

i-warm flux

INFRARED UNDERFLOOR HEATING INSTALLATION MANUAL

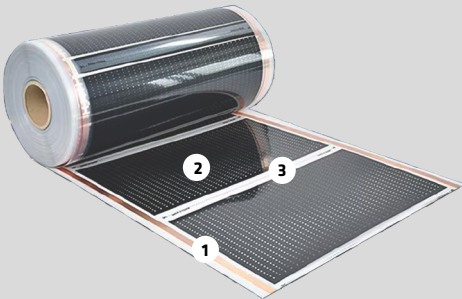


I-WARM FLUX INFRARED HEATING MANUAL - LVT/SPC & LAMINATE

i-warm flux infrared heating film by radiant heat 360 installation guide

This manual provides detailed instructions for installing i-warm flux, specifically designed for indoor underfloor heating applications. The heating film is suitable for installation beneath various floating floor coverings, including laminate, SPC vinyl panels (without integrated underlay), and multi-layer boards. Follow these guidelines to ensure a safe and efficient installation.

SPECIFICATION OF I-WARM FLUXRED HEATING FILM



- 1 COPPER STRIP** It acts as an electrical current conductor. The electric wires should be connected to the copper tape using connectors.
- 2 GRAPHENE INFRARED** This is the primary material of the i-warm flux heating film. The proportion of the graphene infrared mixture controls the heating power of the film.
- 3 CUTTING LINE** this is the designated area of the i-warm flux heating film where it can be cut safely.

i-warm flux

Table no.1

MODEL	FILM WIDTH [cm]	POWER [W/m]	POWER [W/sqm]	VOLTAGE [V]	CUTTING SPOTS [cm]	FILM THICKNESS [mm]	MAX TEMP. OF HEATING FILM [°C]	MAX LENGTH OF ONE STRIP [m]	MAX POWER OF ONE STRIP [W]
IWF-50CM	50	220	220	230	24.7	0.338	~50	10	1756

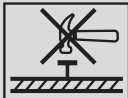
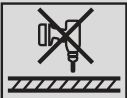


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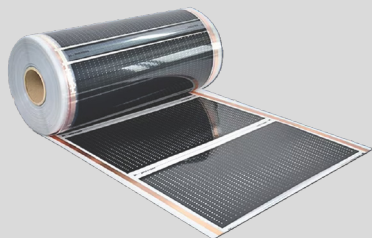
Warranty.

INSTALLATION MATERIALS

TABLE NO. 2

NO.	NAME	SPECIFICATION	PURPOSE
1	i-warm flux infrared heating film	Width: 50cm Power: 220W - 220 W/sqm Power supply: 230V, 50Hz	Purpose of i-warm flux infrared heating film for floor heating for various types of floating panels, based on insulation base: 1. Insulation mat : · Laminated panel with min. 6 mm thick. 2. Insulation mat made XPS300 styrodur: · Laminated panel with min. 6 mm thick. · Layered board with min. 10 mm thick. · SPC vinyl panel (without integrated underlay) by min. 6 mm thick.
2	Insulating Mat	Recommended Thickness: 3 - 5mm	Thermal insulation. Protection against cooling and dampness of the floor. Used for floating laminate panels.
3	Insulating mat - XPS Board	Recommended Thickness: 6-10mm	Thermal insulation. Protection against cooling and dampness of the floor. Used for floating floors such as panels laminated, layered board, SPC vinyl panel (without integrated underlay).
4	Electric wire double insulated	Type: Lgy 450/750 V - stranded Diameter: min. 1.5 mm ²	Electric wire for performing electrical connections double insulated. Not provided.
5	Installation connector Model: Type A	Tin-coated copper connector. Eyelet hole on both sides of the connector. · Type A, straight connection	Connecting the electric wire with the heating film. These are provided in packaging. · Type A
6	Self-amalgamating tape	Butyl tape (electrical insulation tape) Width: 50 mm	Insulating electrical connections of the heating film with electric wire. Protection against the moisture and electric breakdown.
7	Silver self-adhesive tape	Width: 50mm	Gluing the insulating mat, vapor barrier film, heating film with insulation mat or XPS300 board. This is provided in packaging
8	Reinforced self-adhesive tape	Width: 50mm	Gluing XPS300 insulation board.
9	Installation box	Dimension: ~60/60 Type: flush/drywall	Installation of the thermostat and electrical connections.
10	Electric protective conduit	Dimension: ~16	Protection of electric wires and floor temperature sensor against mechanical damage. This is provided in packaging.
11	Vapor barrier film	Thickness: min. 0.2 mm	Protection against dampness of the floor and the heating film. Vapor barrier.
12	Thermostat	1. Air temperature sensor 2. Floor temperature sensor 3. Power supply 110 / 230V 4. Max load. 16A	Room air temperature control. Control temperature of the heating film - floor.

PICTURES OF INSTALLATION MATERIALS



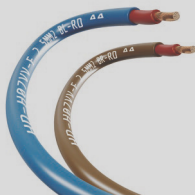
1



2



3



4



5



6



7



8



9



10



11



12

INSTALLATION TOOLS

TABLE NO.3

NO	NAME	PURPOSE
1	Multimeter	Voltage [V] & resistance measurment [,].
2	Pyrometer	Temperature measurement of the i-warm flux infraredheating film.
3	Crimping Pliers	Crimping installation connectors, performing electrical connections.
4	Stripping pliers	Stripping the electric wire sheath. Performing connections of electric wires.
5	Scissors	Heating film cutting.
6	Wallpaper snap knife	Insulation mat cutting.
7	Calculator	Calculation of electric power consumption.
8	Screwdriver	Thermostat installation.
9	Measuring tape	Measurement of the installation area.



1



2



3



4



5



6



7



8



9



● **CAUTION! PLEASE READ THE SAFETY MANUAL THOROUGHLY BEFORE USE**

UNPACKING

Upon purchasing the product, please inspect the package contents and verify the technical condition of the i-warm flux infrared heating film.

- i-warm flux infrared heating film
- protective tube (conduit)
- Adhesive tape
- connection set type A

SAFETY

● **CAUTION! PLEASE READ THE HEATING FILM USER MANUAL BEFORE USE AND RETAIN THIS MANUAL FOR FUTURE REFERENCE. KEEP THESE MANUAL FOR FUTURE REFERENCE.**

- Children aged 8 and older may use the heating film under adult supervision and with proper safety instructions. Children under eight should not handle the thermostat. Cleaning and maintenance should only be performed under adult supervision and with the equipment powered off. Individuals with reduced physical or mental capabilities can operate the installation after receiving appropriate safety training.
- If the power cord or heating film is damaged, discontinue use and dispose of the product. Each room where underfloor heating and i-warm flux heating film are installed must have a separate electrical circuit with a type B circuit breaker and residual current device. The selection of circuit breakers and residual current devices should be carried out by an electrical designer or licensed professional.

SAFETY

The selection of circuit breakers and residual current devices should be carried out by an electrical designer or a certified electrician.

Installing the i-warm flux heating film under floating floor panels in wet areas, such as bathrooms, is prohibited. Please use i-warm core heating film for this application.



! CAUTION! DO NOT INSTALL THE i-warm flux HEATING FILM IF IT IS DAMAGED DURING UNPACKING. PLEASE CONTACT THE SELLER FOR ASSISTANCE.



IMPORTANT CONSIDERATIONS DURING INSTALLATION

1. All installation work must be conducted with the power supply switched off.
2. Ensure the installation site is clean. The floor should be flat, free of sharp objects and dents to prevent scratching, bending, or other damage to the heating film.
3. The installation location of the heating film must be dry and protected from direct exposure to water or moisture. Avoid using the heating foil on damp substrates.
4. Do not use underlay materials that could potentially damage the heating film, such as aluminum or steel sheets.
5. Avoid using underlays that absorb moisture, including paper, wood, or cellulose.
6. Do not use metalized primers.
7. It is prohibited to install the heating film under panels in wet rooms such as bathrooms.
8. Install the heating film only with a temperature regulator (thermostat) equipped with a floor temperature sensor.
9. The heating film should only be supplied from the installation box; direct supply from the socket is not permitted.
10. Take care to avoid damaging the heating film during installation. Do not pierce or drill into heating film

● IMPORTANT CONSIDERATIONS DURING INSTALLATION

11. Do not secure the heating foil with nails, screws, bolts, or any other metal objects.
12. Avoid using floor finishes that may deform or crack due to heat transfer.
13. If the power consumption of the heating foil installation exceeds 80% of the maximum load capacity of the temperature regulator (thermostat), consider using a contactor or an additional thermostat.
14. The electric wires supplying the heating film must not be installed over or beneath the heating film.
15. The installation of the heating film in the underfloor system must include a type B overcurrent switch and a residual current device within the electrical circuit.
16. Ensure thorough insulation of the heating film using self-amalgamating tape at the connector points and at the opposite end where the copper strips are located.
17. Avoid placing the heating foil beneath permanent furniture items that directly contact the ground and restrict airflow (such as fridges, washing machines, and chest of drawers). Furniture and appliances with legs, at least 30 mm in height, are permissible as they allow for free heat flow.
18. The heating film requires a dedicated electrical power supply and should not share circuits with other electrical devices.
19. Avoid overlapping or crossing the heating film. Cut the heating film at specified locations and seal the ends with self-amalgamating tape.
21. Initiate the heating system startup with the heating film as per the manufacturer's recommendations for floating floor panels.

● IMPORTANT CONSIDERATIONS DURING INSTALLATION

22. When installing the top floor covering, take care to avoid damaging the heating film and the vapor barrier film. Do not leave any debris (plaster, nails, etc.) on the heating or vapor barrier film, as this could potentially harm the entire heating system.
23. Operate the heating system in accordance with the guidelines provided by the floor covering manufacturer (most manufacturers recommend a maximum operating temperature of 27°C). ¹⁰
24. Only an electrician with valid licenses should perform electrical connections and measurements.
25. Store the heating film in a dry room at room temperature. You can stack a maximum of two full rolls of heating film.
26. During installation, the installer of the heating film should wear shoes with a soft sole to prevent potential damage to the installation. Ensure electrical grounding of structural metal elements, such as frames, grates, furniture, and doormats, within the heating film.
28. Do not install the heating film at temperatures below 5°C.
29. When conducting the installation, adhere to all dimensions and distances outlined in the manual.
30. Keep the instructions, along with the completed warranty card and carefully prepared design, for future reference and for subsequent installation and maintenance tasks.

PREPERATIONS BEFORE INSTALLING I-WARM FLUX HEATING FILM

1. Verify that the heating film's power matches the planned installation.
2. Verify the building's electrical installation parameters to ensure that using the heating film simultaneously with other devices will not cause issues. If the electrical power capacity is insufficient, it should be increased to ensure the safe operation of the electrical installation. The heating film operates at an electric voltage of 230V.
3. Inspect the main electrical wires supplying the entire heating film installation. The wires should be sized according to regulations for the electrical load corresponding to the total power of the heating film installation.
4. Check the moisture level of the base where the heating film will be installed; it must not exceed 2%.
5. Assess the condition of the building's thermal insulation to determine the appropriate insulation thickness for the heating film and select the suitable power of the heating film.
6. Draw a sketch of the room on the warranty card, including its dimensions. Plan and illustrate the location of the heating film and the routes for laying the electrical wires that supply the heating film. Plan and mark... the position of the electrical box and electric wires supplying the heating film on the sketch of the heating film installation. Include all dimensions in the sketch for clarity and ease of assembly.
7. Design the layout of the heating film according to the installation guidelines provided for the heating film. The maximum length of the heating film strip depends on its power and is detailed in the product's technical table.
8. Determine the projected power requirement for the installed heating film. If the electrical power required exceeds the current connection capacity, the electrical supply should be upgraded.
9. Ensure the cross-section of the electric wire (cable thickness) connected to the heating film matches the power of the heating film being installed.

$$P[W] = P_f[W] \times D_f[sqm]$$

P - Planned power of the heating film installation.

