

Danfoss



Installation Manual Electric Heating Cable



Table of contents

Specifications	2
Typical installations and cautions	3
General installation guidelines	4
The Warranty	9



Danfoss LX Floor Heating System

CAUTION!

It is important that this equipment is installed only by qualified electricians who are familiar with the proper sizing, installation, construction and operation of floor warming system and the hazards involved. The heating mat is designed for under floor heating purposes only.

Note!

The installation shall be in accordance with the manufacture's instructions and national and local codes. The installation shall be in accordance with part 424-J, American National Standard Institute / National Fire Protection Association (ANSI/NFPA70), National Electrical Code (NEC) and Canadian Electrical Code (CEC), part 1. You must use a ground fault protection device (GFCI) or a Residual Current Device (RCD) for bathrooms and all other rooms.

LXmat specifications

Heating cable:	Danfoss LX
Type:	Twin-conductor
Voltage:	120V, 240V
Output:	12W per sq. ft. at 120V or 240V For voltage information please check the label on the box and on the product.
Dimensions:	Width : 2 feet Length : refer to product label Height : approx. 3/8 in. (4mm)
Wire insulation:	Teflon
Casing:	PVDF 120°C/248F
Max. Temperature:	120°C/248F
Bending radius:	Min. 15/32 in. (30mm)

Connection 120V

Phase - Black
Neutral - Blue
Ground - Shield

Connection 240V

Phase - Black
Phase - Blue
Ground - Shield

Warning:

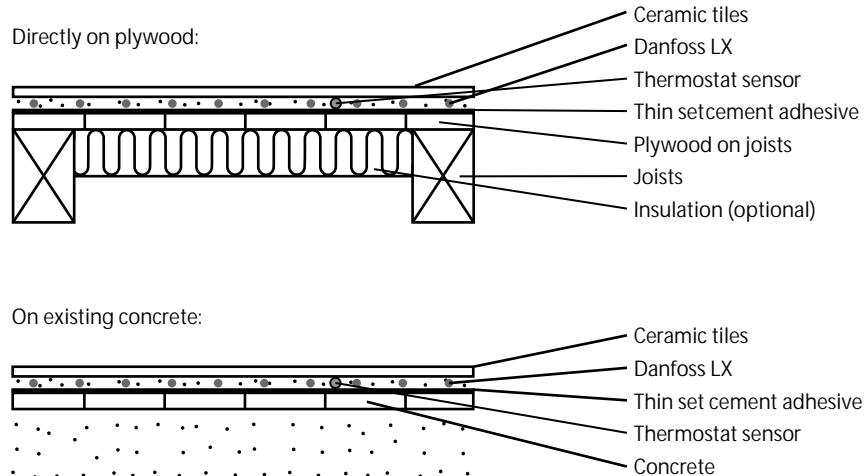
The maximum insulation value of the floor where the heating mat is installed, shall not exceed R 0.70. There is no limit for the insulation under the sub floor.

Typical insulation values

Vinyl thin floor tiles*	R = 0.20
Carpet (standard)*	R = 0.70
Parquet collé*	R = 0.70
Heavy duty fiberboard and carpet	R = 1.00
Wooden floor on furring	R = 2.10

* Compatible with floor heating

Danfoss LX typical installations and applications



Alternative method: Self-leveling cement is recommended for large surfaces and the following floor materials: Engineered wood, laminate, floating floors, vinyl, linoleum and carpet.

Warning:
Consult the manufacturer for information on special installation requirements for wood, laminate and vinyl or linoleum flooring.

Caution!

Read the instructions carefully before installing LXmat.

It is not recommended to install LXmat using a thermostat without a floor temperature limiter, particularly when another heater is installed in the room;

Do not install LXmat in walls or ceilings;

The mat must be embedded in mortar or mortar mixture, concrete or similar;

The minimum installation temperature is 40°F (5°C);

Do not cut the red heating wire;

It is recommended to use copper wire only;

Do not install the LXmat such that two red heating wires touch, cross or overlap;

Remember to always measure, verify and record the actual resistance throughout the installation process (out of the box, after installation, before thin set cement or self-leveler application and after installation of floor tiles) and compare all reading to the ratings on the product table.

Remember to check that the supply voltage matches the voltage of the LXmat;

Remember to place the labels as written in this instruction;

Remember to use a cement based thin-set or self-leveling product;

Only for indoor installation.

Please consult the factory for any other questions or advice.
Metal structures or materials used for the support of or on which the Danfoss LXmat is installed must be grounded in accordance with CSA Standard C22.1, section 10 and the NEC.

