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# Warmset

Warmset srl

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# Loose Ribbon



# General instructions before starting!!



The device can be used by children elder than 8 years, by persons with reduced physical, mental and sensitive capabilities and/or lack of knowledge and experience, only under proper supervision or if they have been trained on the safe use of the appliance and the relative risks.



Children should not play with the appliance.



Cleaning and maintenance must not be carried out by children without supervision.



Always install the heating unit away from other heat sources such as lighting fixtures and chimneys.



Avoid, while laying down the product, the build-up of air pockets in the stratigraphy, optimizing the compactness and proper filling of the screed, as well as the contact between the various layers in case of dry-laying; you should perform the installation on a surface as flat and smooth as possible.



Leave as little time as possible between the laying down of the heating element and the covering of the same, avoiding to drop or leave any sharp metal object on it, stepping as little as possible, only if strictly necessary and with the due attention.



Regardless of the coverage choice, it is important to remember that furniture and furnishings that for some reason happen to be over heated areas must have a lower open space of at least 5 cm. Otherwise you might run into overheating and consequent damage of the heating element and floor.



The heating units must be installed through a differential device with rated operating current not exceeding 30 mA, and a multi-pole safety switch category 3, the two in accordance with the local standards.

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Be sure to read all the technical documentation included with the thermostat. The settings for adjusting the temperature of the probe will be kept in a max-min range of 26 - 24 °C. The thermostat setting mode to be used is that of the “Room / floor limiting”.



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Use a coverage with a maximum resistance of less than 1.5 m2K / W



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Choose for the floor materials compatible with the temperatures that will be reached, asking for counselling the manufacturer about materials not mentioned in these instructions; the thickness of the floor must be more than 5 mm.



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It is advisable to provide, under the heating element, a layer of insulating material with performance better than 1.5 m2K / W. For floating floor application is mandatory to install a proper insulation foam suggested by Warmset or to an official Warmset dealer.



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The labels on the product should be attached in the log of installation manual and kept in the vicinity of the electrical control panel.



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Always use a thermostat with floor temperature limiting mode, as OJ mod. OCS4-10-10 MCS4, OSC4/OSD4, MSC4/MSD4, OSA4-10-10 MSA4 Connect the sensors provided the thermostat. The floor sensor must be installed at about 30 cm from a wall. It is important that the floor sensor is positioned exactly halfway between two heating segments and 10 cm from the heating curves.



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Local building codes and regulations may require all or part of the installation of this product, and/or the corresponding thermostat, to be performed by a licensed electrician. Leave this manual with the end-user.



Direct underfloor heating system

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**Under no circumstance should the heating ribbon be damaged, pierced or held in place through the use of staples; the functionality of the floor heating system will be compromised. Only the mesh can be stapled.**

**Warning**



This instructions are available in digital format on [www.warmset.com](http://www.warmset.com)

# Attention!

## NEVER

- Never install Warmset Mat under built-ins such as cabinets or vanities or where air does not flow freely.
- Never connect the Warmset Mat to the thermostat before the installation is completed.
- Never use sharp tools or power tools to clean grout lines. Cleaning grout lines with sharp tools or power tools may damage the heating ribbon and will void the Warmset warranty.
- Never cut the heating ribbon. If the heating ribbon is cut, it can cause electric shock, dangerous over-heating, or fire. If necessary, the cold leads may be cut shorter, but never remove them completely from the heating ribbon.
- Never use metal penetrative fasteners such as nails, staples or screws to secure the heating ribbon to the sub-floor. Only the mesh can be stapled and not the heating ribbon can be stapled.
- Never try to create a larger heating mat by splicing one heating mat to another. Multiple mat cold leads must be connected in parallel.
- Never install Warmset Mats in walls or ceilings.
- Never remove any labeling from Warmset Mats. Make sure all appropriate labels are visible for inspection.

## ALWAYS

- Always install a GFCI circuit breaker with each Mat (or group of Mats connected together).
- Always use caution when working with tools when working around Warmset Mat. Be careful not to nick or cut the heating ribbon.
- Always adhere to all power limitations of the breaker, thermostat, and chosen Warmset Mat. Be sure the Voltage and Current are both appropriate for the system.
- Always install Warmset system on a adequately rated circuit.
- Always Make sure all electrical work is done by qualified persons in accordance with local electrical and building codes.
- Always use copper wiring to complete the connections in the Warmset system.
- Always seek help or clarity if problems arise. If in doubt about any installation procedures, or if the product appears to be damaged, please contact Warmset before starting the installation process.