P_f - Power consumption of the heating film per sqm.

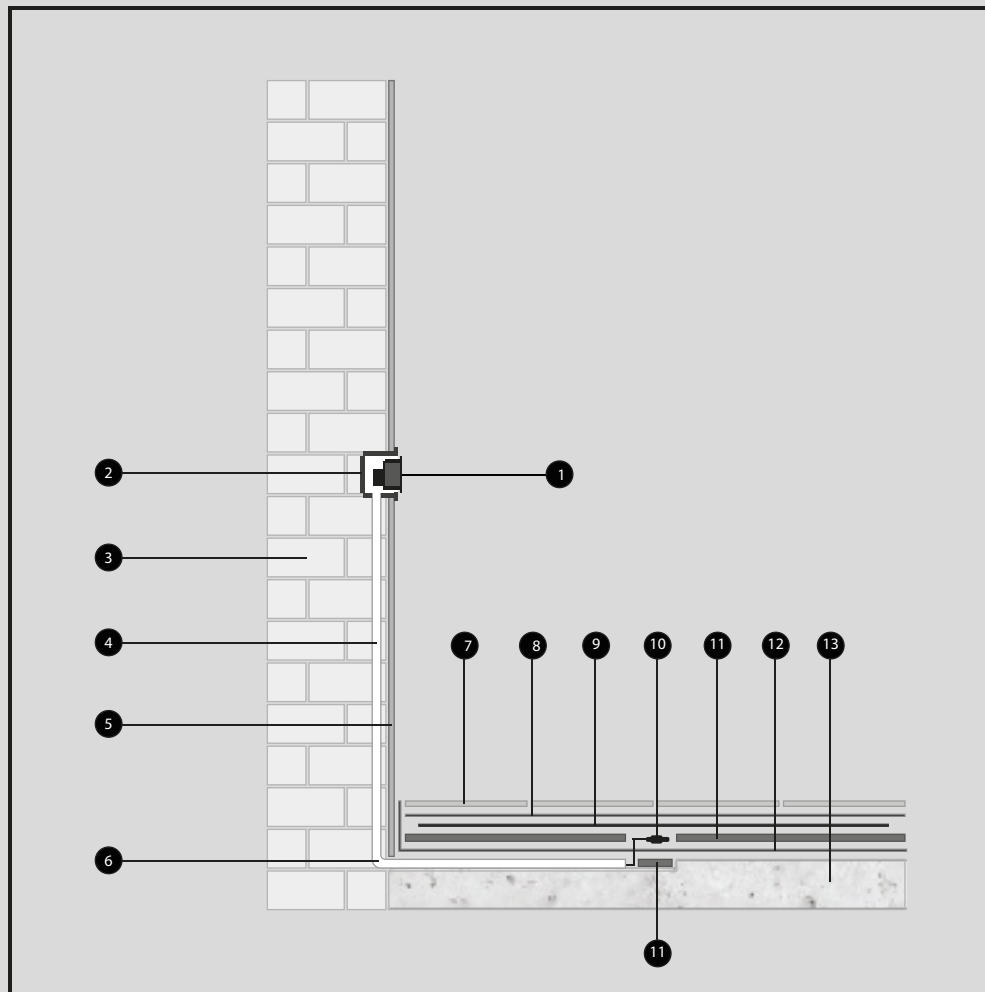
D_f - The surface area of the heating film to be installed on the floor.

● **! CAUTION! THE SELECTION OF WIRE DIAMETER FOR THE POWER SUPPLY CIRCUIT MUST BE DONE BY A LICENSED DESIGNER OR ELECTRICIAN!**

● **! CAUTION! PLAN THE LOCATION OF THE THERMOSTAT IN AN AREA WITHOUT DIRECT SUNLIGHT EXPOSURE OR DRAFTS.**

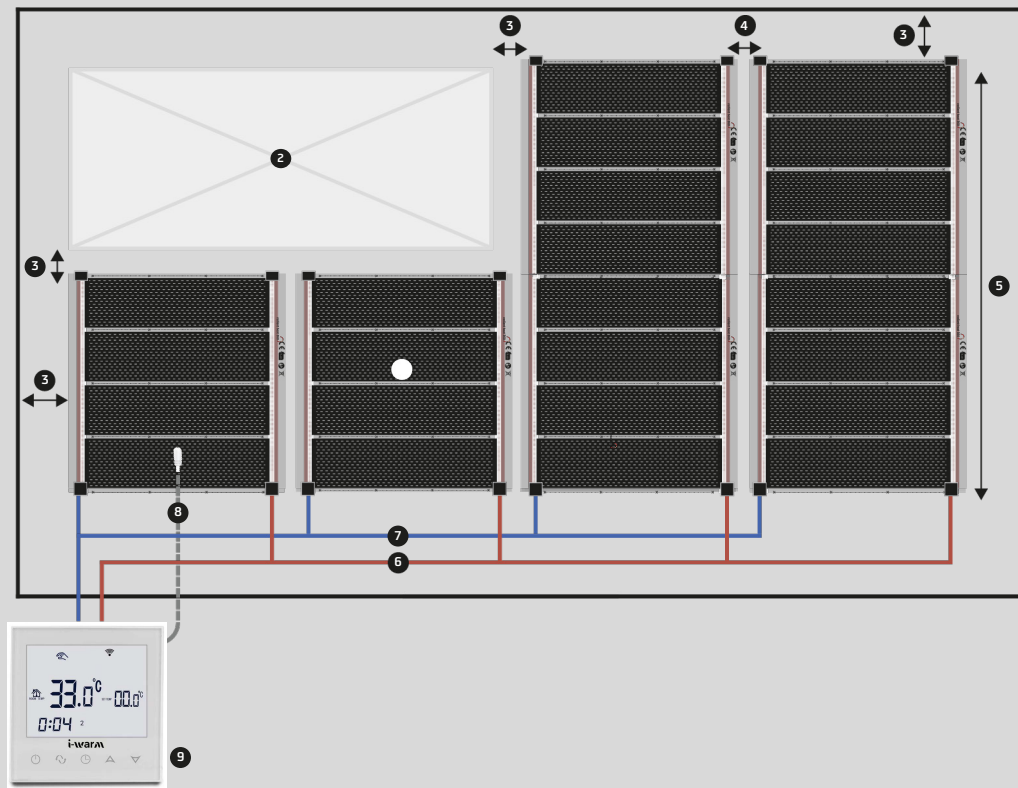
EXAMPLE OF I-WARM FLUX INFRARED HEATING INSTALLATION

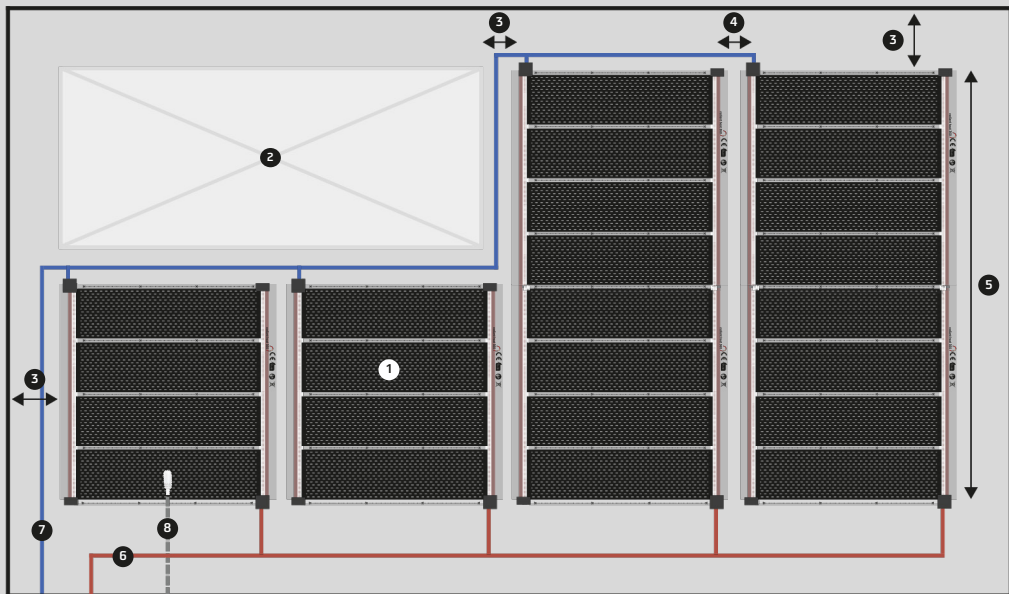
BUILT-IN AIR TEMPERATURE SENSOR AND FLOOR TEMPERATURE SENSOR IN THE THERMOSTAT

PLAN NO. 6

1. Thermostat
2. Installation box
3. Wall
4. A tube (conduit) with power wires from heating film
5. Plaster
6. Pipe (conduit) of the floor sensor
7. FloorING
8. Vapor barrier film
9. i-warm flux infrared heating film
10. Floor temperature sensor
11. Insulating mat
12. Vapor barrier foil
13. Cement spout/OSB/MFP board structure

DIAGRAM 1: I-WARM FLUX HEATING FILM CONNECTION

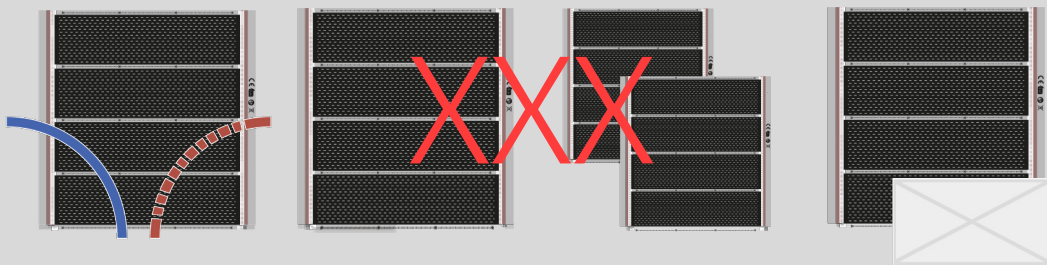




i-warm flux infrared heating film is designed for permanent installation beneath furniture, with a minimum spacing requirement of 5 cm between the heating film and any furniture surface. The heating film should also be spaced 0.5 to 1 cm apart from itself. For the maximum allowable length of the heating film stripe, please refer to Table 1, Page 2 of the installation instructions.

Ensure proper connection of the phase wire, neutral wire, temperature sensor, and thermostat according to the manufacturer's specifications.

