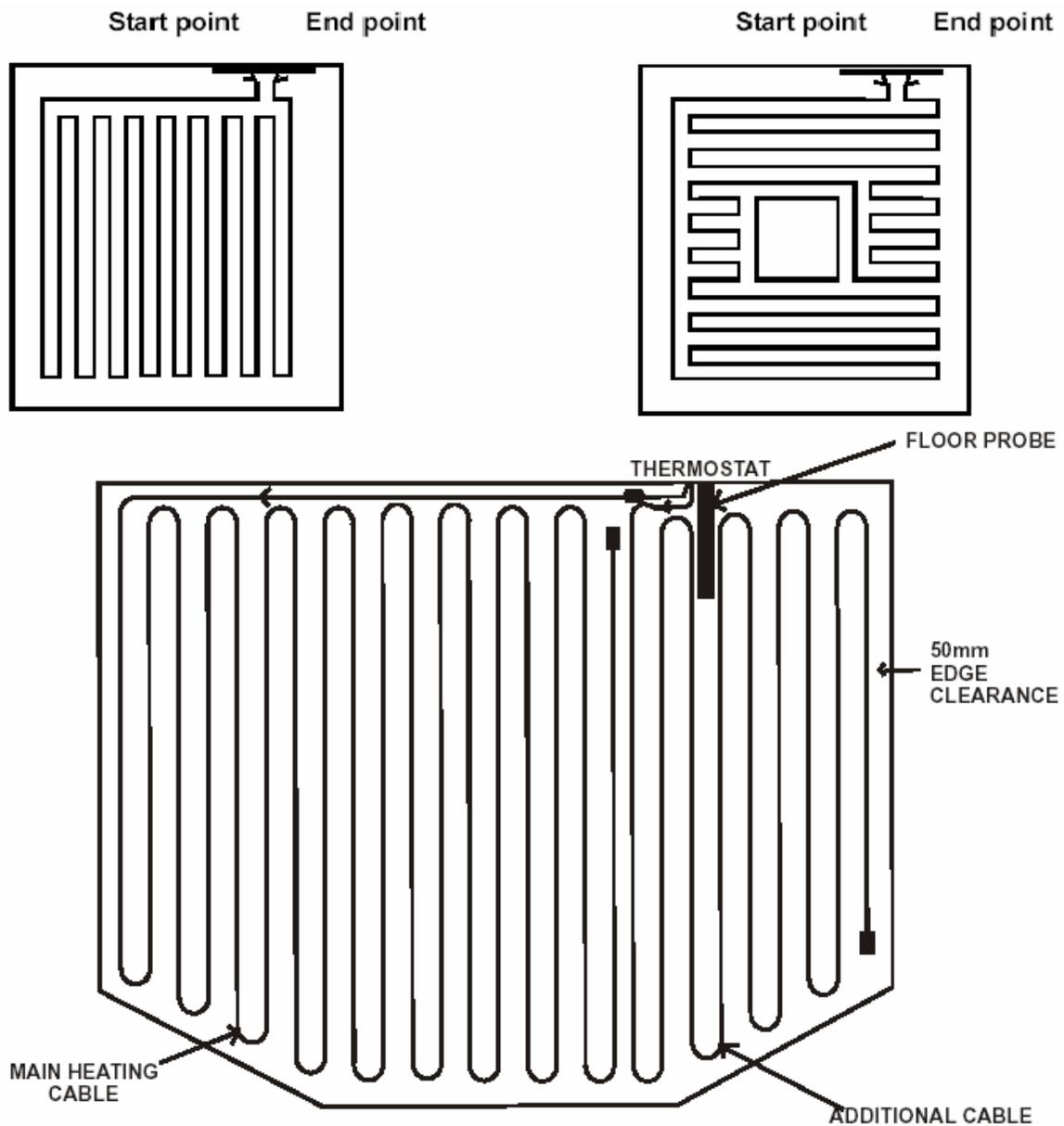


CONFIGURATION NOTES

While the installation procedure for the heating elements is usually to a set configuration, it may be necessary to depart from this in some instances. Illustrated below, are some alternative layouts.

