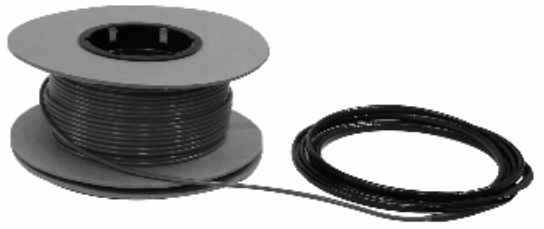
HeatTech



HTCBL (120V & 240V)
Electric Radiant Floor Heating Cable
Installation Manual

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Important Safety and Installation Information

READ AND FOLLOW THESE INSTRUCTIONS CAREFULLY PRIOR TO INSTALLATION. FAILURE TO DO SO MAY CAUSE PERSONAL AND/OR PROPERTY DAMAGE AND WILL VOID THE WARRANTY.

WARNING: Shock and fire hazard

TO PREVENT FIRE, ELECTRICAL SHOCK, PERSONAL INJURY AND/OR PROPERTY DAMAGE, THE INSTALLATION MUST BE PERFORMED BY A QUALIFIED PROFESSIONAL WHO IS FAMILIAR WITH CONSTRUCTION AND OPERATION OF THE SYSTEM, AS WELL AS THE RISKS INVOLVED.

Installation Guidelines:

- INSTALLATION OF HEATTECH™ HTMAT SYSTEM MUST BE IN ACCORDANCE WITH ALL APPLICABLE NATIONAL AND LOCAL ELECTRICAL AND BUILDING CODES.
- A dedicated 20.0 Amps circuit and class "A" GFCI or GFCI circuit breaker is required for the installation of HTCBL floor heating system.
- HTCBL heating cable cannot be overlapped, crossed over, cut, spliced, shortened or modified. If cable is damaged, it must be replaced.
- Lead wire must not come in contact with the heating cable, as it may damage the supply conductor insulation.
- Sensor wire may not cross over lead wire (cold lead) or heating cable.
- Never bend the portion of the cable where cold lead and heating cable are factory-connected (factory splice).
- Never supply power to the HTCBL cable while it is still on a spool.
- If system is installed in wet areas, such as bathrooms, kitchens, saunas, etc. - a Ground Fault Circuit Interrupter is recommended. Thermostat options available from HeatTech™ include models with 5mA GFCI.
- The HTCBL radiant floor heating cable is intended for indoor, floor heating purposes only. It must not be installed in walls or ceilings.
- The heating cable must be installed at 3" OC (On Center) spacing throughout the system to insure consistent heat output.
- Never use staples to secure HeatTech™ HTCBL heating cable to the subfloor.
- The subfloor must be prepared according to ANSI specifications and must be free of nails, screws or other sharp objects which may damage the cable.
- Never install the cable over the expansion joint.
- The combined "R" value of the floor covering materials above the HTCBL heating cable must not exceed the value of 1.0
- For HeatTech's thermostats, maximum combined load per thermostat is 15.0 Amps. This equals up to 150 sq. foot for 120V heating mats and up to 300 sq. ft for 240V mats. If using thermostat(s) other than from HeatTech™, check to make sure that total Amps of the heating mats installed do not exceed the max Amp rating of the thermostat. Larger installation may require multiple thermostats, sensors, dedicated circuits, circuit breakers, etc.
- Do not use sharp tools to clean the grout lines - it may damage the mats and will void the warranty.

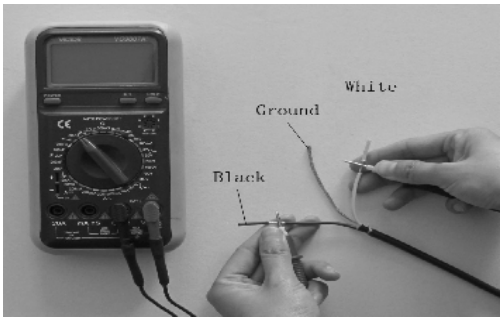
1. Measuring resistance

To perform insulation and resistance testing, a digital multimeter (or ohmmeter) with alligator clips (or equivalent testing leads) is needed.

The resistance and insulation testing of the HTCBL heating cable must be performed and recorded at least four times:

1. Prior to installation (out of the box).
2. After installation of HTCBL heating cable.
3. After the installation of thin set cement or self-leveling mortar.
4. After installation of finished floor (tile, stone, etc.)