CAUTION: Do not install the heating foil under permanent furniture lacking legs of at least 30 mm in height (such as refrigerators, washing machines, or chest of drawers).
PROHIBITED ACTIONS: X

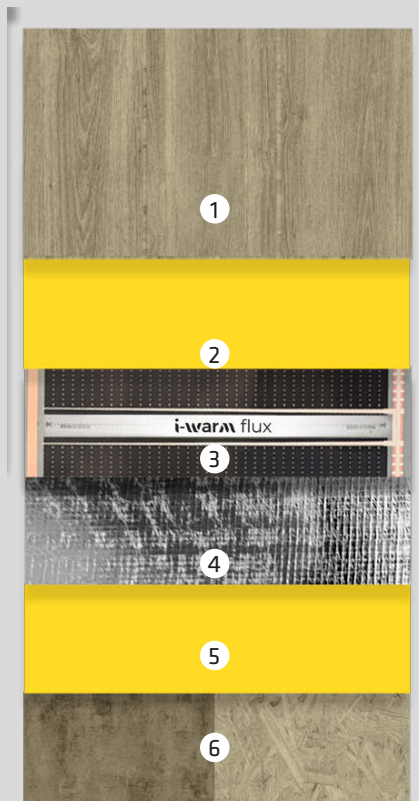
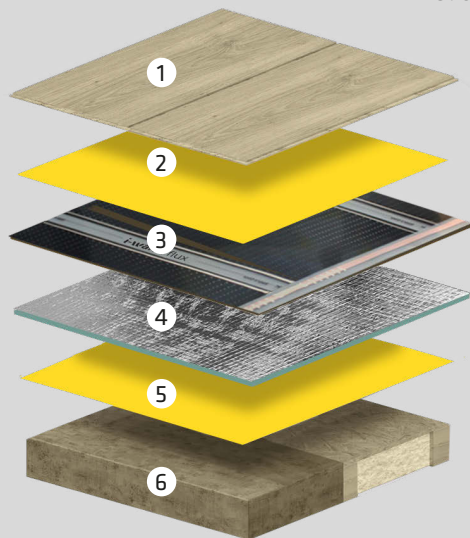


1. Installation of electrical wires supplying the heating film, both above and below it.
2. Cutting the film in unauthorized areas.
3. Overlapping the heating film.
4. Installing the heating film under permanent furniture such as refrigerators, washing machines, or chests of drawers.

BUILD UP OF I-WARM FLUX INFRARED HEATING • BENEATH FLOORING (LVT/SPC DRY-LAY/CLICK & LAMINATE)

1. Floor finish - LVT, Timber, Carpet
2. 0.2 mm vapor barrier film
3. i-warm flux infrared film
4. Foam insulation mat or XPS300 boards
5. 0.2 mm vapor barrier film
6. Floor (cement screed or structure made of OSB/
MFP boards)

PLAN NO. 3



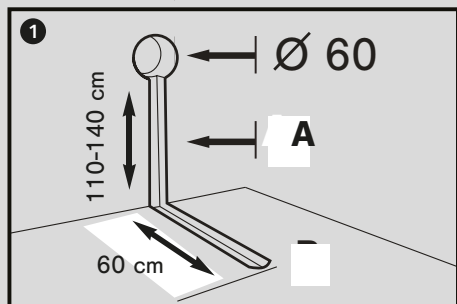
PLAN NO. 4

Legend:

PLAN NO. 3 : layers distribution

PLAN NO. 4 : top view

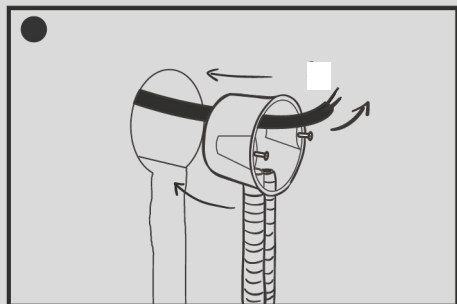
PREPARING THE BOX AND THE PROTECTIVE CONDUIT FOR ELECTRICAL INSTALLATION



At the specified location according to the design, use a drill or hole saw to create a hole for the Ø 60 electrical box. Carve an installation channel in the wall and floor to accommodate two protective conduits: one for the floor temperature sensor and one for the wires supplying the heating film. Connect the electrical lines supplying the heating film at the installation box location. A licensed electrician or designer should select the appropriate power cord cross-section.

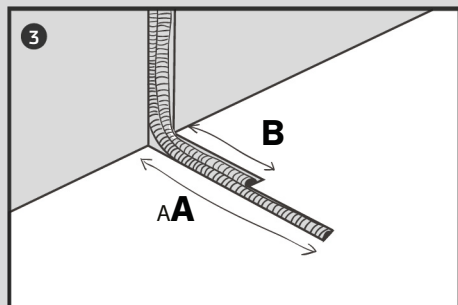
A. Installation channel

- **CAUTION! Install the thermostat box in an accessible location, ensuring it is not exposed to direct sunlight.**



Place the main power supply line and two protective conduits (one for the floor temperature sensor and one for the wires supplying the heating film) into the installation box.

Trim the ends of the conduits to a suitable length to facilitate the installation of the thermostat.

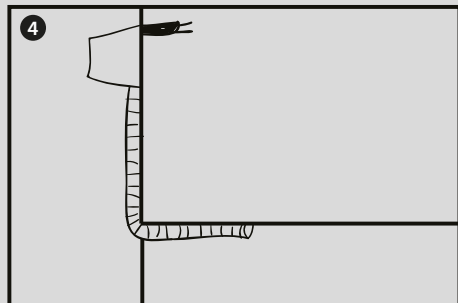


- A. The floor temperature sensor conduit should be approximately 50 cm long. The floor temperature sensor must be positioned beneath the heating film.

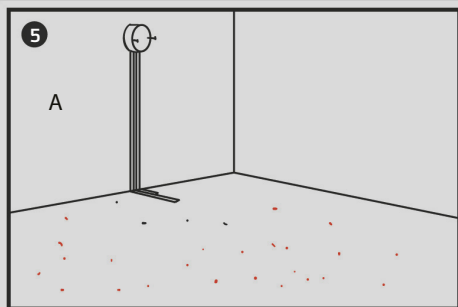
- B. Conduit for heating film, approximately 10 cm in length.

- **CAUTION! The protective conduit should be placed in a part of the floor that is not frequently used and not loaded with fixed elements (such as a wardrobe or bed). Ensure the sensor is protected from any mechanical damage (crushing, crumpling, etc.).**
- **CAUTION! The conduits must be installed beneath the heating film and must not protrude above the floor surface. Failure to adhere to these conditions may result in the failure of the entire heating system.**
- **CAUTION! The end of the floor temperature sensor (A) must be positioned beneath the intended heating film stripe (heating area).**

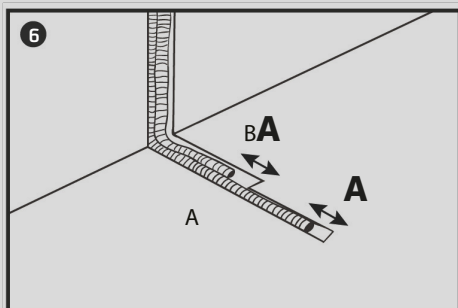
PREPARING THE ENCLOSURE AND PROTECTIVE CONDUITS FOR ELECTRICAL INSTALLATION



Protective conduits should not extend above the level of the screed or the OSB/MFP board structure.



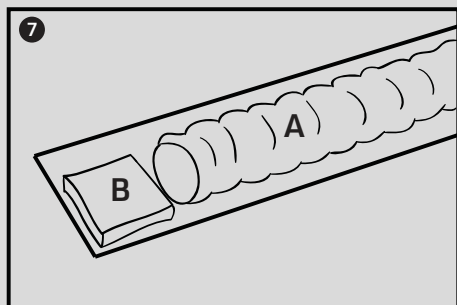
Clean the installation channels thoroughly, removing any debris, dust, stones, or other impurities.



Securely fasten the protective conduit to the floor using hot glue or adhesive to prevent movement. Leave adequate space at the conduit's end for inserting the floor temperature sensor and the wires supplying the heating film.

A. Spacing of 2 cm.

INSTALLATION OF THE FLOOR TEMPERATURE SENSOR

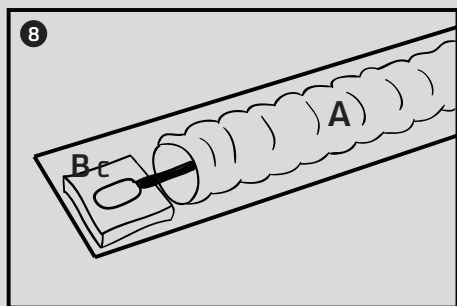


Carefully verify the placement of the protective conduit for the floor sensor. Ensure it does not extend above the floor surface. At the end of the conduit designated for the floor temperature sensor (NTC sensor), place a small square of insulating mat.

A - conduit safeguarding the floor temperature sensor

B - insulating mat (for sensor the rest only)

CAUTION! THE PROTECTIVE CONDUIT MUST NOT EXTEND ABOVE THE FLOOR SURFACE.

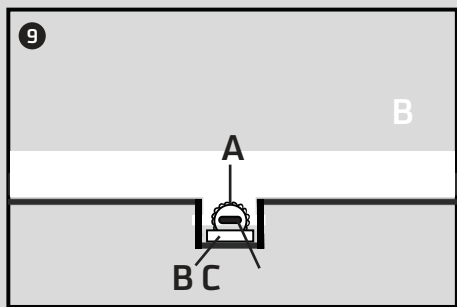


Insert the temperature sensor into the previously prepared conduit for the temperature sensor (see Fig. 6, page 17, and Diagram 6, page 15). Place a small square of insulation mat at the end of the sensor (NTC sensor). Ensure the floor temperature sensor (NTC sensor) is not placed directly on concrete.

A conduit safeguarding the floor temperature sensor

B insulation mat

C NTC temperature sensor



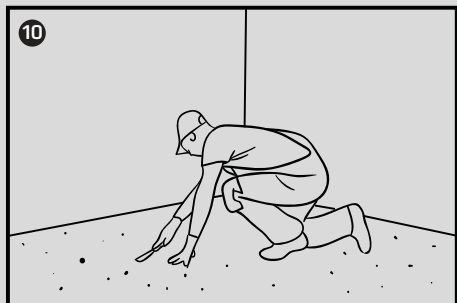
✓ Properly installed protective conduit with the floor temperature sensor.

A Conduit protecting the floor temperature sensor

B Insulation mat

C NTC temperature sensor

PREPARING THE ROOM FOR INSTALLATION

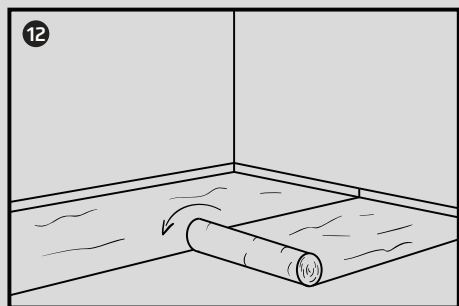


Ensure the floor surface is free of all debris and is smooth and stable. Use a spatula to remove any plaster residues, sharp objects, or unevenness. The floor surface should be clean and level.