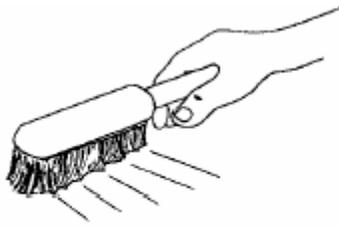


As shown in the examples above, the heating cables are configured to suit the particular layout of the room. **Note: If twin conductor cables are used, no return is required as there is only one cold tail.**

1: FLOOR PREPARATION

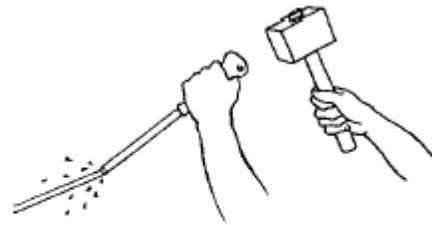
If the floor has been prepared for tiling, it will also usually be suitable for the application of under tile heating.

Where a solid concrete floor is concerned, it is essential this be properly cured according to building specifications prior to heating installation.



Smooth, clean & dry floor required

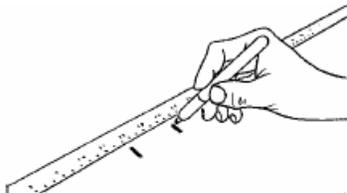
Start with a smooth clean dust free floor.



Chisel out channels for power supply cables

To achieve a level surface, chisel or "chase" short channels in the sub floor at the "starting and ending points" (steps 4+5) This reduces the height created by the red and black cold tails where they are joined to the thinner heating cable. The start and end points of the heating cable need to be 50mm apart, (min) 100mm (max). See spacing calculation page 10. **Note: Heating cables must never cross over.**

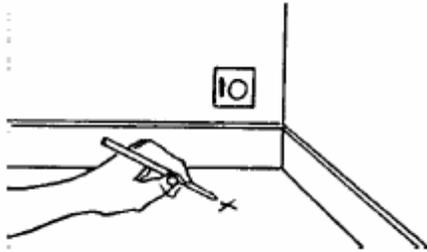
2+3: MARKING CABLE POSITIONS



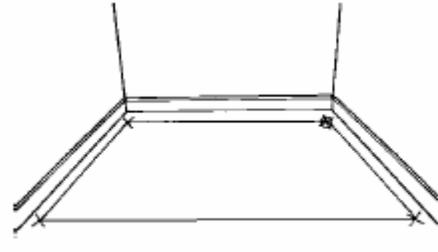
Measure up

Measure actual area to be heated in square meters then, using the spacing calculation formulae on page 10, establish the actual spacing of the cables in millimeters.

With a fiber tipped pen mark your starting point within 1.5m of the power supply (no further). Then mark the outer corners for the area to be heated maintaining the perimeter distance. Then join these up.



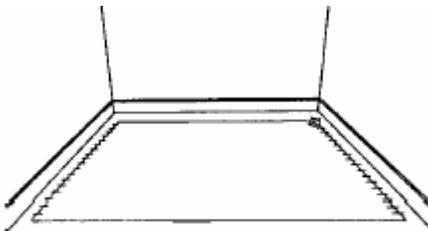
Mark start point



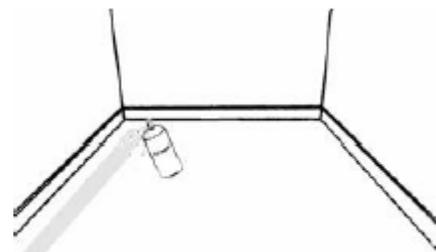
Mark corners and perimeter

Next mark the spacing intervals for the cables (calculated page 10).

Note: we recommend calculated cable spacing average, be no less than 50mm or more than 100mm.

