

## INSTALLATION GUIDE

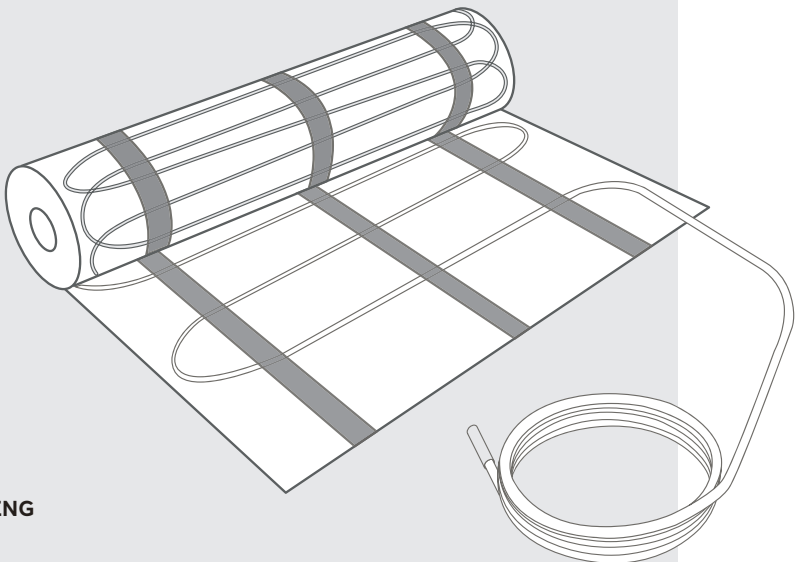
### HEATING MAT DCF160W/m<sup>2</sup>

GENERAL CONDITIONS AND TERMS

DESCRIPTION AND CONNECTION

DIMENSIONING

WARRANTY AND CLAIMS



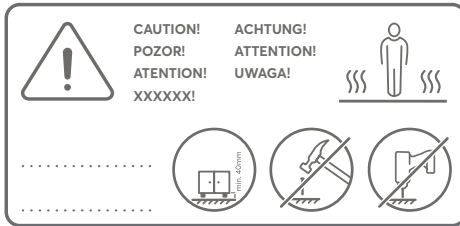
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## GENERAL CONDITIONS

- Heating mats may be operated only as a part of building structures. Fixing the heating cable to the fiberglass fabric during manufacture by gluing is regarded to be only a temporary bond. The heating mat is intended for installation in wet construction processes (concrete, adhesive and "self-leveling" sealing materials based on cement fulfilling thermal flexibility requirements – during application it is necessary to follow the manufacturer's instructions). When in use, the heating mat must be in full contact with these materials and free from air bubbles.
- The mat may be adjusted only as shown in pictures 1 – 3, and in no case may it be shortened. You may shorten only the cold connection ends, as required. The connection joining the cold end and the heating cable may not be installed in a bend. The heating cables of the heating mats may neither touch nor cross one another. The minimum distance between the cables is 30 mm. If the heating or power supply cables are damaged, they must be replaced or repaired by the manufacturer, its service technician or a similarly qualified person in order to prevent a dangerous situation from arising. Do not use nails or screws to install the cables!
- When installing the cables, the diameter of a bend in the cable must be at least eight times greater than the cable's diameter.
- The heating mat must be supplied with electricity by means of a residual current circuit breaker with rated actuating current of  $I_{\Delta n} \leq 30 \text{mA}$ . We recommend that each heating unit/circuit be equipped with a separate residual current device.
- For safety reasons, heating mats may not be installed in walls.
- The heating mats may be stored at temperatures from  $+10^{\circ}\text{C}$  to  $+35^{\circ}\text{C}$  and installed at temperatures from  $+5^{\circ}\text{C}$  to  $+30^{\circ}\text{C}$ . When in operation, they may not be exposed to temperatures exceeding  $70^{\circ}\text{C}$ .
- During removal from packaging, manipulation and installation of the mat take special care to avoid mechanical damage to the mat – check the heating cable visually before pouring the building material.
- The heating mat may not be installed on irregular surfaces.
- The heating mat is primarily intended for installation with the supporting material facing the base. It can, however, be installed the other way round.
- In case that mats are laid in an area larger than  $20 \text{m}^2$  or with a diagonal greater than 7m, it is necessary to account for expansion of the foundation materials. The heating cable must not cross the expansion joints. The non-heating connecting cables located at the expansion joints must be laid loosely in a protective tube. All installed elements – cold connection end, thermostat's probe – where they pass from the wall to the floor must be placed in installation tubes and must allow for movement of the floor and wall relative to one another.
- To allow for expansion around the periphery of the room between the baseboards and the floor tiles, use an expansion profile or fill the spaces with silicone sealing cement. The distance between the heating mat and the wall must not be less than 50 mm.
- The mat must not be placed either under such furnishings as bathtubs, shower baths, toilets and the like or under furniture that does not allow air to circulate. The maximum thermal resistance between the heating part and the room may be  $R=0.18 \text{ m}^2\text{K/W}$ .
- The installation must allow for disconnecting the mat or mats at both poles. The minimum distance of disconnected contacts must be 3,5mm.