PREPARING THE SPACE FOR INSTALLATION



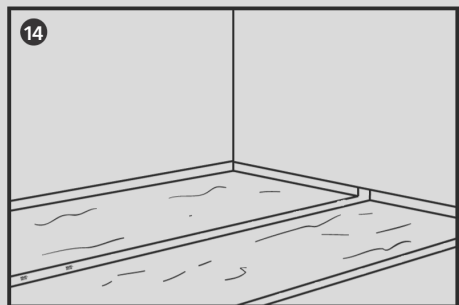
Thoroughly vacuum clean the floor surface with care.



Lay the vapor barrier film on the floor, ensuring it extends approximately 5 cm up the walls. Overlap the vapor barrier film by at least 10 cm. Cover the entire floor surface with the vapor barrier film, including areas where the heating film will not be installed, to maintain moisture protection.

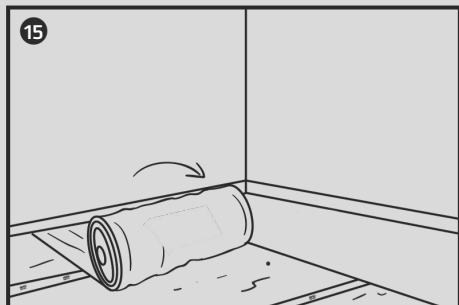


Join the individual sections of the vapor barrier film using overlapping silver adhesive tape.



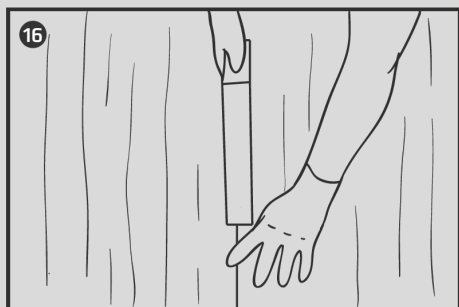
Carefully secure the vapor barrier film at its connections with silver self-adhesive tape along its entire length. Ensure the vapor barrier film is evenly distributed across the entire surface.

FLOOR INSULATION FOAM INSULATION MAT

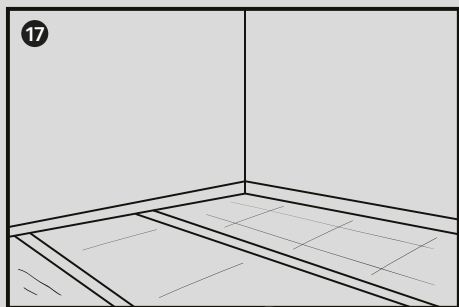


Position the insulation mat directly on the vapor barrier film. Ensure the insulation mat covers the entire floor surface, including areas where the heating film will not be installed, to maintain thermal insulation. Cut the insulation mat accurately at the corners.

● **CAUTION! THE FOAM INSULATION MAT IS ONLY INTENDED FOR USE UNDER FLOATING FLOORS MADE OF LAMINATE PANELS, WITH A MINIMUM THICKNESS OF 6 mm.**

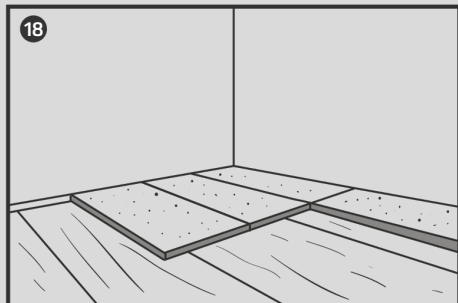


Securely bond the seams of the insulating mat together using silver adhesive tape.

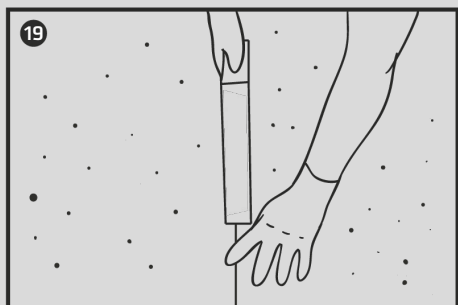


The edges of the insulation mat should be firmly glued together along its entire length to ensure a stable base.

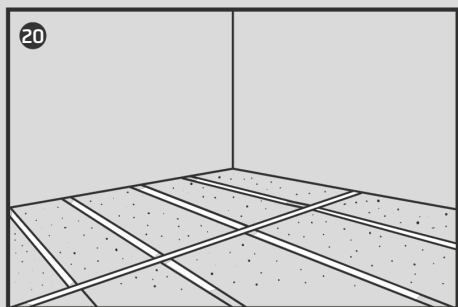
FLOOR INSULATION XPS300 PANEL INSULATION MAT



Lay the XPS300 insulation boards directly on the vapor barrier film. Ensure the boards cover the entire floor surface, including areas where no heating film will be installed, to maintain thermal insulation. Cut the insulation boards accurately at the corners.

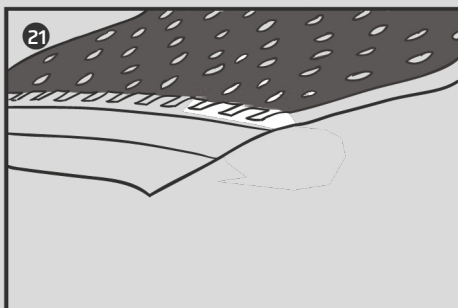


Securely bond the XPS 300 insulation boards together using reinforced self-adhesive tape.



Connect the XPS300 insulation boards at their joints using reinforced self-adhesive tape along the entire length and width. Ensure the XPS300 insulation boards provide a stable base.

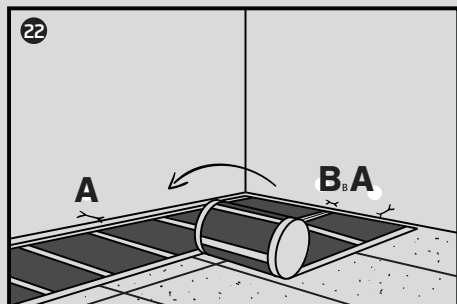
ARRANGING I-WARM FLUX HEATING FILM



Before beginning the installation of the heating film, double-check the compatibility of the heating power of the film with the planned electrical installation.

The heating capacity and specifications of the film can be found on the label or sidebar of the heating film.

LAYING I-WARM FLUX HEATING FILM

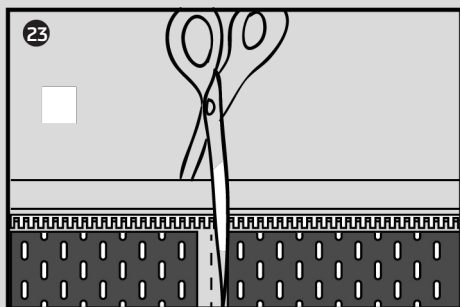


Unroll the i-warm flux heating film on the floor and cut it to the appropriate size in the designated area.

- A. Distance from the wall min. 5 cm
- B. The distance between the strips of the i-warm flux heating film is 0.5 - 1 cm

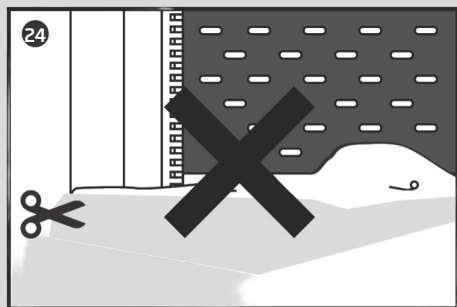
- **CAUTION! Ensure you do not exceed the maximum installation length for a single strip of film (refer to Table 1, Page 2).**

Cut the heating film only at the designated locations, marked with a dotted line and a scissors symbol. Carefully and precisely cut along the dashed line.

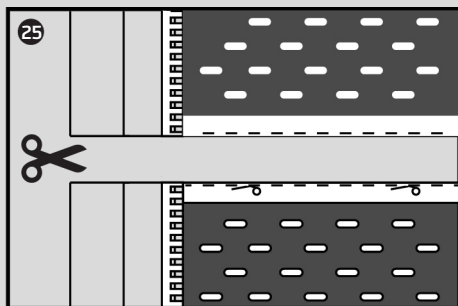


- **CAUTION! If the heating film is accidentally cut through the graphene matrix, it must be re-cut correctly along the designated cut line in another section of the film.**

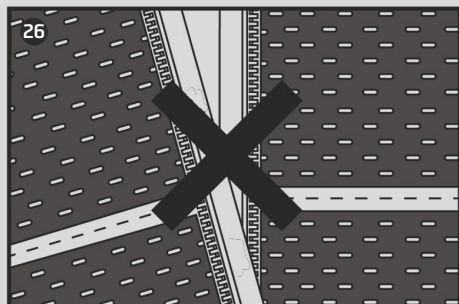
- **CAUTION! DO NOT CUT THE HEATING FILM THROUGH THE GRAPHENE MATRIX (BLACK FIELD). ONLY CUT THE HEATING FILM AT THE DESIGNATED CUTTING AREAS, MARKED WITH A DOTTED LINE AND SCISSORS SYMBOL.**



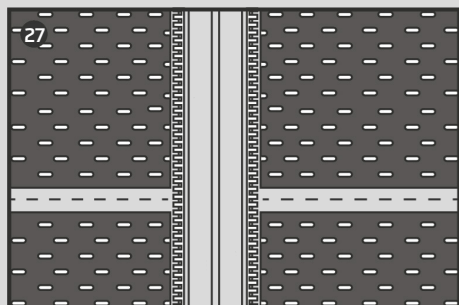
- ✓ Cut the designated section.



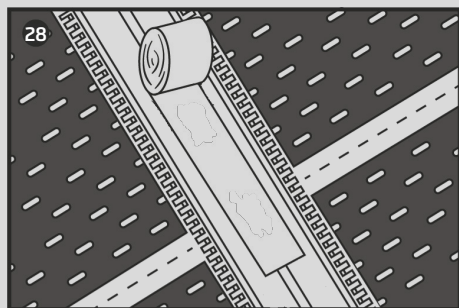
LAYING I-WARM FLUX HEATING FILM



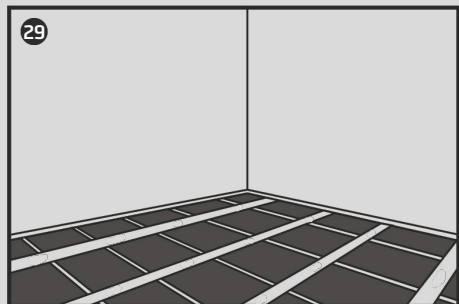
It is prohibited to overlap the heating film. The heating film must not be placed on top of itself.



✓ Correctly layed i-warm flux heating film.

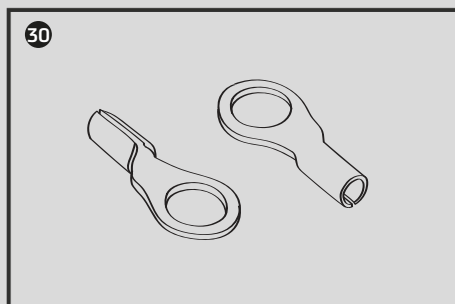


Secure the heating film strips to the insulating mat using adhesive tape.

