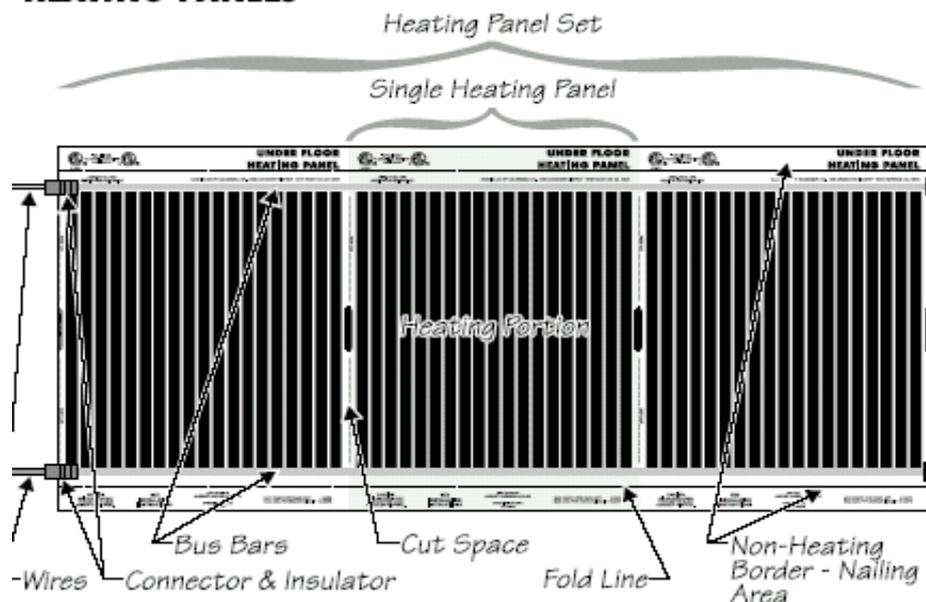


INSTALLATION MANUAL

Thank you for purchasing Roll'n'Warm Film- the most comfortable heating system in the world.

The instructions in this installation manual are to guide you to easily install Roll'n'Warm Film-latest heating technology, and avoid costly mistakes.

HEATING PANELS



THIS EQUIPMENT SHALL BE INSTALLED ONLY BY QUALIFIED PERSONNEL WHO ARE FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF THE APPARATUS AND THE RISKS INVOLVED.



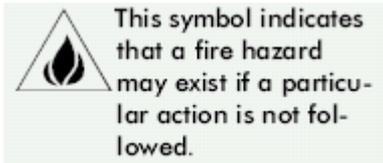
THE INSTALLATION OF THIS HEATING PRODUCT SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND THE REGULATIONS OF THE AUTHORITY HAVING JURISDICTION.

Table of contents

1. Introduction.
2. System elements.
3. Safety measures.
4. Installation instructions:
 - General Installation Instructions.
 - Installation under timber/parquet flooring.
5. Marking and documentation.
6. Typical electrical installation.
7. Controls and accessories.
8. Products list.
9. Warranty certificate.

Dear Customer!

Welcome to the wonderful world of Fc`fbfK Ufa radiant floor heating.

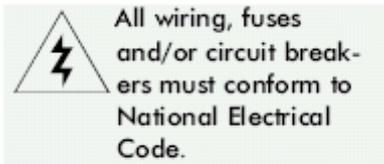


Your body, your family and your friends will congratulate you for your good choice of purchasing a heating system that is the **most comfortable and effective** in the field of under floor heating.

The Roll'n'Warm heating system is not complicated to install, nevertheless it is essential to follow the installation instructions in order to guarantee the best possible results, while working in the most comfortable manner and still following the needed safety precautions.

System elements

Electrical connections box



The electrical connections box is used as the connecting junction for the cable of the heating mat and the thermostat. The box should be installed above floor level, according to the prevailing regulations in your country. The electricity source to the box should be led through a thermostat that can be installed

separately in every room. Assure that

Control unit - thermostat:

The control unit allows each room to be temperature controlled.

1. Placement of the thermostat:
The thermostat should be installed as far as possible from heat sources such as: fire places, direct sunlight, windows, door openings, etc/ that could possibly affect the proper temperature readings (approximately 1.5mt from floor level).
2. The thermostat has two sensors (optional):
 - i. Ambient room temperature sensor (optional).
 - ii. Floort temperature sensor, which is installed only in floor types of: Wooden floor, parquet floor and laminate.
The Floor temperature sensor should be installed between two heating elements and about 50 cm away from a wall.