- The label on the cold end of the heating mat shows the serial number and production date. The label on the mat's packaging shows type, dimensions and area of the mat, total output, output per 1m<sup>2</sup>, as well as the mat's supply voltage and electrical resistance.
- Before and after laying the mats, it is necessary to measure the resistance of the heating circuit. The measured values should be equal. Record the measured values in the certificate of warranty.
- Before and after laying the cables, it is necessary to measure the insulation resistance between the heating conductor and the protective braiding. This measured value may not be less than 0.5MΩ. Record the measured values in the certificate of warranty.
- Before opening the package with the heating mat, it is necessary to check whether the data on the label is in accordance with your requested product.
- In case of any discrepancies, you should report these immediately to the manufacturer or supplier and discontinue the work completely.
- You must draw the scheme of the heating mat layout in the certificate of warranty, indicating the exact distance of the connections of the supply cable and heating part from the walls of the building. Record the serial number and production number of the heating mat that are stated on the label on the mat's cold end, then insert/stick this label into the connection box.
- The supplier must inform other construction suppliers about the heating unit installed in the floor and of the related risks.
- A sheet of paper with information about the heating system must be permanently kept in the switch box of the heating system and passed on to any new owner or tenant.
- When installing the mats, the CSN 33-2000-7-753/HD 3844-7-753; EN 50559 standard requirements must be met.
- The product is produced according to the EN 60335-2-96/IEC 60335-2-96 standard and must be installed in accordance with the national regulations for electrical installation.
- The heating mat can be installed in the bathroom even under zone 0 under the condition that the connector and the end of the heating cable are installed outside this zone.
- If part of a heating mat extends under zone 0, the mat must be connected via a residual current device with a trip current of 10 mA.
- An insufficient thermal insulation layer below the heating system may cause significant thermal loss (warmth moving downwards). Recommended thermal insulation is 70–80mm of extruded polystyrene or similar thermal insulation materials. In case of reconstruction, where there is not space to install the thermal insulation to a sufficient depth on the existing tiles, we recommend installing F-boards in a depth of 6mm or 10mm to accelerate the warming of the surface and to reduce the thermal loss. This material is installed into the adhesive sealing cement that was shaped by a notched spreader and the heating mat is placed directly onto its surface. The F-boards do not need to be penetrated.
- This appliance can be used by children from the age of 8 and older, and persons with lower physical, sensory or mental abilities or a lack of experience or knowledge providing they are under supervision or have been trained in the use of the appliance in a safe manner and understand the possible danger. Children may not play with the appliance.
- Cleaning and maintenance by the user must not be carried out by children without supervision.

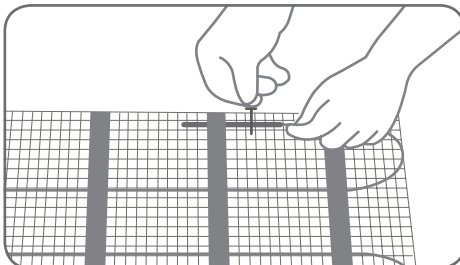
- The user must be instructed by the supplier regarding the installation of floor heating. This fact is stated on a label which comes with the product and must be glued into the switchboard: this label also informs readers that the making of openings is prohibited, as is covering the floor with furnishings or fittings without leaving at least a 4 cm gap between the floor and the bottom surface.