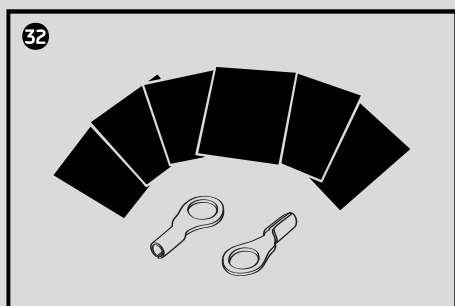
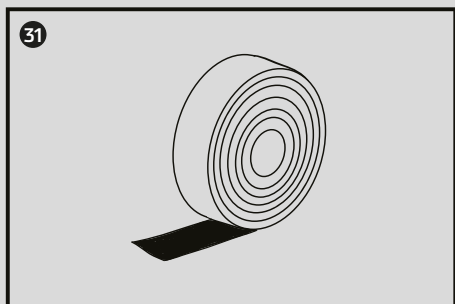


Secure the strips of the heating film to the insulating mat along their entire length to ensure the film remains stable and does not move.

THE ELECTRICAL CONNECTION OF THE HEATING FILM



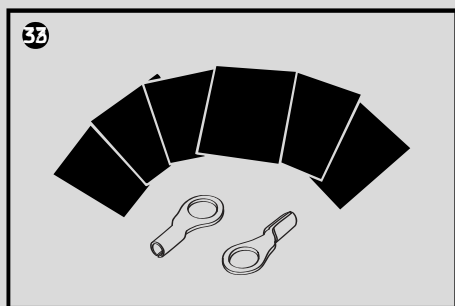
A Connector type A: Used to electrically connect the heating film with an electric wire in a straight system, where the wires exit alongside the connector.



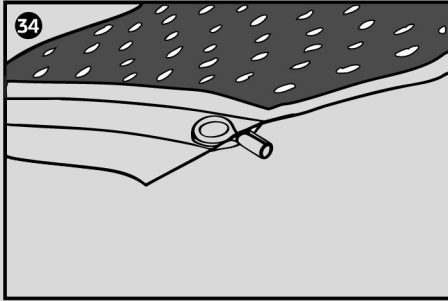
Connection kit featuring connector type A.

The kit is used for the electrical connection of a single strip of i-warm flux infrared heating film.

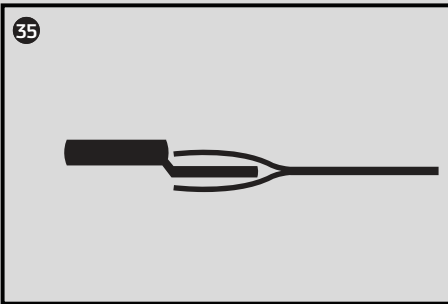
1. Type: A.
2. Sections of self-amalgamating tape.



ELECTRICAL CONNECTION OF THE I-WARM FLUX HEATING FILM

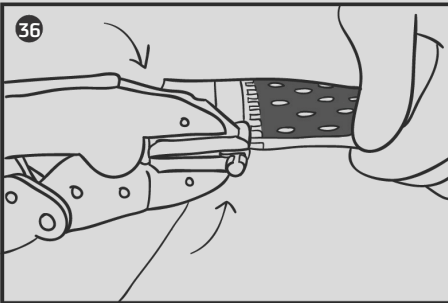


Position the connector in the center of the copper strip of the i-warm flux heating film. Ensure the heating film is placed between the connector plates.

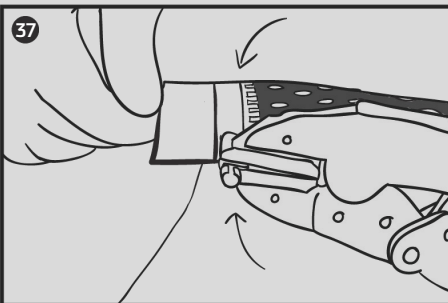


✓ Properly placed connector.

Position the i-warm flux heating film between the insulated PET. Use clamping tongs to secure the connector in the middle of the copper tape.

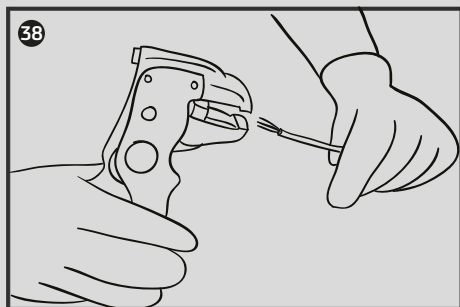


Securely crimp the connector in the center of the copper strip of the heating film using the clamp. Ensure a firm and careful crimping to embed the connector into the copper surface.

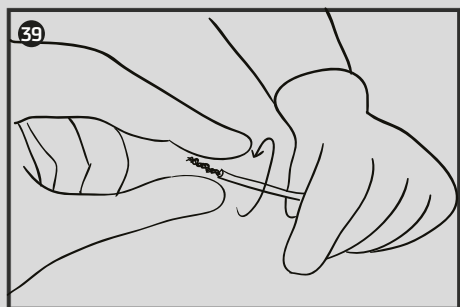


Repeat the process of crimping the connector onto the copper stripe of the heating film on the opposite side of the connector. Press the connector firmly and carefully onto the copper stripe.

ELECTRICAL CONNECTION OF THE I-WARM FLUX HEATING FILM

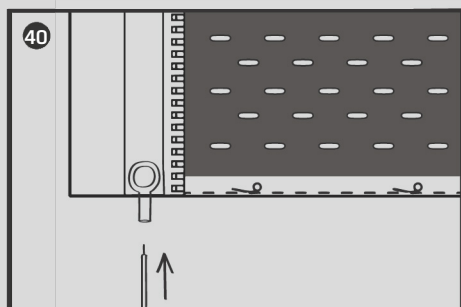


Use wire stripping pliers to remove the double insulation from the electric wire (see Fig. 4, Page 6).



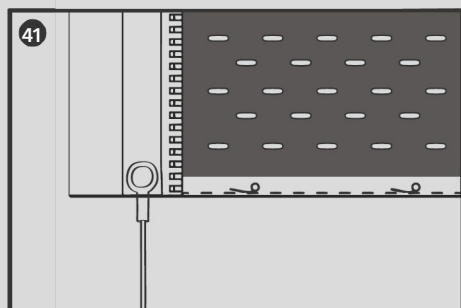
Twist the copper wires of the electric cable tightly to create a cohesive unit.

ELECTRICAL CONNECTION USING CONNECTOR TYPE A



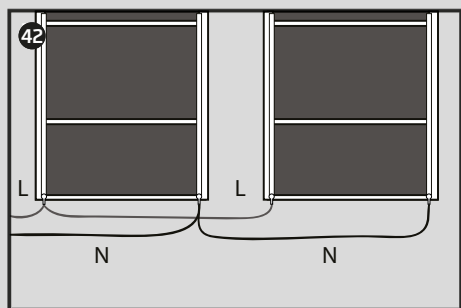
Connector type: A

Insert the electric wire into the connector. Ensure the copper wire of the electric cable is properly positioned inside the connector for a correct electrical connection.



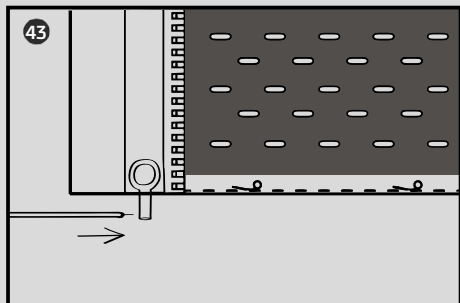
Connector type: A

✓ Correctly fixed electric wire in the A-type connector.

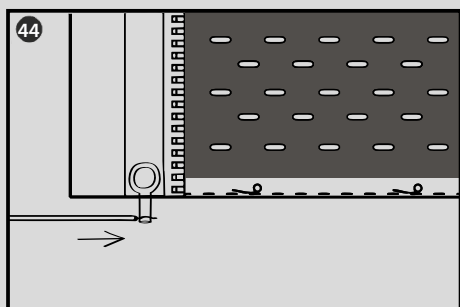


Connector type: A

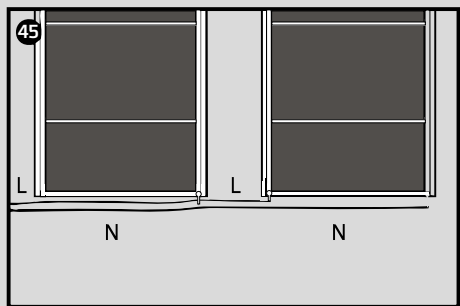
When connecting the heating film strips in parallel, insert two electric wires into the connector and refer to the provided wiring diagram for guidance.

ELECTRICAL CONNECTION USING CONNECTOR TYPE: B**Connector type: B**

Insert the electric wire into the connector, ensuring the copper wire of the electric cable is positioned correctly for a secure electrical connection.

**Connector type: B**

✓ Correctly fixed electric wire in the B-type connector.

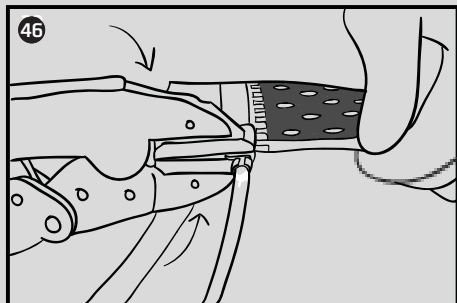
**Connector type: B**

When connecting the heating film stripes in parallel, the electric wire should run continuously from one heating film stripe to the next without interruption. Use special pliers to strip the insulation from the electric wire (see Fig. 4, Page 6).

Correct diagram of wiring.

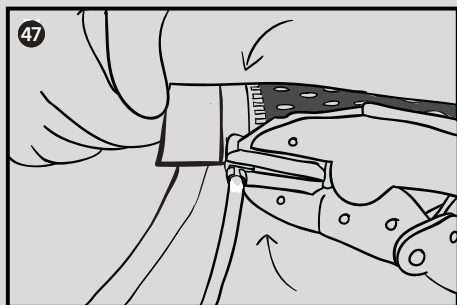
NOTE CONNECTION B IS NOT PROVIDED IN HEATING PACK AND WILL NEED TO BE SOURCED SEPERATELY.

ELECTRICAL CONNECTION PROCEDURE FOR THE HEATING FILM



- ✓ Use the crimping pliers to securely tighten the correctly inserted electric wire in the connector. Ensure the connection is strong and durable.

● **CAUTION! TO ENSURE A STRONG ELECTRICAL CONNECTION, CRIMP THE ENTIRE SURFACE OF THE CONNECTOR.**



- ✓ Correctly placed electric wire.

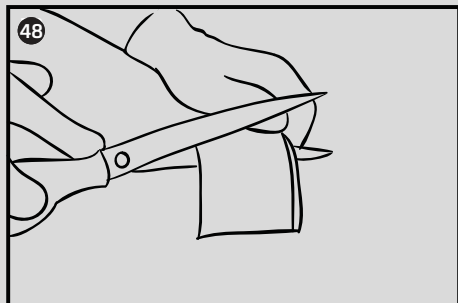
Repeat the crimping process of the electric wire on the other side of the connector. Ensure the connection is secure and durable.

