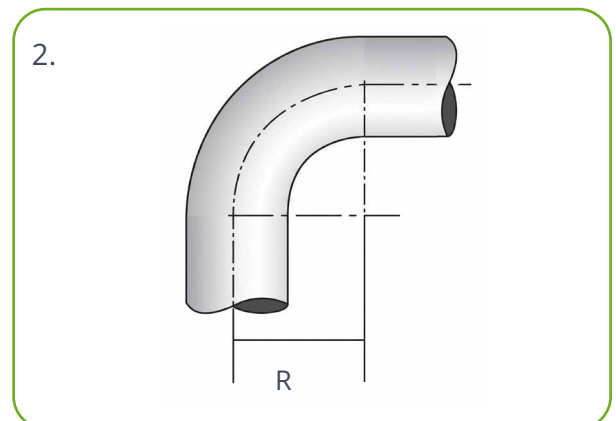
1. Circumference

- Measure the circumference (C) of the pipe using a strip of insulation material of the same thickness to be used for the insulation.



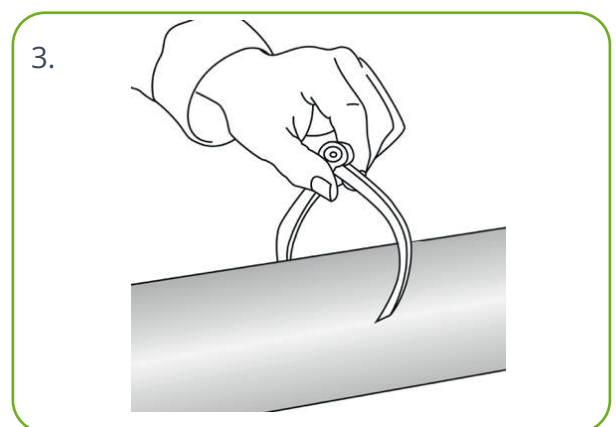
2. Curve radius

- Measure the curve radius (R) using a folding ruler, metal ruler or tape measure.



3. Pipe diameter

- Measure the outer diameter of the pipe ($\varnothing$ pipe) with the outside calipers or using the tape measure.



Required tools (See the Tools section, p. 40)



Draw cutting lines

1. Outline

Create an outline of the insulation bend on a piece of cardboard to obtain the length of the cutting lines on the sheet insulation.

1. Start with a top view of the pipe cross-section area including the insulation thickness.
2. Draw the side view of the fitting:
 - Choose number of segments (see table)
 - Draw the guides for the segments and draw segment
 - Copy the points 0 - 12 from the topview by drawing vertical guides.

Ø_{pipe} Outer diameter pipe

Ø_{ins} Outer diameter (pipe + 2x Insulation thickness)

R Curve radius

C Pipe circumference

L_x Excess length required

L₀₋₁₂ Height of the insulation for copying to insulation with compass

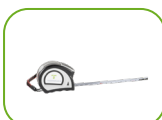
Number of segments	End parts angle [°]	Middle part angle [°]
2 + 1	2x 22.5°	1x 45°
2 + 2	2x 15°	2x 30°
2 + 3	2x 11.25°	3x 22.5°
2 + 4	2x 9°	4x 18°

Important!

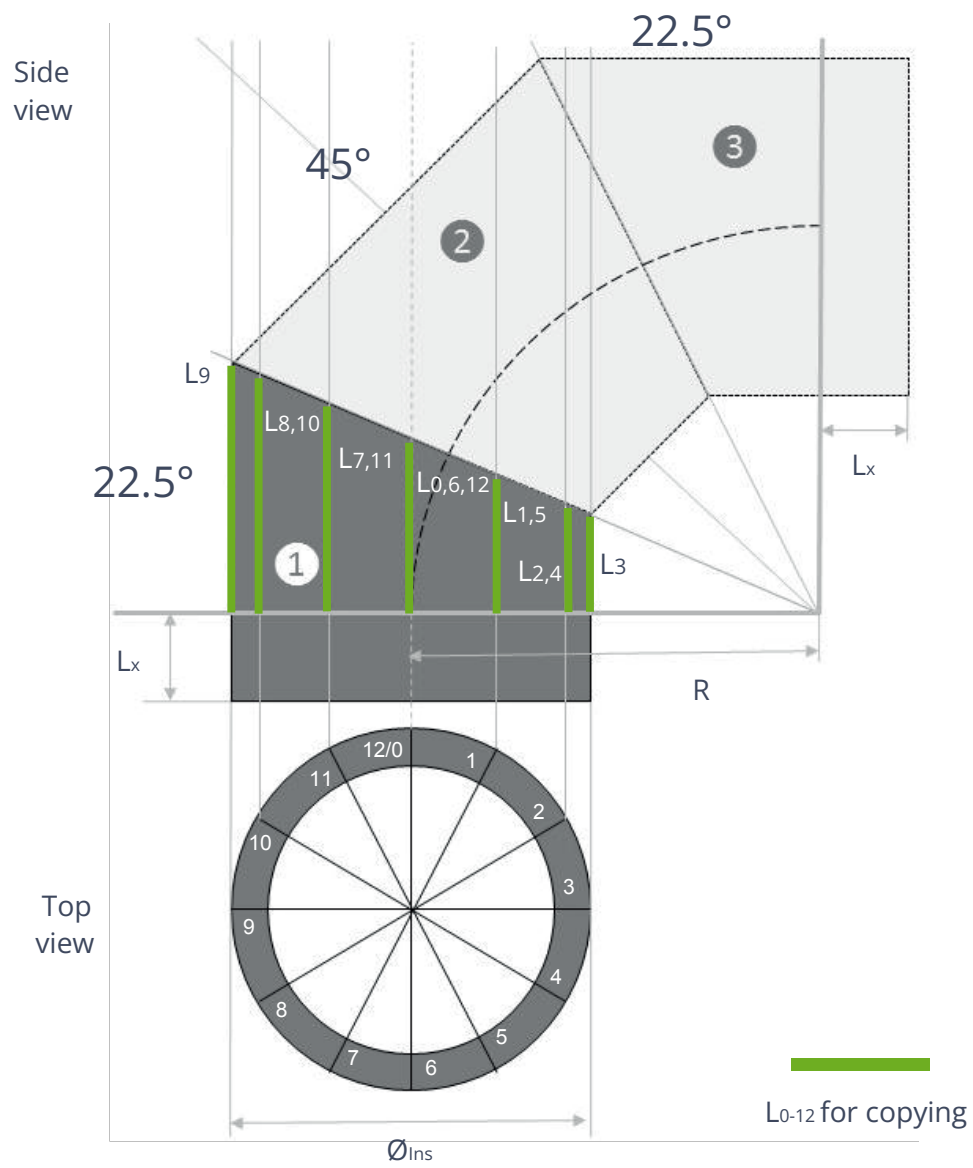
Lengths **L₉** should not be over 140 mm.

If this length is over 140 mm, add another bend segment.

Required tools (See the Tools section, p. 40)



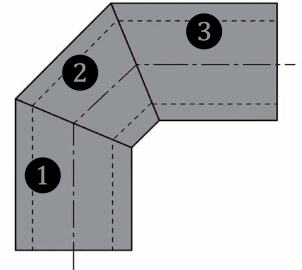
1.



2. Copy lengths

1. Cut a piece of sheet insulation at the width of the circumference (C) or mark it on a bigger piece of sheet insulation.
2. Divide the sheet width (C) into 12 parts and draw vertical guides.
3. Copy the lengths from the template:

- Draw a horizontal guide for the excess length (L_x)
- Draw the horizontal guide(s) ($L_9 + L_3$) for the copy the heights from the side view.
- Copy the heights using a compass ($r = L_0$ to L_{12}) at the points 0 – 12.
- Connect the intersecting point and you get the cutting lines.

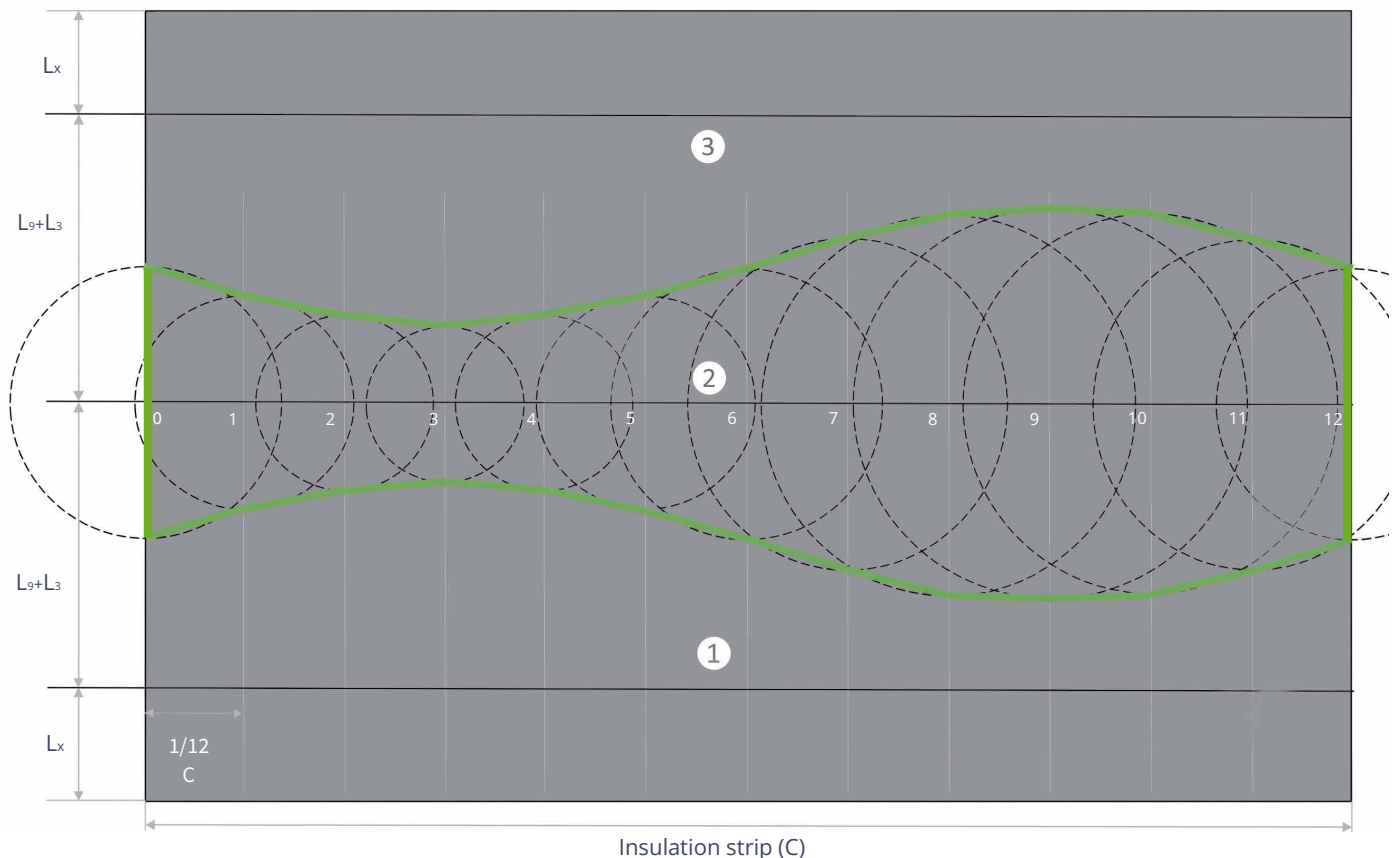


Important!

Hold the compass at an angle when marking the insulation surface to avoid ripping.

Tip!

When fitting more than one elbow with same measure, we advise you to make a template to save time!



 Cutting line

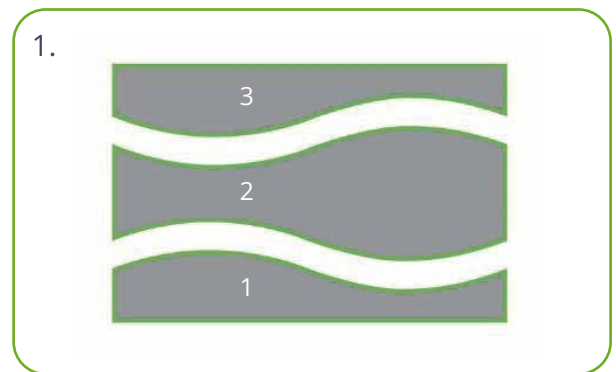
Required tools (See the Tools section, p. 40)



Assemble & join segments

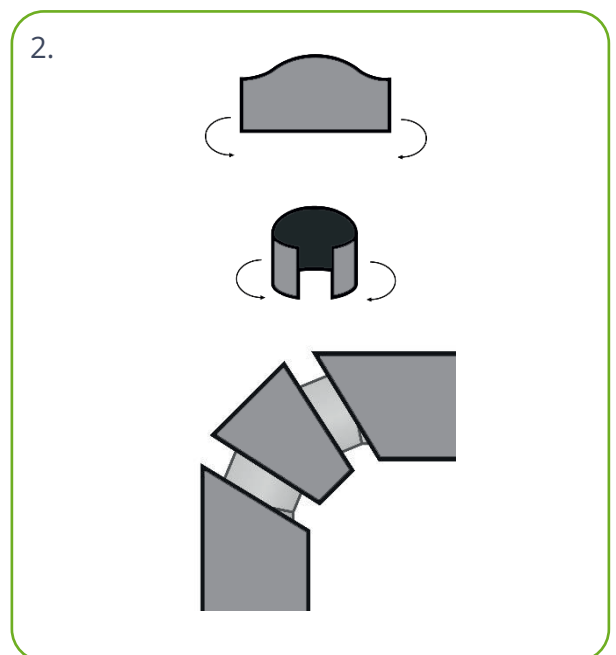
1. Cut out

- Cut out the segments from the sheet insulation material on the cutting lines.



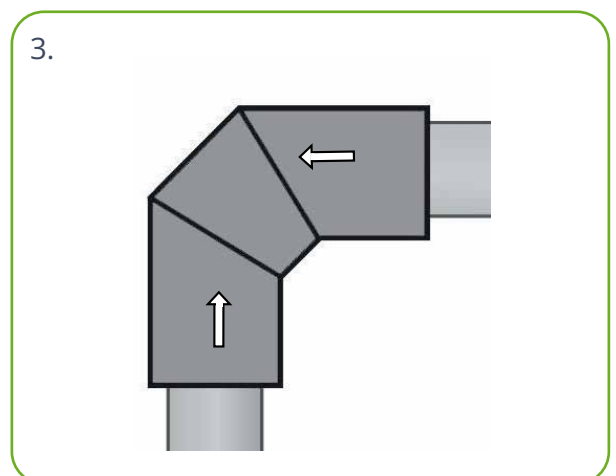
2. Fit

- Apply glue to the joining surface of the freshly cut sheet and allow to tack dry.
- Place sheet on the bend and glue each of the segments together.
- Due to the bending of the segments, the joining surfaces may retract inwards and outwards. Make sure to cut them straight so they fit together (especially for bigger thicknesses).



3. Join

- Apply glue on the joining surfaces, let it dry and join the segments on the bend.



Required tools (See the Tools section, p. 40)



Example: 90° Segment bend – 2 + 3 middle parts

Depending on the pipe diameter and the curve radius, sometimes more than 3 bend segments are necessary. To determine the number of bend segments, consult the table below. Make sure to respect a maximum of 140 mm for the length L_9 .

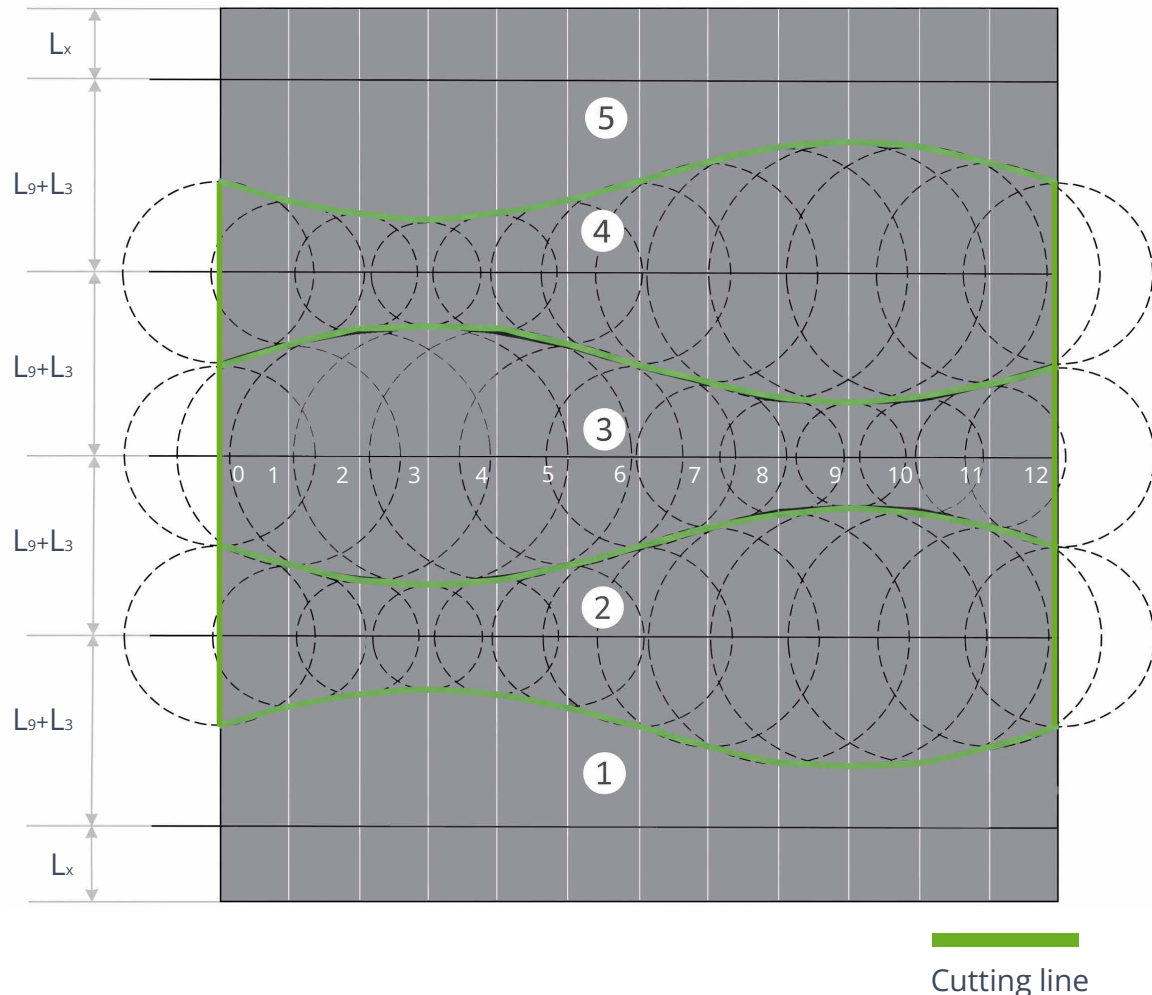
1. Create template

The template for a bend with 5 segments is given below.