## INSTALLATION

### 1. Description and connection

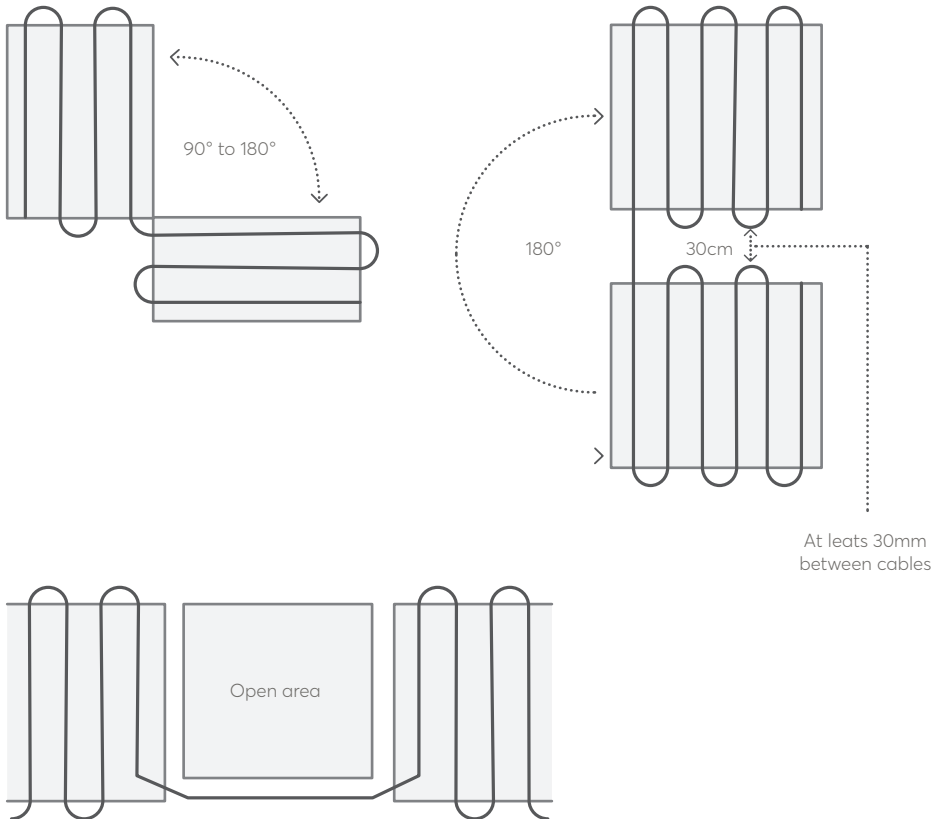
- The heating mat consists of the heating cable attached to a supporting fibreglass fabric.
- The heating cables should be connected to a 230 V, 50 Hz electrical network. Degree of protection: IP67.
- DCF mats have protective braiding. The cable's protective braiding meets the standards required of metal grid or metal shield and provides increased protection in spaces where that is required (bathroom, laundry, etc.) The protective braiding is to be connected to the PE conductor or to a protective grounding connection.
- DCF mats have bottom-edge tapes that are adhesive on both sides. After removing the covering paper from these tapes, the mat can be attached to the base.
- The end of the heating cable must be fastened to the matt using the cable tie provided.



## 2. Using mats for moderately accumulating and direct floor heating

### a). Dimensioning

- If the floor heating is intended to be used to warm the floor surface for short intervals, we recommend that the heating mat be installed close to the floor's surface.
- If the floor heating is to be used to heat a room, it is necessary to know the thermal loss value for the building in order to select the most suitable heating system. The installed output should correspond to a multiple of 1.1 to 1.3 times the calculated thermal loss for the building. If it is impossible to install the calculated output into the entire floor area, an additional heating device must be used (for example, direct heating convector).

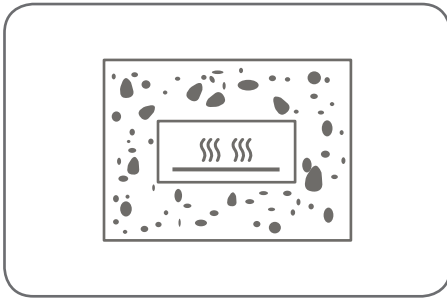


## Installation into concrete

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### b). Installation- moderately accumulating system (self-levelling materials)

- First read Clause 1 in the General Terms and Conditions.
- The concrete mixture must be sufficiently compact so that the layer contains no air bubbles, cavities and the like and ensures full contact with the heating cable. Compacting must be done carefully, by hand, to prevent damaging the cable. In no case may immersion vibrators be used.
- The concrete mixture must contain so-called plasticizers (for example, MAPEI- DYNAMONSR or PLANICRETE).
- When concreting, it is necessary to bear in mind that in case of a break in work longer than 60 minutes the concreted areas do not join fully. Therefore, in case of a longer break, it is necessary to create an adhesive connecting bridge (e.g., by penetrating or in another manner).
- The areas where the heating mat is to be placed must be insulated thermally using polystyrene (expanded polystyrene of at least 25kg/m<sup>3</sup> or, even better, extruded polystyrene with a long-term thermal resistance of 75°C) or mineral floor board 70–80mm thick. The DCF mat should not be mounted onto a flammable material.
- When installing the reinforcing steel, you must pay close attention to avoid damaging the cable's insulation.