● **CAUTION! TO ENSURE A STRONG ELECTRICAL CONNECTION, CRIMP THE ENTIRE SURFACE OF THE CONNECTOR.**

DOUBLE-CHECK THE ELECTRICAL CONNECTIONS OF THE HEATING FILM TO AVOID INSTALLATION ERRORS.

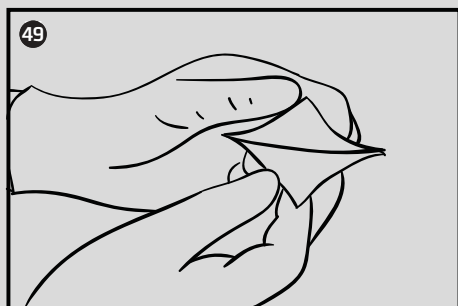
- **! CAUTION! ELECTRICAL CONNECTIONS FOR THE HEATING FILM SHOULD ONLY BE PERFORMED BY A QUALIFIED ELECTRICIAN. ENSURE PRECISE AND CAREFUL HANDLING DURING INSTALLATION!**
- **! CAUTION! ENSURE THE COPPER WIRE OF THE ELECTRICAL CABLE IS PROPERLY PLACED IN THE CONNECTOR TO ENSURE CORRECT ELECTRICAL CONNECTION.**
- **! CAUTION! ENSURE THE CONNECTOR AND THE WIRE ARE CRIMPED SECURELY IN THE CENTER OF THE COPPER STRIP. THE CONNECTION MUST BE STRONG AND DURABLE.**
- **! CAUTION! TO ENSURE A STRONG ELECTRICAL CONNECTION, CRIMP THE ENTIRE SURFACE OF THE CONNECTOR.**

INSULATING THE ELECTRICAL CONNECTIONS OF I-WARM FLUX HEATING FILM

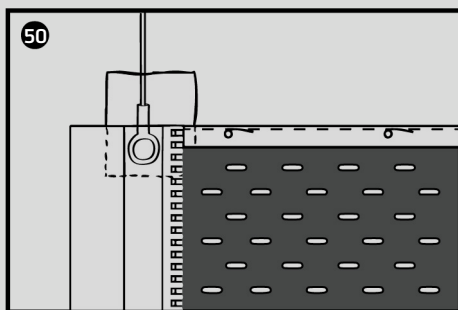


Trim the self-amalgamating tape to fit the entire electrical connection area. The minimum size of the self-amalgamating tape should be 6 cm x 5 cm.

● **! CAUTION! IF YOU HAVE PURCHASED A HEATING FILM KIT, USE THE PROVIDED SELF-AMALGAMATING TAPE FROM TYPE A. (PIC. 32, 33 P. NO. 24).**



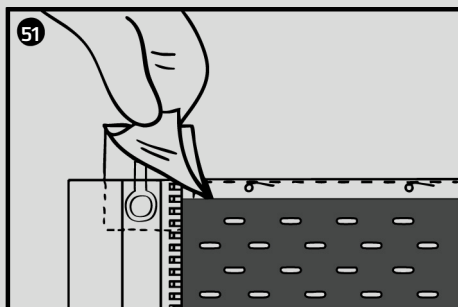
Peel off the protective paper from the self-amalgamating tape.



Apply the self-amalgamating tape to the heating film where the connector connects with the copper stripe.

Ensure the self-amalgamating tape covers the entire surface of the connector and the copper stripe, leaving some allowance.

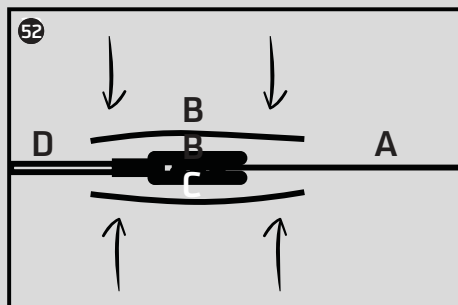
● **! CAUTION! HANDLE THE INSULATION OF THE ELECTRICAL CONNECTION WITH CARE. THE SELF-AMALGAMATING TAPE SHOULD COMPLETELY COVER THE ENTIRE SURFACE OF THE CONNECTOR AND THE COPPER STRIPE, LEAVING AN ALLOWANCE.**



Carefully apply another self-amalgamating tape on the opposite side of the connector to cover the entire surface of the connector and the copper stripe.

Position the second self-amalgamating tape symmetrically to the first one.

INSULATING THE ELECTRICAL CONNECTIONS OF I-WARM FLUX HEATING FILM



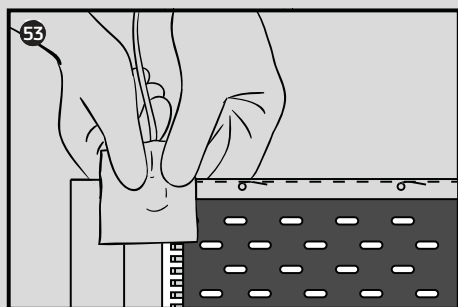
- ✓ Correctly positioned self-amalgamating tapes on both sides of the electrical connector.

A - heating film

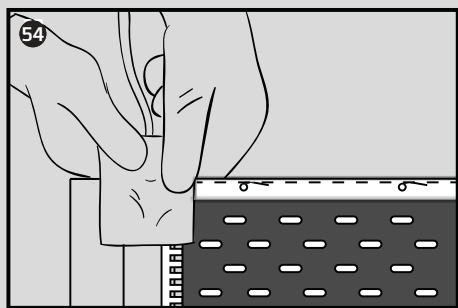
B - self-amalgamating butyl tape

C - A type installation connector

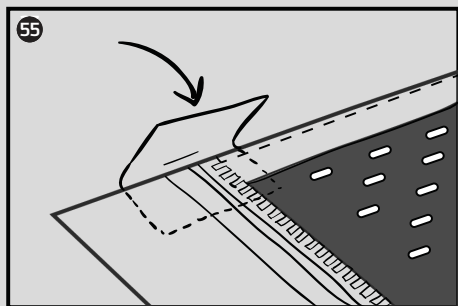
D - electric wire with double insulation (cable)



Carefully and firmly press down the correctly positioned self-amalgamating tapes with your fingers, ensuring they merge together.



Repeat the process of pressing down the self-amalgamating tape several times. Ensure the self-amalgamating tapes are carefully and firmly pressed over their entire surface.

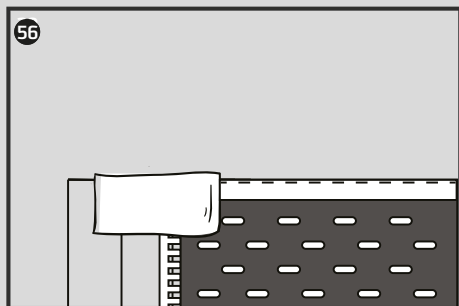


Insulate the copper tape with self-amalgamating tape on the opposite end of the heating film strip. Attach a section of self-amalgamating tape with minimum dimensions of 5x6 cm to the underside of the heating film, leaving the top part of the tape free to fold over.

The self-amalgamating tape must cover the copper strip with an excess.

● **! CAUTION! INSULATE THE ELECTRICAL CONNECTION CAREFULLY. THE SELF-AMALGAMATING TAPE MUST COVER THE ENTIRE SURFACE OF THE COPPER STRIPE.**

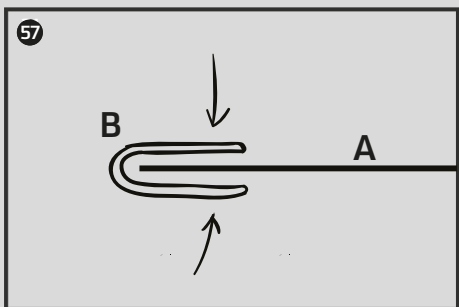
ELECTRICAL INSULATION OF I-WARM FLUX HEATING FILM



Carefully and symmetrically fold the second part of the self-amalgamating tape over the heating film.

The self-amalgamating tape must cover the copper strip with an allowance.

! CAUTION! INSULATE THE ELECTRICAL CONNECTION CAREFULLY. THE SELF-AMALGAMATING TAPE SHOULD COVER THE ENTIRE SURFACE OF THE COPPER STRIPE.

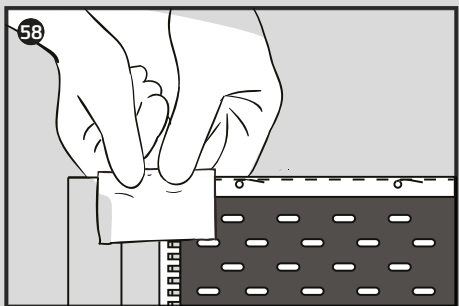


✓ Properly positioned self-amalgamating tape at the location where the heating film is cut.

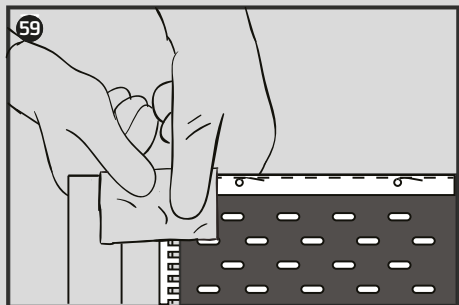
Self-amalgamating tape is applied on both sides of the heating film.

A i-warm flux heating film

B self-amalgamating tape

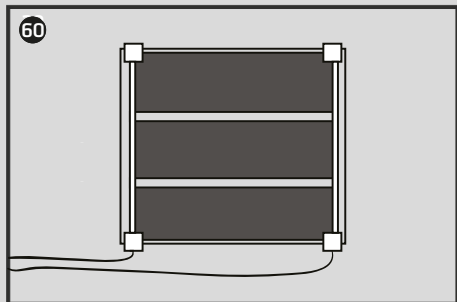


Carefully and firmly press down with your fingers on the correctly positioned self-amalgamating tapes. Ensure the self-amalgamating tapes are joined together.

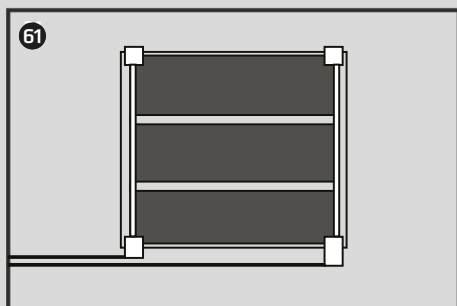


Repeat the process of pressing down on the self-amalgamating tape several times. Ensure the self-amalgamating tape is carefully and firmly secured over its entire surface.

INSULATING THE ELECTRICAL CONNECTIONS OF I-WARM FLUX HEATING FILM



- ✓ A correctly insulated heating film with a type A connector. Self-amalgamating tape applied on both sides of the heating film.

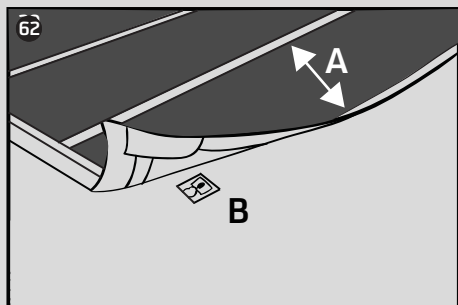


- ✓ A correctly insulated heating film with a type A connector. Self-amalgamating tape applied on both sides of the heating film.