General installation guidelines



Step 1. PLAN LAYOUT

Make a sketch layout or a floor plan of the room; include all permanent furnishings such as toilets, bathtubs, appliances, cabinetry, etc. Indicate all dimensions required to determine the available floor area and the position of the LX thermostat.

(Note that the thermostat must be located at least 4' away from shower or bathtub openings so that they cannot be exposed to water or touched by a person in the shower or bathtub area.)

To assist with the layout step, please use the free Danfoss software available at www.DanfossLX.com



Step 2. TRANSFER LAYOUT TO FLOOR

Sketch Draw an outline of the layout on the room floor. Draw the foot print of all furnishings that are not yet installed. Unroll the first few feet of the LX cable. Starting point of the cable must be placed within 10 ft. from a thermostat. Using your floor plan determine your desired spacing of cable (3" CTC standard) and strapping (recommended 3'-4' apart). Note: Minimum distance between the cables cannot be less than 1".

Mark the position of the connection point between the power lead and the red LX heating cable. This connection must be concealed in thinset or self-leveling cement. When using a floor sensing thermostat, mark the sensor position in the middle of 2 heating cables, about 10 in. (25cm) away from the wall (within the heated area), as close as possible to the thermostat.

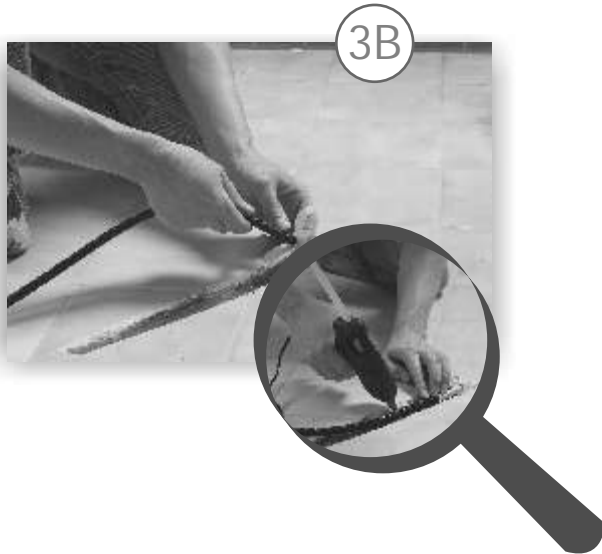


Step 3. INSTALL SENSOR CONDUIT

The flexible sensor conduit (included with the product) now needs to be installed between the thermostat wall box and the sensor position. This conduit must be countersunk into the subfloor.

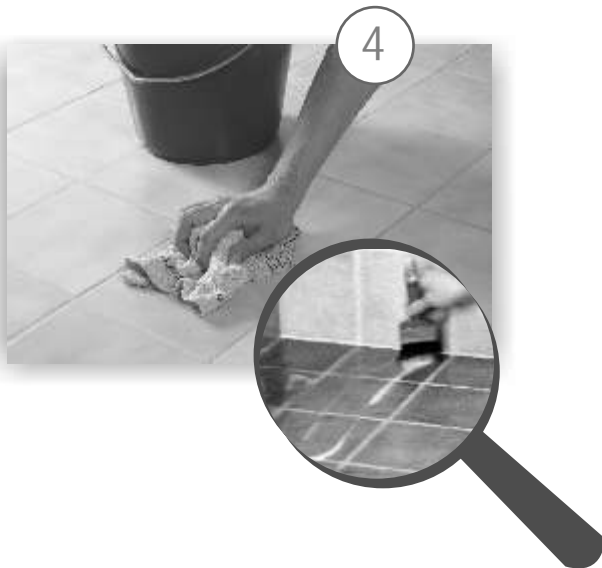
Cut a channel approximately 5/16" deep x 5/16" wide in the floor and wall up to the thermostat for the sensor conduit. The conduit has to go from the thermostat and minimum of 10 in. away from the wall towards the middle of the floor.

IMPORTANT: the sensor conduit must be centered in the cable loop (between two red heating wires).



Use a strong tape to close the end of the conduit so that thinset can't penetrate the conduit.

Use hot glue to fasten the sensor conduit into the groove to prevent it from floating up when a self-leveling compound is poured.



Step 4. PREPARE SUBFLOOR SURFACE

Ensure that the subfloor is securely anchored to prevent it from shifting. Carefully fill in all cracks in the subfloor to prevent any potential damage to the tiles resulting from shifted floor.