## Items needed

### Materials

- > Thermostat and floor probe sold separately
- > Appropriate available circuit breakers
- > An adequately large electrical box
- > Junction box with cover (if required)
- > Electrical Conduit (if required)
- > Adequate gauge wiring
- > Check with local building codes for any further safety requirements

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### Tools

- > Digital multi-meter and ohmmeter
- > A knife or scissors
- > Wire strippers
- > Non-conductive builders tape
- > All necessary small hand tools (drills, screwdrivers, measuring tape, marker, shears to cut mesh substrate, etc...

# Electrical Rough-in

**Warmset heating loose ribbon must be connected to a circuit breaker to protect against circuit overload. A ground fault circuit interrupter is suggested. If there is not a GFCI built in to the chosen thermostat, one should be installed.**

The required rating of the circuit breaker can be determined by the amp draw of the given heating mats. Simply add the amp requirements from each mat in the system. If the total amps required for the circuit exceeds 15 amps, a second breaker must be used. The current draw must never exceed 15 amps per breaker. It is recommended to install Warmset Mat systems on new, dedicated breakers; however it is possible to tap into an existing breaker if there is adequate capacity available. Remember to leave excess current available for high-draw appliances. Typical hair dryers pull 1200 watts of load, and some can draw more.

Choose a location and install an electrical box for the thermostat. Use an extra deep electrical box. For installations with several mats, use an adequate box. This electrical box should be located in a well ventilated area, and placed so that the leads from the mats or junction box, can easily reach it. It must also be able to connect back to the chosen circuit breaker.

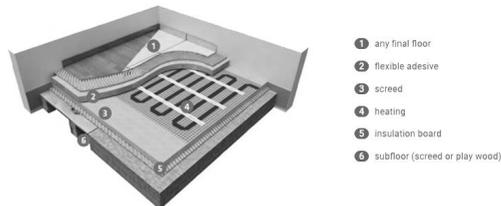
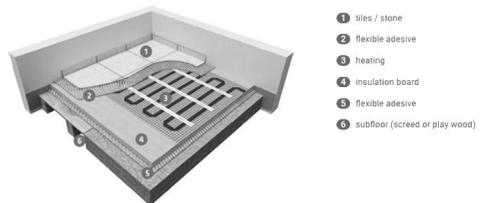
Following code, run a line from the electrical box to the circuit breaker using **2.5 mm<sup>2</sup>** type electrical wiring. Leave at least 15 centimeters of extra cable in the box.

If the electrical box is located too far from where the leads from the mats will be, or if multiple mats are being used, a junction box must be installed. Use a standard junction box and cover. Once the box is in place, run a line from the junction box to the electrical box using **2,5 mm<sup>2</sup>** electrical wiring.

## Type of floor

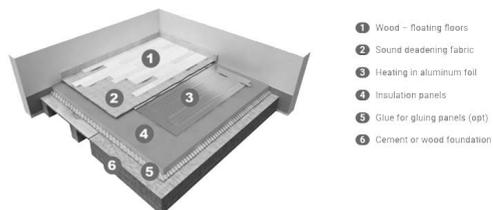
### Wooden Floor

- Ensure adequate ventilation of the ground under the floor;
- The existing floorboards must be firmly fixed and, if necessary, pre-fixed with self-leveling latex / cement to give a flow suitable for a subsequent application of plywood.
- In case of floating insert Warmset insulation or similar



### Ceramic Tile / Resin floors

- Make sure you use an extruded polystyrene or a suitable insulator that supports the tiles if the installation is on a cement base.



# Loose Ribbon Installation

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Before Warmset products can be installed, the floor must be completely swept of all debris.

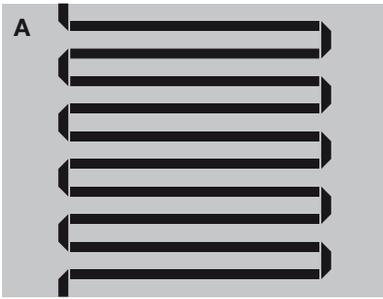
Objects on the floor such as nails or other construction material can interfere with the installation and operation of Warmset Mat systems. Clean the subfloor as thoroughly as you can.

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Depending on the layout and shape of your room, creative placement of the heating may be required.

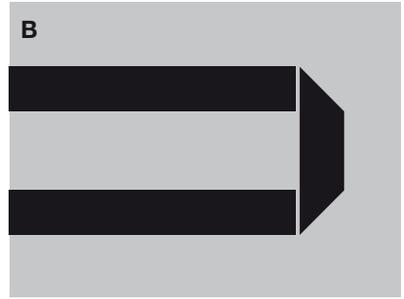
Make sure that the power cable is in a peripheral area and can easily reach the junction box; never run the cable over the heating element. Check that the sheaths ordered actually cover the necessary space. Check the thermostat position. It is very important to make sure that there is never an overlap of heating elements; overlapping could cause dangerous overheating. **Do not attempt to repair damaged heating elements.**