DOUBLE CHECK THE INSULATION OF THE HEATING FILM'S ELECTRICAL CONNECTIONS TO PREVENT INSTALLATION ERRORS

- **! CAUTION! INSULATE THE ELECTRICAL CONNECTION CAREFULLY. ENSURE THE SELF-AMALGAMATING TAPE COVERS THE ENTIRE SURFACE OF THE COPPER STRIP.**
- **! CAUTION! INSULATE BOTH SIDES OF THE HEATING FILM. ENSURE CAREFUL INSULATION AT THE ELECTRICAL CONNECTION SITE AND ON THE OPPOSITE SIDE WHERE THE FILM IS CUT.**
- **! CAUTION! ELECTRICAL CONNECTIONS AND INSULATION OF THE HEATING FILM SHOULD ONLY BE UNDERTAKEN BY A CERTIFIED ELECTRICIAN. PERFORM THE ELECTRICAL CONNECTIONS CAREFULLY AND PRECISELY!**

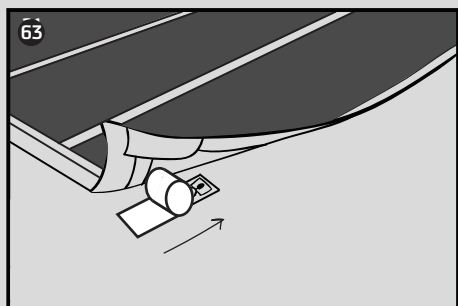
POSITIONING THE HEATING FILM ABOVE THE FLOOR TEMPERATURE SENSOR



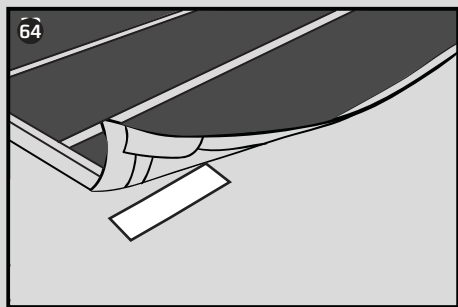
Carefully create a hole in the insulating mat for the floor temperature sensor (NTC sensor).

Verify if the temperature sensor (NTC sensor) is precisely positioned within the heating field (graphene).

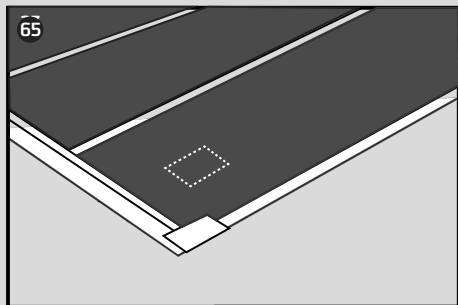
A - heating area (graphene)
B - floor temperature sensor



Seal the opening in the insulating mat at the sensor location with electrical insulation tape and or adhesive tape. Do not use silver heating tape.



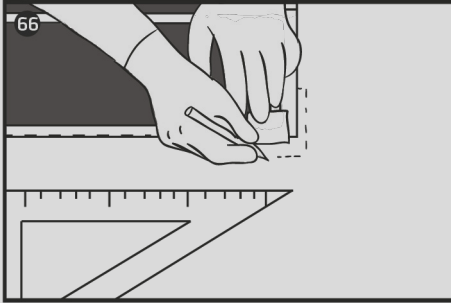
✓ Correctly protected floor temperature sensor (NTC sensor) with tape.



Place the heating film over the tape-protected floor temperature sensor (NTC sensor).

Ensure the floor temperature sensor (NTC sensor) is positioned within the heating zone (graphene).

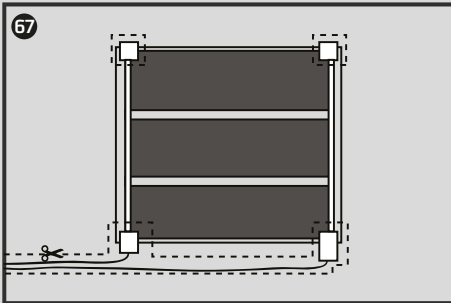
INSTALLATION OF THE HEATING FILM ON THE INSULATION MAT



The heating film placed on the insulating mat must have a flat surface without any protrusions. Ensure that the connectors of the heating film and the electric wires supplying it do not extend above the surface of the heating film.

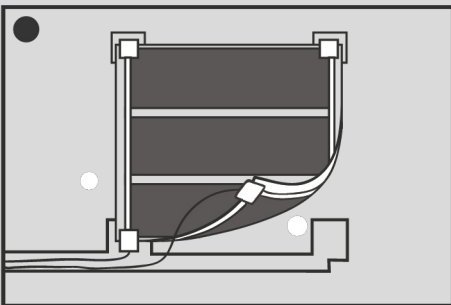
To maintain a flat surface, any elements protruding above the heating film should be positioned within pre-prepared holes in the insulating mat.

Mark the connectors and the paths of the electric wires using a felt-tip pen.

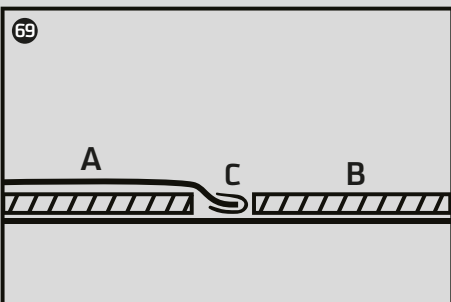


Use scissors to cut out the marked holes in the insulating mat. Ensure all connecting elements and electric wires supplying the heating film are positioned within these prepared holes to prevent them from protruding above the surface of the heating film.

! CAUTION! WHEN CUTTING OUT THE HOLES, ENSURE NOT TO DAMAGE THE VAPOR BARRIER FILM UNDER THE INSULATING MAT!



Carefully verify the placement of the holes in the insulating mat to ensure all connectors and electrical wires are positioned below the surface of the i-warm flux heating film.



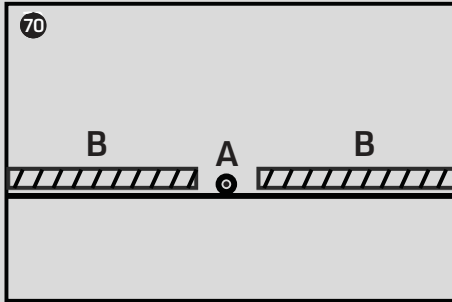
✓ The heating film is correctly positioned with an insulated connection within the prepared hole in the insulating mat. The insulated joint is situated beneath the surface of the heating film.

A - heating film

B - insulating mat

C - insulated joint of the heating film

INSTALLING I-WARM FLUX HEATING FILM ON THE INSULATION MAT

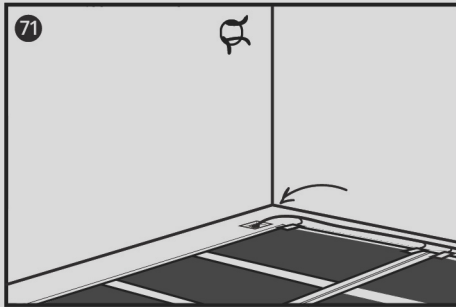


- ✓ Properly positioned power cord (wire) within the insulating mat.

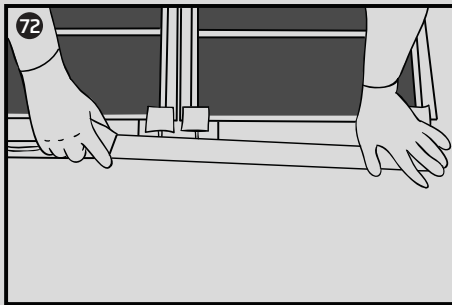
The power cord is situated beneath the surface of the heating film.

A - power cord (wire)

B - insulating mat

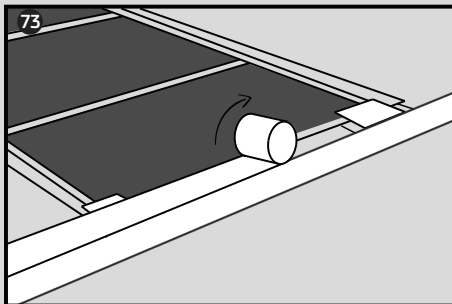


Use scissors to create a hole in the insulating mat at the location designated for the protective conduit intended for the wires supplying the heating film. Insert the wires supplying the heating film into the protective conduit and guide them to the installation box.

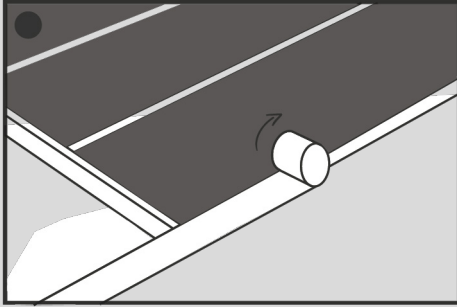


Securely tape the insulated electrical connections and electrical wires that are placed in the cut openings. Ensure all elements within the holes of the insulating mat are firmly taped with adhesive tape.

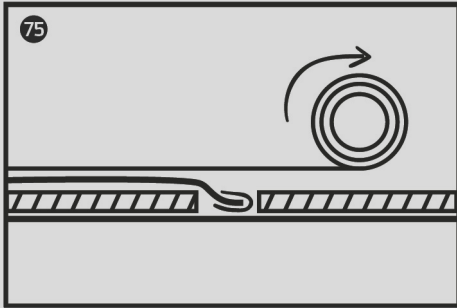
● **! CAUTION! WHEN USING XPS300 INSULATING MAT, USE REINFORCED ADHESIVE TAPE.**



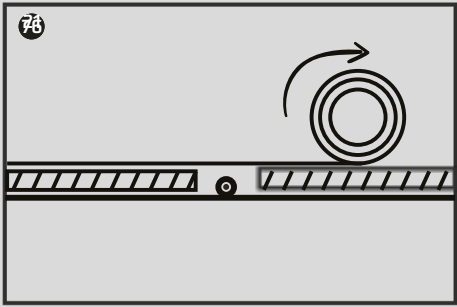
Carefully cover the heating film and the insulated electrical connections with successive sections of adhesive tape. Perform this task with precision and care.

INSTALLATION OF I-WARM FLUX HEATING FILM ON THE INSULATION MAT

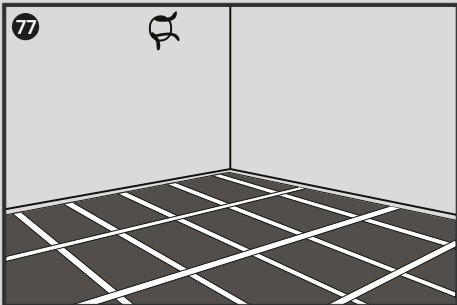
Carefully apply adhesive tape to the opposite end of the heating film strip, covering the insulated electrical connections.



✓ Adhesive tape properly applied to the heating film with an insulated electrical connector.

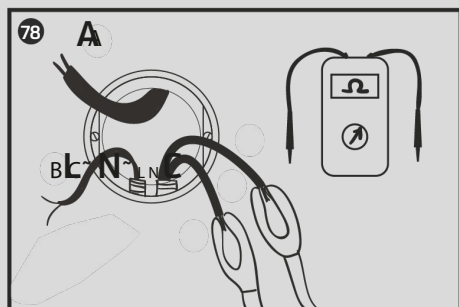


✓ The electric wire (cable) is securely sealed with adhesive tape.



