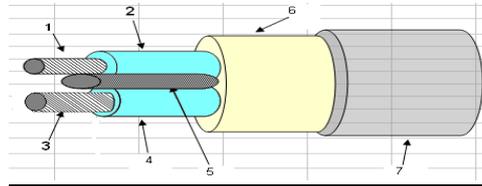




In-Concrete Storage New Build Heating Installation Instructions 30w/Lm



General:

- 1 = Multi Stranded Heating Conductor.
- 2 = Conductor Insulation 0.5mm RTI XPLE (natural)
- 3 = Return Conductor AWG 20/7/28 TPC (0.5mm²) : AWG 19/10/28 TPC (0.75mm²).
- 4 = Return Conductor Insulation 0.5mm RTI XPLE (natural)
- 5 = Earth Conductor 1.0mm TPC (0.9mm²)
- 6 = Aluminised Mylar Tape 15mm Width & 65 Micron Thickness.
- 7 = Outer Insulation 1.5mm RTI High Temp PVC.
- Working Temperature 105 Deg C.
- Working Voltage 230V AC, 50 Hz.
- Cable Dia 6.0mm.
- Cold Tail 3.5m

Watts	Lm Length	Element Res(Ω)	Core Res (Ω/m)	Amps
450	15	7.84	7.84	1.97
750	25	2.82	2.82	3.26
900	30	58.78	1.96	3.91
1200	40	44.08	1.10	5.21
1500	50	35.27	0.71	6.52
2100	70	25.19	0.36	9.13
2400	80	22.04	0.28	10.43
3000	100	17.63	0.18	13.04
3600	120	14.69	0.12	15.65

Important Notes:

1. Do not cut or shorten the heating cable.
2. Do not place the cold tail termination under strain.
3. Installed photos or drawings of each zone installed, including sensor conduit and termination join, must be created and available for future reference.
4. Ensure that cable lengths are 'securely' fastened at the appropriate spacing.
5. All Hotwire™ floor heating must be controlled by a Hotwire™ electronic floor sensing thermostat.

Loading Design Specifications:

1. We recommend the below design loadings and using the heating cable chart above.
 Living Areas: 130 - 180W/m².
 Bedrooms/Bathrooms/Hallways/wooden Floors 100 - 150W/m². The maximum load = 30W/Lm.

2. The cable operating temperature should not exceed 105 Deg C.
3. The cable must be kept clear of any thermal insulation and upper floor surfaces with a minimum clearance of 25mm.

Calculating Cable Spacing:

1. Cable spacing distance is measured from the centre of one cable loop to the centre of the next.
2. Cable spacing is typically determined by the available floor area and the cable length, with spacing varying from 100mm – 300mm.
3. Cable spacing calculations can be achieved by using the cable length.

$$\text{Cable spacing (mm)} = \frac{\text{heated floor area (M}^2\text{)} \times 1000}{\text{cable/s length (m)}}$$

Testing and Handling:

All Hotwire™ cables are quality checked prior to leaving the factory. However the following tests should be carried out –

1. Check the ohmic values =the specified values on the reel label (within -5 to +10%), before, during and after the concrete pour.
2. During a concrete pour, a 500V insulation test should be used to monitor the cable insulation and continuity to ensure there are no open circuits.
3. All steps to protect the cable must be taken.
4. Avoid twisting, tangles, kinks or undue mechanical stress on the cable.
5. Avoid stress on the termination join by pulling or stretching the cable.

Installation:

- The connection of the heating cables must be carried out by an electrical trades person and in accordance with clause 4.22 of AS3000 and any other relevant regulations.
- Ensure the cable loading is suitable and the correct design loading for the area to be heated.
- The heating cable, including the cold trail termination must be embedded within the concrete.
- Cable must never be allowed to cross or touch.
- Cables must never be shortened. The 3m can be shortened if required.
- Cables must not be bent past a radius of 37mm.
- Avoid laying cables where all the permanent are to be installed above the finished floor, or where the floor is likely to be penetrated by nails, water pipes or similar fixings.
- Cables should be covered as soon as possible with concrete, to avoid unnecessary damage.
- Cables must be no closer than 100mm from walls and or fixings.
- Cables need to be attached to structural reinforcement or a separate layer reinforcing mesh, using clips or tie wires.
- Fixing spacing should not be greater than 600mm.
- Cable must not float closer than 30mm below the concrete surface.
- Steel rods of 6mm diameter should used where cables run between the reinforcing mesh. They need to support the weight of a person.

Installation on Top of Existing Concrete Floors:

- Place netting or light guage reinforcement mesh covering the desired heating area.
- Ensure the area is free from sharp objects.
- We recommend the cable ties be no greater than a spacing of 400mm.
- The heating cables should have a minimum finished flooring cover of 25mm.

Floor Coverings:

Note: The following Site Instructions must be adhered to, to comply with the Hotwire Warranty.

Owner/Builder:

- We require **an accurate marking** of the position of walls, kitchen and bathroom fittings, fireplaces and other permanent fixtures that must be avoided when laying the heating cable.
- Floor cuts must also be **accurately marked** and the depth of the cut recorded.

Note: These markings are critical to the correct placement of the thermostats and element connection protrusion points. The markings should be made using spray paint directly into the vapour barrier. Any extra work entailed because of any incorrect markings will be charged as an extra cost.

Electrician

- Will need to allow room in the distribution board for the heating to be installed and allow for the extra capacity in the mains to cater for the heating load.
- Most floor coverings can be used.
- Do not use bitumen backed carpets.
- Parquet or cork overlays must be laid on a dry floor. See "Initial Operation".

Insulation

- A resistance R factor of $1.7\text{m}^2 / ^\circ\text{C} / \text{w}$ for heated floors.
- High density polystyrene or fibre glass insulation materials should be used. (NZ 4218P, BRANZ 292, 344)
- Perimeter 1 metre width insulation should be fitted.

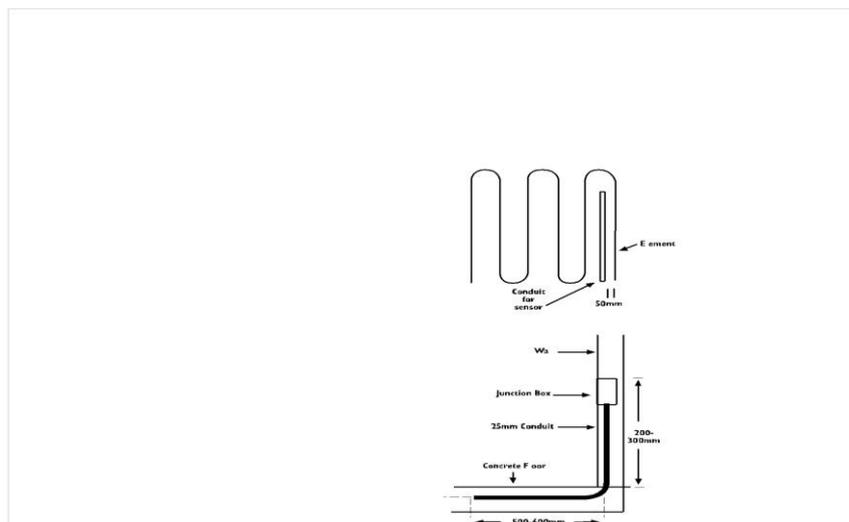
Connection and Wiring

- All power connections must be permanent i.e. no plug/ socket connections.
- All cables must be earthed in accordance with local wiring regulations.
- Ensure that the correct size contactor is used. Loads can sometimes be shared on a contactor. For zones with a capacity of 2.2 Kw or larger require a slave contactor.
- Flush boxes for element and sensor connections should be fitted at 200 – 300 mm above the floor level.
- A Residual Current Device or HRC fuse must protect each heating circuit.
- A surge diverter must be connected between the earth and the phase of phases supplying the floor heating, to protect against lightening strike. Failure to do so will negate your warranty.

Thermostat Controls and Options

- A Din rail mounted designed to be mounted in the switchboard or heating sub-board
- A room flush mounted thermostat with a probe slab sensor/ temperature limiter.
- The optimum floor temperature for comfort should be no greater than 26°C .
- The length of 25mm conduit, for the sensor probe to be fitted, with a gentle 300mm bend at the floor end, running 600mm toward the middle of the room. The probe should be fitted between the heating cable. Each zone must have accessibility to the conduit for each zone to allow for future possible replacement.

Floor Sensing Probe



Damage to cable

- If the outer insulation is cut, punctured or damaged in any way. Repeat the above testing procedure and check the resistance between the cable screen and the surrounding concrete is correct.
- Carefully inspected the damaged area and if the tests register as correct, insulation tape may be used to cover the damaged area.
- Any damaged area should be noted and marked on your installation design layout.
- Do not proceed with the installation without totally repairing the damaged cable.

Initial Operation

- The heating should not be turned on until the concrete has naturally cured. Approximately 5 – 6 weeks.
- Do not install sensitive floor coverings such as parquetry or cork until the initial use of the heating has removed all remaining moisture.

Important

- The client should be made aware that coverings or objects of high thermal resistance are NOT placed directly on the floor. Also that all large items are adequately vented underneath.

Agriculture

- The Hotwire heating cable is suitable to be laid in the ground for growing enhancement.
- Normal loading = 100w/m²
- The cable must be installed at a depth to avoid cable damage.
- Heating warning notices should be put in place.
- The ground area should be void of all sharp objects that may damage the cable.



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