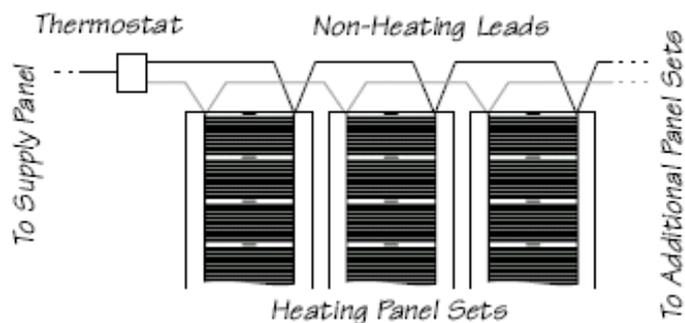
 This symbol indicates that a shock hazard may exist if a particular action is not followed.

 General notes direct you to pay special attention to these items.

3. The thermostat regulates the desired and the pre set room or floor temperature.
4. Two electric cables lead from the thermostat to the electrical connections box, these cables feed the electricity to the heating system (red and black).

5. IMPORTANT- All the electrical connection must be screwed very hard in order to avoid POOR electrical contact.

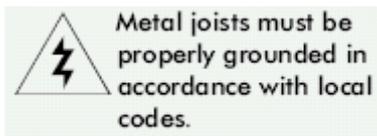
 Route and secure wires between the heating panels, from the heating panels to the thermostat box and from the thermostat box to the electrical panel using standard wiring practices that conform to all of the requirements of all applicable electrical and building codes.



Important – Read the installation instructions for the specific floor covering planned for your installation.

General safety measures:

These safety measures cover the different methods of installation of the RNW under floor heating system to be used in homes, industrial premises or



anywhere else where a warm and comfortable environment is required. This product has been designed with consumer safety always in mind. Yet, since it is electrically operated, there are precautions that must be taken

- especially during the installation process.

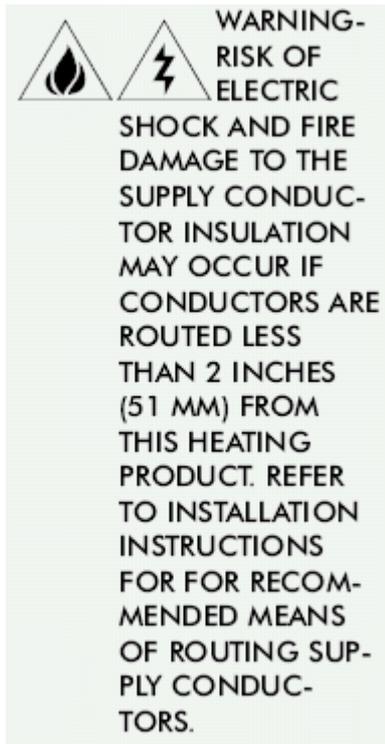
Please follow these instructions for the safety of all concerned. Please read the measures with care, and act accordingly!

Safety requirements during installation:

1. Never fold or wrinkle the heating film.
2. The heating film has to be spread on a smooth and even surface and has to be held flat by adhesive tape or any other reasonable means.
3. Do not install the heating film at a distance that is less than 30 mm from conductive parts of the building, such as water pipes.
4. Do not install the heating film at a distance of less than 15 cm. from a fireplace or hot water pipe.
5. Do not install the heating film under walls or partitions. Do not install the heating film under areas that may in a future time be under walls or partitions.
6. Do not install the heating film in areas where zero clearance furniture is planned to be placed on the floor.
7. Do not damage the electrical insulation of the units, not during the installation nor after.
8. Do not install the heating film when it is folded.
9. Do not install two heating films one on another.
10. No other electrical cables or pipes should be installed under floor together with the heating film.
11. Under floor heating film should be installed only indoors and it is forbidden to install them for outdoor use.
12. Do not install when temperatures are below -5 degree C.
13. Do not use cellulose insulation.

Safety requirements during electrical system installation:

1. All electrical connections of the RNW SYSTEM under floor heating system must be carried out according to the local safety regulations and codes.
2. The electrical circuit that supplies electricity to the under floor heating system shall not be connected to any other apparatus.