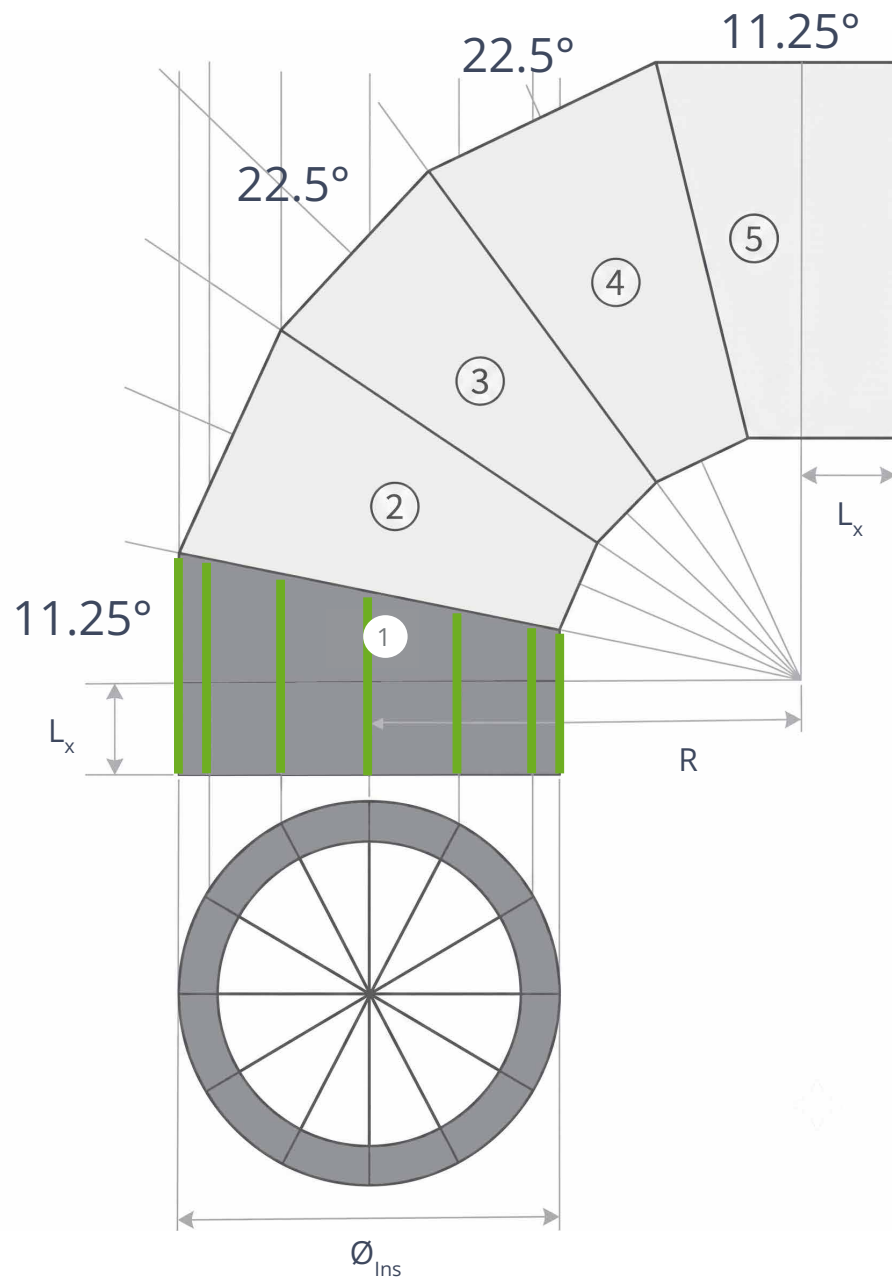
Number of segments	End parts angle [°]	Middle part angle [°]
2 + 1	2x 22.5°	1x 45°
2 + 2	2x 15°	2x 30°
2 + 3	2x 11.25°	3x 22.5°
2 + 4	2x 9°	4x 18°

2. Draw cutting lines

The cutting lines to cut out the 5 segments are given below.



1.



2 Bend 45°

Measure & Draw cutting lines

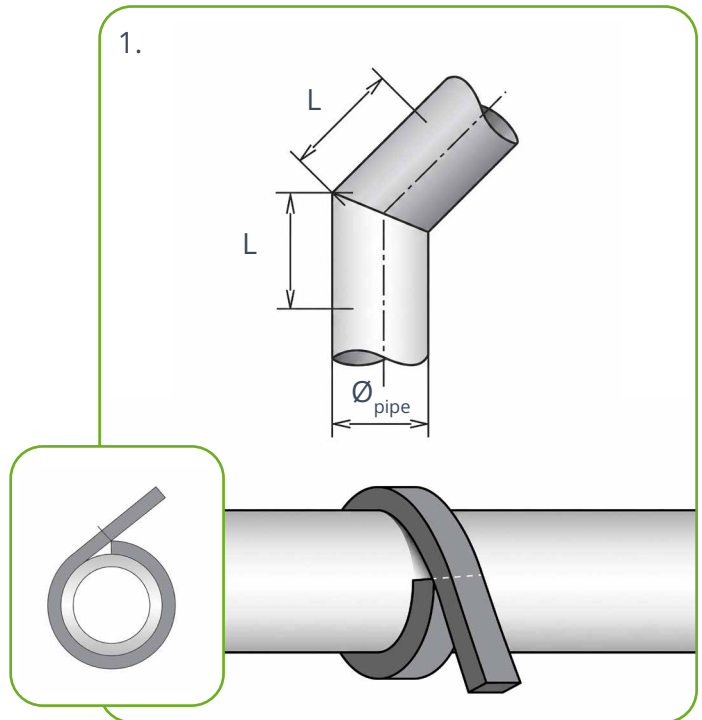
1. Measure

- Decide on the side length (L) of the bend.
- Determine the circumference of the pipe using a strip of insulation material of the same thickness to be used for the insulation.

$\varnothing_{\text{pipe}}$ Outer diameter pipe

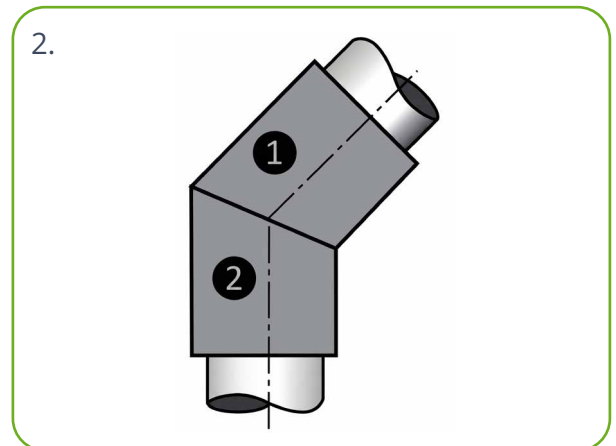
C Pipe circumference

L Side length of the insulation bend

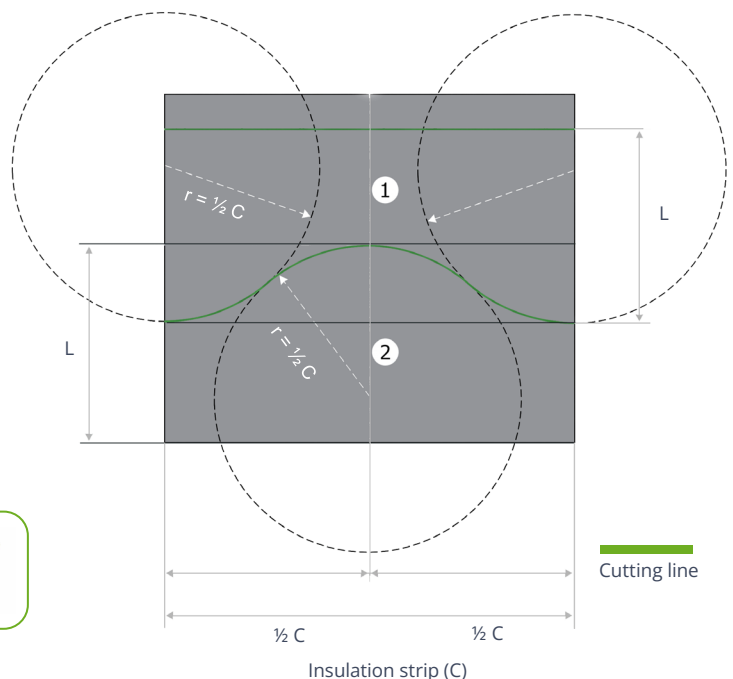


2. Draw guides on sheet

- Cut piece of sheet insulation at the width of the circumference (C) or mark on a bigger piece of sheet.
- Halve the sheet and draw a vertical guide.
- Draw a horizontal line at the height L.
- Mark the centre of the circle (2) at $\frac{1}{2} C$ and draw the circle using a compass.
- Next, use a compass to draw the other two circles with the same radius.



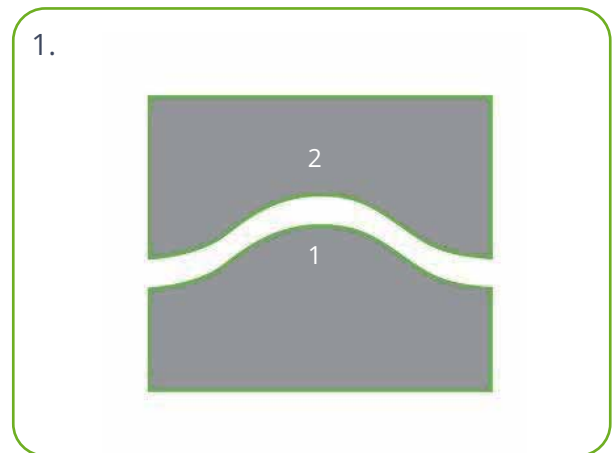
Required tools (See the Tools section, p. 40)



Assemble & join segments

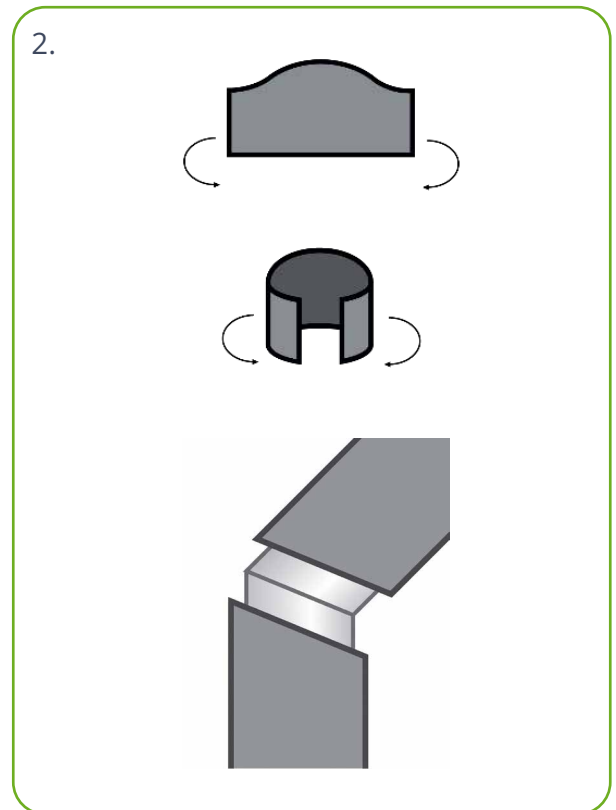
1. Cut out

- Cut out the segments from the sheet insulation material at the cutting lines.



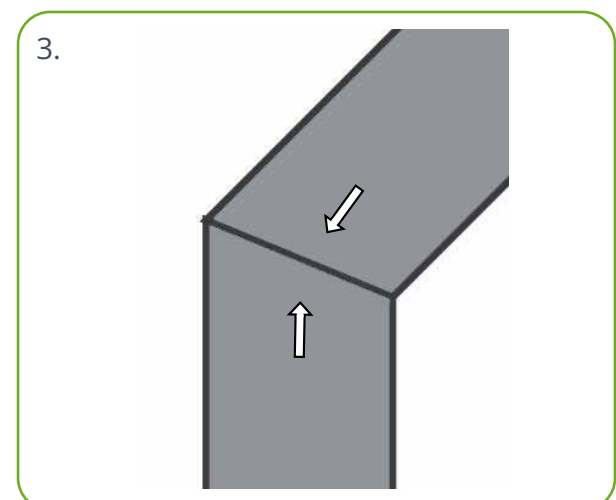
2. Fit

- Apply glue to the joining surface of the freshly cut sheet and allow to tack dry.
- Place sheet on the bend and glue each of the segments together.
- Due to the bending of the segments, the joining surfaces may retract inwards and outwards. Make sure to cut them straight so they fit together (especially for bigger wall thicknesses).



3. Join

- Apply glue on the joining surfaces, let it dry and join the segments on the bend.



Required tools (See the Tools section, p. 40)



3 T-piece 90°

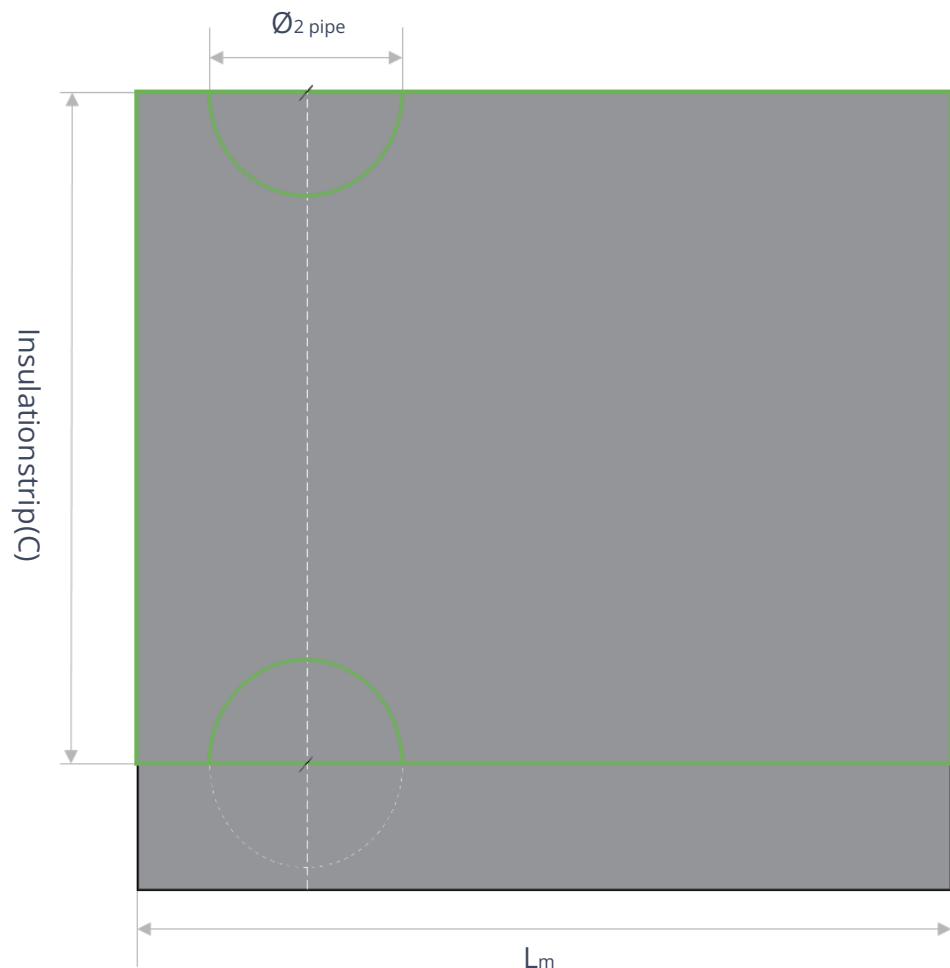
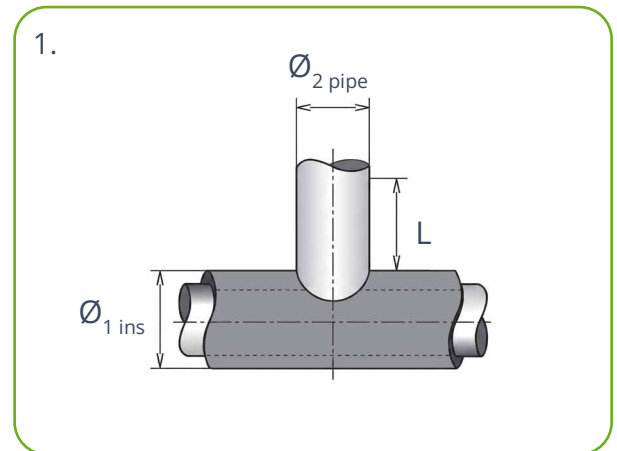
Insulate main line

1. Insulate

- Measure the branching pipe diameter ($\varnothing_{2 \text{ pipe}}$).
- Insulate the main line and cut out a hole for the branching pipe.
- For smaller branching pipe diameters use the hollow punches.
- Ensure compartmentation by applying glue around the hole towards the pipe/duct.