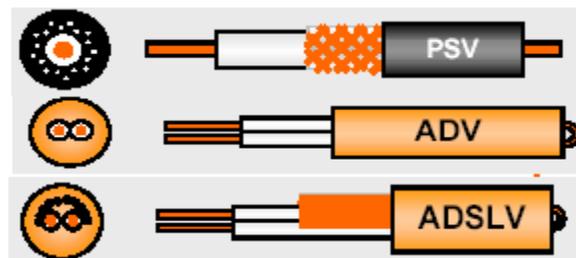


Mark spacing intervals

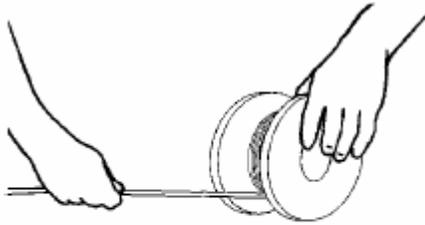


Spray adhesive

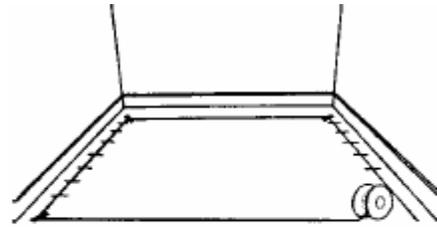
Prime the floor with contact adhesive spray along the floor where the cable loops back and any areas where the cable will need to be taped to keep it in place. The spray, primes the concrete ready for the tape. Only prime the floor in the areas to be taped. Curing takes approx 10 minutes.



4+5: SECURING CABLES WITH FIXING TAPE

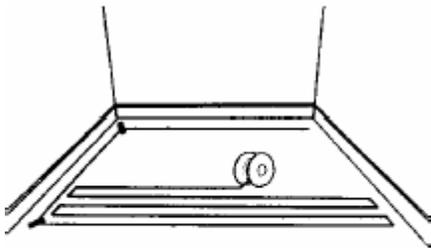


*Unroll power supply
cable from spool*

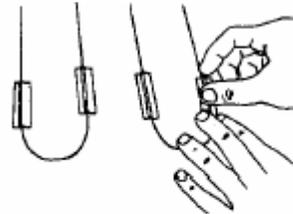


*Lay wire out around
perimeter from start point*

Unroll the 2.5-meter long cold tail to the point where it joins the heating cable. Tape the join to the floor at the start point mark. Follow the perimeter markings on the floor, stretch out the cable, taping down at each corner. The cable should run from the starting point in a U shape to the furthest corner from the start point.



*Lay out heater in parallel
lines*



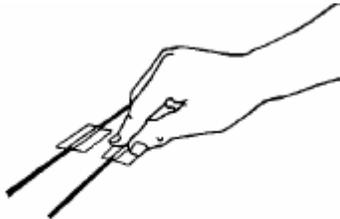
*Space and secure wire with
tape*

Once the cable is laid around the perimeter, commence laying cable in parallel lines back and forth across the main body of heated area.

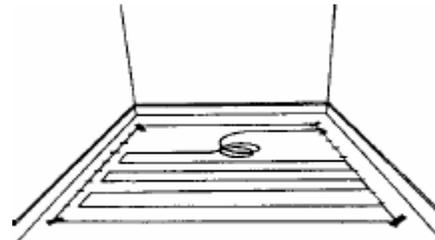
The cable is taped down over the spacing marks on the floor (over previously sprayed areas). Tape lengths of approx. 25mm are sufficient.

A marker midway along the cable spool indicates you have used half of the element. Check floor coverage to gauge your end result.

When approx. 90% of cable is laid, gently unroll the remainder including the second cold tail. At the join where the cold tail is attached to the heating cable, tape this join in place at least 50mm away from the position of the starting point join that was taped down previously.