# Installation



**A.**

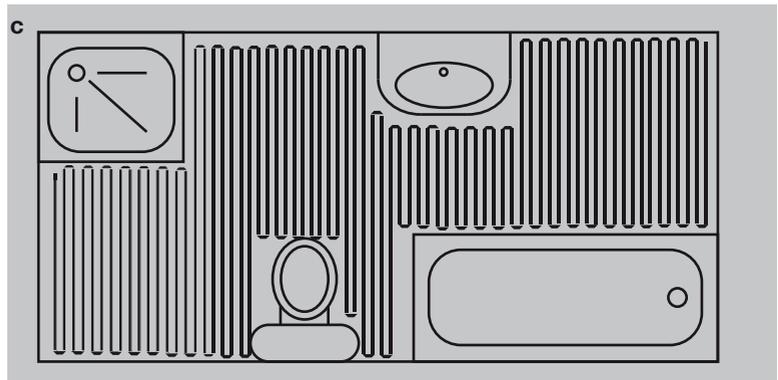
Spread the loose ribbon as shown in the figure, leaving the same distance between each string.



**B.**

For the curves, bend the strap being careful not to damage the heating element

**C.**  
Layout example



**D.**  
How to fold the ribbon



# Installation

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Unroll the Warmset Loose Ribbon to cover the space.

It is important to check the layout by test fitting the entire system. Confirm that there are no folds or large ripples.

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Once the system has been fitted in place; it must be secured to the subfloor. Warmset Loose Ribbon should be secured to the floor using non-conductive, general purpose, double-sided building tape.

It is important to ensure they are being laid as flat as possible. This will help make a smooth surface for spreading mortar. Do not completely cover the heating ribbon with tape.

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Connect the leads from the heating ribbon back to the electrical box or junction box. The cold leads can be installed with or without electrical conduit (recommended for added protection) depending on code requirements. If conduit is required by code, install 1,5 (minimum) conduit from the bottom plate up to the electrical box. For multiple power leads (multiple mats) install 2 cm conduit.

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Drill a 1,5 cm hole in the base plate directly below the electrical box, or if it being used, junction box. Run the line from the mats through this hole up to the junction box or electrical box.

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When using multiple ribbons, the ribbons should be connected in parallel. If multiple ribbons are being installed, label the leads as they enter the junction box. Connect these ribbons to the line going from the junction box to the electrical box.

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The thermostat floor sensor can be installed with or without electrical conduit (recommended for added protection) depending on code requirements. Do not place the sensor in the same conduit as the power leads to avoid possible interference. Open a separate knockout in the bottom of the thermostat box. Feed the sensor (and conduit, if used) through the knock-out, down through the cut-out in the bottom plate, and out into the floor where the heating mat will be installed.

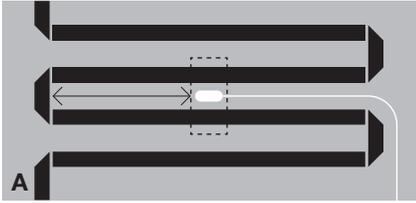
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**Caution**

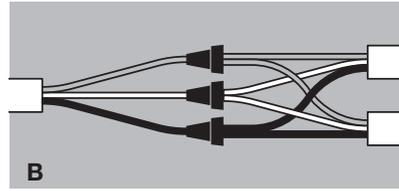


**Never cut the heating ribbon to make it fit.  
Doing so will cause the system to malfunction dangerously.**

# Installation



**A.**  
The thermostat floor sensor can be installed exactly between two heating elements and more than 10 cm from the plies



**B.**  
Parallel connection

## Covered Area - Spacing Guide

| Model       | Covered area (M <sup>2</sup> ) at 100W/m <sup>2</sup> | Ribbon Spacing (mm) at 100W/m <sup>2</sup> | Covered area (M <sup>2</sup> ) at 150W/m <sup>2</sup> | Ribbon Spacing (mm) at 150W/m <sup>2</sup> | Covered area (M <sup>2</sup> ) at 200W/m <sup>2</sup> | Ribbon Spacing (mm) at 200W/m <sup>2</sup> |
|-------------|---|--|---|--|---|--|
| BDB-8.5-20  | 1,7   | 194  | 1,1   | 129  | 0,85  | 97   |
| BDB-11-20   | 2,2   | 194  | 1,5   | 129  | 1,10  | 97   |
| BDB-13.5-15 | 2,0   | 145,5                                      | 1,4   | 97   | 1,0   | 73   |
| BDB-17-20   | 3,4   | 194  | 2,3   | 129  | 1,7   | 97   |
| BDB-25.5-20 | 5,1   | 194  | 3,4   | 129  | 2,6   | 97   |
| BDB-36-20   | 7,2   | 194  | 4,8   | 129  | 3,6   | 97   |
| BDB-42-15   | 6,3   | 145,5                                      | 4,2   | 97   | 3,1   | 73   |
| BDB-51-20   | 10,2  | 194  | 6,8   | 129  | 5,1   | 97   |
| BDB-59-15   | 8,8   | 145,5                                      | 5,9   | 97   | 4,4   | 73   |
| BDB-73-20   | 14,6  | 194  | 9,7   | 129  | 7,3   | 97   |
| BDB-84-15   | 12,6  | 145,5                                      | 8,4   | 97   | 6,3   | 73   |
| BDB-94-20   | 18,8  | 194  | 12,5  | 129  | 9,4   | 97   |
| BDB-109-20  | 21,8  | 194  | 14,5  | 129  | 10,9  | 97   |
| BDB-125-20  | 25,0  | 194  | 16,7  | 129  | 12,5  | 97   |
| BDB-155-20  | 31,0  | 194  | 20,7  | 129  | 15,5  | 97   |