$\varnothing_{2 \text{ pipe}}$ Outer diameter branching pipe

L_m Required length for the main line



Required tools (See the Tools section, p. 40)

 Cutting line

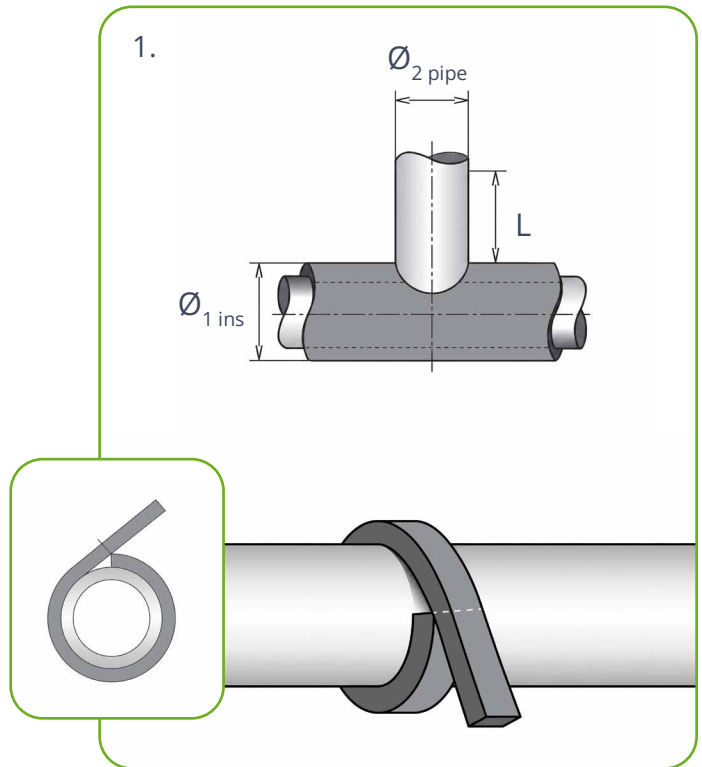


Measure & draw cutting lines

1. Measure

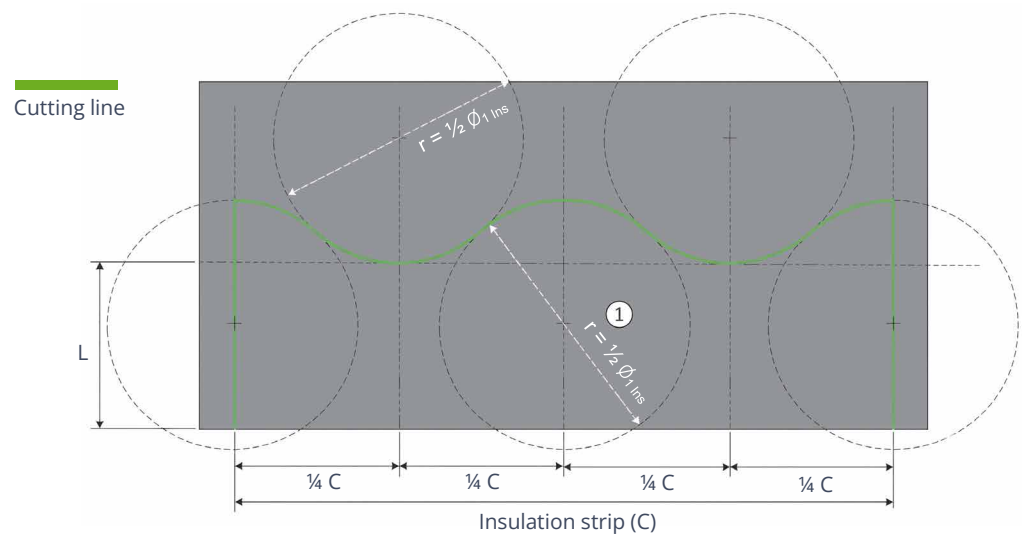
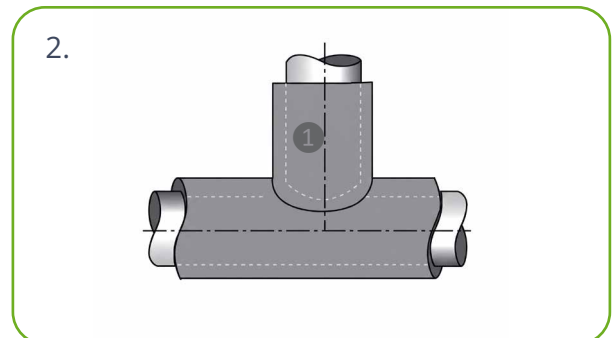
- Decide on the length needed for the insulation of the branching pipe (L).
- Measure the outer diameter of the main pipe including insulation ($\varnothing_{1 \text{ ins}}$) using the outside caliper or tape measure.
- Measure the circumference (C) of the branching pipe by using a strip of insulation material.

- $\varnothing_{1 \text{ ins}}$** Outer diameter pipe (main pipe + insulation)
C Pipe circumference of branching pipe
L Length of insulation of branching pipe



2. Draw guides on sheet

- Take a piece of insulation sheet that's at least the width of the circumference, (C) and mark the width, Divide by four and draw the vertical guides.
- Draw a horizontal guideline at the height of L, mark the centres of the two upper circles and draw the circles using a compass.
- Mark the centres of the three lower circles using the compass and draw them.



Required tools (See the Tools section, p. 40)



Cut out segment & join

1. Cut

- Cut out the segments from the sheet insulation material on the cutting lines.

2. Fit

- Adapt the joining surface to the main line insulation making a 90° cut at the short length and increase the angle towards the top as shown in Figure 2.
- Apply the segment onto the T-piece and towards the main pipe insulation and check the fit.
- Readjust if needed to get a perfect fit.

Important!

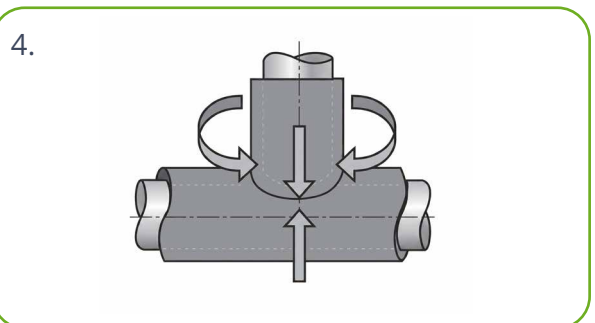
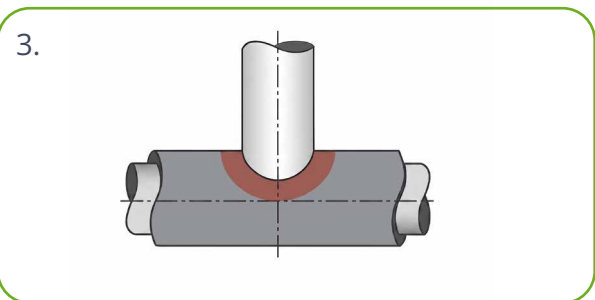
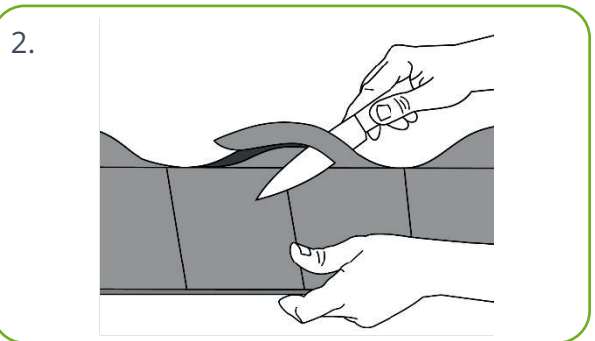
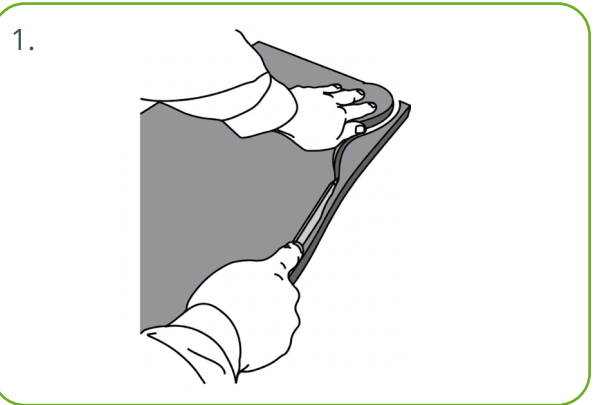
Joining surfaces must make a perfect fit for vapour-tight joining.

3. Prepare surface

- Clean the joining surface of the main pipe using a cleaner.
- Mark the joining surface of the main line using the freshly cut segment.
- Scrape the joining surface of the main line using a knife for better jointing.

4.0 Join

- Clean, apply glue, let it dry.
- First join the segment together and then direct towards the main pipe insulation.



Required tools (See the Tools section, p. 40)



4 Angle T-piece

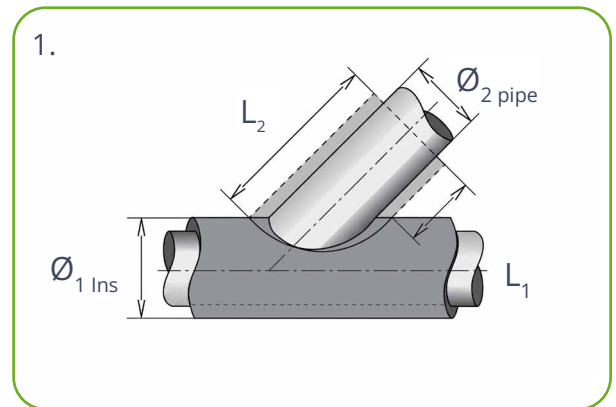
Insulate main line

1. Insulate

- Measure the branching pipe diameter ($\varnothing_{2 \text{ pipe}}$).
- Insulate the main line and cut out a hole for the branching pipe.
- For smaller branching pipe diameters use the hollow punches.
- Shape the hole with a knife to fit the angled branching pipe.

$\varnothing_{2 \text{ pipe}}$ Outer diameter branching pipe

L_m Required sheet length for insulating the main line



Required tools (See the Tools section, p. 40)

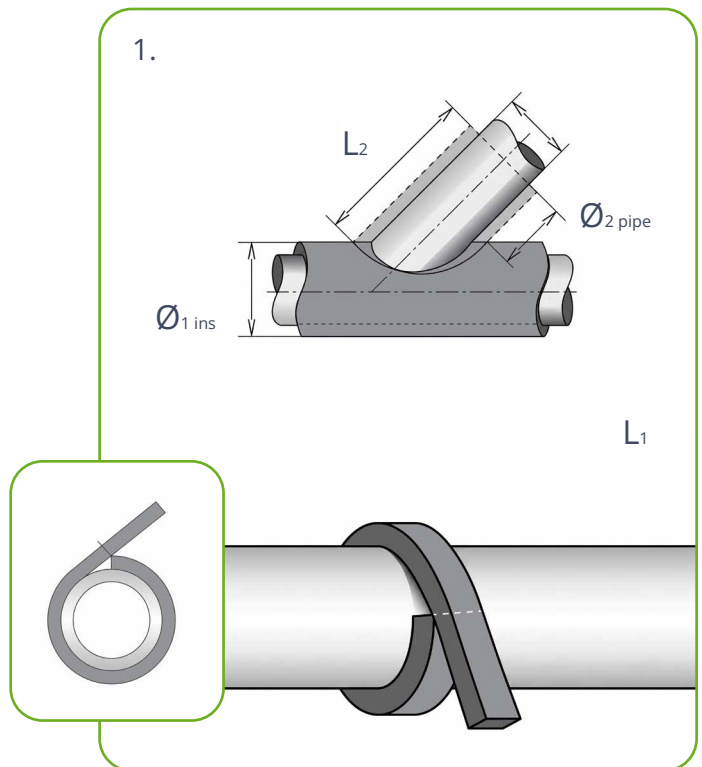


Measure & draw cutting lines

1. Measure

- Determine the length needed for the insulation of the branching pipe and determine the two lengths L_1 and L_2 by wrapping a strip of insulation around the branching pipe and measure the required lengths L_1 and L_2 .
- Measure outer diameter of the main pipe with insulation ($\varnothing_1$ ins) using the outside calipers or tape measure.
- Measure the circumference (C) of the branching pipe using a strip of insulation material

- $\varnothing_1$ ins** Outer diameter pipe (main pipe + insulation)
- $\varnothing_2$ pipe** Outer diameter pipe (branching pipe)
- C** Pipe circumference of branching pipe
- L_1** Length of insulation of branching pipe (shortest distance)
- L_2** L_2 Length of insulation of branching pipe (longest distance)

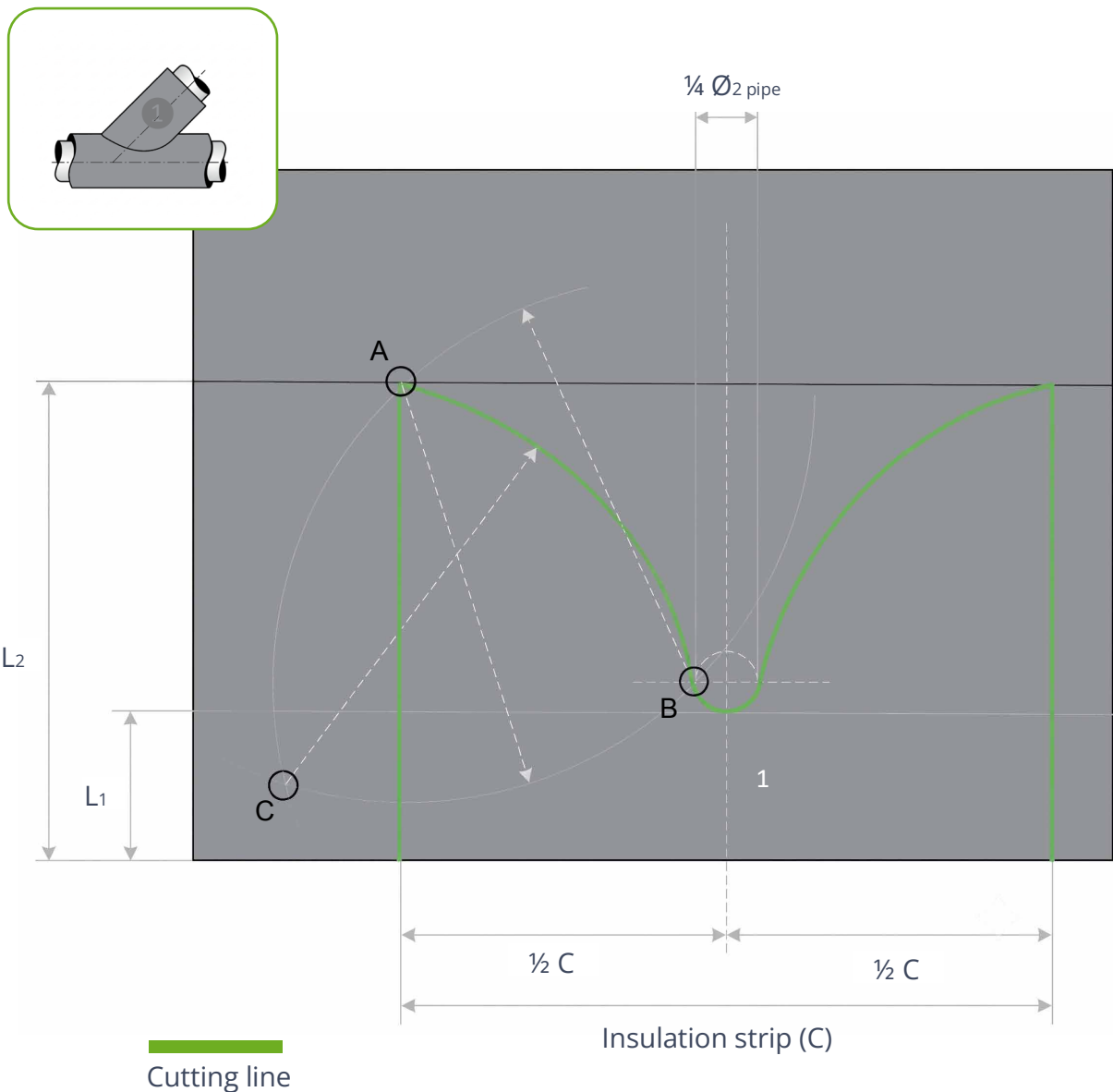


Required tools (See the Tools section, p. 40)



2. Draw guides

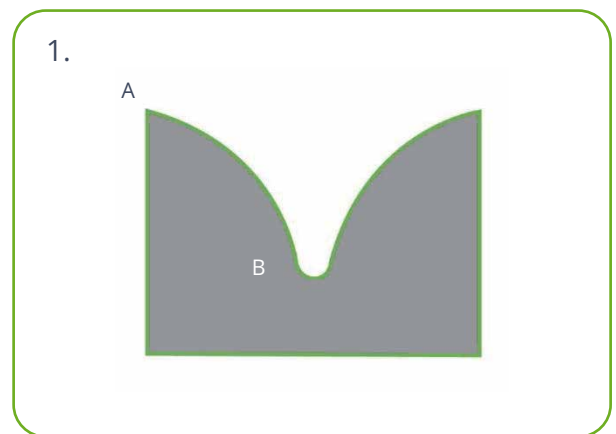
- Take a piece of insulation sheet with at least the width of the circumference (C).
- Draw the vertical lines for the width of the circumference at $\frac{1}{2} C$.
- Draw horizontal guides at height of L_1 and L_2 .
- Draw the small circle ($\frac{1}{4} \varnothing_2$ pipe) using the compass.
- Use point (A) as the circle centre for the compass and the distance (AB) as the radius.
- Draw the circle and then do the same using point (B) as the circle centre. Now, use the point of intersection (C) as the circle centre and the distance (AC) as radius, connect (A) and (B) using a compass to get the cutting line.