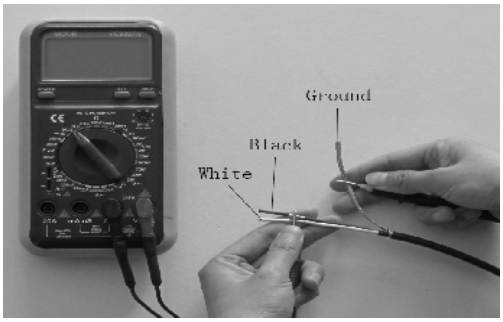
RESISTANCE TESTING - The resistance must be measured between the two conductors, white and black (as shown on the image to the right). Compare the resistance reading to the resistance specified in the Product Selection "Table 1 or Table 2". The measured value should be within ±10% of the data in the table.



INSULATION TESTING - Next, connect the ground wire to the black lead and both power wires (back and white) to the red lead of the multimeter (as shown on the image to the right).

Measure and record the resistance.

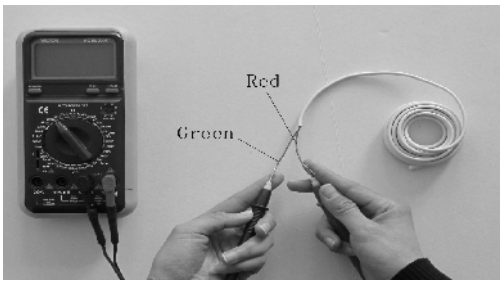
Both measurements should read infinity (open circuit).



FLOOR SENSOR TESTING

Additionally, if using floor sensor, test its' resistance "out of the box" and prior to installation of finished flooring (as shown on the image to the right). The readings should be around 15.0 kOhms at 68F and around 12.0 kOhms at 77F.

If you get different readings from those described above, halt installation and contact Technical Support for assistance.



2. Compatible Types of Floors & Subfloors

Compatible Subfloor Types:

1. Plywood
2. Cement board
3. Concrete slab (smooth surface)
4. Mortar bed
5. Others (inquire for more info)

Compatible Finished Floor Types:

1. Tile
2. Stone, Marble, Granite
3. Laminate
4. Engineered wood floors
5. Carpet
6. Vinyl, Linoleum
7. Others with "R" value not exceeding 1.0 (inquire for more info)

R-values of seemingly identical flooring materials from different manufacturers may vary greatly, so in order to determine the combined R-value for specific combination of flooring / subflooring types, it is best to contact the product manufacturer.

3. Product Specifications

Cable Construction:	Twin conductor
Rated Voltage:	120V (for HTCBL-120 series), 240V (for HTCBL-240 series)
Power Output:	3 watts per linear ft or 12 watts per sq ft (at 3" O.C. spacing) ±10%
EMF (electromagnetic field)	None (Zero)
Heating Cable Length:	40ft and up - see Table 1 & 2
Min. Heating Cable Bending Radius:	1" (25.4mm)
Heating Cable Diameter:	1/8" (3.2mm)
Cold Lead Diameter:	1/6" (4.2mm)
Max. Ambient Temp.:	85ºF (30C)
Min. Installation Temp.:	40ºF (5C)
Cold lead	2-wire, 16 AWG plus ground braid; 10ft (~3m) length

HeatTech™ floor heating cable is comprised of:

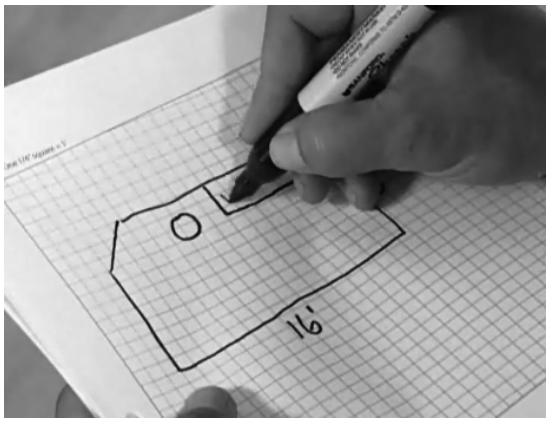
- Heating cable (red) – this portion of the HeatTech™ cable is installed under flooring surface and generates heat.
- Cold lead (black) – a 10ft long, non-heating portion of the HeatTech™ cable, which carries power to the heating cable and is connected to the thermostat.
- Cold lead and heating cable are factory-connected and represent a small (~4" long), distinctively thicker portion of the HeatTech™ cable.

4. System Sizing, Layout and Product Selection

4.1. Calculating the square footage of the heated area

The heated area shall exclude any permanent fixtures such as showers, bathtubs, toilets, vanities or cabinets.
To calculate the square footage of the heated area, multiply length (feet) by width (feet) and record the value.
If the heating area is not rectangular and contains triangles or obstacles, divide it into smaller areas that can be calculated by multiplying width by length.
Triangles are mostly squares or rectangles split in half, so in order to calculate its' area, multiply its' width by height and divide by two.

4.2. Layout & Planning



Create a drawing of the heated area with detailed cable layout. To simplify the process, grid paper can be used, with each sector on the grid paper representing a 3" x 3" square area of the floor (3" is equal to the distance between the parallel heating cable runs).

If the project involves using more than one circuit if the HTCBL, or a combination of HeatTech™ mats and cable – plan accordingly.

If HeatTech™ cable is the sole heating source for the room, check whether your BTU output from the system meets your requirements. For conversion, use the following formula: 1 Watt = 3.41 BTUs/hr.

1. Draw all the cabinetry, showers, bathtubs, Jacuzzis, etc. on the layout - HTCBL cable cannot the installed under these or any solid-surface fixtures. Excessive heat that accumulates under these fixtures may damage the cable. Recommended clearance is 1-2".

2. Note the location of the thermostat. A thermostat should be installed at least 4ft away from bathtubs and shower cabins to avoid being splashed by water. The location of the thermostat must also be adequate to accommodate the installation of cable cold lead (10ft long) and floor sensor.

3. The cable must be positioned about 3" away from the edge of floor drains, 1-4" away from walls and at least 4" away from the edge of toilet rings (to prevent wax gasket melting). The minimal clearance from heating vents and other heating appliances is 8".

Spacing of the cable should remain at 3" O.C. (On Center) throughout the system – see Fig. 1c.

4. If using HeatTech™ cable guides (Part# HTCG-25), mark their location of the layout and estimate length needed. Recommended installation spacing between cable guides is 3ft (see Fig. 1b). Cable guides must be installed perpendicular to the cable and can also be cut into smaller pieces to accommodate the installation of cable along angled or curved heating area borders, as shown on Fig. 1a below.

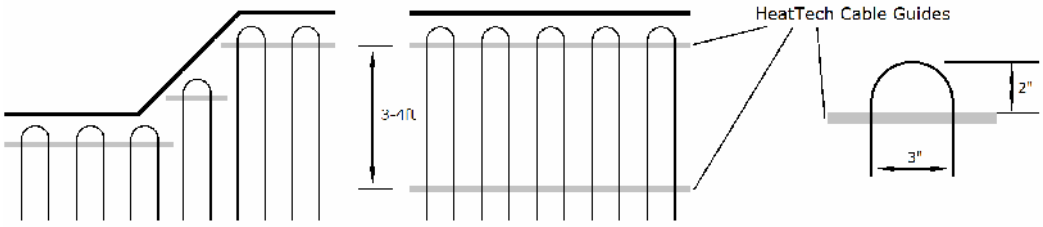


Figure 1a Figure 1b Figure 1c

5. The clearance from walls should be anywhere from 1 to 4 inches and is determined by the size of the heating area and length of the cable selected. Adjusting this clearance may help installers to install the cable in the most efficient manner and avoid shortages and excess cable lengths.

6. It is important to note that during actual installation, there's a chance that the selected cable length may be insufficient or excessive. For this specific reason, and especially for larger projects, installers should dedicate a small area on the floor, where heat output is of low importance. This are could be used either for installation of excess cable, or left unheated.

4.3. Product selection

HTCBL cable:

Select a HTCBL heating cable length based on its' area coverage (as specified in Table 1 & 2), which should correspond to the calculated heating area and layout design created. Make sure to properly select the desired voltage.

NOTE: Operating the 240V cable at 208V reduces the power output to approximately 2.25 watts per ft., or 9 watts per sq. ft in 3" O.C. installation. (25% reduction).

For best results, use HeatTech™ cable guides (Part# HTCG-25) to secure the HTCBL to the subfloor. Cable guides are available in 25ft rolls and allow for precise, quick and easy installation. The total length of the cable guides required will vary based on project requirements.

Thermostats & Floor Sensors:

HeatTech™ offers several thermostat models with features such as 5mA GFCI, included floor sensor, 7-day programmability, and others.

NOTE: The maximum combined load per thermostat is 15.0 Amps. If connecting more than one HTMAT or HTCBL cold lead, they must be wired to the thermostat in parallel.

A second (backup) floor sensor is not mandatory, but recommended in the unlikely event of failure of the original one.

NOTE: If using backup sensor, its' leads must not be connected to the thermostat. Only one sensor can be connected to a thermostat at any given time.

Table 1 – 120V Product Selection

120V	Length		Approximate coverage (sq.ft.)			Watts (3W/ft.)	Amps	ohms
Part #	ft.	m	2" spacing	3" spacing Recommended	4" spacing			
HTCBL-120-40	40	12.2	5	10	15	120	1.0	120.0
HTCBL-120-60	60	18.3	10	15	20	180	1.5	80.0
HTCBL-120-80	80	24.4	15	20	25	240	2.0	60.0
HTCBL-120-100	100	30.5	18	25	35	300	2.5	48.0
HTCBL-120-120	120	36.6	20	30	40	360	3.0	40.0
HTCBL-120-140	140	42.7	23	35	50	420	3.5	34.3
HTCBL-120-160	160	48.8	25	40	55	480	4.0	30.0
HTCBL-120-180	180	54.9	30	45	60	540	4.5	26.7
HTCBL-120-200	200	61.0	35	50	65	600	5.0	24.0
HTCBL-120-240	240	73.2	40	60	80	720	6.0	20.0
HTCBL-120-280	280	85.3	45	70	95	840	7.0	17.1
HTCBL-120-320	320	97.5	55	80	105	960	8.0	15.0
HTCBL-120-360	360	109.7	60	90	120	1080	9.0	13.3
HTCBL-120-400	400	121.9	65	100	135	1200	10.0	12.0

Table 2 – 240V Product Selection

240V	Length		Approximate heat coverage (sq.ft.)			Watts (3W/ft.)	Amps	ohms
Catalog Number	ft.	m	2″ spacing	3″ spacing Recommended	4″ spacing			
HTCBL-240-80	80	24.4	15	20	25	240	1.0	240.0
HTCBL-240-120	120	36.6	20	30	40	360	1.5	160.0
HTCBL-240-160	160	48.8	25	40	55	480	2.0	120.0
HTCBL-240-200	200	61.0	35	50	65	600	2.5	96.0
HTCBL-240-240	240	73.2	40	60	80	720	3.0	80.0
HTCBL-240-280	280	85.3	45	70	95	840	3.5	68.6
HTCBL-240-320	320	97.5	55	80	105	960	4.0	60.0
HTCBL-240-360	360	109.7	60	90	120	1080	4.5	53.3
HTCBL-240-400	400	121.9	65	100	135	1200	5.0	48.0
HTCBL-240-440	440	134.1	75	110	145	1320	5.5	43.6
HTCBL-240-480	480	146.3	80	120	160	1440	6.0	40.0
HTCBL-240-560	560	170.7	95	140	190	1680	7.0	34.3
HTCBL-240-640	640	195.1	105	160	210	1920	8.0	30.0
HTCBL-240-720	720	219.5	120	180	240	2160	9.0	26.7
HTCBL-240-800	800	243.8	135	200	265	2400	10.0	24.0

5. Tools and materials required

You will require the following items to install and test the floor heating system:

- Digital multimeter or ohmmeter – to perform resistance and insulation testing of the HTCBL floor heating cable.
- HeatTech™ HTCBL heating cable – properly sized and selected.
- Duct tape or HeatTech™ cable guides – to secure the heating cable to the subfloor.
- ½″ screws – to secure cable guides to the subfloor.
- Grooving tool or chisel with hammer – to create a groove in the subfloor for the installation of cold lead and sensor.
- Measuring tape – to measure and mark on the subfloor location of cable runs as well as any fixed fixtures, obstacles, etc.
- Wire strippers – to prepare and connect the cold lead to the thermostat.
- Thermostat (as per specifications in this manual) – to set, monitor and efficiently control the flooring temperature.
- Screwdriver – to connect wiring to the thermostat.
- Floor sensor (as per specifications in this manual) – required for proper operation of the thermostat.
- Backup floor sensor (optional) – for backup purposes in the unlikely even of the original floor sensor failure.
- Other materials required for installation of the selected flooring type.

6. HeatTech cable installation

Note: it is highly recommended that the installation of the cable and floor sensor is documented with photos to

note their location for further reference.

6.1. Prepare the subfloor



The subfloor must be dry, smooth and clean prior to cable installation.

Thoroughly sweep and/or vaccum the floor to remove any dirt, dust and debris that may damage the cable and interfere with installation. Make sure there are no nails, screws and other sharp objects that may damage the cable.

6.2. Transfer Layout to Floor

Using measuring tape and marker, draw the outline of the cable layout on the floor, including all obstacles, cabinetry, fixtures, floor drains, etc. For ease of installation, draw arrows pointing the direction of cable runs across the floor. If using HeatTech™ cable guides, also draw their location.

6.3. Electrical Box Installation

Installation of electrical box and conduit pipe must be in accordance with all applicable national and local electrical codes.

Install an appropriate size electrical box at the desired location of the thermostat and within reach of sensor and cable cold leads (both are 10ft long). A typical location of the thermostat is 4-5ft above the floor for easy of access and operation. Run a section of conduit pipe from the electrical box to the floor for cold lead installation. Attach the conduit to the box using appropriate locknut(s) and secure in place. Note that conduit pipe may not be required by local codes – check with an electrician. A ½" conduit pipe is sufficient for single cold lead installation. Multiple cold leads may require a larger conduit pipe.

Run appropriate type and size electrical wire (copper) from the power source to the electrical box. Leave excess wire at the control switch/thermostat box for making connections.

6.4. Heating Cable Installation



1. Start by creating a 3/8" by 3/8" hole/cavity in the bottom of the wall to accommodate the installation and routing of HTCBL cold lead to the electrical box. The cavity should normally be positioned vertically below the electrical box. If using conduit, select the position of the cavity accordingly.

2. Next, using a chisel and a hammer or a grooving tool, create a 3/8" wide by 3/8" deep groove in the subfloor for routing of the cold lead. The groove must run all the way to the cavity created in the wall, and must be deep enough to prevent interference of cold lead with flooring materials above.

IMPORTANT: approximately 4" portion of HTCBL contains a factory splice between the heating cable and cold lead. This portion MUST be installed in the subfloor (3/8" x 3/8" groove) and must never be bent.

3. Perform 1st insulation and resistance tests on the HTCBL cable. Refer to "Measuring Resistance" part of this manual.

4. Route the cold lead through the 3/8" wall cavity to the electrical box (through the conduit, if present).

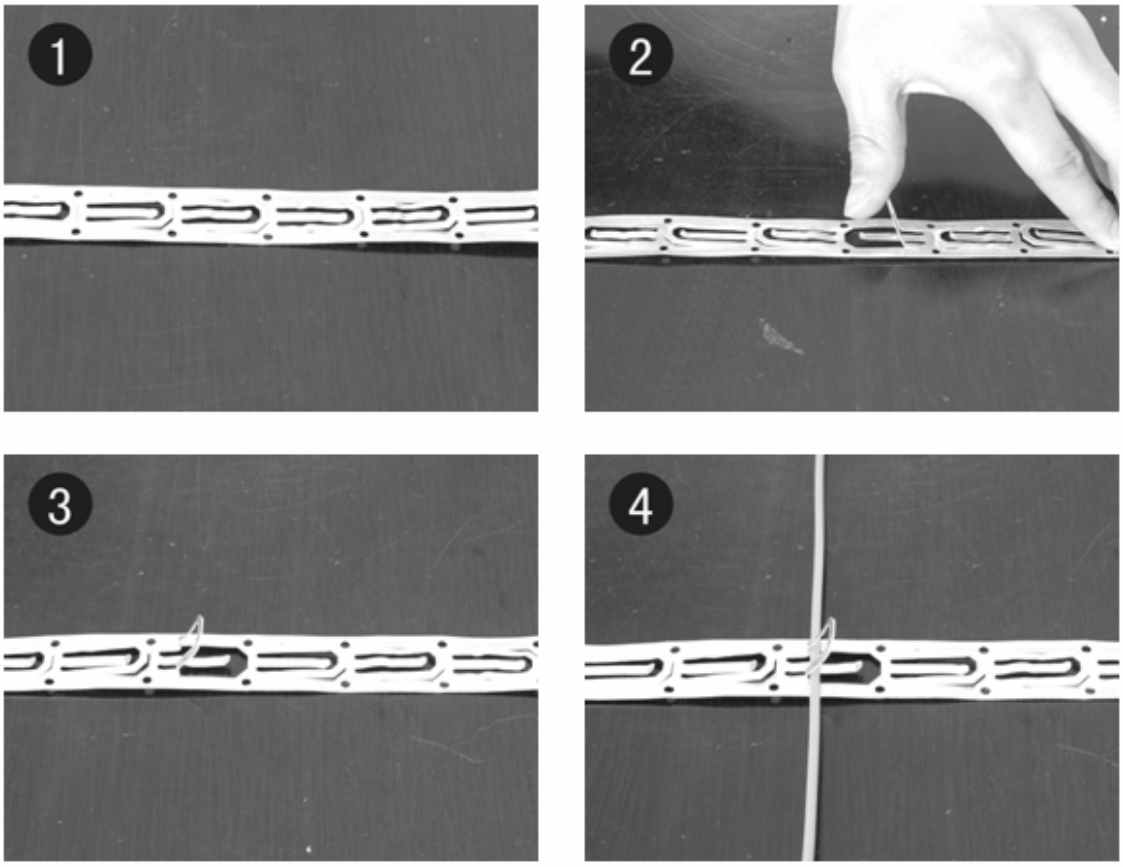


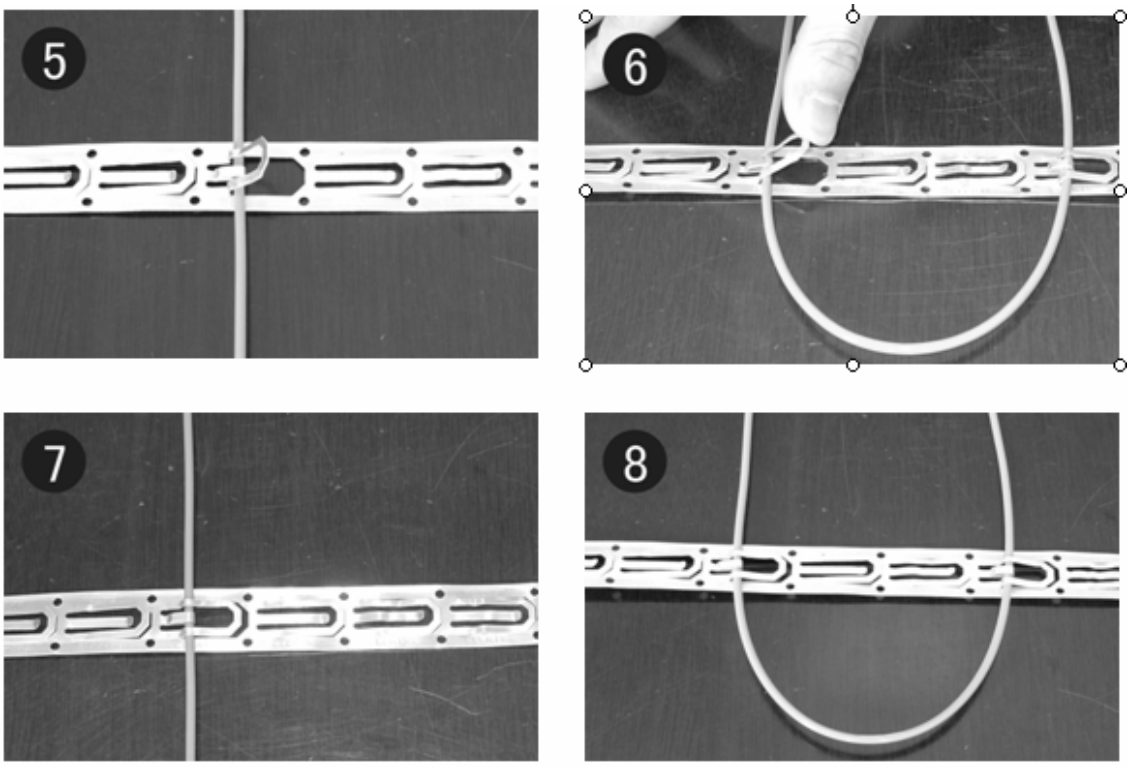
5. Using hot glue, secure the factory splice and the subsequent portion of the cold lead (which runs to the opening in the wall) in the subfloor groove.

6. If using HeatTech™ cable guides, install them as noted in the layout plan. Secure using ½" screws, nails or other type of fasteners approved for use with the given subfloor.