3. The circuit that supplies electricity to the heating system must be equipped with a 5/15/30 ma **GFCI**. Failure to do so can result in electric shock and fire hazard.
4. Electrical hookup of the non-heated leads should be made inside the electrical connections box. Connect all units in parallel; make sure not to exceed the current handling capacity of the supply line. The film has a label defining the voltage and power input rating listed on the product. Ensure that the total current used is not more than 80% of the line capacity to the box.
5. The heating film is an electrically operated system, so the use of a fully qualified electrician for all connections and hookups is recommended. If you choose to do the installation yourself, please be

sure you fully understand and comply with all codes and standards. If you are in any way hesitant or unsure of any portion of the instructions or task, contact a licensed electrician to help with the installation.

Handling instructions during storage:

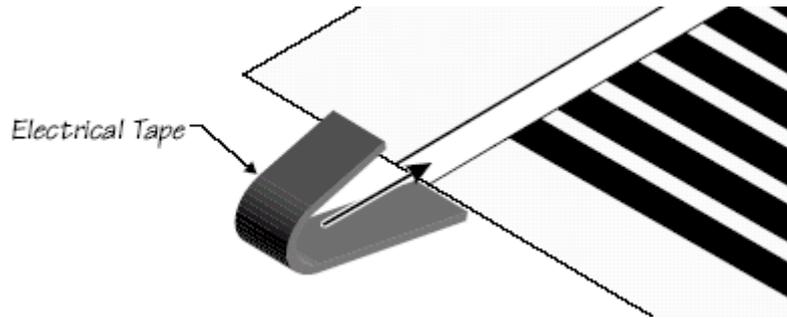
1. The heating film is packed in cartons.
2. Do not put heavy objects on the cartons as they may damage the heating film.
3. Take care not to damage the cartons during transportation.
4. The heating film must be stored in a dry and dust free area.

General Installation Instructions

Always restrict to trimming the blank ends
(where there are no cold tails or feed wires)

1. Foils can be shortened, by cutting along the space between the Carbon Elements.

2. Tape over the exposed ends of the copper bus bars (with 3M Mastic Tape)



3. The Mastic Tape is

used to tape over the cut edge of the element, followed by the electrical tape over the bus bar ends, these must be cut to be at least 4mm larger in all directions than areas that have already been protected by Mastic Tape.

4. Measure resistance of element, this can be checked again after installation and compared with original reading (Must be to the same standard).

•Electrical Connector Solderless Tyco/AMP Termi-foil electrical crimp connector.

 Type NM and NMC non-metallic sheathed cable is not suitable for installing this product.

 If insulation is being installed by another contractor, this information must be made available and compliance ensured.

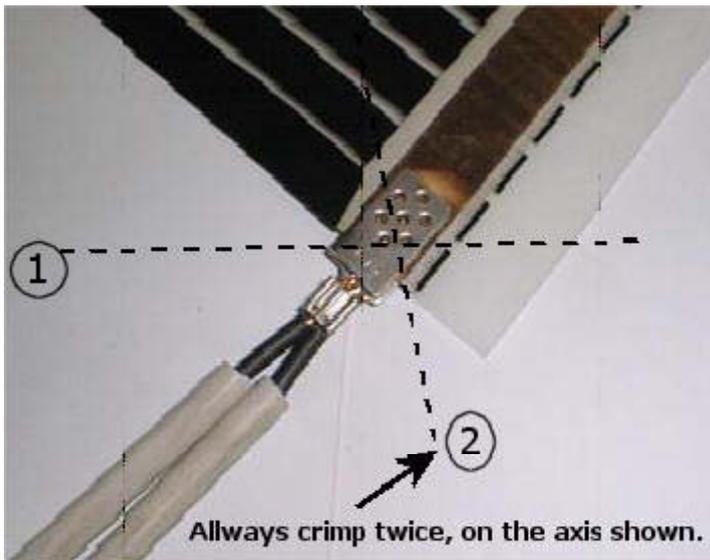
 Caution: Use copper only as supply conductor.

 If any connectors must be replaced, ensure that the heating panel has not been damaged by removing the original connector. If it has, then the entire panel set must be replaced.

 Cut heating panels only along the dashed "cut here" lines.

 Any connectors which are removed must be replaced. A connector may only be crimped once.