Clean and vacuum the floor thoroughly and remove dust and debris from the floor that may damage the heating cable or reduce adhesion

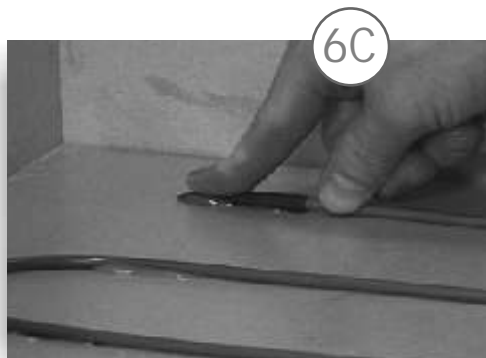
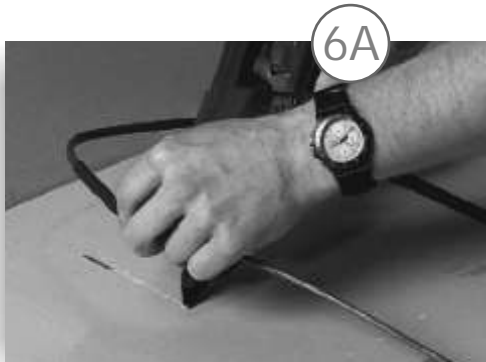
(Optional) To ensure maximum adhesion, apply a primer or sealer as recommended by the thinset or self-leveling cement manufacturer. If using a primer, ensure that the entire floor is covered. Allow the primer to dry thoroughly before proceeding to the next steps.



Step 5. MEASURE THE RESISTANCE

Use a digital ohm meter to measure the resistance of the LX cable and compare it to the resistance listed on the product label. Record the measured resistance on the warranty card. Documenting the resistance at each stage of installation is required for warranty purposes.

Place the cable so that the connection point and the temperature sensor are in their intended positions and bring the lead cable to the thermostat or connection box.



Step 6. BEGIN LAYING THE LX CABLE

Begin laying the LX cable evenly (3" loops recommended) across the floor outside the previously marked areas.

DO NOT CUT OR SHORTEN THE RED HEATING CABLE! Do not expose it to any mechanical stress. Avoid walking on the heating cable. Wear only shoes with soft soles. You can use hot melting glue or Danfoss LX strapping to secure the cable to the subfloor.

Measure and record the resistance on the warranty card. (Due to product tolerance the size can vary +/- 2% and the resistance -5/+10%).

It is highly recommend to take photographs of the installed LX cable before installing the flooring.

ENSURE THAT THE SENSOR CONDUIT HAS BEEN PROPERLY INSTALLED BEFORE PROCEEDING. (see step 3?)

For tiling applications - proceed with the installation of the tiles by covering the heating cables with a layer of thinset cement as directed by the tile manufacturer. Ensure that the thinset mortar covers the entire heating cable as the tiles are installed.

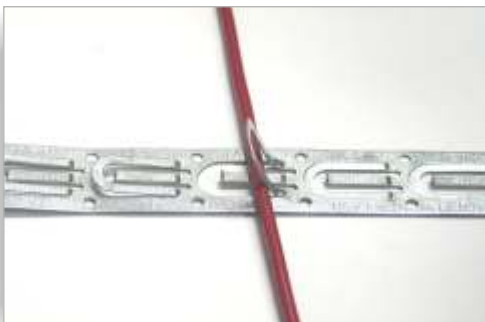
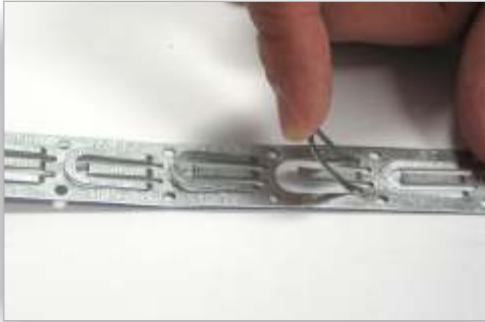
For engineered wood or laminate floor coverings, it is recommended to consult the flooring manufacturer ?. (use a thermostat with a floor temp. limiter. Eg. LXstat 432)

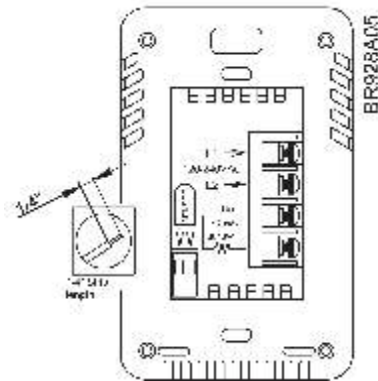
Ensure that all moisture in the self-leveling cement has been fully eliminated in accordance with the drying times recommended by the cement manufacturer (consult the manufacturer for exact drying time).