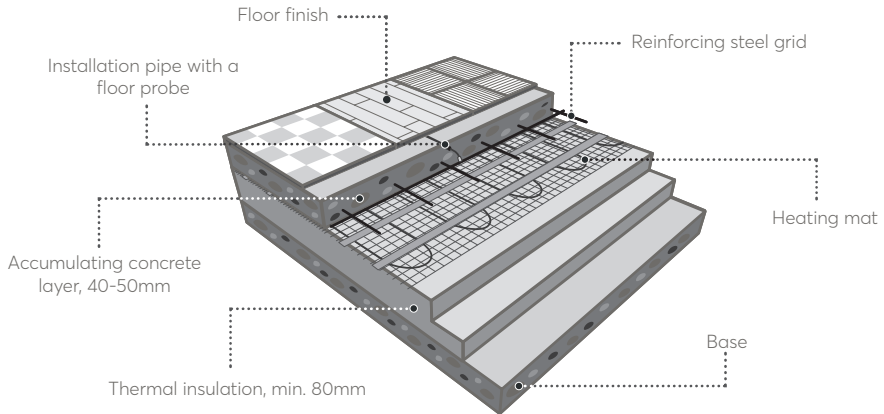


## Procedure

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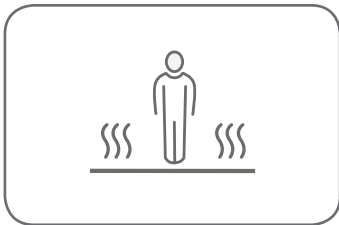
- Clean the concrete area, remove any sharp objects.
- Unroll the heating mat according to the area to be heated.
- Remove the protective layer from the self-adhesive tapes and attach the mat to the base.
- In humid spaces, connect the protective braiding of the cable to the protective grounding connection for the room.
- The connector joining the cold connection end and the heating circuit must not be installed in a bend.
- Measure the resistance of the heating circuit and the insulation resistance or the leaking current and record the measured values in the certificate of warranty.
- Cover the mat with a concrete layer. After concreting is finished, measure the resistance values again and record them in the certificate of warranty.

- Wait at least 28 days after installation before putting the mat into operation, so that the concrete will be set fully.
- Materials used in finishing the floor surface must be approved by their respective manufacturers for use on floors under thermal stress.



### c). Installation- direct heating system

- First read Clause 1 in the General Terms and Conditions.
- Detailed descriptions of use for the individual materials can be found in the installation manuals for the recommended materials.