COLD LEADS CONNECTIONS

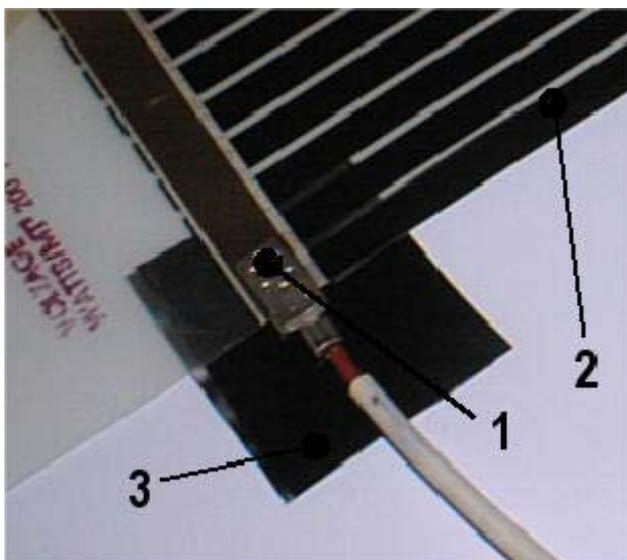


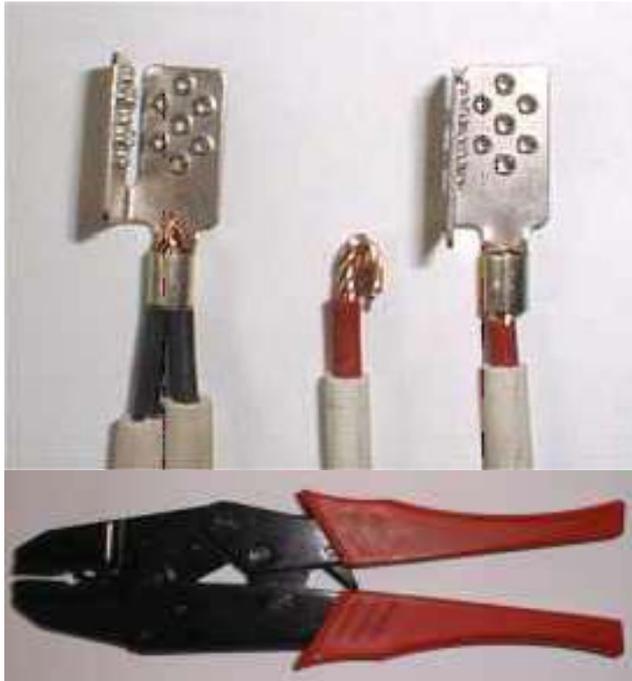
Simple Crimp Connection

Always check continuity after crimp connection,
before proceeding

Seal ends and connection points with 3M Type 2210 Mastic.

1. After fixing cold leads, tape both sides of connectors with 40mm wide Mastic Tape.
2. Cover cut edges with narrow mastic tape; take this right up the first layer of tape covering the connection points.
3. Finally, place large electrical tape either side of the connection points, making sure that this covers the cut areas of mastic tape ends. Carry this at least 30mm down the connection wires. Knead the mastic round the cables and all contours. Make absolutely sure that a good effective seal is produced.





Maintenance **Safe-t-FLEX** of Pliers

Check fully closed gap 1.25-1.4mm

(50-55 thou).

ATTACH COLD TAILS

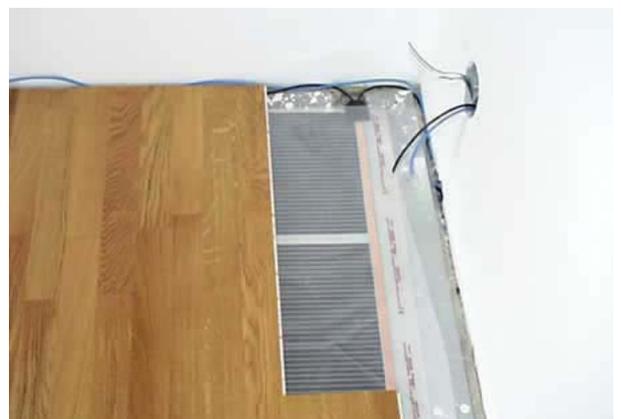
- 1 Bare connecting leads and insert singly or in pairs into the cylindrical ferrule of the crimp connector.
- 2 Cold tails from elements to thermostat positions must not come into contact with any part of the element.
- 3 Using **Safe-t-FLEX** Pliers, complete the crimp connection with the tool so that the "W" form of the die is to the seamed side of the cylindrical female of the crimp.