Cut out segment & join

1. Cut & adapt to fit

- Cut out the segments from the sheet insulation material at the cutting lines.
- Direct the joining surface of the segment towards the main line insulation by cutting at a bevelled angle so it fits the mainline from (A) to (B).
- Apply the segment onto the T-piece and towards the main pipe insulation and check the fit.
- Readjust if needed to get a perfect fit.

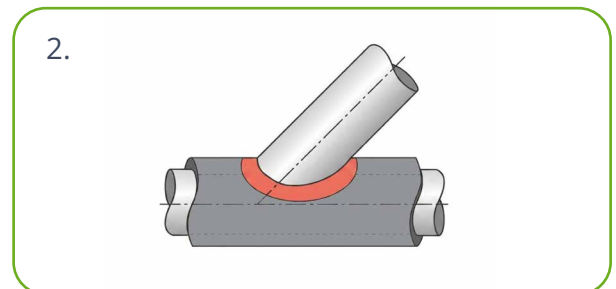


Important!

Joining surfaces fit perfectly together for vapour-tight joining.

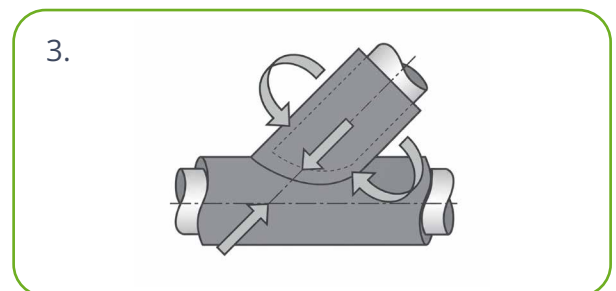
2. Prepare surface

- Clean the joining surface of the main pipe with a cleaner.
- Mark the joining surface of the main line using the freshly cut segment.
- Scrape the joining surface of the main line using a knife for better jointing.



3. Join

- Clean, apply glue and let it dry.
- First join the segment together.
- Then direct towards the main line.



Required tools (See the Tools section, p. 40)



5 Reducer concentric

Measure & draw cutting lines

Insulate main line

- First, insulate the main line up to the pipe reducer.

1. Measure

- Measure the length needed for the reducer (L).
- Determine the diameter ($\varnothing 1$ Ins and $\varnothing 2$ Ins)
- using the outside caliper.
- Determine the circumference (C) of the larger carrier pipe ($\varnothing 1$ pipe) including insulation by using a strip of insulation material of the same thickness (t).

$\varnothing 1$ pipe Outer diameter larger pipe

$\varnothing 2$ pipe Outer diameter smaller pipe

$\varnothing_{ins}$ Outer diameter larger pipe + insulation

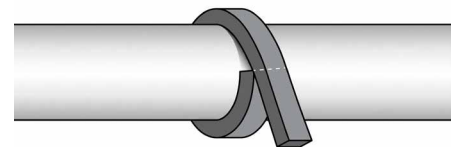
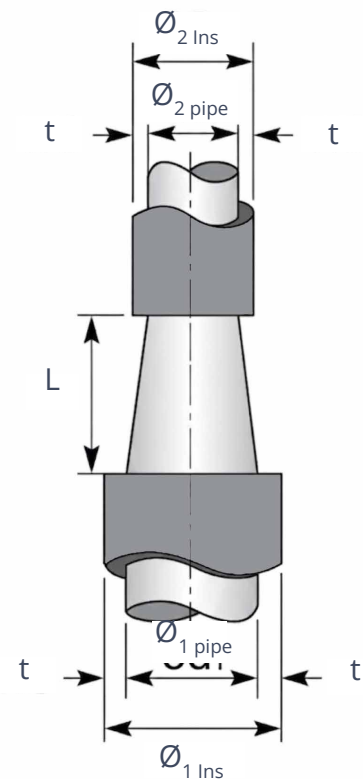
$\varnothing 2_{ins}$ Outer diameter small pipe + insulation

t Wall thickness sheet insulation

C Pipe circumference of larger pipe

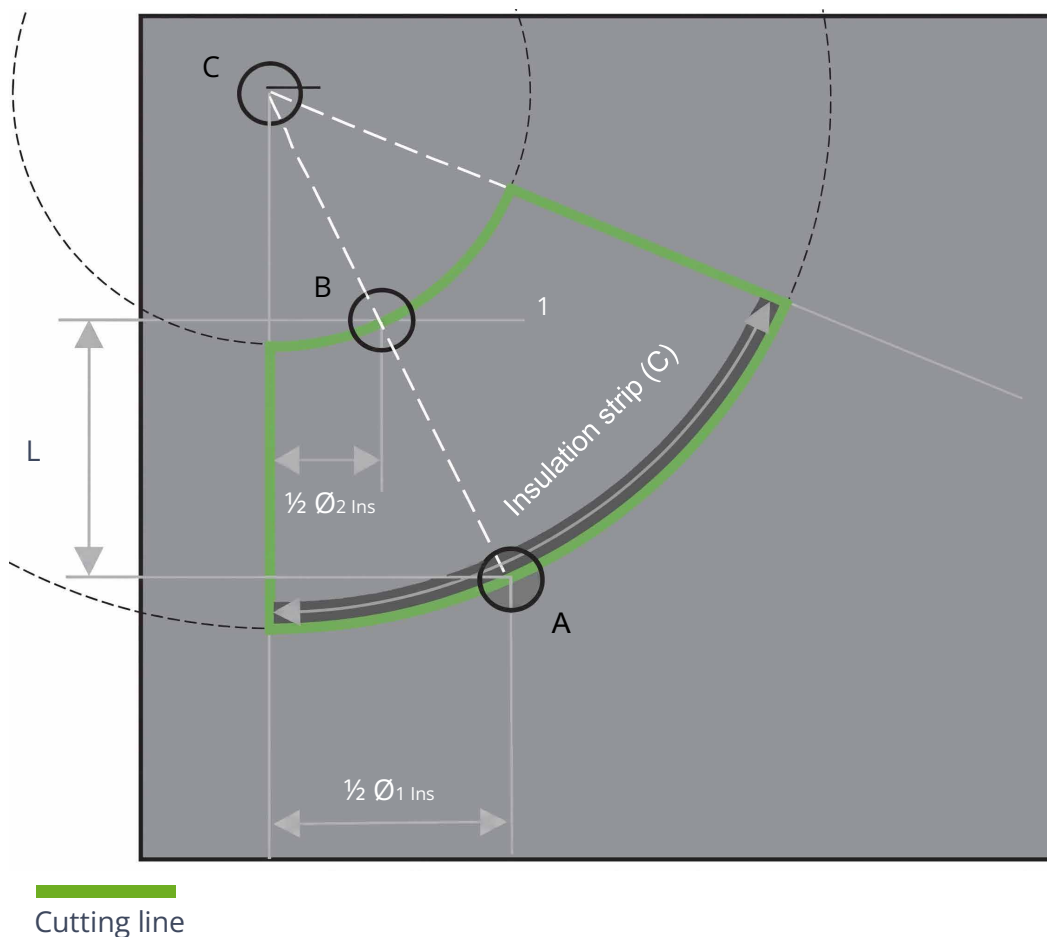
L Length reducer

1.



2. Draw guides

- Take a piece of sheet insulation. Use the vertical edge or draw a rectangular vertical guide.
- Transfer the length (L) with two horizontal guides and two vertical guides at a distance of $\frac{1}{2} \varnothing_1$ Ins and $\frac{1}{2} \varnothing_2$ Ins from the left edge or vertical guide and get the intersection points (A) and (B).
- Draw a guide by connecting the points (A) and (B) to get the circle centre (C) for drawing the curved cutting lines.
- Use the compass to draw two circles with (C) as the circle centre with the radius (AC) and (BC).
- Now transfer the circumference (C) to the outer circle by using the sheet insulation strip and draw the final guide in order to get the straight cutting lines.



Required tools (See the Tools section, p. 40)



Assemble segment

1. Cut out segment and join

- Cut out the reducer piece from the sheet insulation material at the marked cutting lines.
- Adapt the joining surfaces toward the pipe insulation on both sides if required, using a knife.
- Apply glue to the two joining surfaces of the reducer piece and ensure it is tack dry.
- Join the segment together on the pipe reducer.

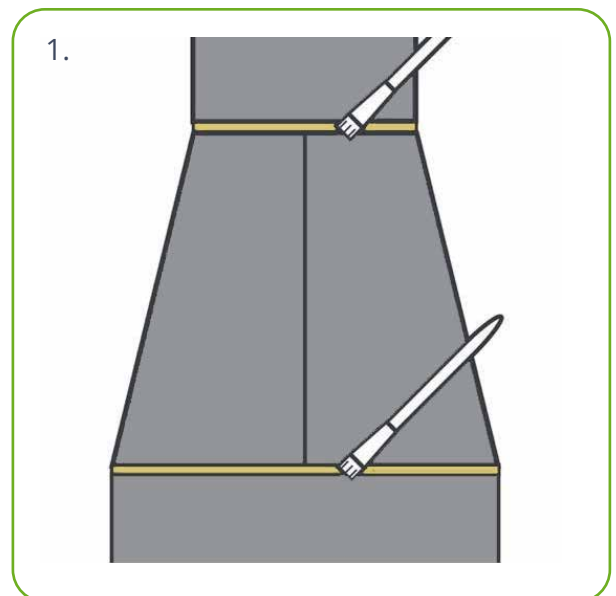
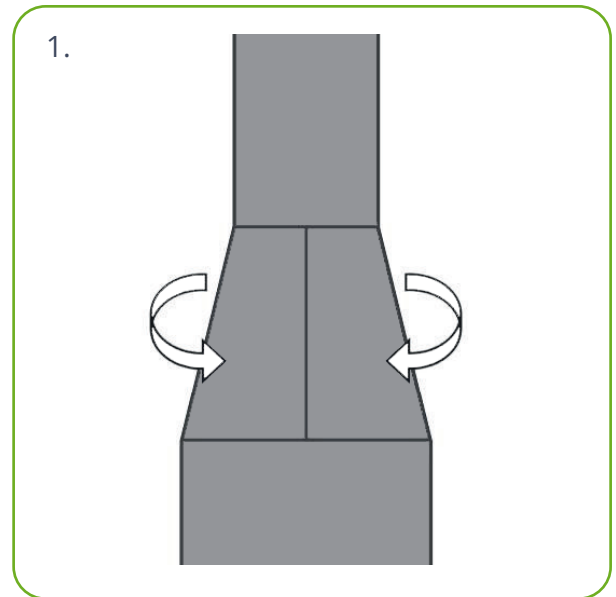
Tip!

Apply glue only to the two surfaces to join the segment! First join the ends of the seam, then the middle part to prevent misalignment of the ends. Then join the remaining parts by firmly pressing the joining surfaces together.

2. Join reducer piece with main pipe insulation

- Use the wet sealing technique for both butt joints and direct towards the main line insulation.

Required tools (See the Tools section, p. 40)



6 Reducer eccentric

Measure

Insulate main line

- First, insulate the main line up to the pipe reducer.

1. Measure

- Measure the two lengths of the reducer (L_1 and L_2).
- Determine the diameter ($\varnothing_{1 \text{ Ins}}$ and $\varnothing_{2 \text{ Ins}}$).
- Determine the circumference (C) by placing a strip insulation sheet material of the same thickness (t) around the pipe ($\varnothing_{1 \text{ pipe}}$).

$\varnothing_{1 \text{ pipe}}$ Outer diameter larger pipe

$\varnothing_{2 \text{ pipe}}$ Outer diameter smaller pipe

$\varnothing_{1 \text{ ins}}$ Outer diameter larger pipe + insulation

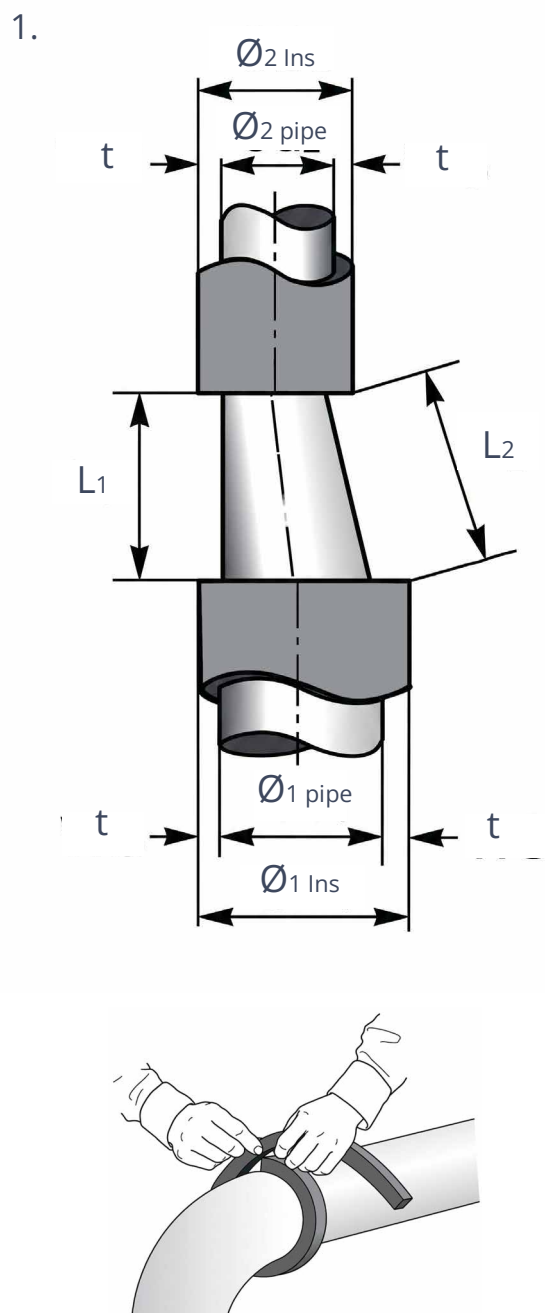
$\varnothing_{2 \text{ ins}}$ Outer diameter small pipe + insulation

t Wall thickness Thermaflex insulation

C Pipe circumference of larger pipe

L_1 Length reducer (shorter distance)

L_2 Length reducer (longer distance)



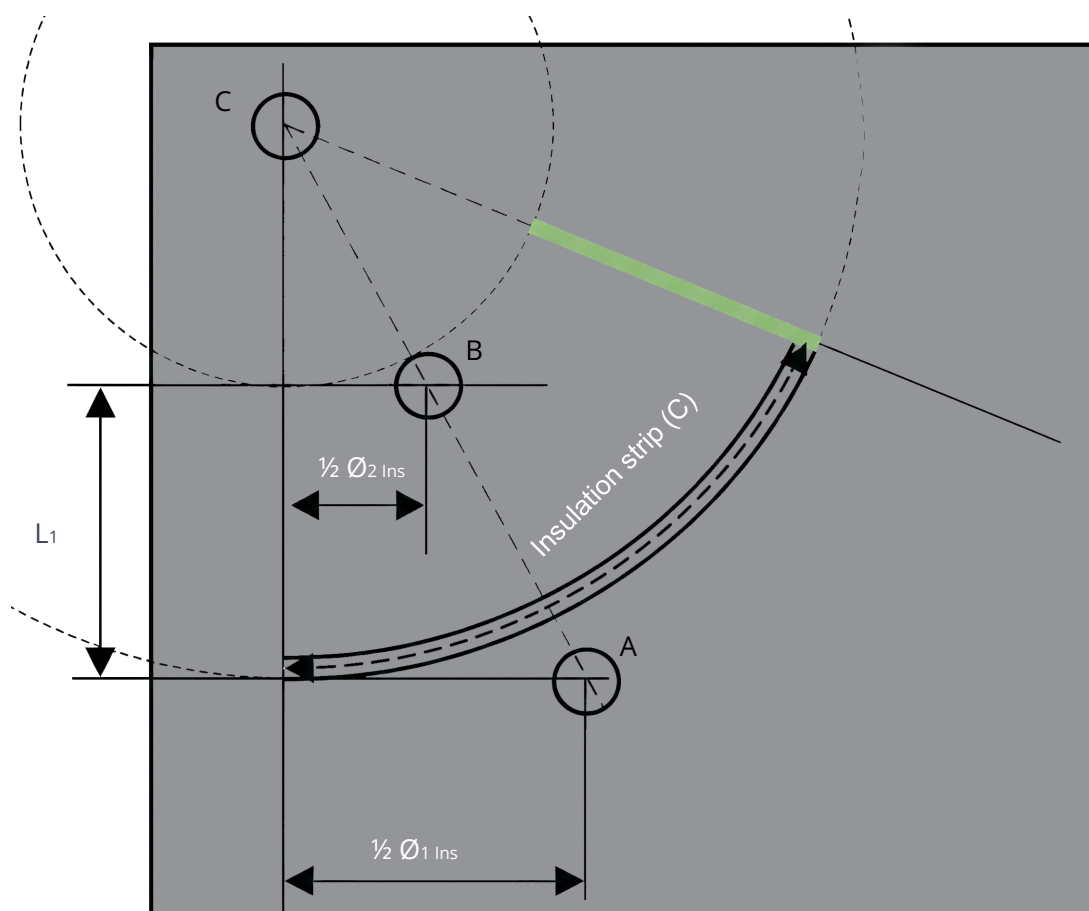
Required tools (See the Tools section, p. 40)



Draw cutting lines

1. Draw guides on sheet

- Take a piece of sheet insulation and draw rectangular vertical guide.
- Transfer the length (L_1) with two horizontal guides.
- Then mark the distances $\frac{1}{2} \varnothing_{1 \text{ Ins}}$ and $\frac{1}{2} \varnothing_{2 \text{ Ins}}$ on these horizontal guides as shown in Figure 1. to get the intersection points (A) and (B).
- Draw a guide by connecting the points (A) and (B) to determine the circle centre (C).
- Draw two circles with (C) as the centre with the radius (AC) and (BC).
- Now transfer the circumference (C) to the outer circle using the sheet insulation strip and get the first cutting line.



