



FLOOR HEATING

ONLINE

Installation Instructions

Cable Kit

Carefully read through the *entire* installation instructions before starting work.

General Instructions

Floor Heating Online Cable Kit is a complete floor heating system consisting of a thin heating cable, fixing tape, thermostat and spiral hose. A reel holder is supplied for quick and easy installation. The system can be used to heat most floor types including: tiles, stone, timber, laminate, thin carpet tiles and vinyl. The diameter of the cable is only 3.2 mm and the system is only connected from one end. Any electrical and electromagnetic fields are negligible due to the cable construction. The system is laid in a screed or the tile adhesive (thickness min. 5 mm) on the existing floor structure such as, concrete, high compression strength insulation board, tile backer board, plywood or chipboard.

- The Cable Kit installation should be controlled by the thermostat included in the Kit.
- The system must be connected to a 230V supply via a 30mA RCD.
- **The heating cable must not be cut.** Only the cold connection cable may be cut.
- The minimum cable spacing is 60mm and the maximum 120mm.
- The Cable should be at room temperature at installation. At lower temperatures the adhesive capacity of the tape will decrease.
- Measure the insulation and resistance values of the cable three times: before laying, after fixing and after floor laying. Note down the values in the test protocol. The 10 year warranty is invalid without this protocol and the signature of a qualified installer.
- Wait at least one week before the heating is switched on, increase the heating gradually.
- The completed floor must not be covered with thick insulating carpets, beanbag seating or similar as this can result in temperatures harmful to the floor.

How to select your Cable Kit

Firstly, the type of room that is to be heated will determine which Cable Kit you should use:

- If it is a conservatory you should select from the left-hand column marked 180 - 150W per square metre; Conservatories.*
- For all internal rooms that have a concrete subfloor you should select from the middle column marked 150 - 100 W per square metre; Concrete Floors.*
- For all rooms that have a timber subfloor or timber floor finish you should select from the column marked ≈ 100 W per square metre: Timber Floors.

** - If there is a timber subfloor or a timber floor finish, the power should be a maximum of 100W/m².*

Examples:

1. If you have an 11m² conservatory (tiles over concrete slab), select the table using the 180 - 150W/m² **Conservatories** column and move down until you reach the 9.44 – 11.38 size band. Select this size, i.e. the 1700W kit part no. FHO-CK-1700D.
2. For an 8m² kitchen (tiles over concrete slab), select the 150 - 100W/m² **Concrete Floors** column and move down until you reach the 7.80 – 9.06 size band. Select this size, i.e. the 1170W kit, part no. FHO-CK-1170D.
3. For a bedroom, 10m², with a suspended timber floor that is to have a 10mm marble floor tile finish. The floor must be made solid and bounce-free (this applies even without floor heating). Since there is a timber subfloor you must use the ≈ 100 W/m² **Timber Floors** column. Move down the column until you reach the 9.40 - 11.69 size band. Select this size, i.e. the 940W kit, part no. FHO-CK-940D.

How to calculate the Cable Spacing.

There is a simple calculation to work out how far apart to lay the cables. This is important because the cable is a fixed length of heating cable which must all be used in the available area. The calculation is simply:

$$\frac{\text{The area to be heated (m}^2\text{)}}{\text{The length of the heating cables (m)}} \times 1000 = \text{cable spacing (mm)}$$

The minimum cable spacing is 60 mm. Do not lay the heating cables closer together than 60 mm.

The maximum cable spacing is 120mm. Do not lay the cables further apart than 120mm. At a spacing of greater than 105mm the cable will, in many cases, only take the chill off of the floor. To use as a heat source in most domestic situations the spacing should be between 70 - 90 mm. This is always dependent on the insulation levels, type of room, the room location and the set temperature. Contact technical if you require assistance, email technical@floorheatingonline.com.