Adjust as follows:

- 1 Remove the retaining ring or lock screw from eccentric axle
- 2 Where fitted, remove toothed lock washer and turn the axle to loosen or tighten the tool adjustment.
- 3 Alternatively, move the toothed washer in the direction indicated to loosen or tighten the tool adjustment.
- 4 Replace lock washer with retainer ring/bolt or the locking screw.
- 5 Re-check the flat parallel jaw gap with a feeler gauge.



Wiring Complete



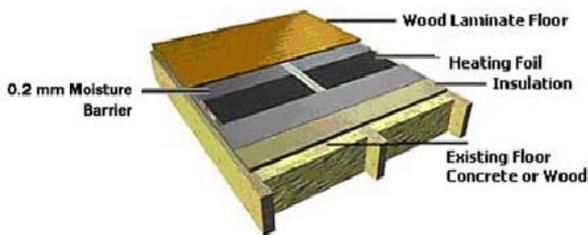
Installation Nearing Completion

Installation under engineered hardwood/laminate:

Warning: Do not overlap one heating film with another.

During installation of the heating system do not place on top of the heating film heavy or sharp tools, or any other items that can damage the heating elements. Do not walk unnecessarily on the heating mats.

1. Properly clean the floor from all debris and dust.
2. Make sure that the floor surface is smooth and free from any objects that could possibly pierce the heating element and thus damage it or the isolating layer.
3. Place a thermal insulation material underneath the heating film in order to receive the ultimate result. The insulation material should preferably



- be **4 mm thick** closed cell polyethylene foam or corresponding.
4. Spread and connect the heating film on the insulation material as explained in the **GENERAL INSTALLATION INSTRUCTIONS**, in a manner that there are no folds in the heating film.
5. Fix the heating film to the insulating material using adhesive tape in a manner that the heating

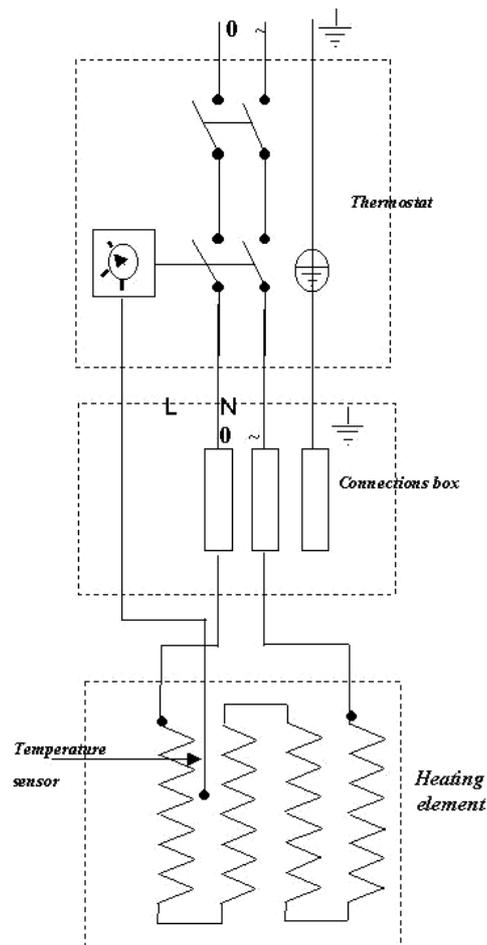
film will not move. Remember to leave a distance of about 10 cm from the walls and about 2.5 cm between the strips of the film.

6. Ensure that the connecting cables of all strips of the heating film do not cross on top of the film and do not overlap one another.
7. Place the sensor probe in the floor between two strips of the film and at a distance of about 50 cm from the wall.
8. Mark on the electrical plans a sketch of how you placed the film on the floor.
 - i. Measure and note the resistance of the heating system.
 - ii. Measure and note the insulation values.
9. Connect all the heating strips in **parallel** and lead the electrical connection wires to the electrical connections box/thermostat.
10. Feeding the system with electricity must be carried out according to the electrical connections drawing.
11. Switch on the heating system for half an hour in order to ensure that the system is functioning properly.