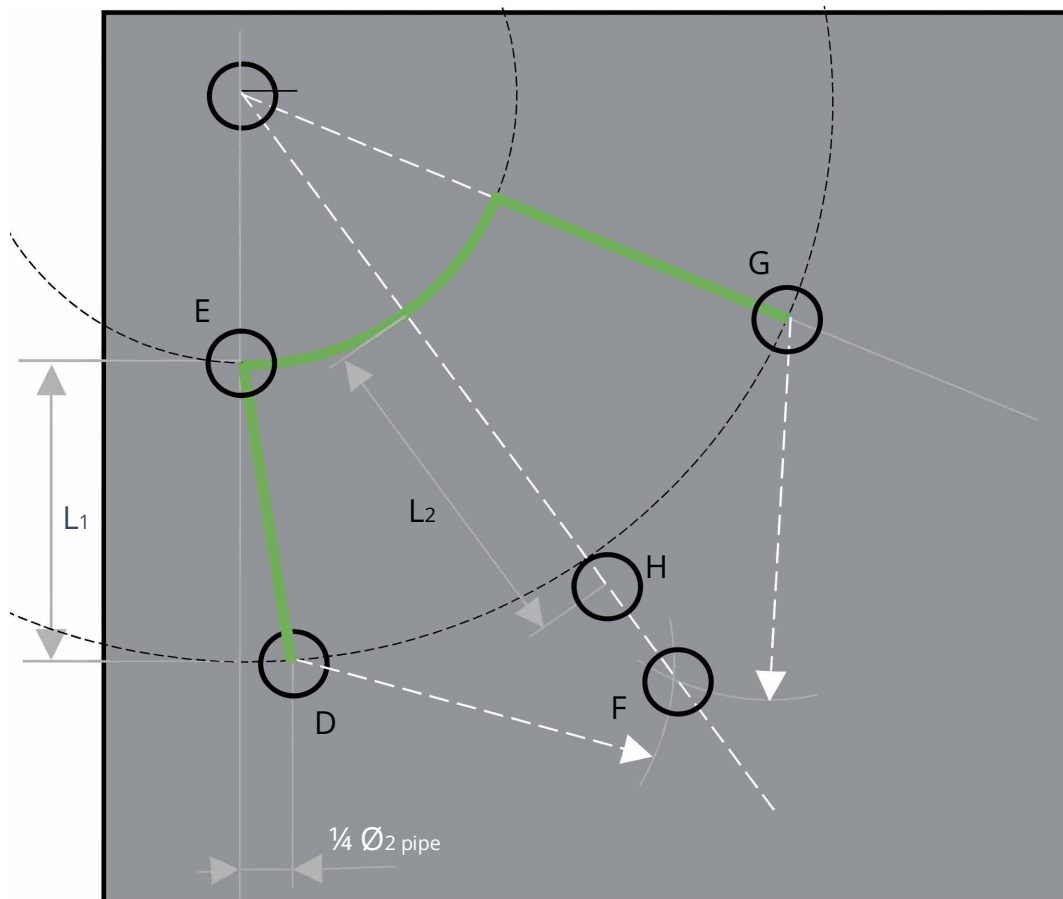
Required tools (See the Tools section, p. 40)

Cutting line



2. Draw guides on sheet

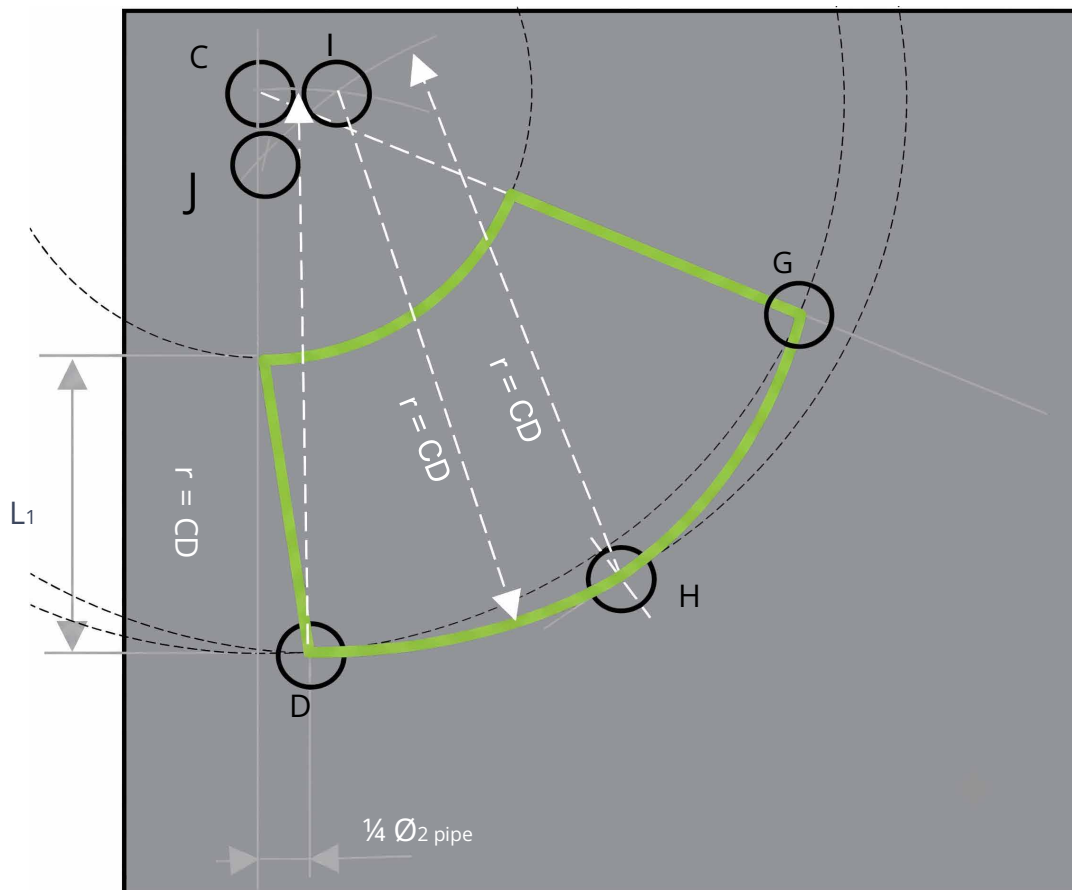
- To determine point (D), mark the length of $\frac{1}{4}$ $\varnothing_2$ pipe from the vertical guide onto the circle circumference (C).
- Now connect (E) with (D) to get the third cutting line.
- Determine the centre line of the segment (F) by dividing the circumference (C) from point (D) and point (G) using the compass.
- Project length L_2 to determine point (H) along (CF).



Cutting line

3. Draw guides on sheet

- Determine circle centre (I) by intersecting the circle lines from point (D) and (H) with radius (CD).
- Draw the curved cutting line for the left section between point (D) and (H) from the circle centre (I) with radius (CD).
- Repeat the same for the second half of the curved outer cutting line from point (G) and (H) to create the circle centre (J).
- Adapt the segment as appropriate.



Assemble segment

1. Cut out segment and join

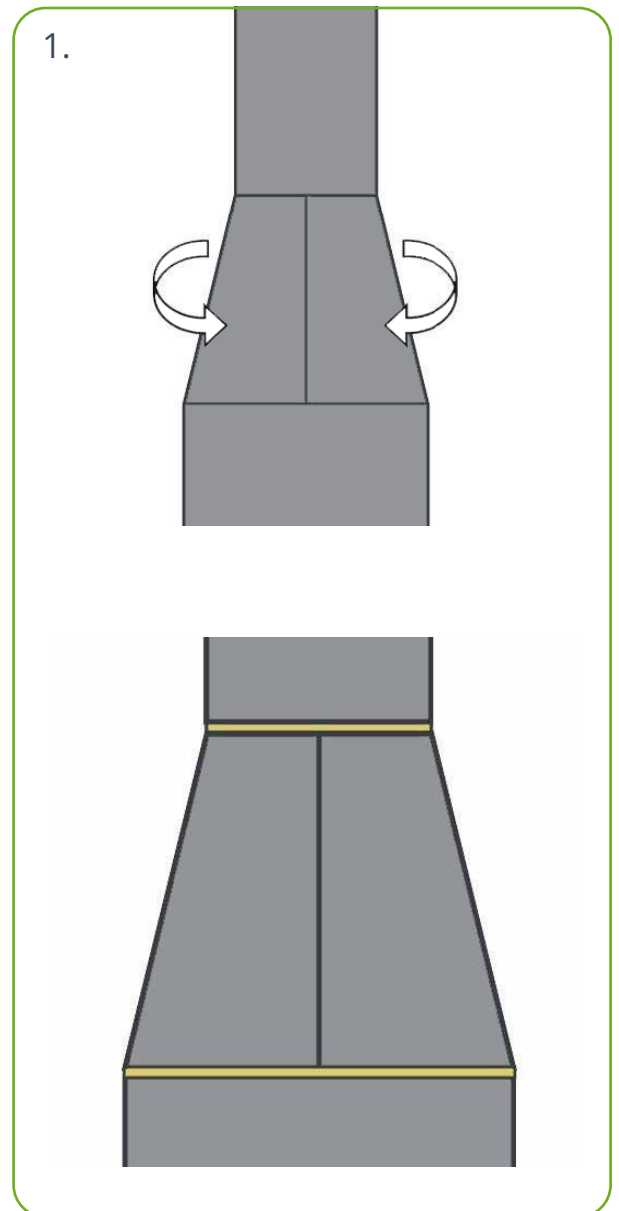
- Cut out the reducer piece from the sheet insulation material at the marked cutting line.
- Adapt the joining surfaces toward the pipe insulation on both sides if required, using a knife.
- Apply glue to the two joining surfaces of the reducer piece and ensure it's tack dry.
- Join the segment together on the pipe reducer.

Tip!

First join the ends of the seam, then the middle part to prevent misalignment of the ends. Then join the remaining parts by firmly pressing the joining surfaces together.

2. Join reducer piece with main pipe insulation

Use the wet sealing technique for both butt joints and direct towards the main line insulation.



Required tools (See the Tools section, p. 40)



7. Flange connection

Flange - Side elements

Insulate main line

- First, insulate the main line / duct up to the backing ring.

Important!

Use compression joining for the butt joint toward the backing ring.

1. Measure

- Determine the diameters with the outside caliper.

$\varnothing_1$ ins Outer diameter pipe (main pipe + insulation)

$\varnothing_2$ Outer diameter backing ring

2. Draw cutting lines

- Draw vertical and horizontal guides (centre lines for the circles).
- Use the compass to mark circles on the sheet insulation.

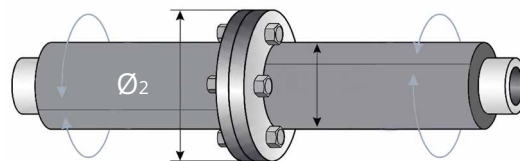
3. Cut & join

- Cut out the two segments.
- With a knife, make a small cut in the segments to allow for connection.
- Apply glue on both sides, let dry and rejoin the two side elements on the pipe / duct.
- Use the wet sealing technique to join the insulation side elements towards the pipe/duct insulation.

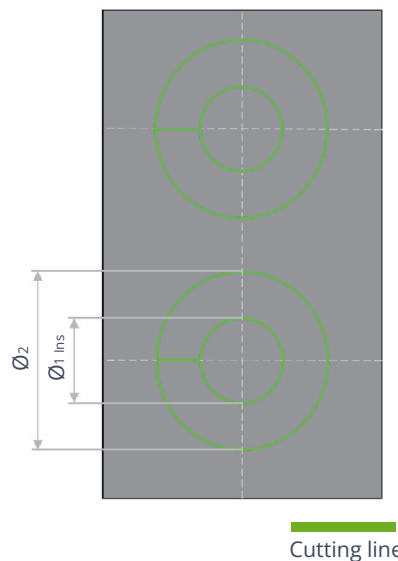
Required tools (See the Tools section, p. 40)



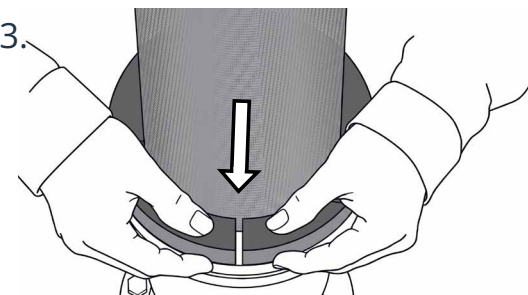
1.



2.



3.



Important!

Clean the joining insulation surface of the pipe / duct insulation with a proper cleaner and open the cells with a knife or emery cloth for better jointing.

Flange - Insulation cover

1. Measure

- Determine the circumference with a strip of sheet insulation.
- Measure the width (L) to be insulated.

C Circumference
L Width to be insulated

2. Draw cutting lines

- Draw horizontal and vertical cutting lines.

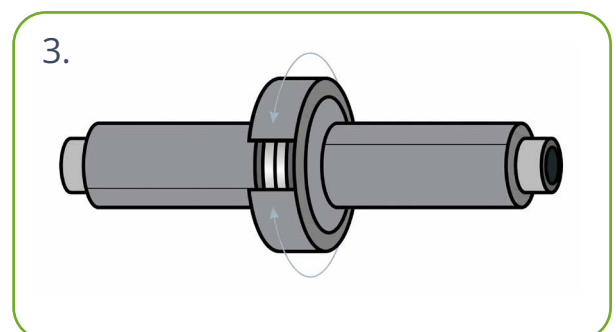
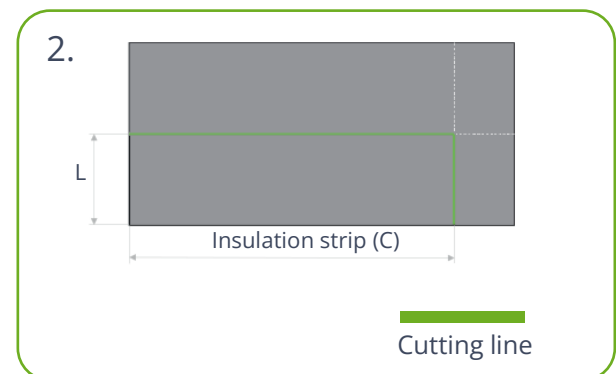
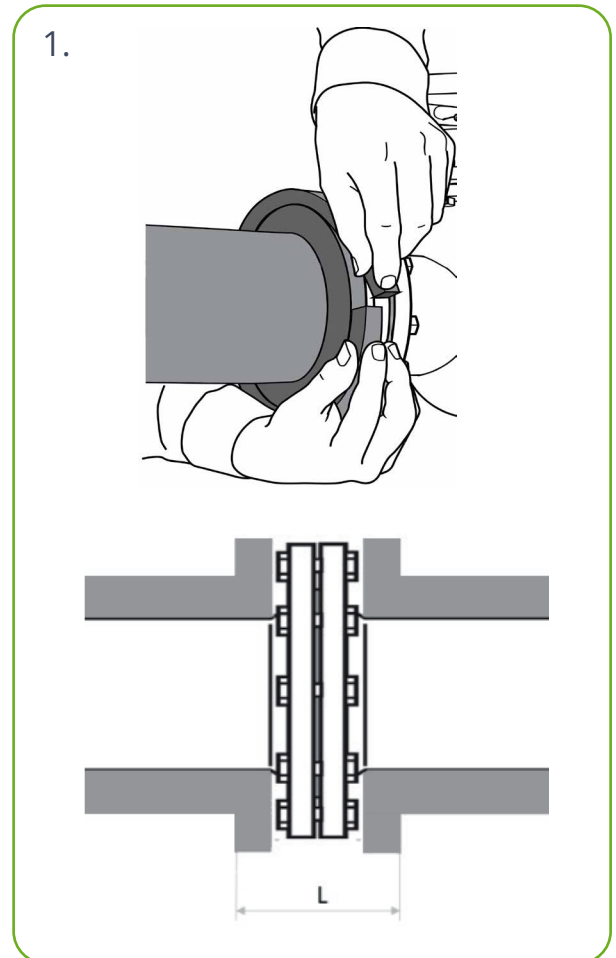
3. Cut & join

- Cut out the rectangular piece of sheet insulation on the cutting lines.
- Apply glue to the ends of the insulation cover itself as well as to the joining surfaces of the side elements.
- Allow time to dry and apply on the flange connection by firmly pressing the sides together, from one end to the other.