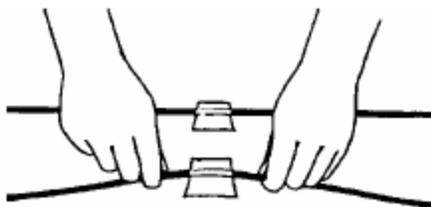
Tape down end point join parallel with start point



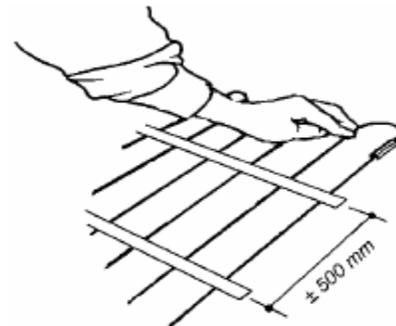
Lay out balance of wire

The remaining coil of unsecured cable should be laid out in reverse order – starting from the end point and working backwards to where cable was last taped down.

To achieve even coverage of the balance of heated area, it may be necessary to adjust some of the cable spacing that was previously secured. Relocating the runs slightly wider or closer together can do this.



Adjust wire spacing if necessary



Secure the wire with tape

You may wish to alter the layout due to irregularities created by toilets. This is quite acceptable providing:

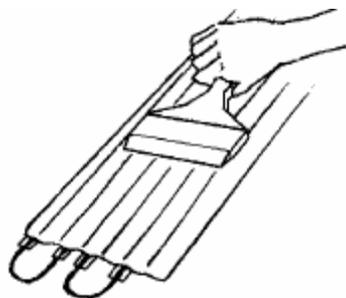
- 1. A minimum space of 50mm is maintained.**
- 2. Heating cables are never crossed over.**
- 3. Heating cables are kept 50mm away from walls.**

Once laying the heat cable is complete the cold tails (power feeders) need to be carefully pulled up a conduit or wall cavity by a draw wire.

The floor probe (temperature sensor) needs to be located exactly midway between 2 heating cable runs running out at least 300mm towards centre of the floor still ensuring that the probe lead (4 meters in length) can reach the controller position up the wall.

6: SECURING CABLES WITH ADHESIVE

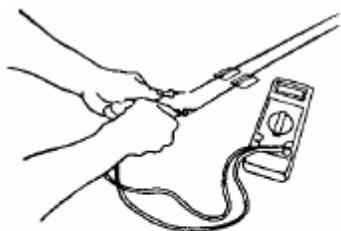
Fit the cold tails into the chases in the floor and secure with tape. Pour adhesive at the ends of the cable runs and use a squeegee to drag the adhesive along the cables and allow bonding to “settle” around the cables themselves. Allow 24 hours before laying any tiles.



Some tile installers may prefer to apply a self-leveling screed to further protect the cables before tiling. CBS Heating recommends using cardboard to kneel on while tiling, eliminating the need for applying a self-leveling screed. It's your choice.

7: CONNECTING THERMOSTAT AND TESTING

Your CBS Safe-t-WIRE under tile heating cable has been tested prior to supply.



*Check resistance using multi-meter as well as **Insulation test***

Use a multi-meter to check cable resistances before, during and after cable installation. A resistance test certificate is supplied with each cable so this can be compared. Insulation integrity check will require 500 volts minimum. Now is the time to do this.

Continuity alarms are available for hire from CBS Radiant Heating. Mob. 0400 709 000.

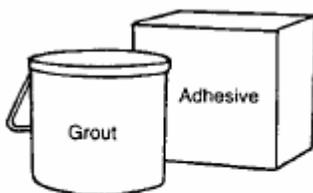
After installation of cable, tiles and control device are finished; all sub-circuits and connections must comply with current electrical codes and practices.

Important: Your CBS Safe-t-WIRE cable kit installation can be performed by others; however, a certified electrician must perform all electrical connections. Connect the Red and Black cold tails per control wiring diagram, the outer; single copper wires go to earth.

Sub circuits must be protected via RCD (residual current device) and a means of all pole disconnection from supply.

Where digital controllers or timers are being utilized, electrician should refer to the wiring instructions supplied with the device.