Examples:

1. A kitchen with a concrete floor and floor tiles over has a floor 3m x 2.5m (7.5m²). Less 2m² for kitchen units = 5.5m²
Use the table (**Cable Selection Chart** on page 3 below) to select your Cable Kit – you should select the 790W Kit which is 74 m long.
The cable spacing is calculated:
 $5.5 \div 74 \times 1000 = 74$ mm (always round down if your calculator says 74.323 as here)
2. A conservatory with a concrete floor and tiles over is 4 m x 3m (12 m²).
Use the table to select your Cable Kit – you should select the 2050W Kit which is 190m long.
The cable spacing is calculated:
 $12 \div 190 \times 1000 = 63$ mm
3. A conservatory with a concrete floor and tiles over is 4 m x 4.2 m (16.8 m²).
Use the table to select your Cable Kit – you should select the 2720W Kit which has two cables, each 126 m long.
The cable spacing is calculated:
 $16.8 \div (2 \times 126) \times 1000 = 67$ mm

4. For a bedroom, 12m², with a suspended timber floor that is to have a 10mm marble floor tile finish. Use the table to select your Cable Kit – you should select the 1170W Kit which is 108 m long.
The cable spacing is calculated:
 $12 \div 108 \times 1000 = 111 \text{ mm}$

Cable Selection Chart

Part no.	Power (W)	Length (m)	Coverage (m ²) 180 - 150 W/m ² Conservatories	Coverage (m ²) 150 - 100 W/m ² Concrete Floors	Coverage (m ²) ≈100 W/m ² Timber Floors
FHO-CK-140D	140	14	0.8 – 0.9	0.9 – 1.3	1.4 – 1.9
FHO-CK-200D	200	19	1.1 – 1.3	1.4 – 1.6	2.0 – 2.4
FHO-CK-250D	250	24	1.4 – 1.8	1.7 – 2.1	2.5 – 3.2
FHO-CK-330D	330	31	1.9 – 2.2	2.2 – 2.6	3.3 – 3.9
FHO-CK-400D	400	37	2.3 – 2.5	2.7 – 3.1	4.0 – 4.6
FHO-CK-470D	470	44	2.6 – 2.9	3.2 – 3.5	4.7 – 5.2
FHO-CK-530D	530	49	3.0 – 3.5	3.6 – 4.2	5.3 – 6.3
FHO-CK-640D	640	60	3.6 – 4.3	4.3 – 5.2	6.4 – 7.8
FHO-CK-790D	790	74	4.4 – 5.1	5.3 – 6.2	7.9 – 9.3
FHO-CK-940D	940	88	5.2 – 6.4	6.3 – 7.7	9.4 – 11.6
FHO-CK-1170D	1170	108	6.5 – 7.5	7.8 – 9.0	11.7 – 13.5
FHO-CK-1360D	1360	126	7.6 – 9.4	9.1 – 11.3	13.6 – 16.9
FHO-CK-1700D	1700	159	9.5 – 11.3	11.4 – 13.6	17.0 – 20.4
FHO-CK-2050D	2050	190	11.4 – 12.9	13.7 – 15.5	20.5 – 23.3
FHO-CK-2340D	2340 *	108 +108	13.0 – 14.0	15.6 – 16.8	23.4 – 25.2
FHO-CK-2530D	2530 *	126 +108	14.1 – 15.0	16.9 – 18.1	25.3 – 27.1
FHO-CK-2720D	2720 *	126 +126	15.1 – 16.9	18.2 – 20.3	27.2 – 30.5
FHO-CK-3060D	3060 *	159 +126	17.0 – 18.8	20.4 – 22.6	30.6 – 33.9
FHO-CK-3400D	3400 *	159 +159	18.9 – 22.6 #	22.7 – 27.2 #	34.0 – 37.7 #

* - supplied as two cables.

- for areas larger than listed please contact sales, email: sales@floorheatingonline.com

Heater Cable Power, Length & Resistance values (Resistance tolerances: $\pm 10\%$)

Part no.	Power (W)	Heater cable length (m)	Resistance (Ohms)
FHO-CK-140D	140	14	340
FHO-CK-200D	200	19	265
FHO-CK-250D	250	24	215
FHO-CK-330D	330	31	160
FHO-CK-400D	400	37	135
FHO-CK-470D	470	44	113
FHO-CK-530D	530	49	100
FHO-CK-640D	640	60	83
FHO-CK-790D	790	74	67
FHO-CK-940D	940	88	56
FHO-CK-1170D	1170	108	46
FHO-CK-1360D	1360	126	39
FHO-CK-1700D	1700	159	31
FHO-CK-2050D	2050	190	26
FHO-CK-2340D	2340 *	108 +108	46 +46
FHO-CK-2530D	2530 *	126 +108	39 +46
FHO-CK-2720D	2720 *	126 +126	39 +39
FHO-CK-3060D	3060 *	159 +126	31 +39
FHO-CK-3400D	3400 *	159 +159	31 +31

Min. insulation value 10 M Ω

* - supplied as two cables. Cables MUST be tested individually.