Important!

Clean the joining insulation surface of the insulation cover with a proper cleaner and open the cells with a knife or emery cloth for better joining.

Required tools (See the Tools section, p. 40)



8. Valve

Valve - Side elements

Insulate main line

- First, insulate the main line / duct up to the backing ring.

Important!

Use compression jointing for the butt joint towards the backing ring.

1. Measure

- Determine the diameters with the outside caliper.

$\varnothing_1$ ins Outer diameter pipe (main pipe + insulation)

$\varnothing_2$ Outer diameter backing ring

2. Draw cutting lines

- Draw vertical and horizontal guides (centre lines for the circles).
- Use the compass to mark circles on the sheet insulation.

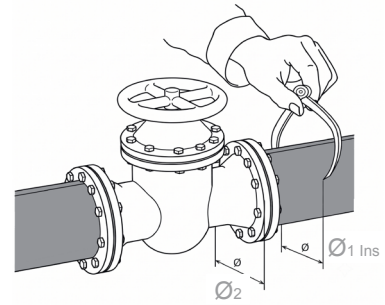
3. Cut & join

- Cut out the two segments.
- Using a knife, make a small cut in the segments to allow connection.
- Apply glue on both sides, let dry and rejoin the two side elements on the pipe/duct.
- Use the wet sealing technique to join the side elements towards the pipe insulation.

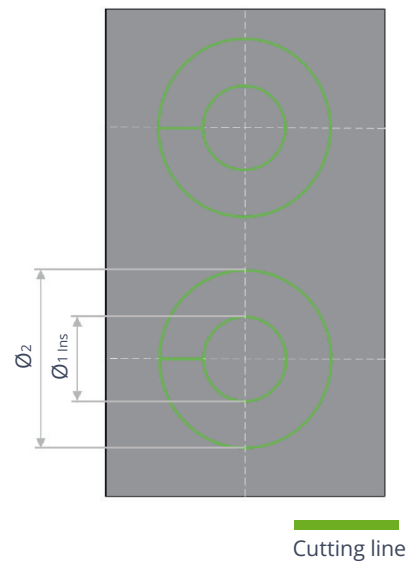
Required tools (See the Tools section, p. 40)



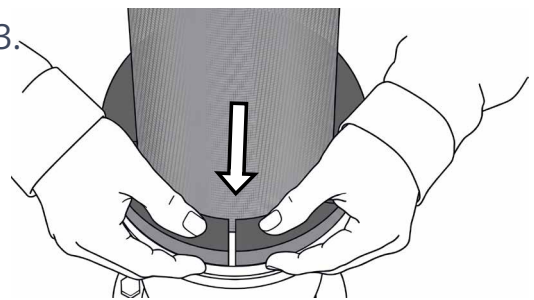
1.



2.



3.



Important!

Clean the joining insulation surface of the pipe / duct insulation with a proper cleaner and open the cells with a knife or emery cloth for better jointing.

Valve - Body cover

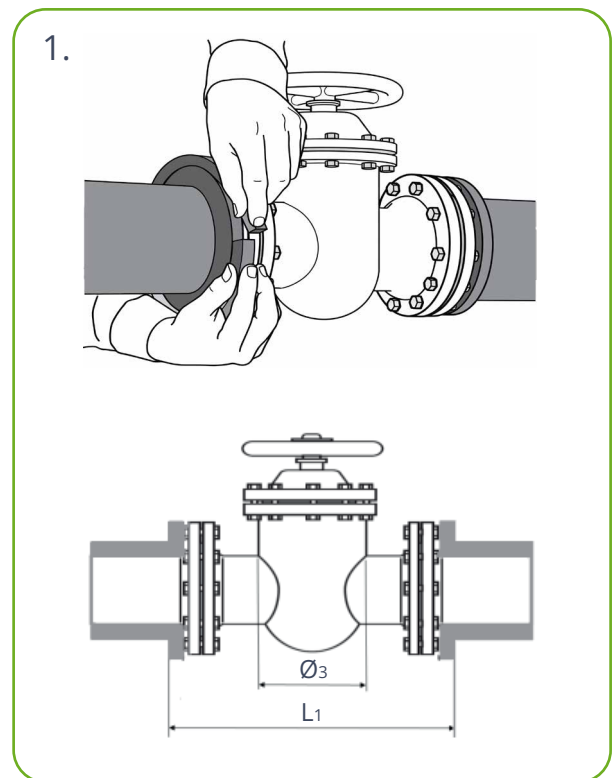
1. Measure

- Determine the circumference (C1) with a strip of sheet insulation.
- Measure the width (L1) to be insulated.
- Measure the outer diameter of the valve body, OD_3 .

Ø_3 Outer diameter Valve body

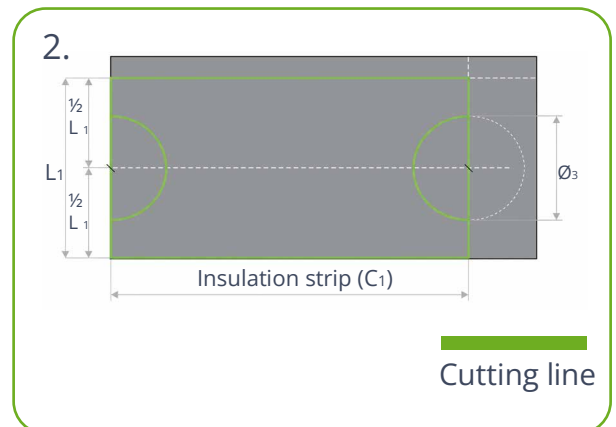
C1 Circumference

L1 Width to be insulated



2. Draw cutting lines

- Draw horizontal and vertical cutting lines.
- From the vertical lines, draw two half circles for the outlet of the fitting body with a compass.



3. Cut & join

- Cut out segment on the cutting lines.
- Apply glue to the two connecting surfaces of the body cover itself and the joining surfaces towards the side elements.
- Allow to dry before joining.

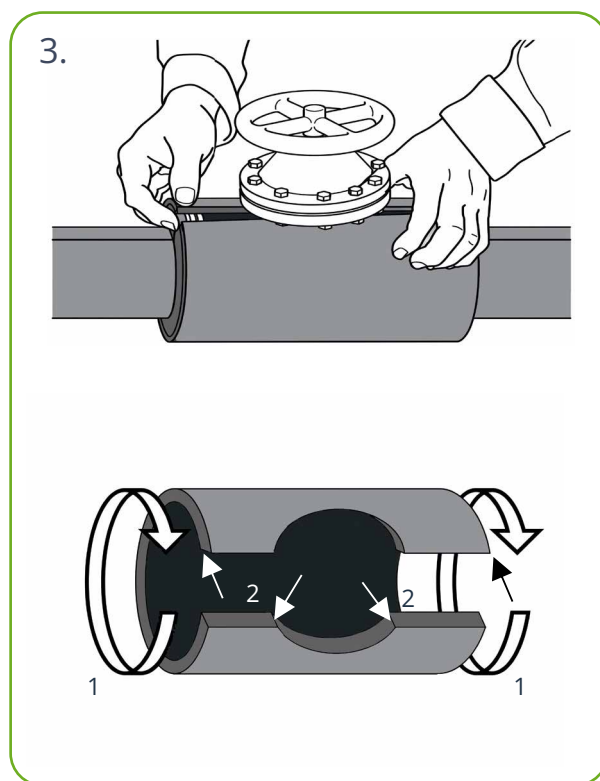
Important!

Clean the joining insulation surface of the body cover towards the side elements with a proper cleaner and open the cells with a knife or emery cloth for better joining.

- Wrap the body cover towards the side elements around the valve.
- Join both sides of the body cover together.
- To prevent misalignment, join the edges first.
- Apply light pressure to join the remaining parts.

Tip!

Due the stability of Thermaflex polyolefin insulation reinforcement is not necessary.



Required tools (See the Tools section, p. 40)



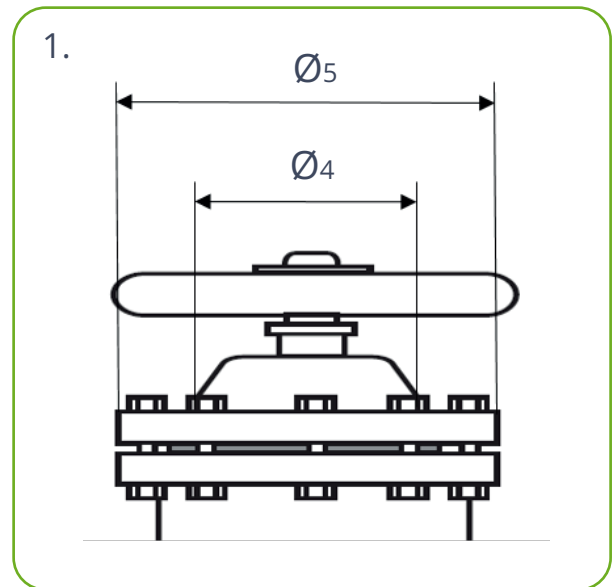
Valve - Top cover

1. Measure

- Determine the two diameters using the outside calipers.

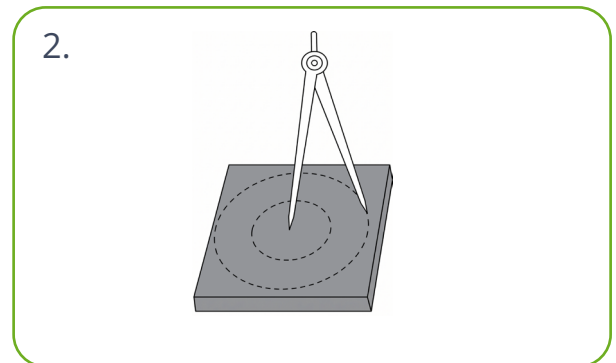
Ø4 Outer diameter valve handle / wheel outlet

Ø5 Outer diameter valve bonnet



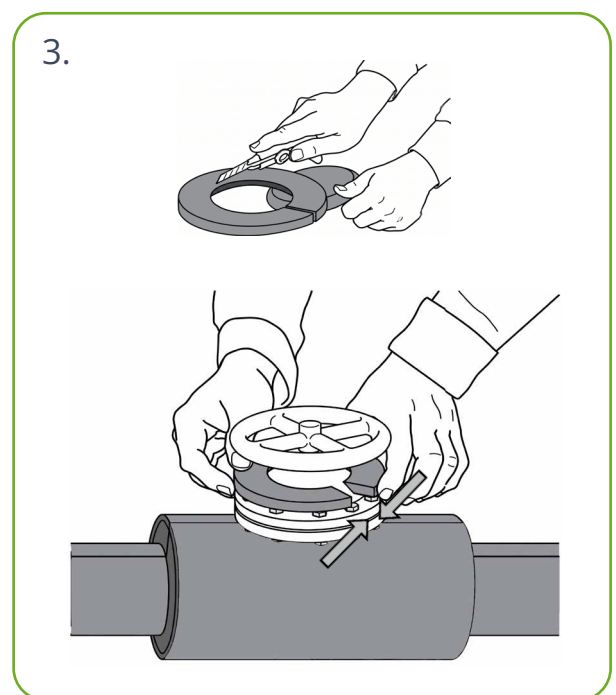
2. Draw cutting lines

- Draw diameters Ø4 and Ø5 on a piece of sheet insulation.



3. Cut & Apply top cover

- Cut out the top cover and cut open on one side.
- Apply glue and ensure it's tack-dry before reconnecting the two ends of the top cover.



Required tools (See the Tools section, p. 40)



Valve - Bonnet cover

3. Cut

- Cut out the segment from the sheet insulation material on the cutting lines.

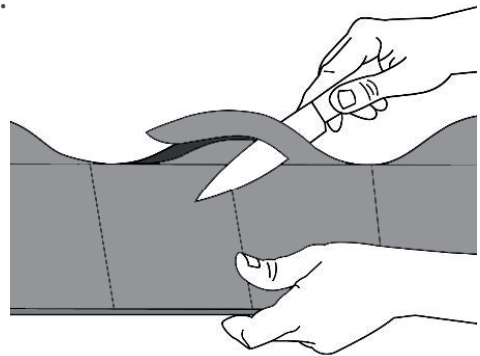
3.



4. Fit

- Adapt the joining surface to the body cover insulation making a 90° cut at the short length and increase the inwardsbeveled angle toward the top as shown in Figure 4.
- Apply the segment onto the Valve bonnet and towards the body cover insulation and check the fit.
- Readjust if needed for a perfect fit.

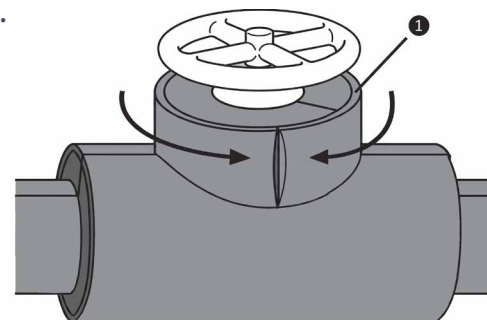
4.



5. Join

- Apply glue and make sure its tack-dry before joining the surfaces of the body cover itself as well as the surfaces towards the top cover.
- Fix the bonnet cover onto the top cover.
- Use wet sealing technique to fix onto the body cover.

5.



Important!

Clean the joining surfaces with a proper cleaner and open the cells with a knife or emery cloth for better joining.

Required tools (See the Tools section, p. 40)



Sheet Insulation - Rectangular ducts

General

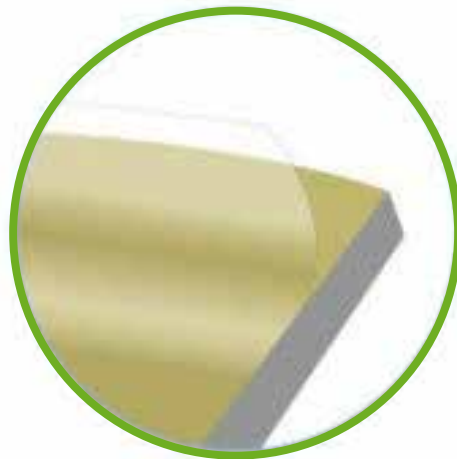
This part of the manual will guide you in professional rectangular air duct insulation and the most common elements of square ducting systems with Thermaflex polyolefin sheet insulation, also available in self-adhesive that can save valuable installation labour costs. For the insulation of specific elements not covered in this installation manual, please contact your Thermaflex partner and our insulation specialists will be happy to assist you.

Whether your insulation challenge is retrofit, new construction or prefabrication, we offer complete toolsets and installation training programs to ensure maximum peace of mind for owner, installer and end-user.

Glue

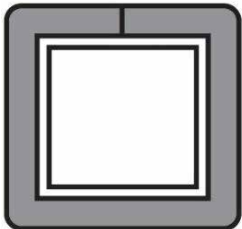
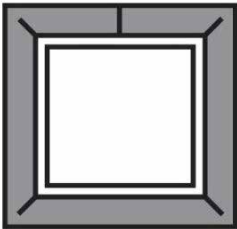
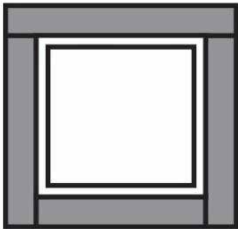


Self-adhesive sheet insulation



2. Rectangular ducts

All methods shown in this manual can be followed either by gluing (ThermaGlue) or Thermaflex self-adhesive sheet material.

			
Thickness	Up to 13 mm thickness only	All thicknesses	All thicknesses
Application	Not for condensation prevention	All applications	All applications
			This method is ideal for bigger thicknesses and multi-layer application. Due to the closed cell structure of Thermaflex insulation material, the visible cells on the edges has no influence on the insulation performance. If you prefer not to see open cells you can choose the alternative option as shown below. 

Surface preparation

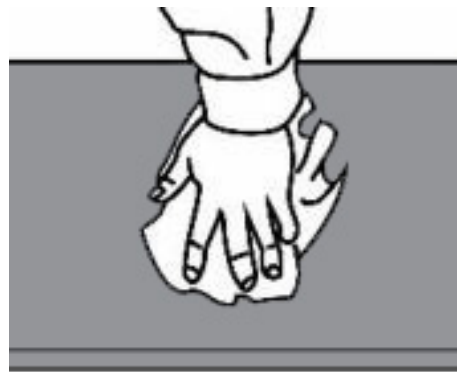
1. Clean surfaces

- Rectangular duct and insulation surface must be free of contamination such as dust or grease, and free of moisture prior to the application of ThermaGlue.

Important!

Clean the surfaces with polyolefin cleaner (PB, PE, PP) and make sure that the surface to be insulated is resistant against the cleaner.

1.





Method 1

Measurement & cutting

1. Measure

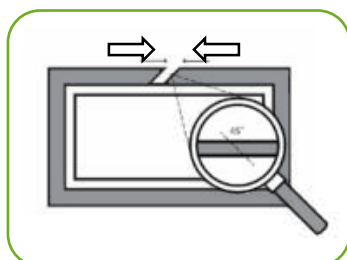
- Determine the circumference (C) of the rectangular duct using a strip of insulation material of the same thickness to be used for the insulation.
- Measure the required length (L) up to the next duct flange or other network component.