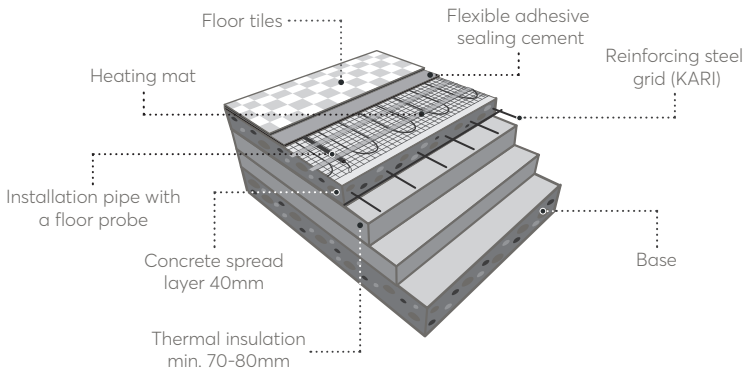
## Procedure

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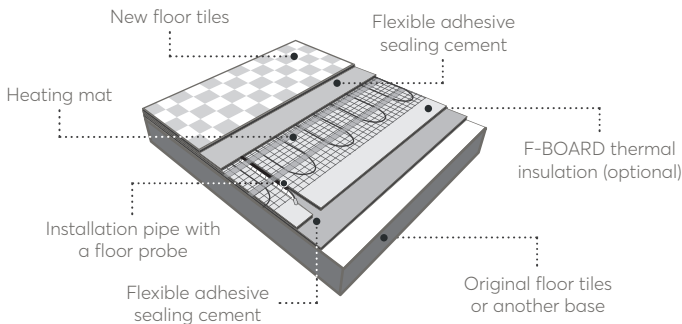
- Unroll the heating mat and adjust it according to the area to be heated. Mark the place for the connection and ending of the heating mat on the floor. Roll the mat up again.
- Create "pockets" in the base material where you will place the connections for the heating and non-heating components.
- Clean the concrete area, remove any sharp objects and coat it using a suitable penetrating solution.
- Unroll the heating mat according to the area to be heated.

- Remove the protective covering from the self-adhesive tapes and attach the mat to the base.
- Measure the resistance of the heating circuit and the insulation resistance and record the measured values in the certificate of warranty.
- Use flexible adhesive sealing cement and a flat spreader to smooth the floor surface (be careful not to damage the cable with the sharp edge of the spreader).
- Before laying the floor tiles, measure the heating circuit values again and record both values in the certificate of warranty.
- Lay the floor tiles onto the surface.
- When putting the heating mat into operation, the adhesive sealing cement must be fully hardened (see instruction for use and recommendation from material's manufacturer).

### Direct heating system- new construction



### Direct heating system- reconstruction



## d). Regulations

- Thermostats with a floor probe installed in the heating part of the floor, with at least 30 cm within the heated area, must be used for the thermal regulation of rooms heated using heating circuits/mats.
- Place the floor probe of the thermostat as close to the surface of the floor as possible. The probe is placed into a conduit whose end blocked to prevent ingress of building materials.



- In the case of direct-heating applications, the conduit is placed between the loops of the heating cable, in the centre of a loop. The conduit mustn't touch or cross the heating cable!
- The radius of the bend of the conduit between the wall and the floor must be executed in such a way that the probe can be exchanged if needed! The recommended minimum bend radius is 6 cm.
- The thermostat must be set to the mode: Room + floor temperature limit or Floor.
- The maximum allowed floor temperature setting (if the datasheet for the covering used doesn't state a lower value):
  - 27°C - rooms which are used for longer periods
  - 35°C - rooms used for shorter periods, with floor tiling

### 3. Accelerating the warming of heating floors

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#### a). For heating mat laid in a concrete layer

- Wait at least 4–6 weeks after installation before putting the mat into operation, so that the concrete will be set fully.
- On the first day, set the temperature of the floor to be the same as the temperature in the room (maximum 18°C).
- In the following days, increase the temperature in increments of 2°C per day up to 28°C.
- Maintain the temperature of 28°C for three days.
- Then, decrease the temperature of the floor by 5°C per day until you reach the initial temperature.
- Afterwards, you can set the desired temperature and put the floor into normal operation.

#### b). For heating mat laid into self-leveling material and into adhesive sealing cement

- We recommend putting the mat into operation after 5 days from laying the final layer of the floor (floor covering).

**Note:** The values mentioned above are for information only, it is necessary to follow the instructions provided by the manufacturer of the respective construction material.

### 4. Warranty and claims

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Glen Dimplex Heating & Ventilation provides a warranty period of 10 years for the product's functionality, beginning from the date of its installation that is confirmed in the certificate of warranty (installation must be made at latest within 6 months from the date of purchase), provided that:

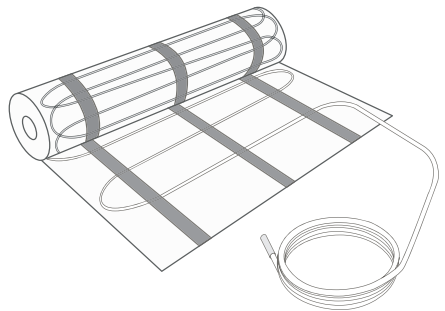
- a certificate of warranty and proof of purchase are submitted.
- the procedure described in this user guide has been followed.
- data on laying and connecting the cable in the floor and the resulting measured values of the insulation resistance of the heating cable are provided.
- the procedure for applying the sealing cement specified by its producer has been followed.

Claims may be made in writing at the company that performed the installation, or directly to the manufacturer.

The claims procedure also is available at the website: <http://www.gdhv.one>



This instruction manual is intended for the suppliers, owners and users of heating mats and in the case of a change of owner/user, it has to be handed over to the successor, together with a duly completed Certificate of Warranty.



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