Multiple cables should be connected in parallel either directly into the thermostat or into a junction box and then a connection taken to the thermostat. The maximum thermostat load is 13 amps (2990W) (PRT-E Thermostat). Installations exceeding this load will need to be controlled with a suitable power contactor or alternatively by more than one thermostat – consult your electrician about this.

Installation must be carried out according to electrical regulations and under the supervision of a qualified electrician.

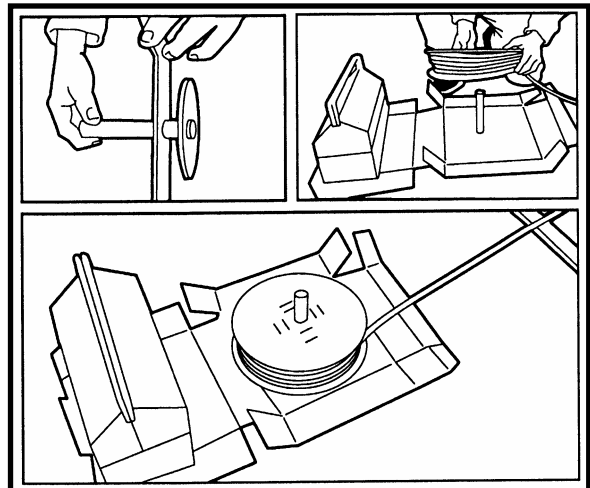
**Please read through the entire installation instructions
before starting work!**

Subfloor

Make sure the floor is solid, without any springiness and clear of any dirt or residue. Wooden or chipboard flooring with more than 30 cm between the joists needs to be reinforced to prevent cracking and the floor tiles from releasing. This also applies without underfloor heating.

Reel Holder

The kit contains a reel holder consisting of a plastic tube and a disc to make cable laying easier. Insert the plastic tube through the disc and place the plastic tube with the disc in the perforated hole underneath the packaging. Fit the cable reel on the plastic tube and place a weight on top of the packaging. Now when you pull the cable the reel will turn. (Figures 1-3)



Figs 1 – 3

Installation

Cut a groove in the floor for the spiral hose, which will house the thermostat sensor cable. The hose should be terminated in a position that will not be covered by a carpet or any furniture, at least 50 cm into the heated area of the room. The sensor must be placed so that it will lie in the middle of two cable runs. If the hose is bent too sharply it will be difficult to insert the sensor. Ensure any bends are gentle! Then tape over the end of the hose (See figure 4). The cable joint must also be in the floor. Make a cut-out in the floor so that the height of the cable joint is not greater than the height of the cable.

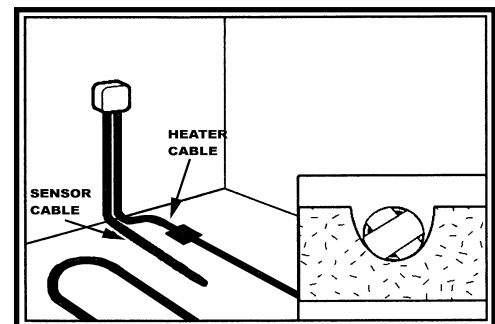


Fig. 4

Prime the floor with a PVA adhesive (5 parts water to 1 part PVA) or any commercial concrete sealer as per the manufacturer's instructions and allow to dry. (See figure 5).

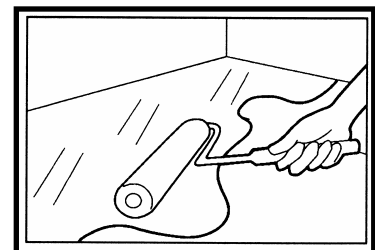


Fig. 5

Measure the insulation and resistance values of the cable and note them in the test protocol. **Dividing the laying area by the length of the heater cable and multiplying by 1000 can easily calculate the cable spacing.** This gives the spacing in mm. Mark out the cable spacing on the floor, approximately 15 cm from the walls. Fix the rolls of tape, one on each side of the floor, by the first mark (see figure 6). **NOTE!** Take care when making the calculations and marking out the floor to ensure that the cable exactly fits the area. **The grey heater cable must not be cut under any circumstances!**