7. Start installing the cable according to the layout plan. See illustrations below for proper use of HeatTech™ cable guides. Maintain moderate tension of cable throughout the installation. Do not twist it. Minimum bending radius of the cable is 1". Avoid walking over the cable - if needed, wear only shoes with soft soles or cover cable with plywood or cardboard.

8. Perform 2nd insulation and resistance tests on the HTCBL cable. Refer to "Measuring Resistance" part of this manual.





6.5. Floor Sensor Installation

The use of floor sensor is highly recommended (required for floor sensing thermostats offered) and will allow for faster system response and more precise temperature control.

If using the floor sensor, it can either be installed directly on the subfloor, or in a 3/8" copper conduit tubing. If using conduit, create a 3/8" wide by 3/8" deep groove in the subfloor using a chisel and a hammer or a grooving tool. To secure sensor/conduit to the subfloor, use duct tape, hot glue or strips of HeatTech™ cable guides. DO NOT use metal staples to secure the floor sensor.

If installing laminate or engineered wood flooring, the sensor must be positioned between underlay and laminate/engineered wood flooring. Installation of the secondary (backup) floor sensor is also recommended in the unlikely event of failure of the original sensor. NOTE: only one sensor can be connected to the thermostat at any given time.

6.6. Positioning the floor sensor:

To ensure that sensor lead wires are of sufficient length, the sensor should be located in close proximity to the thermostat. Sensor must be installed in a manner that will not subject it to other sources of heat or cold (heating vents, sunlight, external walls, draft air etc.)

The sensor must be positioned in the middle of two runs of heating cable and extended at least 6-12" into the heated flooring area (12-16" if near exterior wall). See Fig. 2 for

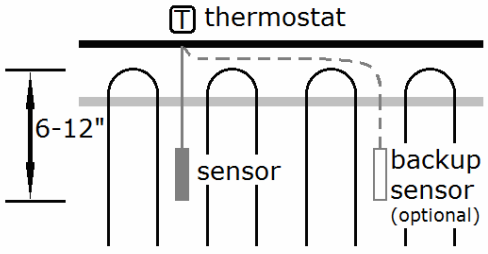


Figure 2

details.

Note that sensor should not touch or overlap with HTCBL cable.

6.7. Installing the floor sensor:



First, check the resistance of the sensor. If readings differ from the factory-specified values, halt the installation and contact Technical Support for assistance. Create a 5/16" by 5/16" cavity in the wall and floor (if using conduit) to route the sensor vertically to the thermostat. Secure the sensor to the floor as described above and attach the sensor or conduit with such to the stud with approved fasteners, if needed. Make sure to leave extra wiring to allow for easy connection of sensor leads to the thermostat.

NOTE: DO NOT install the sensor in the same conduit as the HTCBL lead wires.

7. Floor Installation

7.1. Special Considerations:

1. If Crack Isolation Membrane is used in the project, it must be installed below the HeatTech™ heating cable, unless directed otherwise by the membrane manufacturer.

2. Use of insulation in subfloor installations is highly recommended to increase the efficiency of the radiant heating system and reduce heat loss. Wherever possible, install the insulation between the joists, following the manufacturer's instructions. NOTE: do not install any type of rigid insulation directly above or below the cement board.

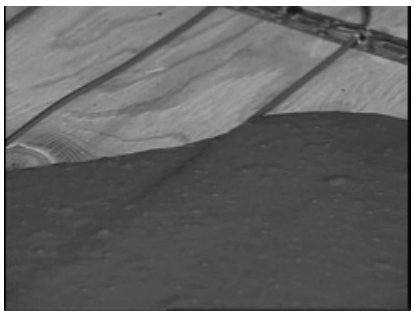
3. Consult with flooring manufacturer for information on special installation requirements for wood, laminate and vinyl or linoleum flooring.

4. Minimal installation temperature is 40ºF.

5. Plastic trowels are considered the safest for working with HeatTech™ cable, as they minimize the chance of damage to the cable during installation. A typical 3/8" x 3/8" notch plastic trowel works best. When spreading cement over the cables, make sure to follow the direction of cable runs.

Consult with building professionals to choose the optimal installation method for your system.

Important: in order for the heating system to function properly, all flooring must be in direct contact with cement-based material in which the cable is installed.



7.2. Self-Leveling Method (Recommended for All Flooring Types)

This method is recommended for all types of flooring and especially for larger projects and projects involving the installation of engineered wood, laminate, floating floors, vinyl, linoleum and carpet.

1. Install the HeatTech system.
2. Follow the manufacturer's instructions to prepare, pour and

spread the self-leveling cement. The cable must be fully covered.

3. Perform 3rd resistance and insulation testing as described in "Measuring Resistance" part of this manual.
4. Allow for the cement to cure as advised by the manufacturer.
5. Conduct 4th and final resistance and insulation testing.
6. Install the finished floor following the manufacturer's instructions.

7.3. Thinset Mortar Method

This method is best used for tile, stone and similar floor covering materials.

1. Install the HeatTech system.
2. Follow the manufacturer's instructions to prepare, and spread the thinset. Acrylic or latex modified thin-set are best for this installation type. The cable must be fully covered.
3. Perform 3rd resistance and insulation testing as described in "Measuring Resistance" part of this manual.
4. Allow for the cement to cure as advised by the manufacturer.
5. Conduct 4th and final resistance and insulation testing.
6. Install the tile, stone or other flooring following the manufacturer's instructions.

Alternatively, after installing HTCBL cable on top of plywood, cement board or concrete slab, a layer of thinset mortar can be applied over the heating cable followed by immediate installation of the tile/stone, etc. This method, however, is considered to be difficult and is suitable only for experienced installers. Similar to other methods described above, resistance testing must be done after the installations of finished flooring and prior to making electrical connections.

Important: Regardless of the installation method selected, the cement/mortar/grout must be completely cured prior to making electrical connections and running the radiant floor heating system. Minimum drying time is 1 week.

8. Electrical Connections

⚠ **WARNING: Power supply to the electrical box with thermostat must be turned off prior to making any electrical connections.**

All electrical work must be done by a qualified and licensed electrician in accordance with all applicable national and local building and electrical codes, including National Electrical Code (NEC). Only UL/ETL Listed and CSA certified components should be used for the installation.

1. Follow the instructions that come with the thermostat to install it and connect power supply, grounding wire(s), cold lead(s) and sensor. If using multiple runs of HTCBL cable, they must be connected in parallel (black-to-black, white-to-white, ground-to-ground). The total combined current load must not exceed 15.0 Amps per thermostat. Minimum copper wire AWG for power supply is 14AWG.
2. Do not remove the label from the HTCBL cable, as it may be required for inspection. Alternatively, retain the label along with resistance measurements and other system's product manuals.
3. Mark the appropriate circuit breaker that supplies power to HeatTech™ electric radiant floor heating system.
4. After all the electrical work is complete, power up and test the system.

9. Troubleshooting

Issue	Possible Causes	Solutions
No heat from floor	No power.	Check circuit breaker.
	Circuit breaker tripped.	Ensure that there are not too many cables or other appliances connected on the same circuit. The HTCBL requires a dedicated circuit. See the Product Selection "Table 1 or Table 2" of this manual for product specifications.
	Ground-fault tripped in the thermostat.	Refer to Thermostat Installation and Operation Manual.
	Thermostat not turned on.	Refer to Thermostat Installation and Operation Manual.
	Cable not connected to thermostat.	Refer to Thermostat Installation and Operation Manual.
	Floor temperature sensor not connected.	Refer to Thermostat Installation and Operation Manual.
	Faulty sensor.	Use backup sensor instead (if installed) or replace existing floor sensor.
Floor is warm all the time.	Thermostat is not properly programmed.	Refer to Thermostat Installation and Operation Manual.
Floor is not warm enough.	Thermostat is not properly programmed.	Refer to Thermostat Installation and Operation Manual.
Installation instructions are not available.		Download the latest version of HTMAT System Installation Instructions from www.HeatTechProducts.com or call 1-800-470-5685

25 Year Limited Warranty

For a period of (25) years from the date of purchase and subject to the conditions, limitations and exclusions in this warranty, Havaco Corporation ("Manufacturer") warrants that its HeatTech HTMAT heating mats and HTCBL heating cable ("Product" or "Products") will be free from defects in material, design and workmanship. Manufacturer reserves the right to make changes to the Products design and pricing, as well discontinue them without obligation to replace or upgrade any existing Products with new ones.

In order for the warranty to apply, Products must be installed by a licensed, qualified professional(s), in accordance with the latest version of Manufacturer's Installation Guidelines, in accordance with all applicable local and national electric and building codes and only for the purposes designated by the Manufacturer. This Warranty shall apply only to Products that have been properly stored, handled, installed and tested for defects before, during and after installation.

Manufacturer does not warrant:

- Any products other than HTCBL and HTMAT, such as thermostats, sensors, circuit breakers, etc.
- Product failures caused by other malfunctioning or defective products from other manufacturers.
- Products damaged during installation, including, but not limited to cuts, kinks, scratches, etc.
- System or Product failures associated with defective flooring, subflooring or other building materials in the system.
- Damage to Products from using inappropriate, incompatible or worn out tools.
- Damaged from exposure to corrosive or otherwise incompatible chemicals.
- Products installed in buildings containing structural defect or instability.
- Damages from a disaster, such as fire, wind, lightning, flooding, etc.

All reports of Product failure must be accompanied by proof of purchase, original resistance measurement records and believed reason for failure. Such reports must be submitted to manufacturer along with the defective Product, at owners' expense. Upon receipt of the Product(s), within reasonable time period, Manufacturer will conduct product testing and inspection. If the conditions of this Warranty are met and the Product is proven to be defective, Manufacturer will provide a replacement Product free of charge. Other allowances, including, but not limited to freight, Product repair, Product replacement or refund of Products purchase price are exclusively at the option of Manufacturer and are not covered by this warranty.
MANUFACTURER DOES NOT WARRANT THE FINISHED FLOOR COVERING, ITS' COST AND THE COSTS ASSOCIATED WITH REMOVING AND REPLACING IT.

IN ORDERFOR THE WARRANTY TO APPLY, ALL ELECTRICAL CONNECTIONS AND SYSTEM GROUNDING MUST BE MADE BY A LICENSED ELECTRICIAN.

MANUFACTURER WARRANTS THAT THE HEAT OUTPUT (IN WATTS) OF ITS PRODUCTS IS AS STATED ON PRODUCT LABELING, OR IN THE ABSENCE OF SUCH, IN INSTALLATION MANUAL. MANUFACTURER DISCLAIMS ALL WARRANTIES AS TO THE TEMPERATURE LEVEL THAT THE PRODUCT, OR THE SYSTEM IN WHICH IT IS INSTALLED, MAY PRODUCE.

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