NOTE: All spacings have been based on square areas for calculation purpose. Therefore actual spacing will vary according to the shape of the area to be heated. All spacings should be measure from the center of heating ribbon.

1



**Plan:**

Plan the installation well so as to be able to spread the loose ribbon correctly taking the measurements of the area

2



**Test & Record: (1st Time)**

Test the ribbon Resistance & Insulation prior to installation. Record information from test and label on wire to lable logbook putting the tag you can find in the box.

3



**Place double-side adhseive:**

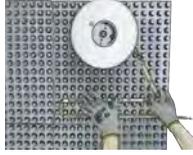
Unroll the RETAKK double-sided tape positioning it every 5 cm and remove the silicone paper once the double-sided adhesive tape (If the loose ribbon is self adhesive put directly the Ribbon).

**Put the loose Ribbon:**

Unroll the loose ribbon progressively and spread it over the tape.

**DO NOT DAMAGE OR CUT HEATING RIBBON.**

Take picture of installation.

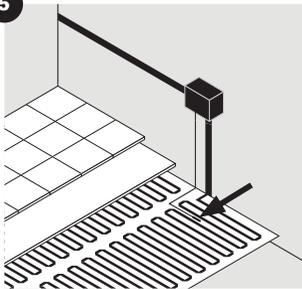


**Folds:** when you arrive at the end of the room, fold the ribbon like in the imagine, continue for all the room.

4

**Test & Record: (2nd Time)**  
Test the ribbon Resistance & Insulation.

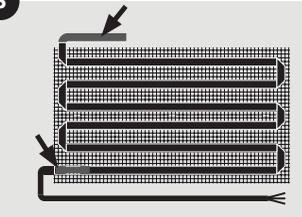
5



**Prepare for Electrical Connections:**

Be sure to install Thermostat sensor according to the instruction written in the manual.

6



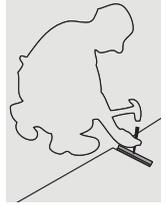
**Set Ribbon in Mortar:**

Be sure to fully embed the ribbon into the thinset or self-leveling compound without damages.

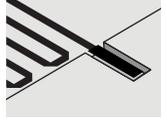
**MUST NOT PUT SPLICE AND FACTORY TAIL CONNECTIONS INSIDE THE CONDUIT.**

**For floating floors:**

Make sure to make a hollow on the subfloor/insulated board underneath the factory tail and head.



**Insert the factory tail inside the hollow.**



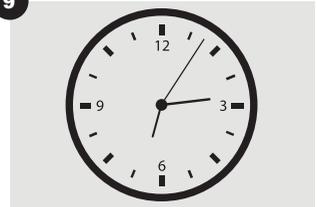
7

**Test & Record: (3rd Time)**  
Test the mat resistance & insulation. Mail in warranty card and label log-book to [info@warmset.com](mailto:info@warmset.com).

8

**Tile and Grout Floor.**

9



**Switching system:**

Switch on the mats after a qualified licensed electrician made electrical connections, making sure to follow instructions and installation times of slab/flooring.

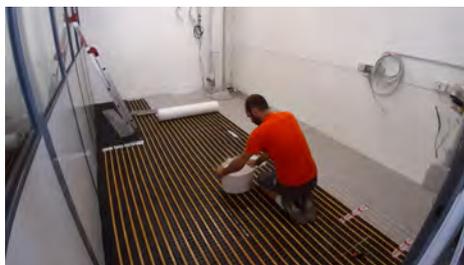
**For floating floors:**

For floating floor application is mandatory to install a proper insulation foam suggested by Warmset or to an officiale Warmset dealer.

### Application in a milled floor



### Application in a floor with ashlar insulation



### Outdoor application without adhesive