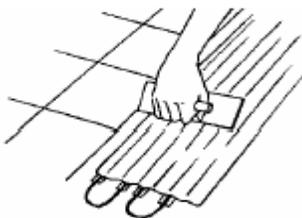
Once the cables and controller have been installed and the tile adhesive has cured, the system can be activated. Initial warm up time will vary depending on the type of floor (concrete or timber), time of the year and thermal characteristics of your sub-floor, possibly taking several hours for any noticeable result. This will improve with increased usage.



8: TILING

Only use tile adhesives and grouting that are suitable for use with under floor heating.

Use the correct grout or adhesive



Tile as usual

During tiling, gently comb the adhesive parallel to the cable runs. If possible, the use of a plastic trowel is recommended. Combing perpendicular to the cable should be avoided.

Use adhesive in sufficient quantities to prevent voids or hollows forming under the laid tiles.

Where tiles need realigning, avoid contact with heating cable to minimize possible damage.

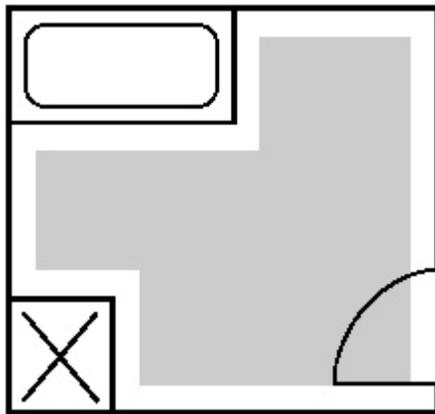
WARNING: Storing or cutting tiles on top of the cables are a recipe for disaster; also contamination with chippings or dust must be avoided during the tiling process.

Carpet or cardboard used as a kneeling board can prevent damage to cables. Prevention is better than cure. Test resistance periodically to ensure continuity. If a problem arises, don't continue. Contact CBS on Mob: 0400 709 000 or refer to "Cable repair procedure" in Tiler Instructions PDF.

Grout the floor ASAP per adhesive manufacturer's instructions.

Allow 7-10 days for tile adhesive to cure, prior to turning on system.

CALCULATING CABLE SPACING



1. Calculate the actual m². To be heated (see grey shaded area) i.e. 3.1m².

2. Select cable from chart on website for a bathroom needing "full heat" 160w/m²
500w cable 43m length per sizing guide
= 3.10m² divided by 43m = 0.072.
Multiply 0.072 by 1000 = 72mm spacing.

Summary:

3.10m²/43.0 meters of wire = 0.72 x
1000 = 72mm apart.

To Summarize:

The CBS Safe-t-WIRE cable must not be shortened or lengthened. Spacing evenly ensures an even temperature across the tiled floor. Adhesive spray ensures adhesive tape holds. Allow 10 minutes to cure, before applying holding tape.

