



Electric underfloor and ceiling heating specialists since 1959

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ESWA FLOOR AND CEILING HEATING ELEMENT SPECIFICATION AND INSTALLATION REQUIREMENTS

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A. CEILING HEATING.

- (1) Ceiling heating elements will be supplied and fitted by Eswa Limited. The ceiling heating element consists of an electrical conductive foil with a continuous meander pattern of current carrying strips. The foils are laminated between two layers of plastic film to give a hermetically sealed moisture proof and electrically insulated covering. The metal foil of the element is designed to fuse within the plastic covering during an over-temperature situation. Each foil element unit is manufactured and factory fitted with a specially designed wiring terminal unit which forms an integral part of the element design facilitating wiring connection to the element. The 'wiring terminal unit' is specially designed to allow parallel and series connections of the heating element foils and is fitted with non-removable wiring connections
- (2) Eswa Limited shall fully design the system and select suitably dimensioned heating foils for each room. Eswa will prepare and issue for comment and approval by the Architect / Engineer installation drawings showing the position of the heating elements and any other details necessary for the installation. The installation drawings will be produced from joist, batten and truss layout drawings, including lighting and any other ceiling obstructions effecting the ceiling foil element design, which must previously have been supplied by the Architect / Engineer.
- (3) Eswa Limited will supply and fix the element foils direct to the MF grid or battens / joists. And test the pole to pole resistance and continuity of the circuit. The Builder will then follow with a layer of 12.5mm plasterboard or other Eswa approved ceiling finish. Foil backed plasterboard must not be used. All plasterboard or other ceiling finishes are to be supplied and fixed by the Builder.
- (4) All wiring between the room terminations and the element 'wiring terminal unit' shall be carried out by Eswa using PVC/PVC 1.5mm cable with no inter-connections or joint boxes between. All parallel and series connections must be carried out within the 'wiring terminal unit'.
- (5) The Electrical Contractor shall connect the circuit feed to the ceiling heating elements at the room termination position and install suitably rated power wiring to the adequately rated sub-circuit MCBs within the consumer unit to each individual room electrical termination, the position of which will be determined by the architect.

- (6) For external ceiling areas, i.e. roof, the Building Contractor is to supply and lay a minimum of 200mm of fibreglass insulation directly above the ceiling heating foils. For all intermediate floor areas the building contractor must fit 60mm fibreglass insulation above the MF grid over the entire ceiling area and in close contact with the element foil.
- (7) **Electrical:** The Electrical Contractor is to wire feeds to all room terminations - generally one per room, and connect supply wiring, and test as required by Eswa Limited. It is necessary that all carcass wiring, including that for heating, is completed before the heating installation takes place. Lighting points should occur either away from, or on the edge of elements but not on the internal area of any element. Elements are planned on the layout drawings in this way according to the final agreed position of lighting points. Eswa will wire, PVC/PVC twin 1.5mm cable from the heating elements to each room termination point. The Electrical Contractor is to provide an access with conduit and draw wire within the building fabric from the connection position into the ceiling void. Alternatively Eswa can leave their tails for capping by the Electrical Contractor. Immediately after the erection of the ceiling face the Electrical Contractor should test, at each connection point, the resistance between poles, and the insulation resistance between the heating element feeds and the building fabric. **The results should be entered on the test certificate, supplied by Eswa Limited, and checked for any discrepancy with the post and pre boarding results. Any difference must be notified to Eswa Limited immediately.**
- (8) **CONTRACT DETAILS:** Before installing the heating, it is essential that the building is weather tight - which includes glazing and doors fixed. Any floor screed, asphalt, etc., above heated ceilings must have been laid and allowed to dry out. **The MF grid to which the elements will be fixed must be installed accurately in accordance with the carcassing and/or Eswa layout drawing.** Elements and insulation to be stored in a safe dry place and protected against weather and casual traffic. As detailed in our quotation we require boarding and trestles to enable us to have access to the ceiling face and to comply with the statutory regulations where appropriate. Special care should be exercised when handling the elements or any material adjacent to them. Any fixing through the elements (ceiling screws, etc) should be strictly limited to the fixing strips which run in conjunction with the underneath of the grid at accurate centres. Perforation of the element foil, or coloured connection strip at the termination end of the elements must not occur, as this will cause damage to the electrical circuit and breakdown of the element. Eswa Limited will not be responsible for any mechanical damage occurring to the elements subsequent to their fixing them. The ceiling boards should be erected as soon as possible after the erection of the heating elements to reduce the risk of accidental damage caused by passing traffic. Boards are to be standard plaster wall board without film backing, or other Eswa approved. It is necessary that each ceiling board is fixed at the edges first, where the fixings are visible and then a straight edge and pencil used to 'line through' so that the screws are certain to be positioned accurately into the MF grid. Each board should be staggered in accordance with the manufacturer's recommendations. Eswa Limited should be consulted with regard to alternative ceiling materials and finishes. Please ensure that the ceiling erector is aware of these points. Ceiling boards should be dry on erection, but if they are wet or have absorbed excessive moisture after erection, they must be allowed to dry out naturally or be replaced otherwise movement in them may be expected. The heating must not be used to dry the ceiling boards or building out. Thermal insulation of a minimum of 200mm thick fibreglass or equivalent should be fitted to external ceiling areas (roof spaces, etc) and laid in close contact with the back of the heating elements.