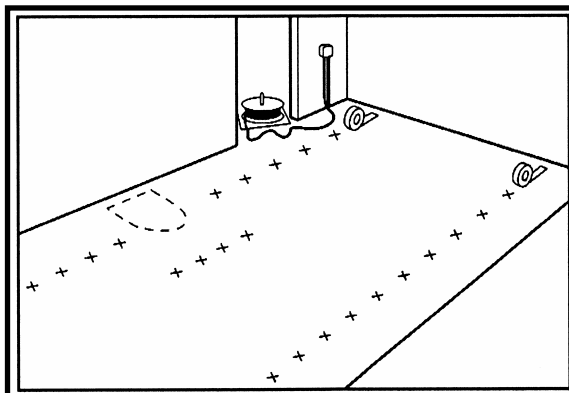


Fig. 6

Pull out the first run of the cable and fix with the tape approx. 15 cm from the bend as shown in figure 7. Let the rolls of tape stay as they are. **The minimum cable distance to the wall is 3 cm.**

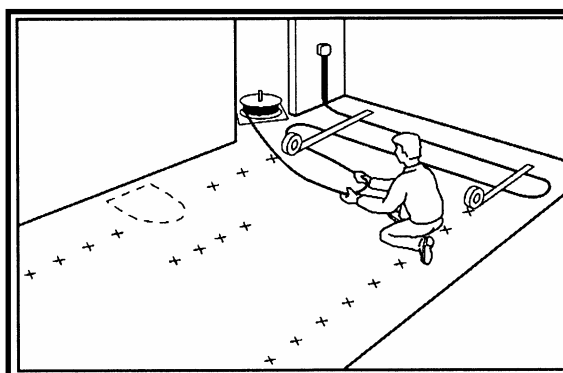
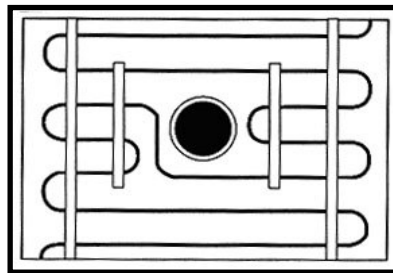
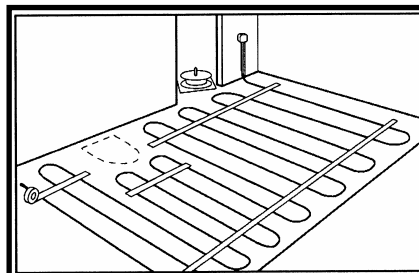


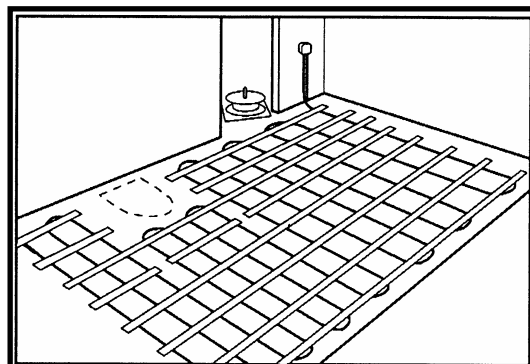
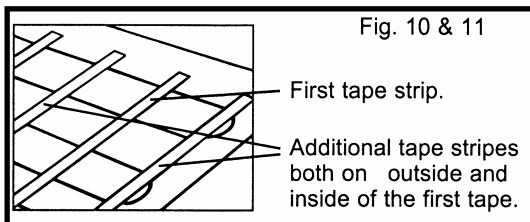
Fig. 7

Do the same for the next run. The cable must not be installed under permanent fittings, toilets, and the like. Note the screw holes for the toilet. Route the cable as shown in figure 9 with floor drains and similar obstacles.

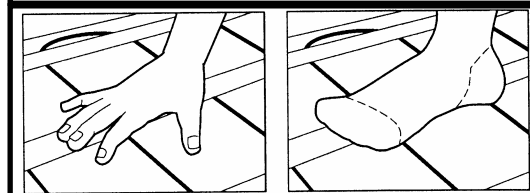


Figs. 8 & 9

Once the cable has been laid, lay new strips of tape inside and parallel to the first strips of tape at a centre-to-centre distance of about 17 cm (this gives 6 strips per metre). Also tape the outside of the first strips about 2 cm from the cable bend. See figures 10 & 11. Leave the protective paper on the tape.



Use your hands or stockinged feet to ensure the tape is secured correctly. This is extremely important on coarse surfaces such as concrete. (See figure 12-13).



Figs. 12 & 13

Measure the insulation and resistance values of the cable again and note them in the test protocol. Document the position of the cable with sketches or photographs and keep these next to the main distribution box. Now you may screed over the cable either with a flexible tile adhesive or a proprietary self-levelling screed. Take care not to catch the cable. It is advisable to use a plastic float. (See figure 14)

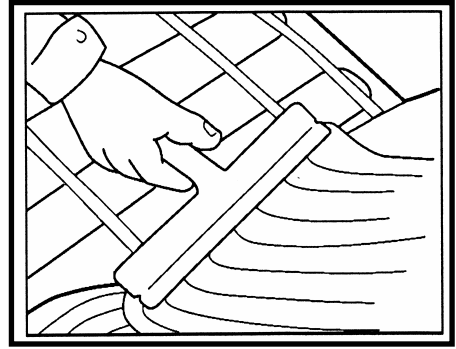
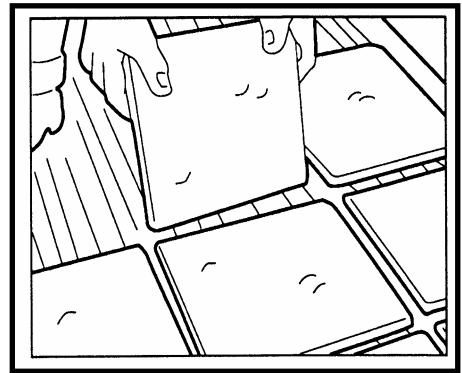


Fig. 14

Once again measure the insulation and resistance values. This is to ensure the cable has not been damaged during screeding. Lay the tiles according to the manufacturer's instructions. Use flexible tile adhesive and grout.



Insulation and resistance measure the cable once again and note the values in the test protocol.

Refer to applicable industry regulations of manufacturer's directives for floor structures, screeding, sealing layer, tiling, grouting, etc.

The completed floor must not be covered with thick insulating rugs, beanbag-seating or similar, as these can cause temperatures harmful to floor.

Allow the system to dry naturally, for at least **one week**, and then switch on the heating at a low level – we would recommend an initial setting of 16°C and increasing the temperature by one degree a day until your comfort level is reached (typically 22 - 26°C). Note – the heating may be slow to react initially especially if installed on a new screeded floor or in a new building.

See separate instructions for programming of the thermostat.

Cable Kit Do's & Don'ts

Do

- ✓ Read the entire installations instructions before beginning.
- ✓ Protect the supply to the system using a RCD.
- ✓ Use the calculation to determine the cable spacing. Mark out the floor & check that all the cable will fit into the available area.
- ✓ Ensure that the joint between the cold cable and heating cable is in the floor under the screed/tiles
- ✓ Always fit the thermostat sensor in the supplied protective pipe.
- ✓ Where two cables are supplied fit them in parallel at the thermostat. Check whether using more than one cable is going to overload the thermostat (max. 2990W) and use a suitable contactor if required.
- ✓ Take a photo or make a sketch of the cable installation before covering it.
- ✓ Test the system before covering it. Fill in the test protocol.
- ✓ Call Floor Heating Online if in doubt as how to proceed.

Do Not

x DO NOT CUT THE HEATER CABLE.

x Do not assume anything. If in doubt check.

x Do not lay the cable under any permanent fixings such as baths, WCs and kitchen units.

x Do not place the cable where holes are to be drilled or screws put into the floor. We recommend that wherever possible you avoid drilling the floor - use an adhesive instead.

x Do not tile/screed the floor unless **all** the cable is evenly laid in the available area.

x Do not leave any heating cable out of the floor.

x Do not allow the cables to cross over or touch.

x Do not lay the heater cables closer than 6cm apart, or greater than 12cm apart.

x Do not turn the heating on for ***at least*** a week after laying the floor.
(At least 1 day per mm of screed/adhesive).