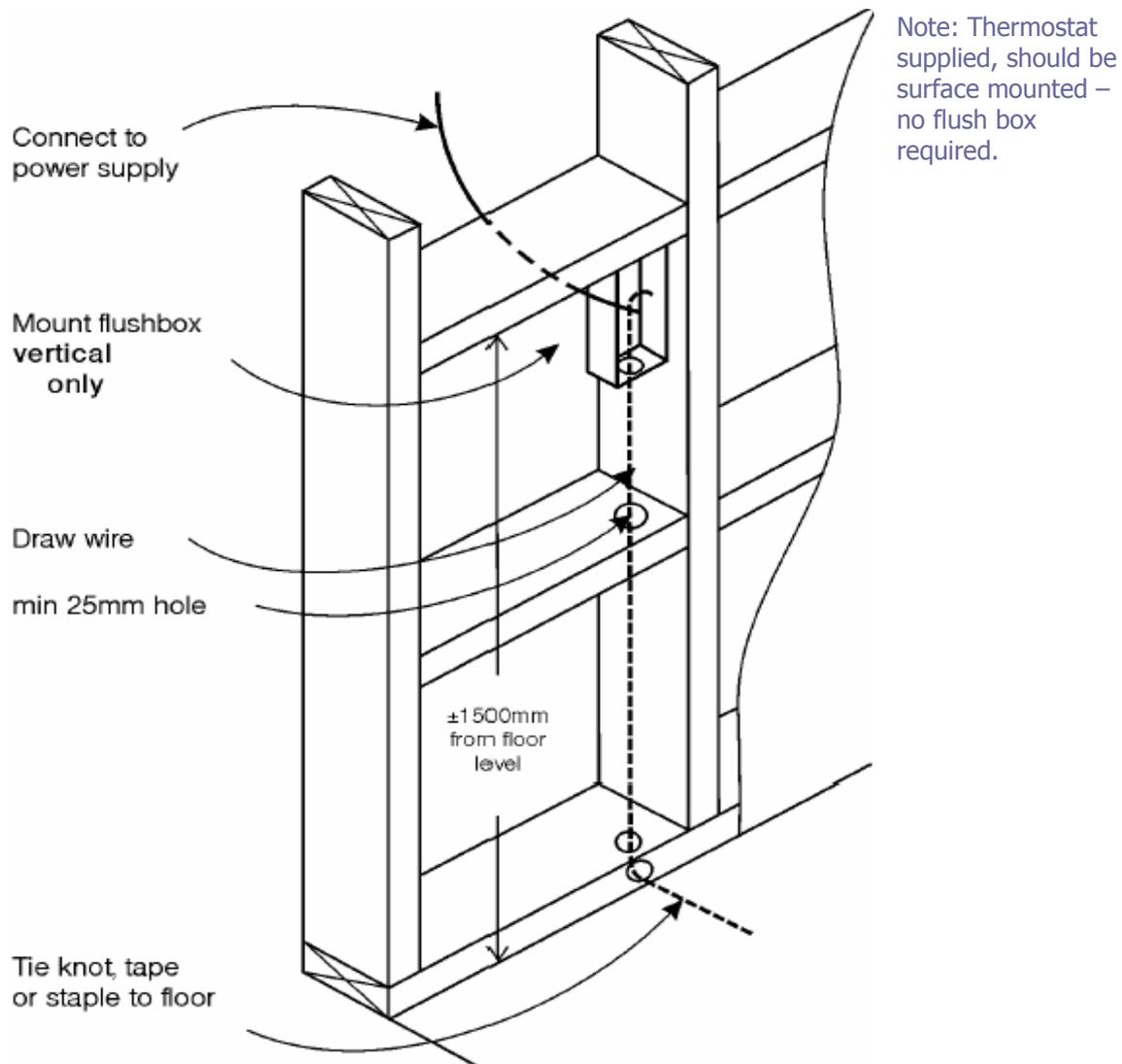
Cables are marked 50% of length to indicate progress of installation. To secure a long installation life, floor must be clean, dry and stable (wooden floors) or fully cured (concrete floors).

WARNING

Electrical Requirements

Please Pass on to your electrician

Cross section for pre-wire requirements of both under tile, and under-carpet, heating systems.



Note: Plastic wall boxes (image on website) are available from CBS Heating to facilitate easy location of the Acmelec AE-Y309 Digital Control in masonry walls.

LABELS

Safe-t-WIRE
FLOOR HEATING
DO NOT PIERCE FLOOR

Fit to room thermostats

Fit to consumer panel and access trap to floor.

WARNING

THIS BUILDING IS FITTED WITH **Safe-t-WIRE** ELECTRIC FLOOR HEATING CABLES

DO NOT PIERCE THE FLOOR WITH NAILS, SCREWS OR OTHER FASTENERS

Do not affix further insulation, facing materials or plastic foam tiles
above the existing floor surface.

IF ANY FIXING THROUGH THE FLOOR IS NECESSARY CONTACT THE DISTRIBUTOR FOR
GUIDANCE

CBS RADIANT HEATING SYSTEMS. Tel: no. 0400 709 000 Email: info@cbsheating.com

Additional information regarding design methods, control equipment, general electrical requirements, flooring specification, can be obtained by contacting:

Carterton Building Services Pty. Ltd.
P O Box 865,
Balcatta, WA 6914

Mob: No. 0400 709 000
Fax 3 No: 0433 145 320

Distributor: