WARMZONE TILE HEATING

INSTALLATION INSTRUCTIONS

Tools required (Customer Supplied)

Only a few common hand tools are required to install your Comfort Touch system. These tools are available at most local hardware stores or home improvement centers.

- Metal scissors or "snips" for cutting the plastic gauge
- Measuring tape 30'
- T50 staple gun (or equivalent) and ⅜" staples (when installing system on plywood sub-floors
- Hot melt glue gun and glue sticks (when installing system on concrete floors)
- Pull string (incase the drywall in hung before the cable is installed and wired)

Materials included as part of the System

Every system comes with the following heating system components and mounting hardware:

- Tile Heating Cable (as required)
- Plastic Gauge (as required)
- FWT–3 Floorstat and temperature sensor (with 25' of sensor extension wire)
- Relay Module (120, or 240 VAC as required)

Sub Flooring Surface Preparation

The Warmzone Tile Heating system can be installed on plywood, concrete, existing tiles, prestressed concrete panel, crack isolation membrane or any floor surface compatible with the adhesives.

The floor surface should be flat, smooth, free of protruding nail or screw heads or other objects that may damage the cable. Follow the adhesive manufacturer's directions for any other necessary preparations to the floor surface.

IMPORTANT!!!

The cable should be installed at a minimum distance of:

- **½" to 1" from the underside of a counter, fixed furniture, steps, patio doors, baths or shower;**
- **3" from any walls;**
- **8 - 10" from toilet faucets;**
- **8" from any other heating system on the floor or screwed to the wall (this does not apply to a convection type of heating appliance).**

The cable CANNOT be overlapped, crossed, CUT, SHORTENED, modified, nor can the spacing between the cables be altered other than that determined by the gauge. The gauges are the only approved anchoring device. The system should not be installed under fixed furniture or where air does not flow freely.

Cable Installation

The seal on the cable guarantees the integrity of the cable. Before removing the cable from the box test the cable being careful not to break the seal. An ohm test **should** be done and the result compared to the cable resistance as marked at the factory. The ohm reading should be withing 5% of the resistance marked on the tag on the cable. This will ensure that the cable was not defective from the factory. If the ohm reading is outside of 5% resistance contact Customer Service for Return Authorization.

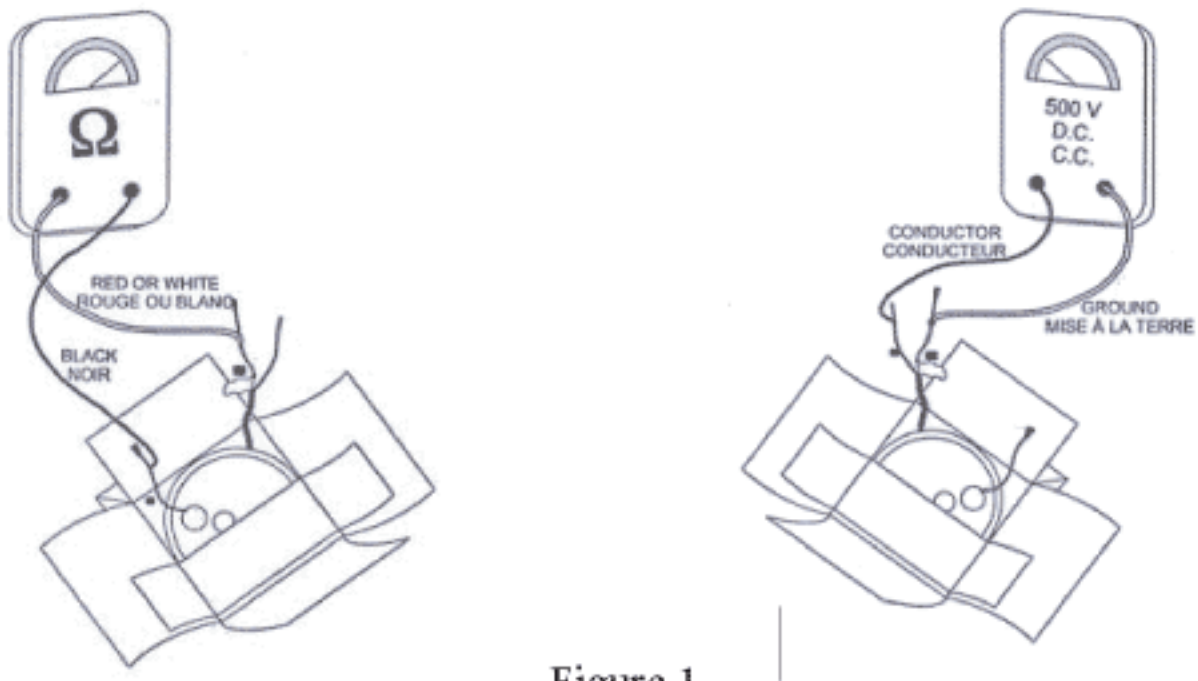


Figure 1

NOTE: THE SEAL WARRANT THE CABLE'S INTEGRITY. NO RETURN WILL BE ACCEPTED IF THE SEAL IS BROKEN, SO PLEASE READ INSTRUCTIONS BEFORE BREAKING THE SEAL.

Determine where the connection box will be installed. It should be in an accessible location such as in the same room, an adjacent room linked through the wall, or in the room below via the floor. At the end of each cable is approximately 7 feet of cold lead. The cold leads do NOT heat and run from the floor into the wall and terminate at the relay module. The cold leads are noticeably larger than the heating cable and there will be a flag to indicate where the cold leads and heater cable are spliced. The National Electrical Code (NEC) requires that cold leads be placed with in conduit from the floor to the 4 square box. The cold leads may be cut to length. Figure 2 shows routing of the leads into the line voltage outlet box; pass the leads under a kickplate when routing the cable at the bottom lath of the wall.

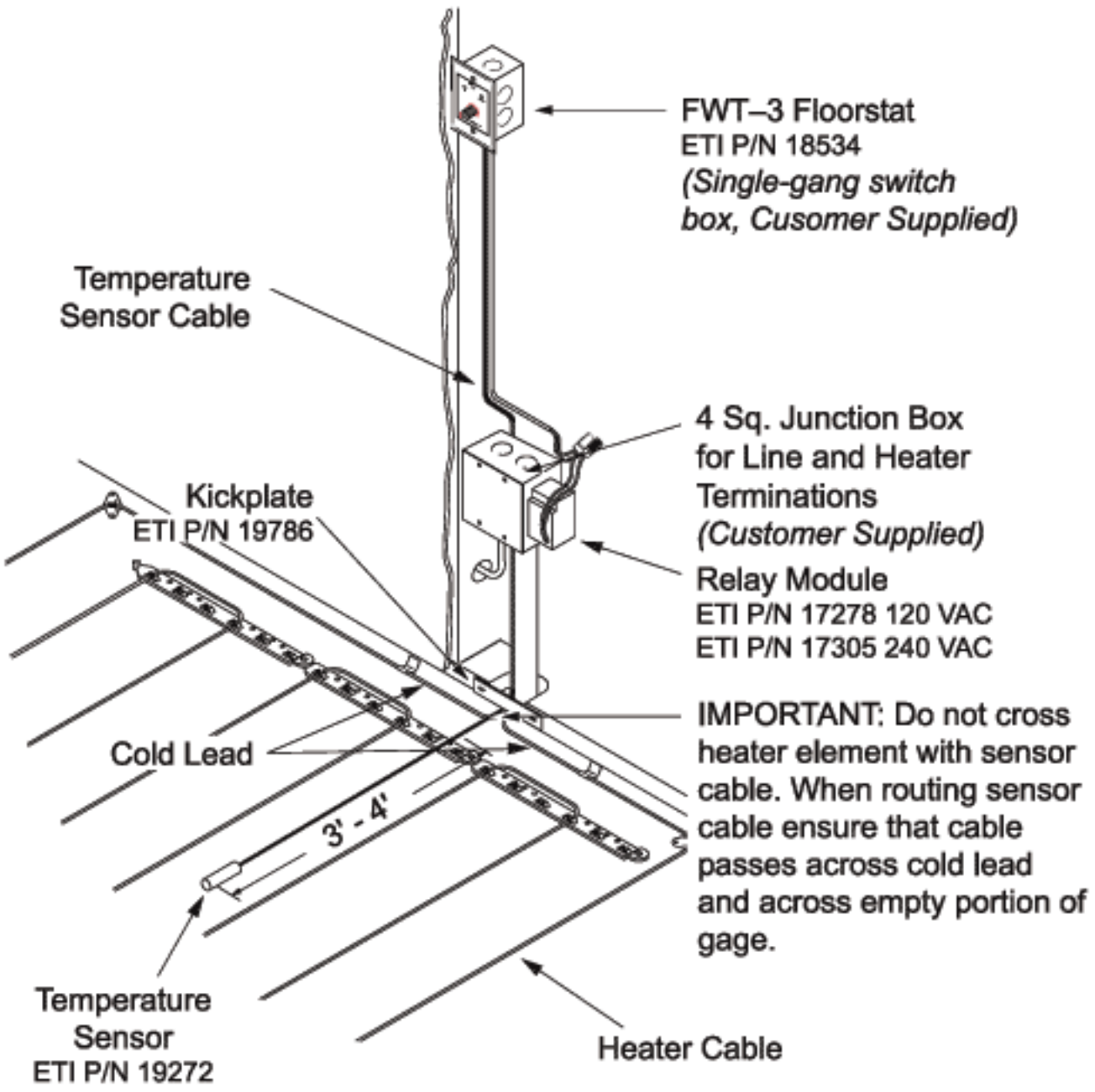
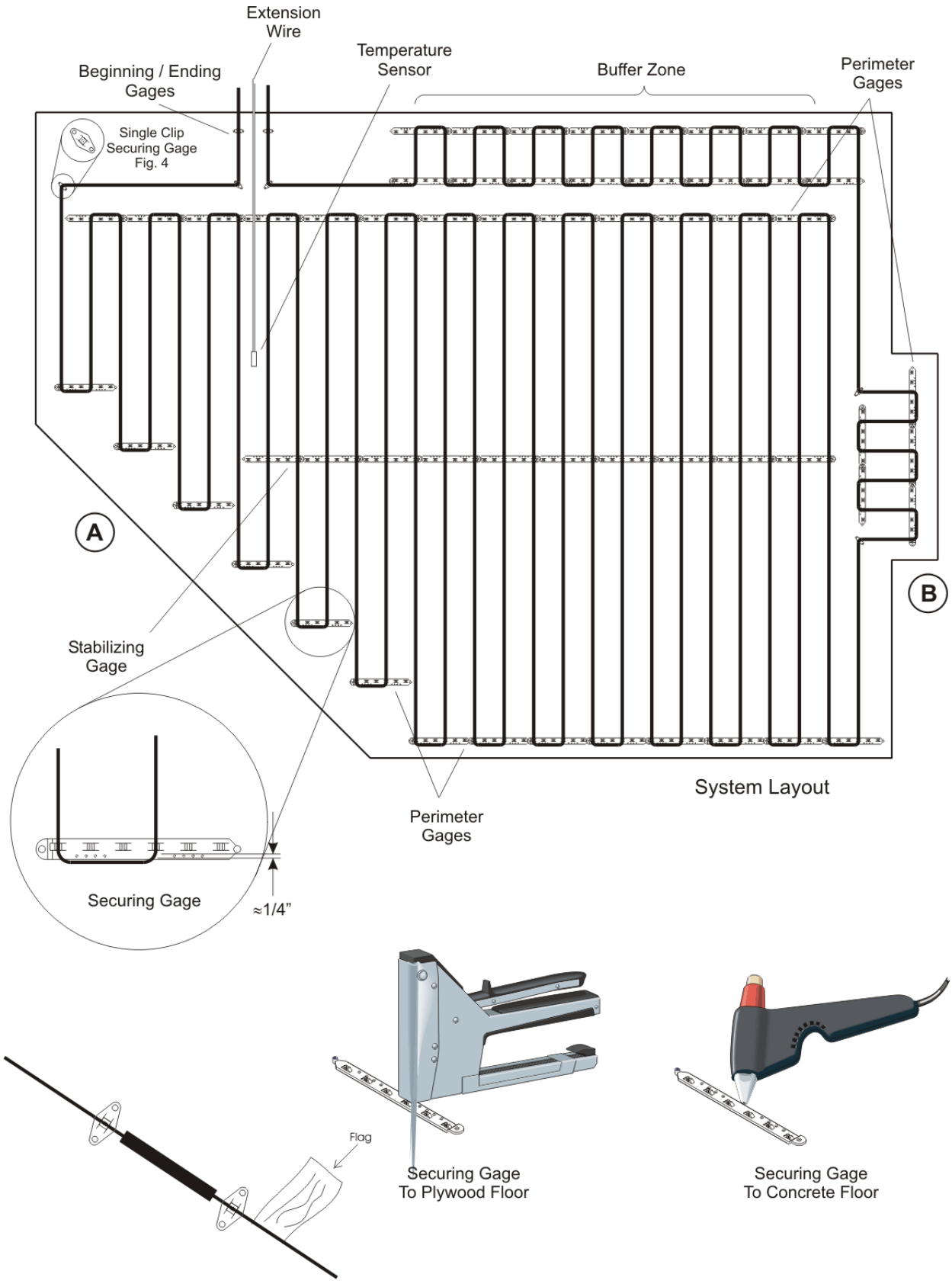


Figure 2

Using a chalk line, layout heater and gauge installation on the floor. To attach the plastic gauges on a plywood surface use a T50 staple gun (or equivalent) and ⅜" staples (Fig. 4). If you do not have a stapler, use a hot glue gun and sticks. For concrete floors, use a hot glue gun and glue sticks. Inject the glue through the holes of the gauge and attach it to the floor taking care not to get glue in cable hold downs (Fig. 5). Secure the heater cable cold lead splice, identified by a white flag, to the floor using the gauges (Fig. 3). Install the gauges as work progresses and apply a slight tension to the cable to ensure that the cable is always parallel (Fig.6).


Extension Wire
Temperature Sensor
Beginning / Ending Gages
Buffer Zone
Perimeter Gages
Single Clip Securing Gage Fig. 4
A
B
Stabilizing Gage
Perimeter Gages
System Layout
Securing Gage
≈1/4”
Flag
Securing Gage To Plywood Floor
Securing Gage To Concrete Floor

Figures 3 - 6

When installing the cable, allow sufficient space for the cable return, that is, the cable must start and end at the connection box (Fig. 6). If multiple cables are required for the installation, each run of cable should be carefully planned to ensure that the spacing between the cables is always respected.

To get around obstacles such as diagonal walls, fixed furniture etc., install the gauges in such a way that they follow the shape of the obstacle (see Fig 6A). In this way the gauges always remain parallel to each other. When there is insufficient space for the return of the cable (ex: a doorway) change the direction of the cable (Fig 6B). Divide the room in smaller sections should your room exceed 10 feet (3 meters) in length.

The cables should be secured at regular 3 to 4 foot (one meter) intervals. Insert the plastic gauges under the cables and slide the cables into notches. Once the installation is completed, attach the cables in the connection box (customer supplied.) Join the two leads, at the plastic joint level, with electrical tape and insert them in the connection box through the bottom hole. The braided shields should be secured directly to the ground terminal (Fig 7).

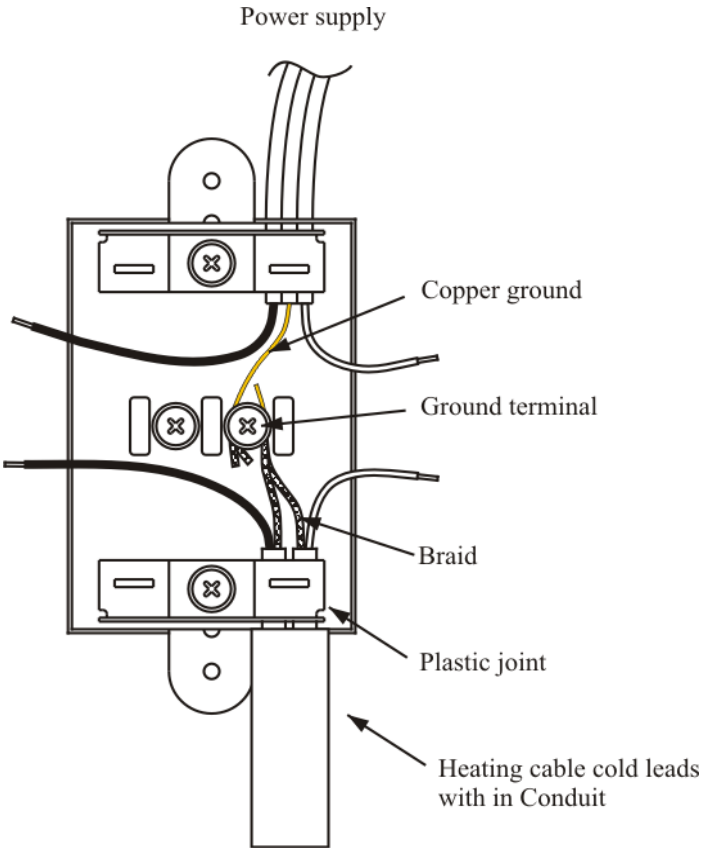


Figure 7

Proceed to the electrical connection as described in the " Wiring Diagram" included in the electronic Floorstat kit. The National Electrical Code (NEC) articles 210 and 424 (as well as many local electrical codes) requires a Ground Fault Equipment Protector (GFEP) be used on the branch supply circuit for shock safety and fire protection. A GFEP is not included with a Comfort Touch system and must be purchased separately. Consult the appropriate electrical code for your area.

A typical installation of the Warmzone Tile Heating system in a bathroom is show in Fig. 10. Note that the cable direction can be changed, during the installation to insure the maximum coverage area possible. Ensure that buffer zones are easily accessible to accommodate any excess cable.

★★When you get close to the end of the spool, unwind and install the connecting cable (end of the cable as shown in figure 2). Continue the installation of the cable from the opposite end (connection box to the buffer zone) in order to use all of the excess cable.

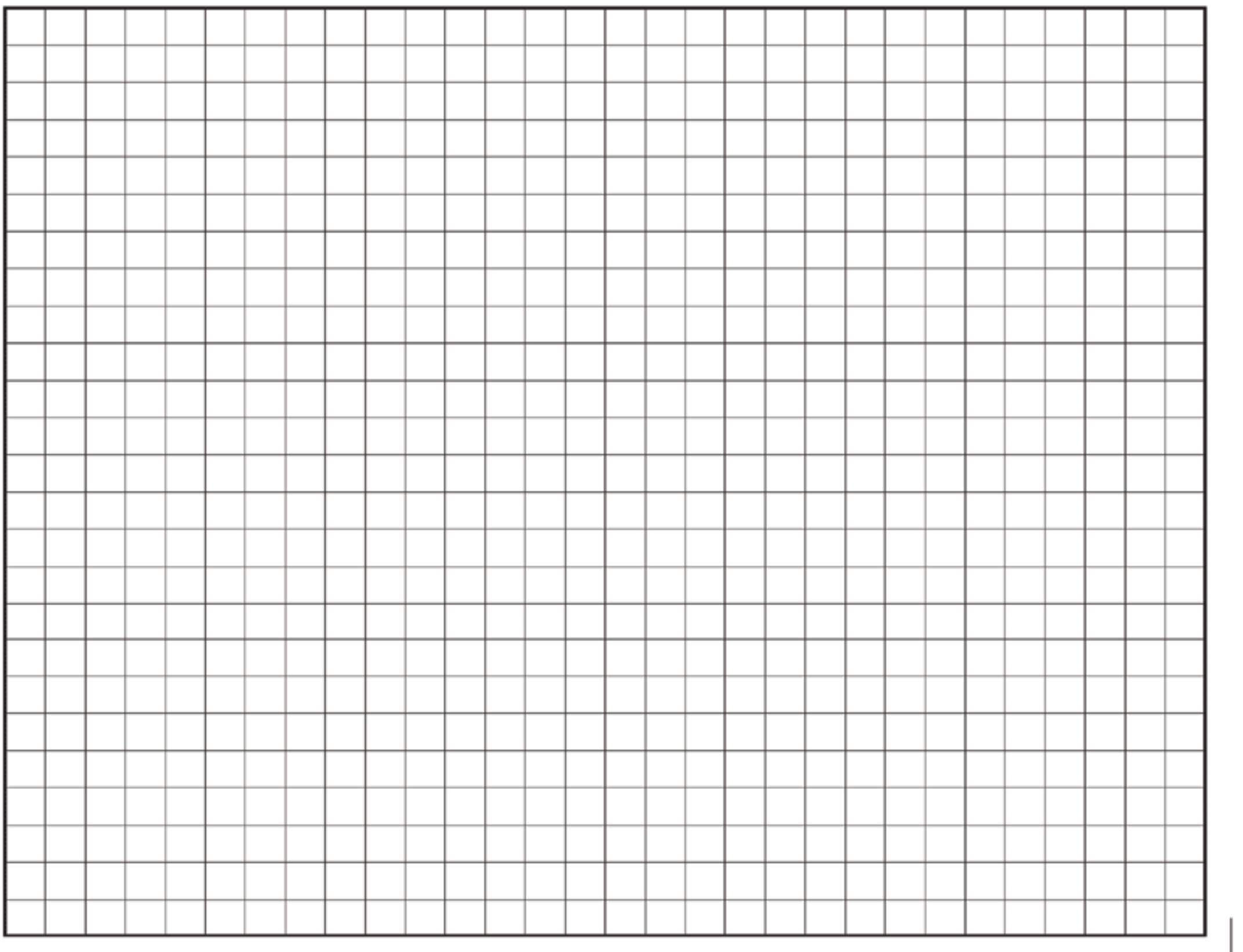
The heating cable is to be tested for electrical resistance after looping it in the plastic gauge, but PRIOR to connecting it to line voltage and installing the floor covering. To conduct the test, first connect both of the cold lead wires to an ohmmeter. The ohmmeter reading should match the resistance printed on the tag that was attached to the heating cable.

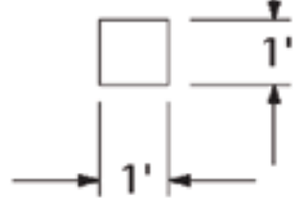
Install the probe wire with the sensing bulb between the heating cables at a distance of 3 to 4 feet (30 to 60 cm) out onto the floor. **DO NOT** cross the probe wire over the heating cable. The probe should be placed in a neutral location, not near any other heating or cooling sources (Fig 2.)

Once the installation is complete, a megger test should be done on the cable using a meg-ohm meter. When the cable is meggered, the reading should be at least 2 Megohms. The megger is testing the integrity of the cable's insulation between the bus wire and the shield (grounding wire). To correctly megger the cable, the Torotron Corp. high pot tester, model # THP05AD (or equivalent) should be used. Please follow the manufactures instructions for using the megger. If this equipment is not available, connect the heating cable to the GFEP and try the cable for enough time to get the cable above room temperature before installing the floor covering.

▲If the cable is left on longer than 20 seconds, it will be uncomfortably hot!!

NOTE: The Canadian electrical code, part one, section 62.226-1, specifies that the system has to be protected by a class "A" GFEP . For systems connected to a 120 volts tension line it can be connected to a local circuit breaker in the connection box. As for 240 volts systems, the GFEP must be installed on the main load center.





Determining the area to be heated

1) Draw to scale the room to be heated. Calculate the total surface area.
   Calculate the area occupied by permanent fixtures such as counters, baths, commodes, etc.
2) Subtract from the total surface area.
3) The resultant square footage will be the heating area of the floor. Choose a cable of the next size shorter than the heating area calculated to allow for a buffer zone that will accommodate any excess cable, if necessary.

Floor Covering Laying Techniques

Once the cable has been installed and tested, proceed to the application of the adhesive and the laying of the floor covering. Follow the adhesive manufacturer's directions as well as the following instructions.

The heating floor system is compatible with most latex based cement adhesives such as MAPEI's KERABOND/DERALASTIC, GRANI/RAPID AND ULTRAFLOOR/KERAPLY or others of equivalent quality. The Comfort Touch heating floor system can also be covered with a self leveling cement, such as MAPEI"s ULTRA/PLAN (24 hour cure) or NOVO/PLAN (7 day cure) or other products of equivalent quality.

There are three installation methods; the direct method, the scratch coat method and the self leveling cement method.

1. **Direct Method (without scratch coat) (Fig. 8)**

Spread the adhesive on the floor in the same direction as the wire, using a trowel. The minimum indentation size of the Trowel must be ¼" X ⅜" X ¼" (6 mm X 10 mm X 6 mm). Lay the tile directly on the cable. This method can be used on smaller surfaces. After the floor has been installed over the cable, the cable should be tested again to make sure that it has not been damaged during floor covering installation.

2. **Scratch Coat Method (Fig. 9)**

This method involves glazing with the dry-set material that will also be used for the floor covering. A layer of dry-set is first spread over the cable, with a flat trowel, pulled at a 45° angle using very little pressure. There should be enough dry-set material to cover the cable and the splice. Once the dry-set material is set proceed with laying the tile as per the manufacturer's recommendations. In larger rooms, allow the protecting layer (scratch coat) to cure overnight. Do not cover gages with the scratch coat material. Fill in around the plastic gauge with cement when laying the tile. After the floor has been installed over the cable, the cable should be tested again to make sure that it has not been damaged during floor covering installation.

3. **Self Leveling Cement Method (Fig. 9) (Recommended)**

Ensure that the cable be well secured to the floor surface at 3 feet (one meter) intervals, for the cables have a tendency to float on the self leveling cement. When using self leveling cement on a concrete surface, you should anchor the plastic gauges at 1 to 2 feet (30 to 50 cm) intervals. Using a scraper, spread a thin layer of cement. Once the cement set proceed with laying the floor covering as per the manufacturer's recommendations. After the floor has been installed over the cable, the cable should be tested again to make sure that it has not been damaged during floor covering installation.

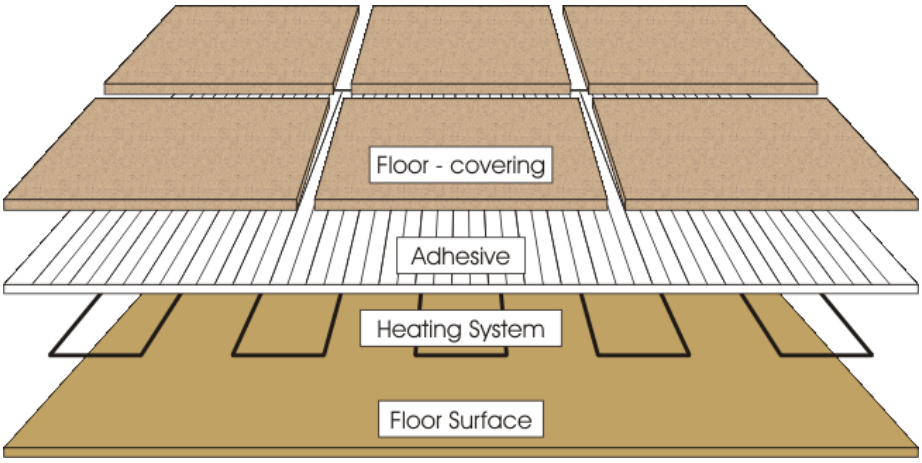


Figure 8

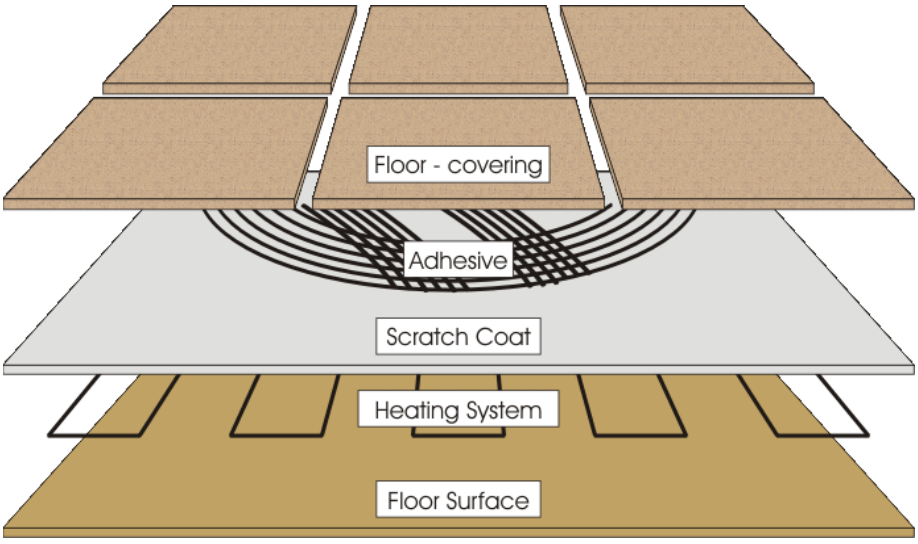


Figure 9

TIP: The cable should be protected when it is being installed in rooms requiring more than one day to install and tile. These are the following ways to protect the cable:

- Use a thin layer of tile adhesive or mud
- Use a soft material, like cardboard, to protect the cable. Do NOT use plywood.

NOTE: The stability of the floor covering may vary from one to the other. Adhesive manufacturers and the *Tile Council of America* (TCA) strongly recommends the use of expansion joints on the perimeter of the room and obstacles as well across the room (reference TCA article EJ-171.)

ALLOW A MINIMUM OF 72 HOURS WAITING PERIOD BEFORE STARTING YOUR SYSTEM. THIS TIME IS NECESSARY FOR THE ADHESIVE TO SET.

Should the floor covering need repair, proceed with caution. Scratch off the grout around the tile to be replaced, break the tile with a hammer and carefully scrape off the adhesive, without damaging the cable. Should the cable be damaged and/or the GFEP be set off, the system is out of service and should not be activated. Please contact ETI for help with troubleshooting instructions.

About the FWT–3 Floorstat

Designed specifically to operate with the relay module and the heating cable, the FWT–3 Floorstat provides round-the-clock monitor and control of the floor temperature. A "Digital Anticipation™" feature built into the FWT–3 improves temperature control and efficiency as time progresses. The Floorstat learns the characteristics of the heated space and automatically adjusts to optimize comfort and efficiency. Installation, connection, and operation of the FWT–3 is simple and straightforward. There are no line voltage connections made to the FWT–3, so no conduit is required in routing wires to it.

The FWT–3's power and temperature sensor connections are done with Class 2 low voltage wiring, which are quick and easy. A green indicator illuminates to show that system power is available. A yellow indicator illuminates when the system is heating. The knob adjusts the floor temperature; clockwise rotation of the knob increases the temperature. Full counter-clockwise rotation of the knob puts the system in "idle" mode, which prevents heating. This saves energy when unoccupied areas do not require heating. The green indicator will blink continuously when the idle mode has been selected.

FWT–3 Floorstat Location

FWT–3 Floorstat provides control of the heating system, and mounts inside a single-gang outlet box. Once mounted inside the outlet box, the FWT–3's faceplate sits flush with a room wall. Choose a mounting location, preferable, directly above the outlet box containing the line voltage wiring. If mounting as above is not practical, select a location so that low voltage wiring can be conveniently made between the FWT–3 and the relay module. The Floorstat can be located in a closet, cabinet or even under the floor if there is direct access. To wire the Floorstat and relay together, take both cold leads and hook them up to the red and white wires of the relay. The Floorstat should be hooked up to red and white (low voltage) wires on the relay.

Temperature Sensor Wire Connection

The sensor wire has 25 ft. of extension wire that wires directly into the back of the FWT–3 Floorstat. At this point, FWT–3 Floorstat should be located in the single gang box. The temperature sensor should exit from beneath the drywall onto the sub-floor. This is to help eliminate problems in installing the temperature sensor cable from behind the drywall to the sub-floor later on. The temperature sensor is not to be attached to the sub-floor until the cable has been laid out. Sensor cable can be cut to length.

Guarantee

The heating cable bears a 25 year limited warranty against all manufacturer's defects from the date of purchase. The system should be installed in accordance to generally accepted standards as well as all written documentation of the manufacturer. The warranty exclusively covers the repair or the replacement of the cable. Labor or other materials are not included.

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