C Duct circumference

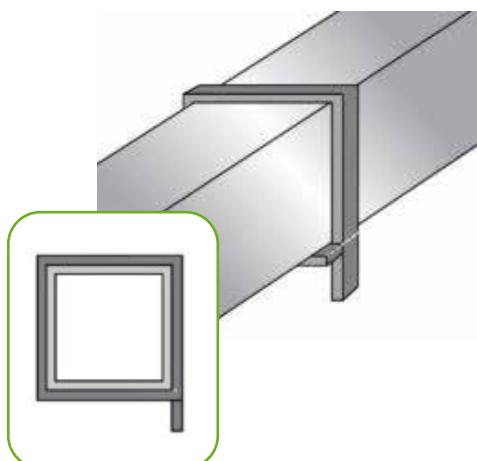
L Length

Tip!

For circumferential joining, cut the sheet material in a beveled manner to maximise the joining surface.



1.



Insulation strip (C)

2. Outline guides & cut

- Plot the circumference on the sheet insulation and cut accordingly.
- Cut the sheet insulation to length (L) for butt joining towards the next network: a duct flange, readily insulated element, etc.

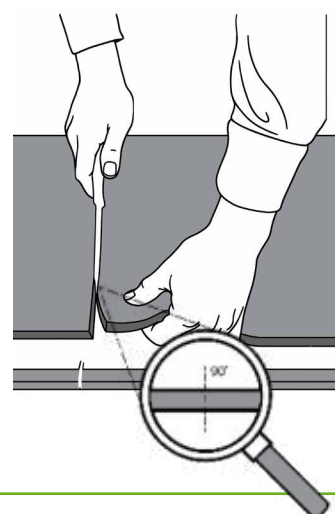
Important!

Remember: allow an excess length of +5 mm for wet sealing for the butt joints and compression joining to the e.g. duct flange.

Required tools (See the Tools section, p. 40)



2.



Important!

This method is not suitable for condensation prevention and can only be used for up to 13 mm insulation thickness.

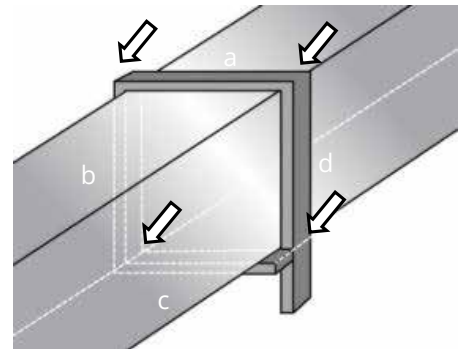


Measurement & cutting

1. Measure

- Determine the circumference (C) of the rectangular duct using a strip of insulation material of the same thickness to be used for the insulation and add excess length for compression joining.
- Mark the edges on the insulation strip to obtain the side length.
- Measure the required length (L) until the next duct flange or other network element.

1.



2. Outline guides & cut

- Plot the circumference on the sheet insulation and cut accordingly.
- Cut the sheet insulation to length (L) for butt joining towards the next network element.

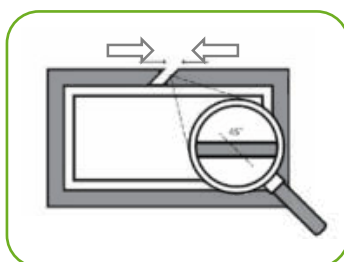
C Duct circumference

L Length

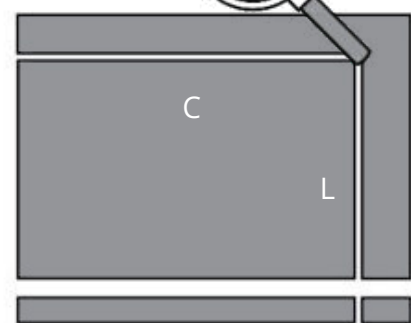
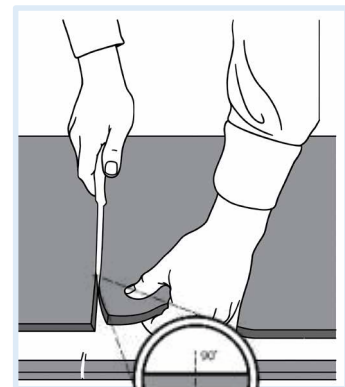
a,b,c,d Side length

Tip!

For circumferential joining, cut the sheet material in a bevelled manner to maximise the joining surface.



2.



Insulation strip (C)



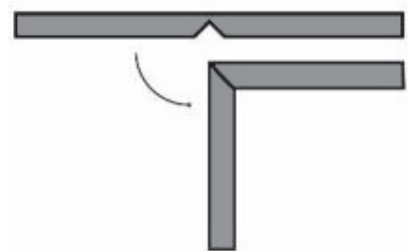
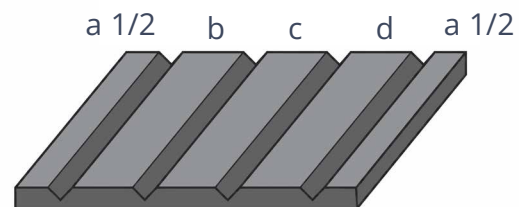
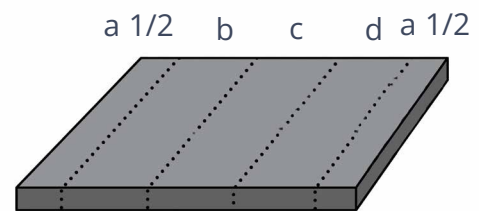
3. Mark lines and make v-groove

- Mark lines according to Figure 3.
- Use a mitre cutter or angle grinder with suitable cutter to make a v-groove of $\frac{2}{3}$ of the sheet insulation thickness.

Important!

Remember: allow an excess length of +5 mm for wet sealing for the butt joints and compression joining to the e.g. duct flange.

3.



Required tools (See the Tools section, p. 40)





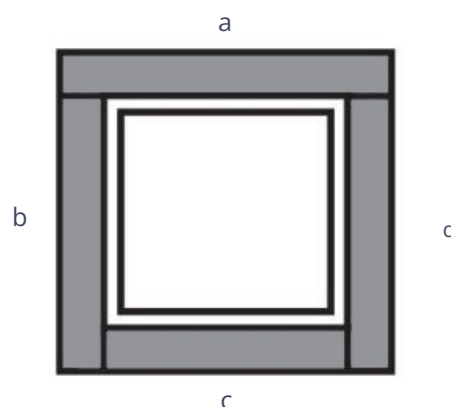
Measurement & cutting

1. Measure

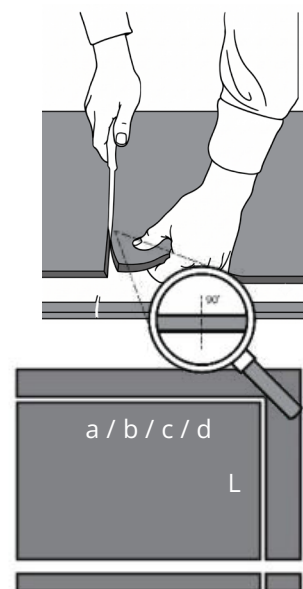
- Measure the required length (L) up to the next duct flange or other network element.
- Determine the required side lengths as shown in Figure 1, described below:

- a** width of duct + 5 mm + 2x insulation thickness
- c** width of duct + 5 mm
- b,d** height of duct + 5 mm + insulation thickness
- L** Length

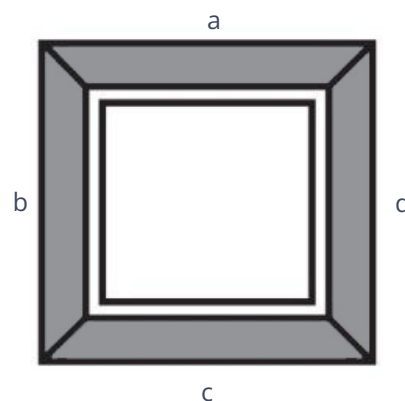
1.



2.



Alternative.



2. Outline guides & cut

- Plot the determined side length on the sheet insulation and cut accordingly.
- Cut the sheet insulation to length (L) for butt joining towards the next network element.

Alternative solution – closed

For optical reasons, the edges are cut at an 45° angle with a mitre cutter or with a knife so that the top layer fits the corners and no cell structure is visible.

Important!

Allow an excess length of +5 mm for compression joining and thermal expansion for all side lengths.

Important!

Method 2: Apply glue to the edges of V-cut as well!

Required tools (See the Tools section, p. 40)





Method 1,2 & 3

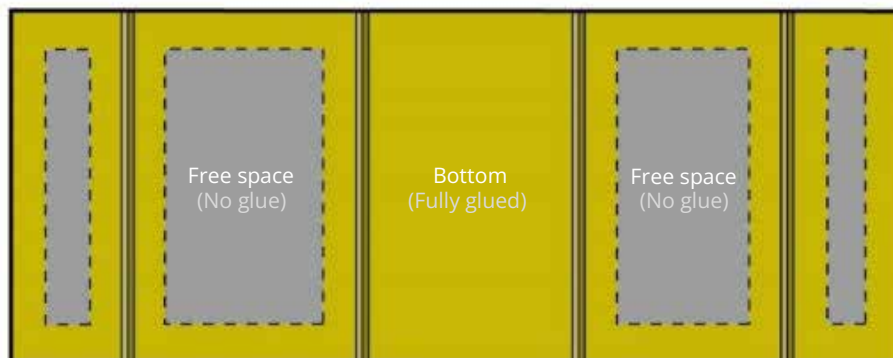
1. Gluing

Apply glue

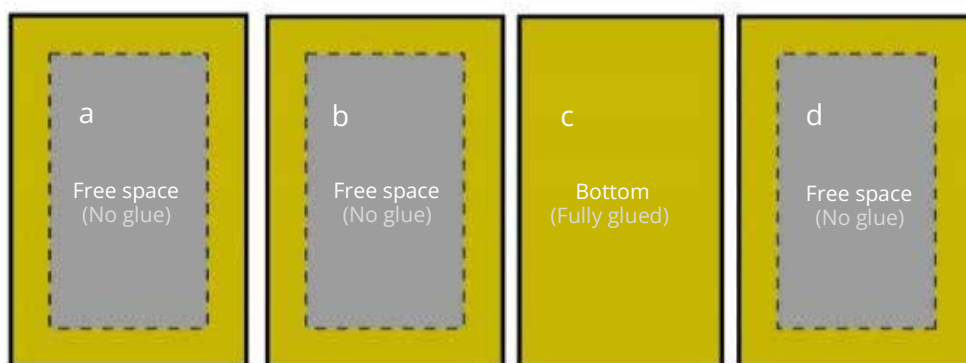
1. Apply glue (join to object)

- Due to the excellent stability of Thermaflex insulation material, we recommend full surface joining to the bottom surface only to reduce the risk of sacking and save glue.
- Coat or spray ends at a strip of >10 cm thickness with Thermaflex adhesive as shown in Figure 1.1 and Figure 1.2.
- Make sure to leave an excess ~ 30 - 50 mm for wet sealing towards network elements or already installed sheet insulation.
- Apply glue on both the Thermaflex sheet insulation and the pipe / duct surface. Ensure Thermaflex adhesive is tack-dry before joining.

1.1 (Method 1 & 2)



1.2 (Method 3)





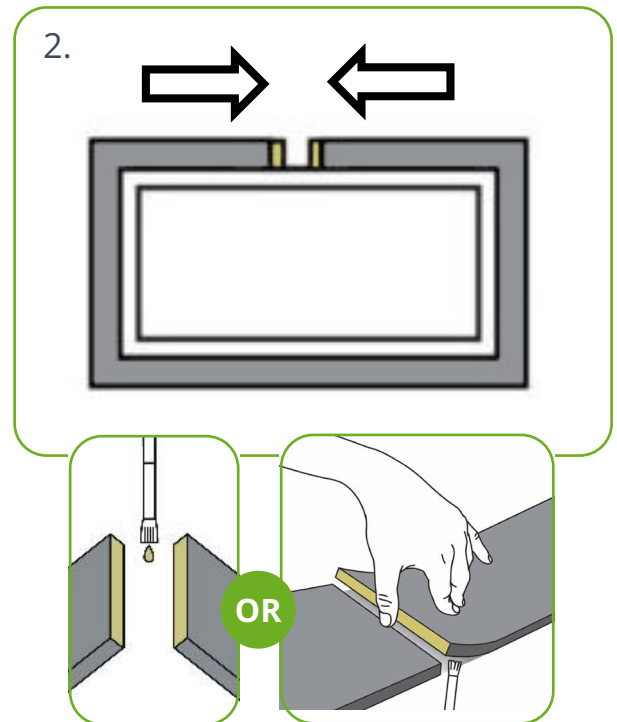
Method 1,2 & 3

2. Join insulation

- Coat both surfaces for circumferential joining with glue and let sealant dry before application (tack-dry consistency).

Tip!

When applying glue to large surfaces, we recommend using a spatula or spray gun.



Required tools (See the Tools section, p. 40)





Method 1,2 & 3

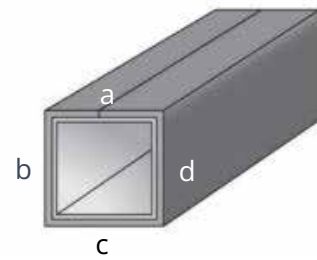
Apply insulation

1. Circumferential joining

1.1 Method 1 & 2

- Wrap sheet insulation around the rectangular air duct.
- First join the edges and then the middle part to prevent misalignment of the ends for each side length.
- Join the remaining parts applying light pressure.

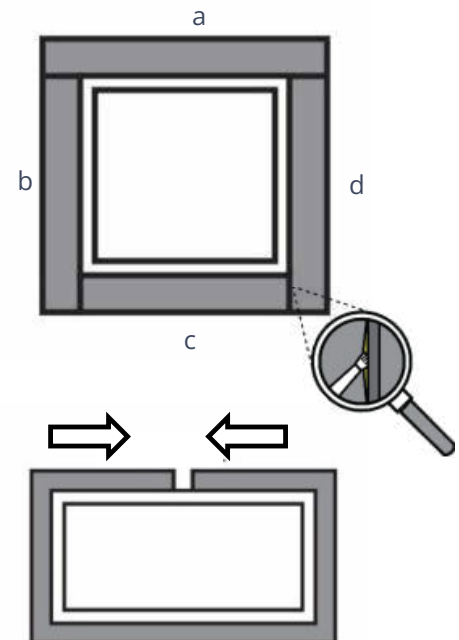
1.1 (Method 1 & 2)



1.2 Method 3

- Start with applying sheet c, then sides b and d.
- Apply insulation top cover a.

1.2 (Method 3)

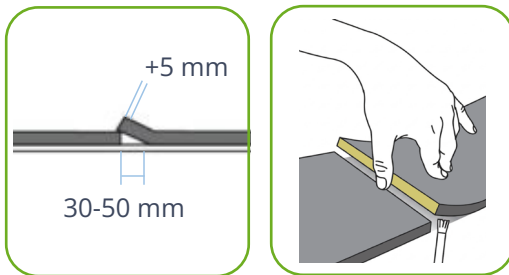




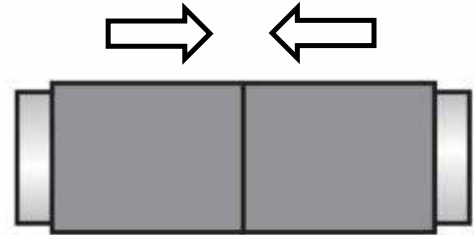
Method 1,2 & 3

2. Butt joining

- Apply sheet with an excess length of +5 mm onto the object for compression joining.
- When joining the sheet material onto the object, don't apply glue on the last 30 - 50 mm to allow wet sealing.



2.



3. Multi-layer insulation

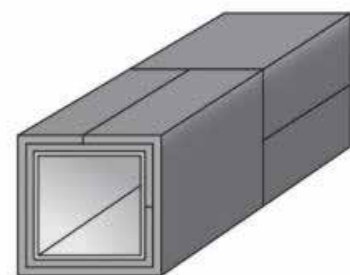
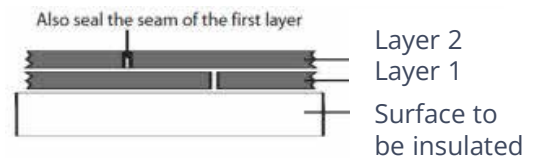
Ensure that the two layers are away from each other or even at another side of the rectangular duct so that the longitudinal seams don't overlap, as shown in Figure 3. After applying the first layer, the second layer should be applied in the same manner.

Important!

The multi-layer technique is also needed for bigger higher insulation thicknesses.

Apply glue under the seam of the 2nd layer.

3.



Required tools (See the Tools section, p. 40)





Method 1,2 & 3

2. Self-adhesive sheet

Apply gluing

1. Measure, Cut

- Determine the duct measures.
- Allow an additional 1% overlength due to the shrinkage after removing foil.
- Allow an additional +5 mm for butt joints.
- Cut sheet insulation to fit.

Important!

Allow additional 1% overlength!

2. Peel back foil

- Slightly peel back the foil for the part to insulate.

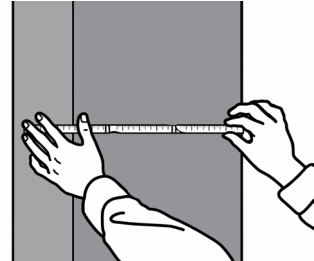
Important!

Do not remove the foil completely.

3. Apply sheet

- Line up sheet at points A and B.
- Press firmly onto the active adhesive.
- Align material and continue to ensure it is lined out correctly.
- Press down firmly whilst slowly removing the foil.

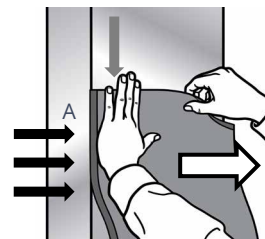
1.



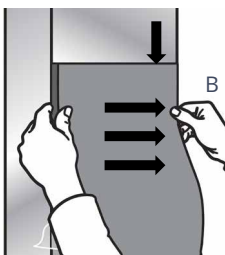
2.



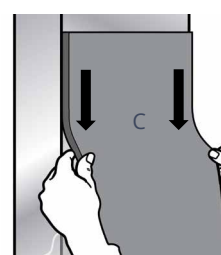
3.A



3.B



3.C





Method 1,2 & 3

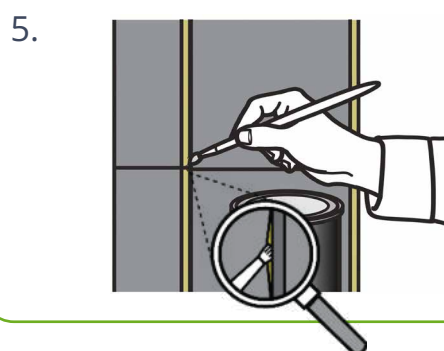
4. Butt joints

- For butt joints leave 5 mm overlap for compression joining / wet sealing technique.



5. Seal off corners

- Apply the wet sealing technique to the compressed butt joint for a vapor tight seam.



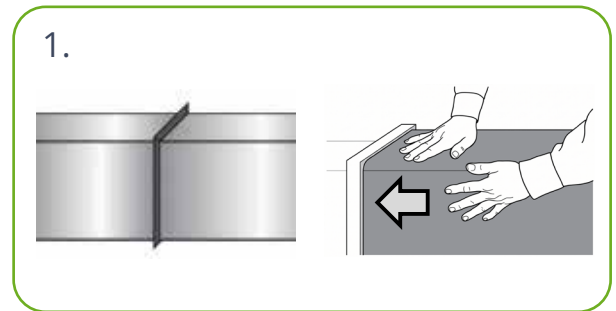
Required tools (See the Tools section, p. 40)



3. Duct flange

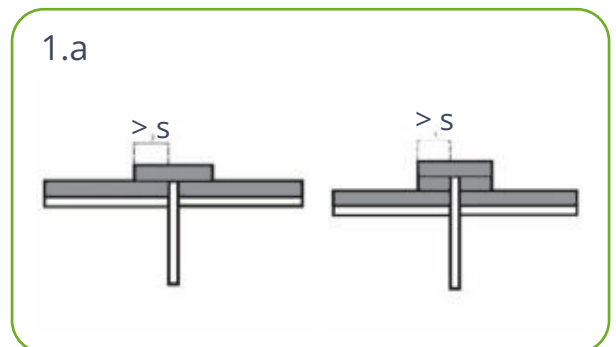
1. Insulate Air ducts

- Apply insulation on the rectangular air duct first. Insulate up to the flange connection applying light pressure (+5 mm).



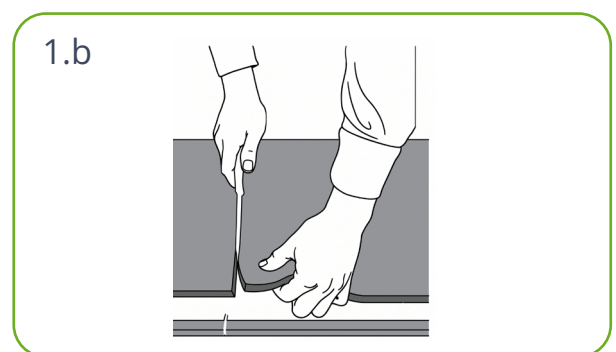
1.a Method 1 – box

- If the height of the flange is less than, or equal to the insulation thickness, only one in insulation strip is required.
- If the flange is higher, a box must be built around the duct flange.



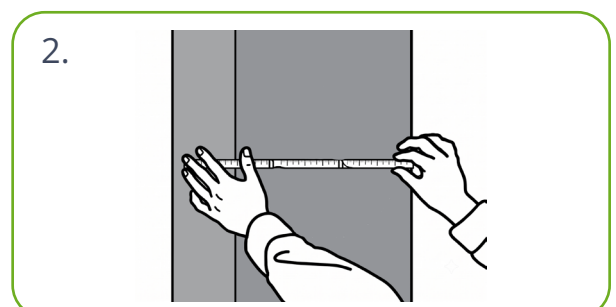
1.b Cut, clean and glue

- Take a piece of Thermaflex insulation sheet with the same thickness and cut out the required strips.
- Scrape the joining surface to improve bonding, by using a knife for example.
- Clean the joining surfaces with a polyolefin cleaner.
- Coat the joining surfaces with Thermaflex adhesive and let dry (tack-dry consistency) prior to application.



2. Measure

- Determine the measures of the insulated duct and the duct flange to be insulated.



2.a Method 2 – tube insulation

- For this method, cut tube insulation in half for insulating the duct flange.

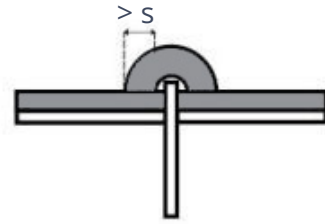
2.b Cut, clean and glue

- Cut the tube insulation to length at a 45° angle using a mitre box or cutting mat.
- Cut tubular insulation of the same insulation thickness (at least 20 mm) into two equal halves.
- Scrape the joining surface to improve bonding, by using a knife for example.
- Clean the joining surfaces with a polyolefin cleaner.
- Glue together to fit over the insulated duct body and flange, while leaving one side open.

2.c Apply insulation

- Apply the insulation frame over the duct flange on the duct body.
- Join the frame together.
- Apply the wet sealing technique to join the frame onto the insulated duct body.

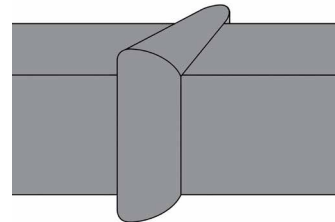
2.a



2.b



2.c

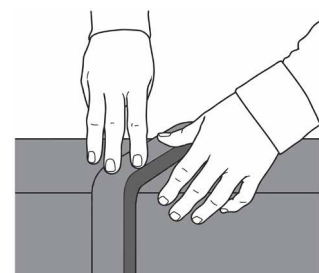


Close seams

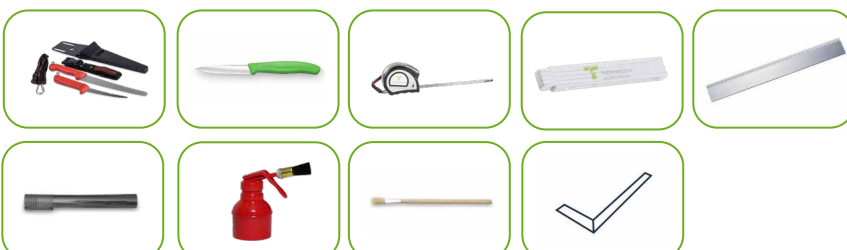
1. Apply ThermaTape

- We recommend, to close the seams for optical reasons after inspection.

1.



Required tools (See the Tools section, p. 40)



Prefab it yourself

General

Tailoring to all possible needs, we offer 3 main connection solutions to seal off your system! This includes, basic glues, factory prefabricated connections, and our heatplate tool to prefab-it-yourself at the speed of light!

The heat plate provides a polyfusion welding technique for tubular Thermaflex insulation material. Delivering a solid and homogenous joining for the prefabrication of insulation fittings on-site or in your workshop as preparation.

Simple process:

- The welding process is simpler than the use of glue
- Standard tooling - heating element (standard butt fusion heating element with PTFE (Teflon) coating can be used)

Speed - Time saving:

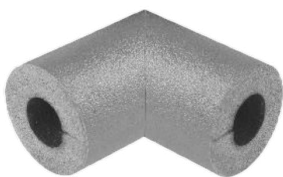
- Very fast process compared to glue up to ID 114 mm tubular insulation
- Enormous time savings due to prefabrication of standardised fitting insulation and specific fitting insulation with tubular insulation

Solid welding connection:

- Homogenous polyfusion welding process, glue free!

Sustainability:

- Environmental friendly joining technique
- No additional adhesive



Solidifying your system

Craftmanship in the forefront

Connections are often the most vulnerable and time-consuming part of an insulation system. So, when it comes to efficiently insulating an installation, the type of connections should be carefully considered. To tailor to all possible needs, we offer 3 main connection solutions to seal off your system: from your basic glues, to factory prefabricated connections, and a heatplate tool to prefab-it-yourself at the speed of light.

Glue

Ease & time savings	●○○○○○
Reliability	●●●○○○
Health	●●○○○○
Sustainability	●●○○○○

Prefabrication with glue technology

Heatplate

Ease & time savings	●●●●●○
Reliability	●●●●○
Health	●●●●●●
Sustainability	●●●●●●

Prefabrication with polyfusion technology (heatplate)

Ready-made

Ease & time savings	●●●●●●
Reliability	●●●●●●
Health	●●●●●●
Sustainability	●●●●●●

Ready-made prefabrication parts

Prefab it yourself

Preparation

1. Heat up the heating element

Heat surface to the temperature of 180°C.

Important!

Ambient temperature 5°C - 35°C

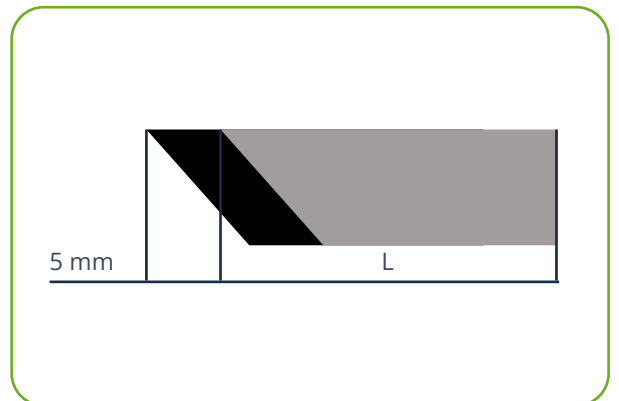


2. Length allowance

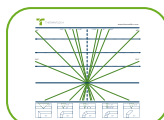
For melting provide an additional length of + 5 mm to the original length of each fitting.

Important!

Respect the country specific health and safety regulations for working with high temperature electrical equipment.



Required tools (See the Tools section, p. 40)



3. Cut fitting segments

Cut fitting segments with the help of the Thermaflex cutting matt or mitre box in accordance to the figures beneath.

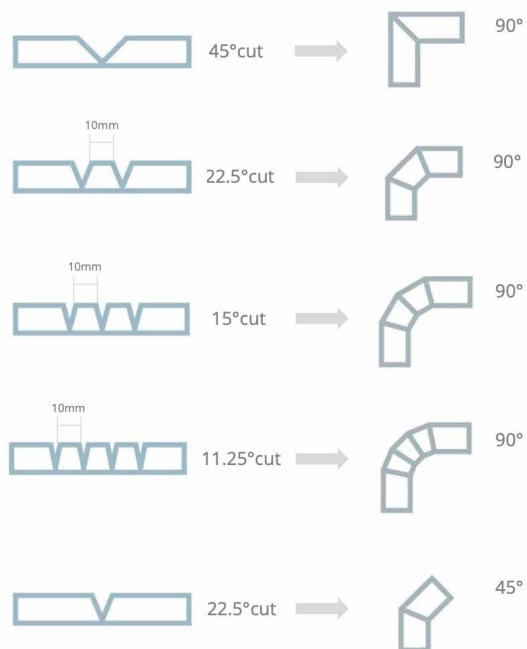
Important!

For melting provide an additional length of + 5 mm to the original length of each segment.

Bends 90° and 45°

Pre-fabricating a 90° or a 45° bend involves a simple process:

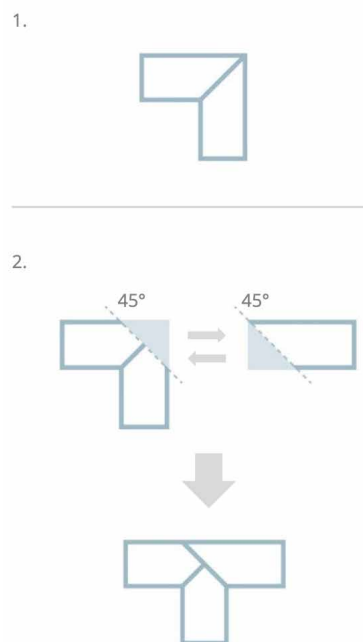
- Cut out V-shaped pieces.
- Weld.



T-piece 90°

Pre-fabricating a 90° T-piece involves a two-step process.

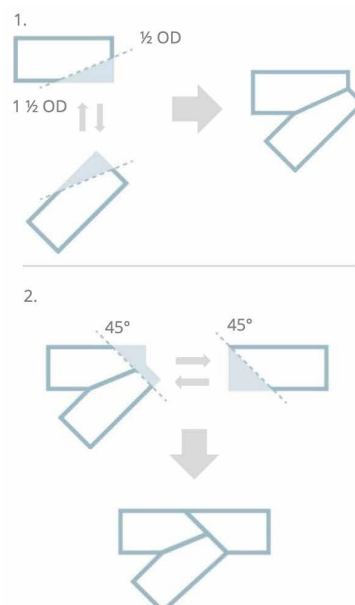
- Produce a 90° bend.
- Find an additional piece of tube insulation of the same size; then, cut both pieces to fit together like shown in Figure 2 and weld.



T-piece 45°

Pre-fabricating a 45° T-piece involves a two-step process.

- Produce a 135° bend as shown in Figure 1.
- Cut the bend and the tube insulation to fit together like shown in Figure 2 and weld.



Joining

1. Melt fitting component interface

Press both components onto the heating element and follow the following sequence.

Equalise surface:

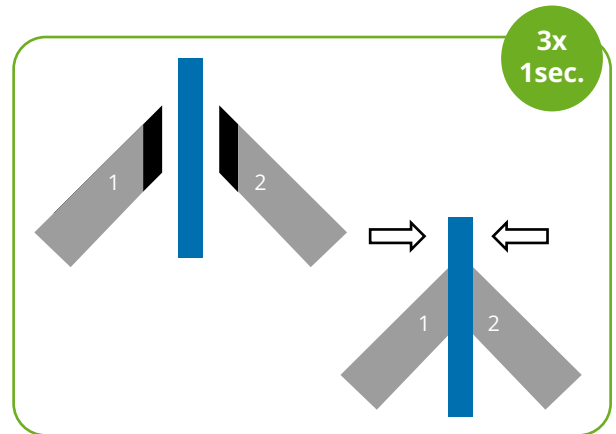
- Press: 1 second (equalise surface)
- Remove from heating element
- Press: 1 second (equalise surface)
- Remove from heating element

Heat up surface:

- Press: 1 second (heat up time)

Important!

Lightly press fitting components onto the heating element.

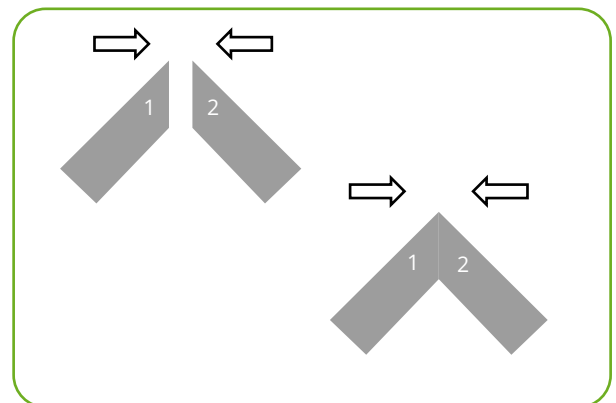


2. Joining

Join the two fitting components within 2 seconds (dwell time) after removing from the heating element and secure fittings by holding firmly with pressure for 3 seconds (welding time). After the welding process the two components are bound and homogenously joined.

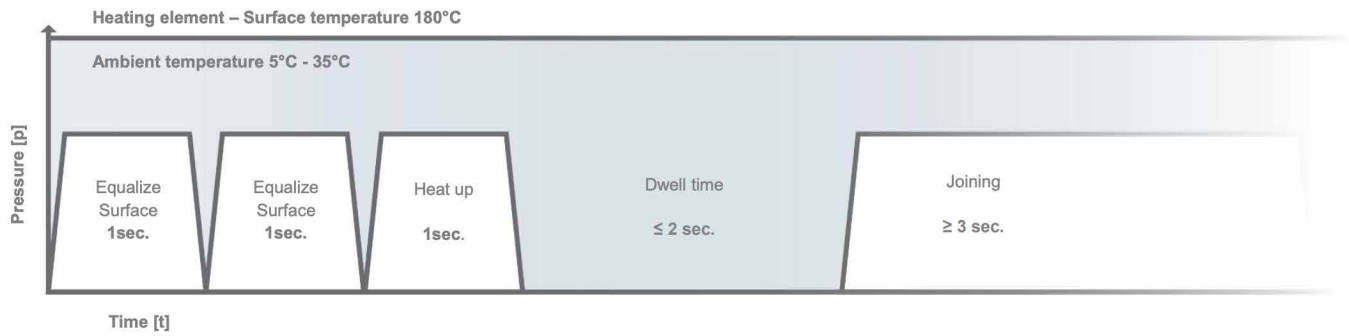
Important!

After the welding process, carefully clean the heating element surface with a thick and dry paper cloth.



Welding process

Polyfusion welding of tubular polyolefin insulation





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