

TERMOFOL

MANUAL INSTALLATION GUIDE

&

WARRANTY CARD

Energy efficient
heating system



www.termofol.co.uk
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THANK YOU FOR CHOOSING OUR HEATING FILM

This instructions will help in a safe and trouble-free installation.

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Visualization of the installation

Installation under laminate panel



Installation under ceramic tiles



Complete set includes:

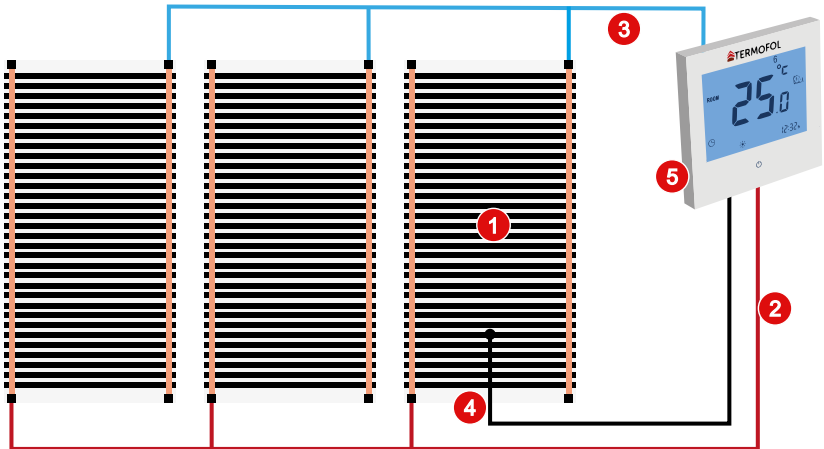
- heating film
 - optional thermostat
 - joining tape
 - connection clips
 - electric wire
 - butyl tape
 - thermostat sensor protective tube if thermostat is included
 - vapour barrier
 - warranty card
 - Note crimping tool and floor insulation is not included.
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1. ASSEMBLY INSTRUCTIONS FOR THE HEATING FILM

REQUIRED TOOLS	
 Universal multimeter	 Infrared thermometer
 Scissors	 Wire stripper
 Crimping tool	 Screwdriver
 Puncher	 Gloves
 Measure tape	 Drill driver (Required under tiles when build concrete base only)
 Calculator	
REQUIRED ASSEMBLY MATERIALS	
 Heating film	 Self-adhesive tape
 Insulation underlay	 Protective pipe
 Electric wire	 Reinforcement steel mesh (Required under tiles when build concrete base only)
 Rivet clips	 Mounting stud (Required under tiles when build concrete base only)
 Crocodile clips	 Vapour barrier
 Butyl waterproof tape	 Protective conductor

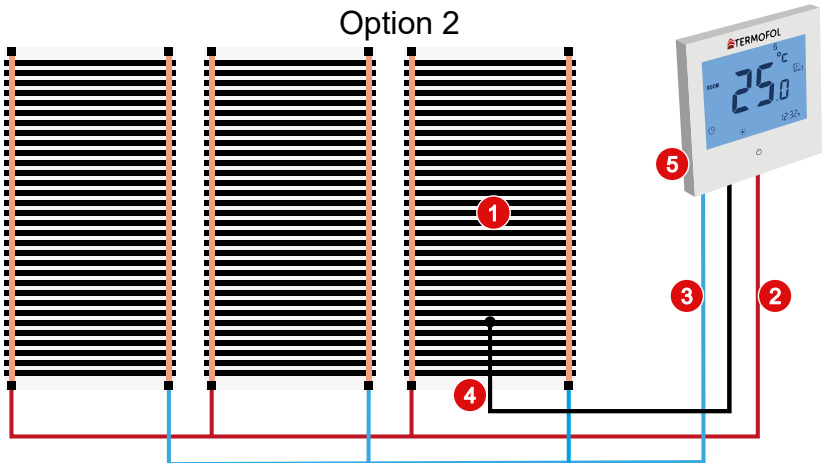
2. CONNECTION OF HEATING FILM

Option 1

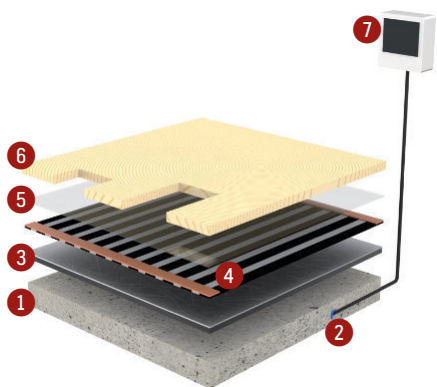


1. Heating film
2. Connection L – Live
3. Connection N – Neutral
4. Temperature sensor
5. Thermostat

Option 2

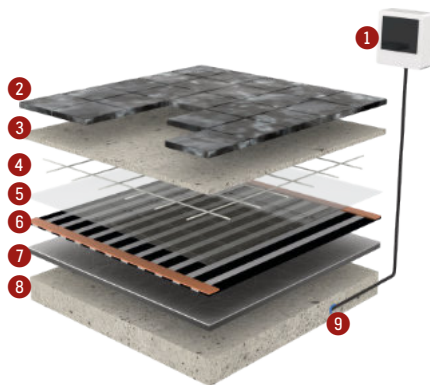


3. CROSS-SECTIONS OF INSTALLATION OF HEATING FILM UNDER LAMINATE/WOODEN FLOOR



1. Base floor
2. Temperature sensor
3. Underlay insulation
4. Heating film
5. Vapour barrier
6. Laminate/wooden floor
7. Thermostat

CROSS-SECTIONS OF INSTALLATION OF HEATING FILM UNDER CERAMIC TILES



1. Thermostat
2. Ceramic tiles
3. Concrete
4. Reinfold mesh
5. Vapour membrane
6. Heating film
7. Insulation
8. Base floor
9. Temperature sensor

4. PREPARATION AND REVIEW OF THE WORK SURFACE

Confirm parameters of the electrical wiring system, ensure that a demand for electric power is sufficient. If the parameters are not sufficient, you should increase their values. Check humidity of the base floor. If it exceeds by 2%, use damp proof insulation.

Draw factual plan of distribution the heating film location and the floor sensor and thermostats position.

Plan a distribution of the heating film according to maximum lengths of one strip of the heating film according to the table below.

Model - Power	Film width	Maximum length [meters]
TF – 3025T - 55W/m	25 cm	25
TF – 305T - 110W/m	50 cm	12
TF – 310T - 220W/m	100 cm	6
TF – 305TL - 70W/m	50 cm	18
TF – 310TL - 140W/m	100 cm	9
TF – 305TT - 40W/m	50 cm	32
TF – 310TT - 80W/m	100 cm	16
TF – 310TR - 180W/m	100 cm	7

WARNING! IF THE POWER OF THE INSTALLED HEATING FOIL EXCEEDS 80% OF THE LOAD OF THE THERMOREGULATOR, APPLY SAFETY SWITCH!

WARNING! THE HEATING FOIL INSTALLED MUST HAVE AN RCD SWITCH ≤ 30 mA IN THE ELECTRIC CIRCUIT

WARNING! CONNECTING THE HEATING FOIL MAY ONLY BE CARRIED OUT BY AN ELECTRICIAN WITH CURRENT AUTHORISATION.

Formula for calculating the installed heating foil power

$$P(W) = Pf(W/m^2) \times Df(m^2)$$

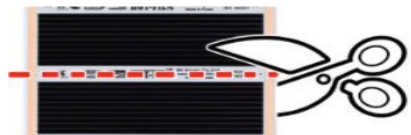
P – Planned power of heating foil installation
 Pf(W) – Heating film power consumption m2
 Df(m²) – Surface area of the film installed on the floor

Adjust the cross-section of the electric wire according to the table below:

tab.2

Surface of the electric wire (mm ²)	Maximum allowable electric current (A)	Power consumption (W)
2,5 mm ²	26 A	4,18 kW
4 mm ²	35 A	6,71 kW

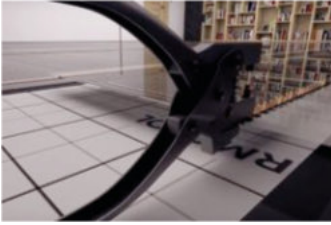
WARNING!
Cut the heating film only in the designated areas every 25cm



WARNING!
Don't overlay the heating film in the overlapping manner. Use one to three cm gap between each stripe.



5. HEATING FILM CONNECTION WITH RIVETS CLIPS



1. Use puncher to make hole in the heating film in the copper strip location



2. Place the connecting clamp between two layers of the heating foil, put the ring rivet on it and then insert the sealing cap.



3. Press all connectors parts together using a pair of crimping tool pliers.

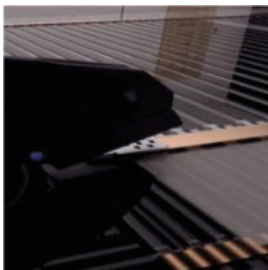


4. Use butyl tape to insulate the electrical connection and the other end of the heating film.
5. When connecting the heating foil to the thermoregulator, use parallel connections according to the circuit diagrams on page 4 and connect the thermoregulator according to the instructions supplied.

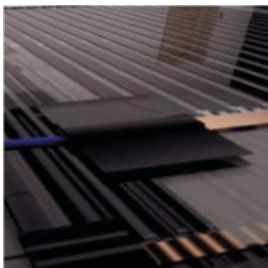
6. HEATING FILM CONNECTION WITH CROCODILE CLIPS



1. Insert the flat side of the crocodile clip between two layers of heating film.



2. Manually adjust the crocodile clip and then press it with the crimping tool pliers. Crocodile clip **MUST** press copper layer of heating film.



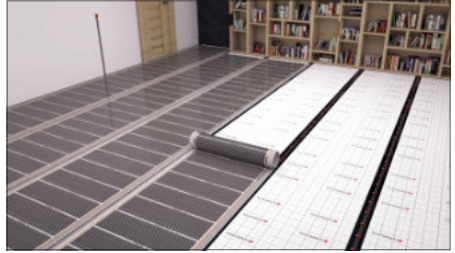
3. Use butyl tape to insulate the electrical connection and the other end of the heating film.

NOTE Use appropriate crimping tool. Incorrect connections are not cover by warranty and may result in system failure. Inspect connections and electric circuit.

7. INSTALLATION OF HEATING FILM



1. Before an installation carefully dry out and clean floor surface. Check flatness of the ground. Make a groove for a protective corrugated pipe.



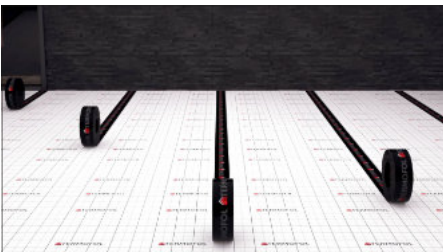
4. Place the heating film on the insulation surface and cut it to the desired size in the space provided. **CAUTION!** Do not lay the heating foil under heavy, immovable components



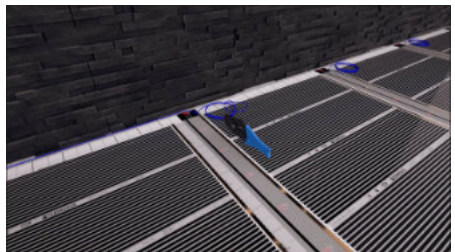
2. Clean the floor and then install the protective pipe including the NTC sensor. **CAUTION!** The NTC sensor must not be covered with carpets, furniture, etc.!



CAUTION! It is permissible to install the film under movable components.

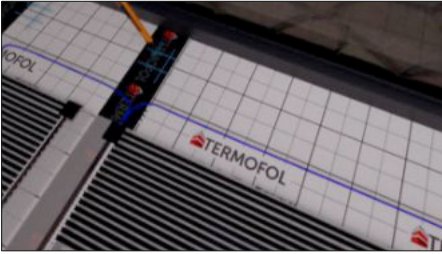


3. Lay down the underlay insulation over the full floor area and then connect the strips with the TERMOFOL tape

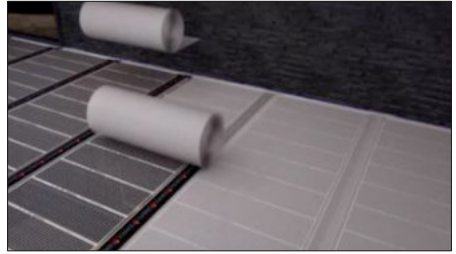


5. Connect the heating film. Using appropriate tools attach clips to heating film.

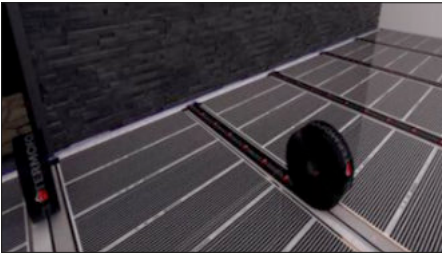
INSTALLATION OF HEATING FILM



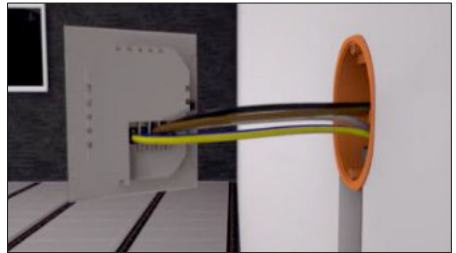
6. Cut out the insulating surface at the point where the heating film is connected to the cables, according to the cable routing.



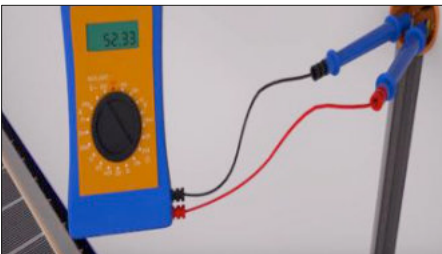
9. Distribute the vapour barrier (yellow/black color) over the full floor area and then connect it with the TERMOFOL tape.



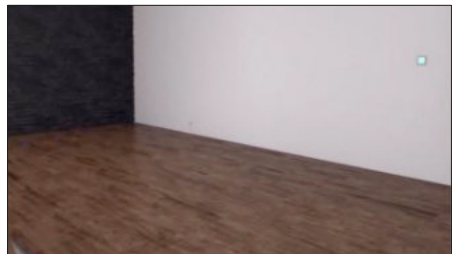
7. Stick the heating film with the TERMOFOL tape to the insulating underlay.



10. Connect the heating film to the thermoregulator according to the instructions, switch on the heating and check the function of the system.

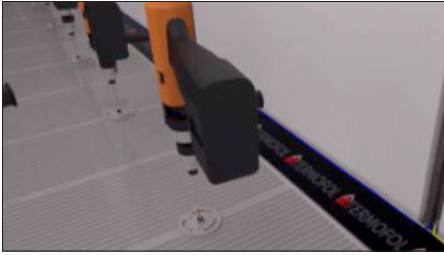


8. After carefully checking all connections of the heating foil system, measure the resistance of the heating foil with a resistance measuring device and then calculate the power of the installed heating film. If you do not take a measurement you will lose the warranty

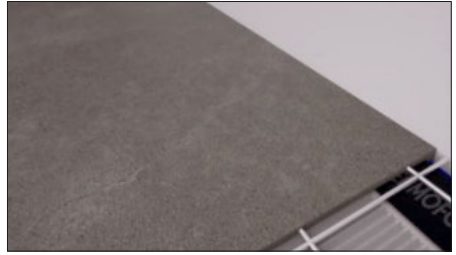


11. Complete the installation of the TERMOFOL heating foil by laying the laminate floor. If the storage system is to be installed under tiles, the following page of these instructions must be observed.

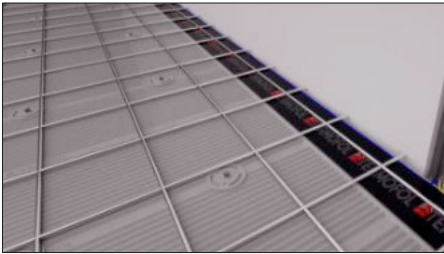
INSTALLATION OF HEATING FILM



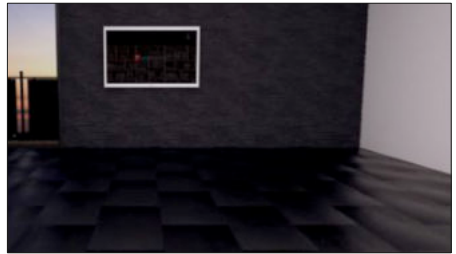
12. Switch off the heating system and then attach heating film with the help of mounting stud at the points where the heating film is to be cut.



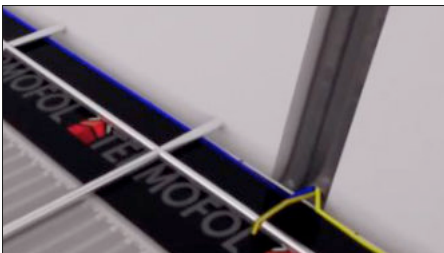
15. Apply a self-leveling subfloor, creating an expansion joint between the walls.



13. Spread out the reinforcement steel mesh.



16. After the subfloor has dried, you can install ceramic tile floor by elastic adhesive for the underfloor heating.



14. Connect the reinforcement network to the protective conductor and earth the heating system.



CAUTION! THE HEATING CAN BE SWITCHED ON 30 DAYS AFTER APPLYING THE SUBFLOOR!

CAUTION! THE MINIMUM SUBFLOOR THICKNESS IS DETERMINED BY THE SUBFLOOR MANUFACTURER!

CAUTION! ONLY PERFORATE THE FILM AT THE PLACES INTENDED FOR CUTTING THE FILM!

CAUTION! FAILURE TO FOLLOW THESE INSTRUCTIONS MAY DAMAGE YOUR HOUSEHOLD APPLIANCES, THE FILM AND / OR ELECTRIC SHOCK!

8. CHECKING THE INSTALLATION OF FLOOR HEATING

Day	Temperature
1	15° C
2	18° C
3 - 5	20° C
6 - 8	25° C

1. Use an ohmmeter to measure the resistance of the heating system again, then enter the result in the warranty card along with the routing of the electric wires and Ntc sensor.
2. Turn on the system and check if the temperature rises.
3. The first start of heating should be scheduled in accordance with Table 1

COMMENTS

- Keep the workplace clean
- Install the heating foil only with the thermoregulator
- Do not exceed the maximum floor temperature of 29 degrees
- If the power of the installed heating foil extends 80 percent of the load of a given thermoregulator, use EXTRA SWITCH
- Electrical cables must not be installed on the heating foil and under the heating foil
- Cut the heating foil in designated places only

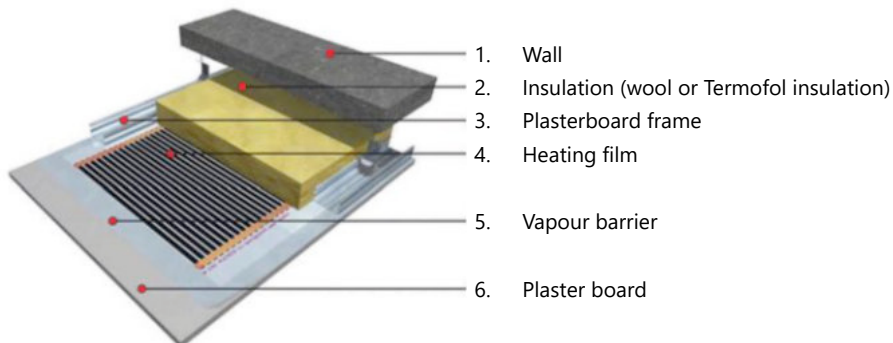
INSTALLATION OF HEATING FOIL CAN BE EXECUTED BY ELECTRICIANS WITH CURRENT AUTHORIZATION AND LICENCE. FAILURE TO INSTALL THE RECOMMENDATIONS EXISTING IN THIS INSTALLATION BOOK MAY CAUSE NOT RECOGNITION OF WARRANTIES AND DAMAGE TO THE HOME EQUIPMENT AND ALSO AS ELECTRIC SHOCK AND YOUR BODY OR HOME MEMBER INJURY

9. THERMOSTATS

Our thermostats are tested and calibrated for max energy savings. Install heating film only with thermostat. Note thermostat is 16(A) Max heating area for 16(A) thermostat. See table below.

HEATING FILM POWER	MAX HEATING FILM AREA FOR 16A THERMOSTAT
80 W/m ²	42m ²
140 W/m ²	23m ²
180 W/ m ²	18m ²
220 W/m ²	14m ²
400 W/m ²	8m ²

10. HEATING FILM INSTALLATION ON WALLS AND CEILING



1. Attach the mounting frame to the wall
2. Fill the space between the racks with a layer of insulation, such as mineral wool or Termofol aluminium insulation
3. **WARNING !** The space between the heating foil and the wall must be fully filled - the heating foil must adhere to the cardboard plasterboard.
4. Secure the heating foil to the rack using TERMOFOL tape
5. Make the foil connections according to the wiring diagram Spread the vapour barrier film to protect the heating film.
6. Measure the resistance of the heating system, then complete the warranty card and enter on installation plan for the heating foil.
7. Connect the thermoregulator according to its instructions. Attach the top layer - gypsum board to the rack

Heating film needs to be cover on both sides otherwise not going to be work properly.

Insulation on one side and heat receiver on other side, when installed on wall adhere to the mineral wool or any other insulation material, no empty spaces are allowed in any circumstances between wall and plaster board. Please contact us for details.



WARNING ! It is forbidden to screw the screws, hammer nails, drill in a floor, wall heated by heating foil!

WARNING ! The connection of the heating foil must be performed by a qualified electrician in accordance with the safety regulations and up-to-date license.

11. INSTALLATION HACKS

1. Connecting of heating film

- Insert the flat side of the crocodile clip between two layers of heating film.
- Insert the crocodile clip into the gap so that it has direct contact with copper.
- Tighten the clip with a crimping tool press tool with power.
- Secure all electrical connections with black sticky butyl tape 2 pieces on clamped clip and 1 on the other end of copper band. See installation movie.
- Cut off in insulation place where connection are with butyl tape to receive the same level.
- Floor insulation can be cut to ensue floor level, that apply to slightly thicker points where electrical connections are secure with butyl tape.
- In the place where the electric wires cross, dig in the concrete base few mm or groove in the osb floor board (plywood board) to receive the same level.

2. Installation under laminate floor

- layout underlay insulation on full floor area
- remember to make dilatation (gap to wall)when you put laminate panels

3. Installation under concrete base

- use a reinforcing mesh and connect each other with copper wire
- all ground connection connect to main differential system
- use only material (elastic adhesive and self-leveling) base dedicate for underfloor heating

4. Thermoregulator

- use separate sensor protection tube for ntc temperature sensor
- the sensor should be installed so that the top layer of the floor does not crush the sensor
- make proper gouge in the floor for sensor
- under the sensor put a piece of insulation
- the sensor must be placed under the heating foil with graphite carbon
- mount the controller in the place where sun is not to long during the day
- mount the controller approx. 1.2 meter high from the floor level.

Important!

When installing carbon film make sure you have appropriate floor insulation to prevent your floor from absorbing heat. System works much more efficiently when insulation with reflective aluminium layer is used. Vapour barrier is recommended be twin sub floor and heating film.

Our dedicated TERMOFOL Insulation has excellent thermal properties and reflect infrared radiation, also it has build in vapour barrier.

12. TERMS OF WARRANTY

The warranty period for products sold by the Guarantor shall be counted from the purchase date and applies to :

- Heating foil 6 years
- Thermostats 24 months

Defects or damage found during the warranty period should be reported immediately to the Guarantor, not later than within 7 days from the date of their occurrence.

The Guarantor is responsible to the Purchaser for any physical defects caused by the product sold.

The warranty does not cover defects resulting from other causes, and particularly as a result of:

- Incorrect use of the product,
- Incorrect product selection for the conditions at the installation site,
- Incorrect assembly, maintenance, storage or transport of the product,
- Mechanical, chemical, thermal or deliberate damage to the product and the resulting defect.
- Product damage resulting from the use of materials which are non-original or non-compliant with the manufacturer's recommendations,
- Damage caused by accident, force majeure (fire, flood, lightning, etc.)
- Malfunctioning devices affecting the operation of the product.

The warranty does not cover parts subject to normal wear, or to parts and consumables such as couplings, or fuses.

The guarantee does not cover any product which cannot be identified as a product purchased from the Guarantor on the basis of the submitted documents and features of the product. In addition, the buyer loses guarantee rights to the product in the event of:

- Any modification to the product,
- Interference of unauthorised persons,
- Any attempt at repairs carried out by unauthorised persons,

The complaint acceptance for consideration is conditioned on meeting all of the following conditions:

- The Buyer's submitting the complaint in writing, or possibly by fax or e-mail, including the
- Product name, catalogue number, purchase date, and a detailed description of the fault, along with any additional information related to the defects of the product and photographs of the defective product.
- Presenting the original invoice or receipt purchase for the advertised product.
- In the event of the non-acceptance of the complaint, the product will be returned to the advertiser at his / her request, provided that he / she has previously covered the cost of shipping the item to the Buyer.

Uncollected goods after a period of 60 days will be disposed of.

Measure the resistance value of the heating film system with a resistance measuring device (multi-meter) and then check how big resistance should be in your system and then fill in to warranty card. If you do not check a measurement of resistance value or resistance value is not correct you will lose the warranty

13. WARRANTY CARD

BUYER NAME:

ADDRESS:

DATE OF PURCHASE: **DATE OF INSTALLATION:**

ORDER NO:

INSTALLATION DATA

ROOM	MODEL & POWER OF HEATING FILM	QUANTITY OF SQUARE METERS FITTED IN THE ROOM	HEATING FILM RESISTANCE [Ohm]

PLEASE NOTE!

THE WARRANTY CONDITION IS PROPERLY FILLING IN THE WARRANTY CARD. READ THE WARRANTY TERMS.

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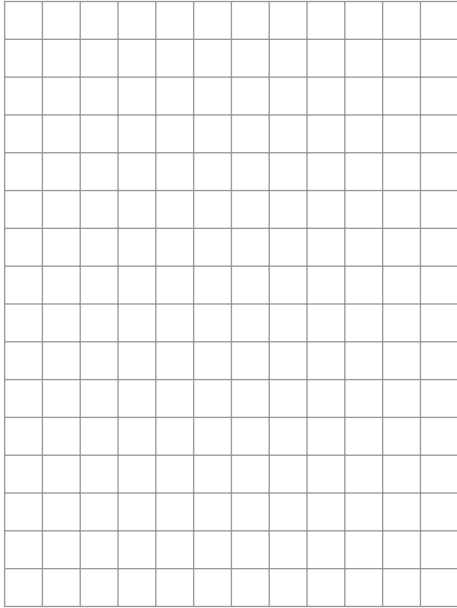
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073978739 34

<https://www.termofol.co.uk>

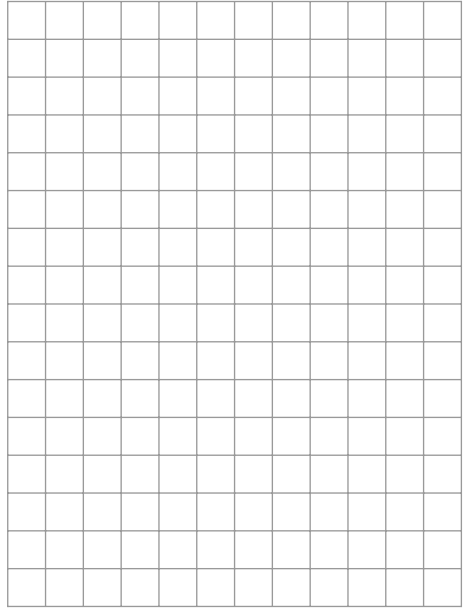
Name Signature of Installer

PLAN OF LAYING THE HEATING FOIL

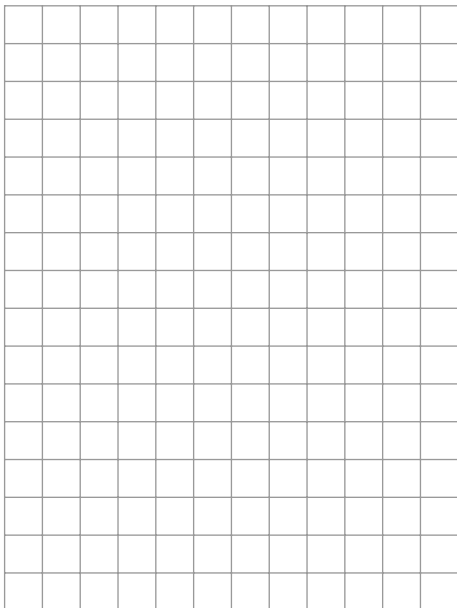
Room 1



Room 2



Room 3



Room 4