Once the thin-set cement has dried, measure the cable resistance and record it on the warranty card (Due to product tolerances the size can vary +/- 2% and the resistance -5/+10%). The system must not be turned on until the thinset cement has fully dried. A minimum of seven (7) days is recommended.



Step 7. DANFOSSLX STRAPPING INSTRUCTIONS





Step 8. CONNECT POWER SUPPLY AND THERMOSTAT

The connection of the power supply and the LX (GFCI) thermostat must be done by a qualified electrician in accordance with the National Electrical Code (NEC) and the Canadian Electrical Code (CEC). The electrician should also feed the sensor cable into the installed conduit and connect it to the thermostat, take a final resistance reading and record it on the warranty card.

It is important for the homeowner to mail in the certificate immediately after installing the system (cable and thermostat). Failure to do so could void the manufacturer's warranty. The warranty is subject to the guarantee conditions listed on the warranty certificate.

Keep a copy of the warranty card for your reference.



Step 9. RECORD INFORMATION AND AFFIX LABELS

Label 1: Product identification label

The eight digit product code provided on the LX cable label must be recorded on the warranty certificate.

Label 2: Electric panel label

This label is to be placed inside the electric panel. On this label record the name of the room where the heating cable has been installed.

Label 3: The Warning Label

The warning label must be placed in the room where the heating cable has been installed, preferably on the floor. The label should be kept in the room at least for the duration of the construction or renovation of the floor.



Step 10. ENJOY THE COMFORT OF Danfoss LX

The LX floor heating system is now ready to use. Increase the floor temperature gradually and adjust it until it reaches a comfortable level depending on the type of room and your personal preferences.

The heating cable is designed for under floor heating applications only.

The heating cable must be embedded in concrete or similar.



EXTENDED WARRANTY

For a period of ten (10) years from the date of purchase Danfoss warrants that the Danfoss LXmat is free from defects in material, design and workmanship. The extended warranty is only valid if the warranty certificate has been properly completed and mailed, and the installation is in accordance with the installation instructions.

The defective Danfoss LXmat has to be inspected by or submitted to Danfoss or an authorized Danfoss LX dealer. Failure to comply with all of the foregoing will void this extended warranty. Danfoss will, when the customer has documented that a defect in the Danfoss LX was present at the date of delivery, repair or supply a new Danfoss LX at Danfoss' option. All claims shall be made within the extended warranty period. Danfoss shall not be liable for any claims made later than ten years from date of purchase.

Danfoss shall not be liable for any consequential and secondary costs or damages linked to the defect or replacement of the Danfoss LX. Danfoss will be liable for any costs related to the dismantling of defective product and the installation of a new product; however such liability is limited to the amount of five (5) times the initial product costs for each damage/case.

THE FOREGOING WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ON THE PART OF DANFOSS. DANFOSS DISCLAIMS ANY WARRANTY, EXPRESS OR IMPLIED, OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. DANFOSS NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON, FIRM OR CORPORATION TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH SALE OR PRODUCT. DANFOSS SHALL NOT BE HELD RESPONSIBLE FOR DAMAGE TO PERSON OR PROPERTY, CONSEQUENTIAL LOSS, LOSS OF PROFIT, LOSSES ON GOODS IN STORE, OR THE LIKE WHICH MIGHT ARISE OUT OF THE FAILURE OF THE EQUIPMENT DELIVERED, IRRESPECTIVE OF THE CAUSE (INCLUDING FAULTY MANUFACTURE).

How to claim this warranty

Contact the company's Customer Service department and provide the following information:

- 1) Nature of the manufacturing defect
- 2) Date of purchase and, if already installed, date of installation
- 3) If installed, name of electrician and flooring installer
- 4) Resistance readings taken by installer
- 5) Proof of purchase and serial number from product label

Our Customer Service department will provide you with an authorization number and advise you on the next steps to complete your warranty claim.

Disclaimer:

This warranty gives you specific legal rights and you may also have some legal rights which may vary from state to state or province to province. Danfoss hereby disclaims, and it is as a condition of the sale, that there are no implied warranties. Some states and provinces do not allow limitations on an implied warranty so the above limitation may not apply to you.

Manufacturer:

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