B. FLOOR HEATING.

- (1) The Eswa TXXP floor heating cables consist of a resistance wire, a covering sheath of XPLE insulation, and a PVC outer sheath. The PVC outer sheathing is particularly necessary for physical protection during site installation. The cable is totally hermetically sealed against the ingress of moisture. Various loadings of cable are available, but in this instance shall generally be installed at approximately 10 watts per metre and up to 100 watts per metre square due to the presence of timber flooring, thin screeds and the constant availability of supply to the contactors.
- (2) For installation in areas containing a bath or shower, the current Edition of the BSI/IEE Wiring Regulations state that a cable with a continuous metal sheath and earth wire must be used, the earth wire must be connected to the equipotential bonding. The Eswa TXLP floor heating cable will fully comply with this regulation when connected according to the regulations. In these areas cables will be installed at approximately 17 watts per metre and 120 watts per metre square.
- (3) The cables are installed by Eswa Limited by being clipped at specific intervals to galvanised mild steel fixing strips, previously fixed to the floor slab at either end of the room and at intervals across it. The overall coverage and loadings will be in accordance with a previously prepared drawing. The cold tails of each cable are taken to a termination box within each area. Electrical wiring will have been taken to this point from the distribution board by the Electrical Contractor. Control of the floor heating is normally by an optimum start external weather sensor unit. This unit will automatically adjust the input to the floor - depending on the prevailing weather conditions. In areas with no ceiling heating, a room air sensor is the recommended method of control.
- (4) The cables are tested at the time of installation, as with the ceiling heating; however in this case they should also be monitored as the floor screed is being laid. A suitable monitor may be hired from Eswa Ltd. A second test **must** be carried out by the electrical contractor as soon as possible following screeding, and the results entered on to the test sheet previously supplied by Eswa Limited. **Any discrepancy between the pre and post screed results must be notified to Eswa immediately.**
- (5) Any normal floor finishes can be used in conjunction with Eswa floor heating cables. If unusual finishes are anticipated, Eswa Limited should be advised.
- (6) **Electrical:** The Electrical Contractor is to provide a suitable conduit from the termination point (detailed on the Eswa layout drawing) to the cable plane, with a 'hockey stick' bend at the cable plane end. He is to wire feeds to each floor heating position, connect cable cold tails within, and test, the resistance between poles, and the insulation resistance between the heating element feeds and the building fabric as required by Eswa Ltd.
Each circuit is to terminate in a deep socket outlet box and fitted with a switched spur. The suggested height for the connector box is at standard socket outlet level.
- (7) Control of the floor heating will be by others.

(8) CONTRACT DETAILS:

- (a) Heating cables and fixing strip are to be stored in a safe, dry place and protected against weather and casual traffic.
- (b) The complete area of floor should be clear of building materials, etc. It is important that the sub-floor surface properly prepared for screeding and is both clear of sharp projections and brushed clean prior to the Eswa installation. It is **essential** that the positions of floor obstructions - fitted cupboards, bath, shower, sole plates etc - be marked on the floor prior to the Eswa installation.
- (c) Traffic over cables should not be permitted and screeds should be laid as soon as possible after laying cables has been completed. Screed should have a maximum grit size of 3mm and should not be less than 40mm min thickness. Special care should be taken when laying screed. Screed should be moved in line with the cable directions, and not across - to avoid disturbing cable positions and spacings. Screed dispensers, pumps and pipes must not be rested on cables
- (d) Screed should be allowed to dry out naturally for approximately six weeks, depending on thickness and weather. If required heat can then be applied gradually over a further four weeks.
- (e) Eswa Limited will not be responsible for any mechanical damage to cables subsequent to their fixing them. There must be no fixings into or penetration of the screed subsequent to the installation of the underfloor heating without reference to Eswa Limited.