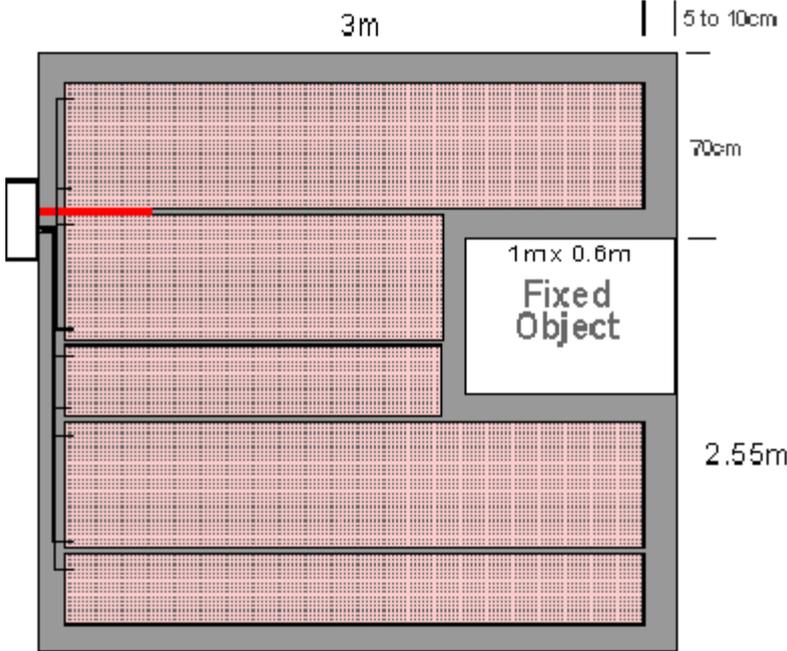
Having done the above (once all the measured values had been noted in writing), allow the floor covering to be assembled. The wood flooring should be installed over the heating film, in a manner that the heating film will be gently squeezed into the insulation material leaving no air gaps between the insulation material, the heating film and the wood floor.

While installing the laminate/hardwood flooring, one should use a piece of plastic or carton that should be inserted underneath the parquet piece that is currently installed so that when you hammer in the next piece, you should slide the hammer on this piece of plastic and not on the heating film. The thickness of the wood that was used in test performance was 14 mm and this is the maximum permit thickness to be installed.

Typical electric installation:

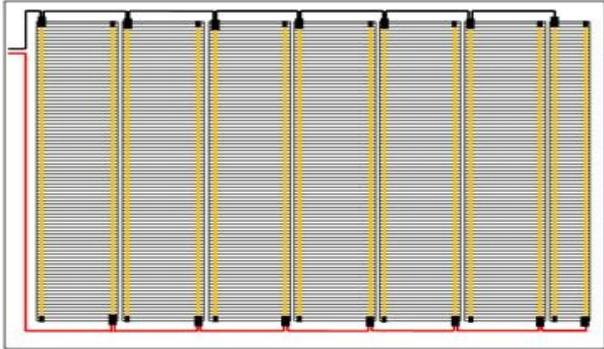


EXAMPLES OF FLOOR PLAN, WIRING, WITH MESUREMENT AND FIXED OBJECTS



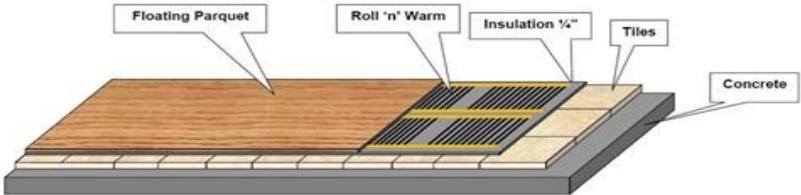
- FlexHeat
- 3mm insulation
- Cold Tail/Cables
- Thermostat Floor Probe
- Thermostat & Junction Box

Layout Example



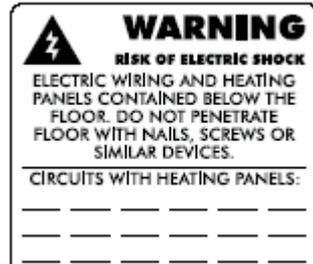
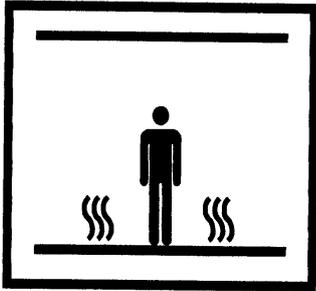
Installation Example

IMPORTANT!
Check your local building codes and regulations and act accordingly, if they contradict any of the following examples or instructions.



Marking and documentation:

1. Place a label on the electrical junction box mentioning that under floor heating system is installed in the room:
2. Note and keep record of the installation details: measured heating film resistance and the physical location of the unit on the floor plan.



Installer:	Date of installation:
Resistance value:	Insulation value:
Floor scheme with the heating film layout:	
Resistance Value after Floor Installation:	
Insulation Value after Floor Installation:	



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