Please carefully verify the correct placement of the heating film as per the manual instructions. Ensure that the surface of the heating film is clean, stable, and flat, without any protrusions.

MEASUREMENT AND TESTING OF HEATING INSTALLATION



To verify the continuity of electrical connections and the installed heating capacity, measure the resistance of the installed heating film.

Record the resistance measurement result on the warranty card. Calculate the power of the installed heating film using the formula provided below, and document the result on the warranty card.

$$\text{POWER [W]} = \frac{\text{voltage (V)}^2}{\text{resistance (}\Omega\text{)}}$$

Lf - phase electric wire of the heating film

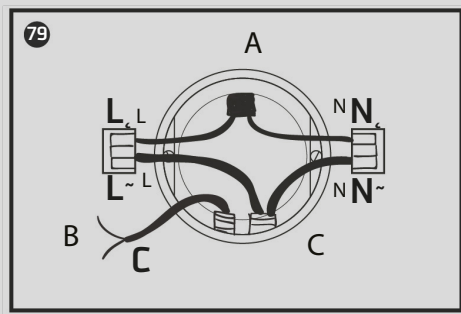
Nf - neutral electric wire of the heating film

A - power cord

B - floor temperature sensor cable

! CAUTION: IF THE INSTALLED POWER OF THE HEATING FILM EXCEEDS 80% OF THE MAXIMUM POWER LOAD SPECIFIED FOR THE TEMPERATURE REGULATOR (THERMOSTAT), USE A CONTACTOR OR A SECOND THERMOSTAT!

! CAUTION: IF THE RESISTANCE MEASUREMENT RESULT AND THE CALCULATED POWER DO NOT MATCH THE NOMINAL POWER OF THE HEATING FILM (+/- 10%), THE HEATING FILM HAS BEEN INCORRECTLY INSTALLED AND IS UNSUITABLE FOR OPERATION. VERIFY THAT ALL HEATING FILMS HAVE THE SAME RATED POWER.



Conduct a test of the heating film installation by connecting it to the power source. Connect the heating film to the power supply as shown in the diagram.

Lz - phase network electric wire

Lf - phase electric wire of the heating film

Nz - neutral electric wire

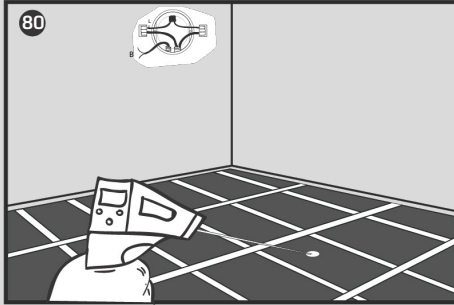
Nf - neutral electric wire of the heating film

C - floor temperature sensor cable

! CAUTION! THE ELECTRICAL CONNECTIONS OF THE HEATING FILM MUST BE PERFORMED BY AN AUTHORIZED ELECTRICIAN. HANDLE THE ELECTRICAL CONNECTIONS WITH CARE AND PRECISION!

! CAUTION! BEFORE TURNING ON THE HEATING INSTALLATION, THOROUGHLY INSPECT THE CONNECTIONS OF THE ELECTRICAL WIRES AND THE ELECTRICAL CIRCUITS OF THE HEATING FILM.

HEATING INSTALLATION MEASUREMENT AND TEST



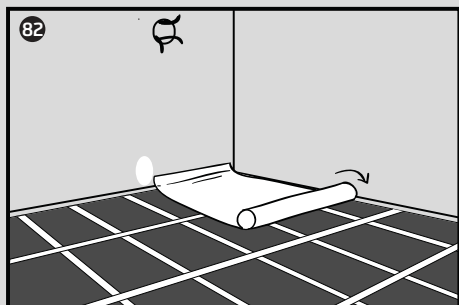
After connecting the heating film to the electrical mains, measure the temperature of the heating film.

Using an electronic device such as a pyrometer or thermal imaging camera, or by physically touching the film with your hand, verify that the heating film uniformly heats up across all installed heating stripes and zones.

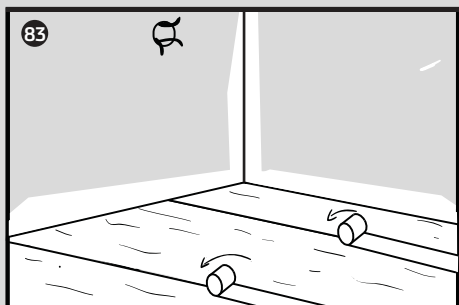
Once the heating system test is complete, disconnect the entire heating system from the power supply.

- **! CAUTION! IF THE HEATING FILM DOES NOT HEAT UP, DISCONNECT THE ENTIRE INSTALLATION AND CAREFULLY CHECK ALL ELECTRICAL CONNECTIONS AND PROTECTIONS IN THE ELECTRICAL SWITCH CABINET.**
- **! CAUTION! AT THE LOW RATING POWER OF HEATING FILM SUCH AS 60/80 [W/SQM], THE TEMPERATURE OF THE HEATING FILM RISES SLIGHTLY AND MAY BE UNDETECTABLE TO THE TOUCH.**
- **! CAUTION! AFTER PERFORMING THE HEATING INSTALLATION TEST, DISCONNECT THE ENTIRE HEATING SYSTEM FROM THE ELECTRICAL POWER SUPPLY.**

COMPLETING THE INSTALLATION OF THE HEATING FILM

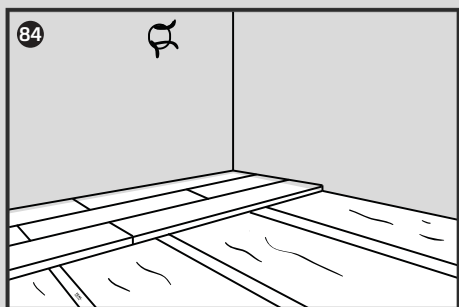


After verifying the proper functioning of the heating system, proceed to lay the vapor barrier film across the entire room surface, ensuring a minimum overlap of 10 cm.



Thoroughly adhere the vapor barrier film at the seams using self-adhesive tape along its entire length. Ensure the vapor barrier film is uniformly spread across the entire surface.

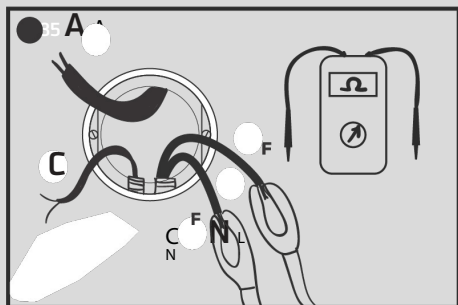
Securely connect each strip of the vapor barrier film with overlapping sections using adhesive tape.



Once the vapor barrier foil has been laid and securely glued in place, proceed with arranging the floating floor panels.

- **! ATTENTION! WEAR ONLY SOFT AND FLAT FOOTWEAR DURING FLOORING INSTALLATION.**
- **! ATTENTION! PLEASE EXERCISE CARE WHEN LAYING THE FLOOR COVERING TO AVOID DAMAGING THE VAPOR BARRIER FILM AND THE HEATING FILM.**
- **! ATTENTION! FOLLOW THE MANUAL CAREFULLY WHEN PLACING THE FLOOR COVERING AND MAINTAIN A CLEAN ENVIRONMENT.**
- **! ATTENTION! DURING FLOOR INSTALLATION, ENSURE NO DIRT REMAINS ON THE SURFACE OF THE FILM. THIS CAN CAUSE DAMAGE TO THE HEATING SYSTEM.**
- **! ATTENTION: FAILURE TO FOLLOW THE MANUAL MAY RESULT IN DAMAGE TO THE HEATING SYSTEM.**

COMPLETING THE INSTALLATION OF THE HEATING FILM



To verify the installation of the heating film and the continuity of electrical connections, measure the resistance of the installed heating film.

Record the measurement of the resistance in the warranty card.

Lf - phase electric wire of the heating film

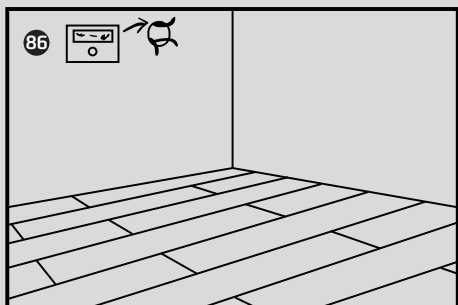
Nf - neutral electric wire of the heating film

A - power cord C - floor

temperature sensor cable

●! ATTENTION! IF THE RESISTANCE MEASUREMENT IS INCONSISTENT WITH THE PREVIOUS READING, IT INDICATES DAMAGE DURING THE FLOOR INSTALLATION. IN SUCH CASES, USE OF THE HEATING SYSTEM IS STRICTLY PROHIBITED.

●! ATTENTION: FOR ACCURATE MEASUREMENTS, THE TOLERANCE OF RESISTANCE MEASUREMENT INSTRUMENTS IS +/- 1%.



After measuring the heating film and confirming the correct operation of the heating system, proceed with installing the thermostat (temperature regulator) according to the original installation manual provided with the thermostat. After correctly installing the thermostat, recheck the heating system for proper operation.

Adjust the floor temperature sensor's temperature limit based on the floor covering manufacturer's recommendations. (The ideal floor temperature is approximately 27°C.) Please check settings on thermostat to ensure that the floor sensor has been set to external and not internal. Setting 2 on the i-warm thermostat. Please check manufacturers guidelines if using third party thermostat. Warm up the installed floor covering as per the manufacturer's recommendations.

! ATTENTION! FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN DAMAGE TO THE HEATING SYSTEM, HOUSEHOLD APPLIANCES, ELECTRICAL SHOCK, INJURY, OR DEATH.

SKETCH OF THE HEATING FILM INSTALLATION

Drawing guidelines:

1. The outline of the room with dimensions
2. Stripes of heating films (distance from the walls)
3. Power of the heating film strips
4. Thermostat
5. Location of the temperature sensor
6. The route of laying the electric wires

electrician's stamp and signature

WARRANTY CARD

THE MANUFACTURER PROVIDES A 5 YEAR WARRANTY ON HEATING FILM

The warranty does not cover:

1. Mechanical damage to the heating film.
2. Damage to the heating film due to physical impact.
3. Damage caused by fire, flooding, or lightning strikes.
4. Damage resulting from improper installation or misuse of the heating film.
5. Damage to the heating film or malfunction of the heating system caused by using materials that do not comply with the manufacturer's recommendations and assembly instructions.

DATA	
Buyer	
Heating film installer (stamp)	
HEATING FILM INSTALLATION DATA	
Installation date	
Model & power of the heating film	
Type of heating film installation	
Heating power of the installation [W/sqm]	
Number of installed heating film [sqm]	
Measurement of the resistance of the heating film [°] (1)	
Measurement of the resistance of the heating film [°] (2)	

Required attachments:

1. Sketch of heating film installation
2. Protocol of receipt of the heating film installation
3. Measurement report of the electric heating film installation
4. Proof of purchase of the heating film



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