



aquatherm

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UNDER-FLOOR HEATING SYSTEM

General

Supply and install to the areas as shown on the Drawings, a aquatherm PE-Raised temperature EVOH protected underfloor heating system as supplied by Aquatherm.

Design Responsibility

Design of the underfloor heating system, including the number, positioning, and configuration of circuits for uniform heat distribution is the responsibility of the system supplier and installer. Refer to the Drawings for zone panel location, required zones, and sensor positions. Refer to the Schedules for performance criteria.

The Mechanical Contractor shall provide detailed installation drawings and performance sheets for approval by the Engineer. The drawings shall show pipe circuits, sensor positions, cabinet locations, sectional drawing and any other information required by the Engineer to adequately assess the system. The performance sheets shall be as provided by the supplier, calculated to be up to date with any changes to the building including types of floor coverings, slab dimensions, changes to room size etc. This information shall be provided prior to construction of the floor slab to ensure that thermal (heating and insulation) and structural requirements of the slab and heating systems are correctly coordinated.

Coordinate all aspects with the Main Contractor including the following:

- Underfloor insulation
- Sumps, drain channels, floor wastes etc
- Walls and other building elements
- Coverage at saw-cuts
- Cabling requirements etc

Installation

M.1.1 INSTALLATION SHALL BE CARRIED OUT BY A SPECIALIST INSTALLER APPROVED BY THE SUPPLIER IN ACCORDANCE WITH THE SUPPLIER'S SPECIFICATION AND INSTRUCTIONS, AND BRANZ APPRAISAL NOTE THAT A REGISTERED PLUMBER IS NOT REQUIRED FOR THE INSTALLATION OF UNDERFLOOR HEATING SERVICES.

The three accepted installation methods are:

- Fix with cable ties on the top of the reinforcing (where at least 35mm cover is available above the pipe);
- Clip pipe to supplier's proprietary, self adhesive, 'U' shaped clamping tracks;
- Staple pipes to in-slab high density insulation using supplier's proprietary staples.

Pipework shall be installed:

- With a minimum of 35mm cover over the pipes. Take care where expansion cuts are made in the concrete to ensure the pipe is sufficiently below the depth of the cut;
- In accessible slab areas (do not install pipes under walls without approval by the Engineer);
- Within a single slab pour (do not install pipes across a construction joint without approval by the Engineer);
- Above the slab insulation;
- To maximize spacing of the pipes in the slab before connection to the zone cabinet.

Install expansion joints in the form of local offsets sheathed within an oversize flexible hose. The hose shall be sealed at each end to ensure that no concrete enters the joint.

All sensors shall be moisture proof and removable. In slab sensors shall be placed in a conduit at least 2m into the room, be at the same height as the underfloor heating pipes, and equal distance between the underfloor pipes.

Photos shall be taken of the installation prior to slab pour and provided in data form to the Engineer, and printed in colour for inclusion in the Operating and Maintenance Manuals. Particular attention should be given to complex areas, or areas of non-standard installation.

Update the installation drawings for inclusion in the Operating and Maintenance Manuals.

Commissioning

The completed system shall be pressure tested as required in BRANZ Appraisal No.437:2008, prior to the slab being poured.

The system shall be maintained at operating pressure during the slab pour.

The installer shall complete all of the supplier's recommended tests and ensure that all warranty conditions are met. Unipipe test sheets which are available from the supplier shall be filled out. The installer shall have all testing and commissioning results signed off by the supplier and then submit them to the Engineer for approval, and include in the Operating and Maintenance Manuals.

Zone Control Panels

Each underfloor heating zone panel shall incorporate:

- Aquatherm flow and return header manifolds, complete with zone control heads. Zone heads shall indicate operation and be normally closed when not powered. Manifolds shall be labelled to indicate flow and return;
- Manual drain valve and air cocks at both manifold ends;
- Temperature and pressure gauges;
- Isolating and regulating adjustment to each loop;
- Flow header over-temperature control (adjustable, set to 45°C), to isolate pump and close zone heads;
- Aquatherm three-way diverting valve c/w thermal actuator, and associated control items;
- Zone heads and pump wired to din rail mounted terminal connectors inside an electrical box sized for the correct number of zones and thermostats, anticipated to

be a single zone per cabinet, however two control cables shall be run to the cabinet from the BMS to future-proof for split zone control;

- The internal electrical cabinet shall be complete with an isolating switch;
- Integral pump sized to carry the full circulating volume and pressure of the circuits;
- Components shall be factory assembled in a lockable wall-mounted cabinet;
- Automatic air vents on flow and return pipework (where cabinet is at a high point i.e. bottom entry).

Controls

Each zone's control valves shall be operated to maintain a space temperature according to the wall mounted temperature sensor. During operation hours the space set points shall be initially set to 21°C, with each individually adjustable (either by wall thermostat or by controls system).

(If floor slab reset add the following) -

A floor slab temperature sensor shall be installed in each zone and reset floor slab set point based on space air temperature for each zone. The slab temperature shall limited to 8°C higher than the space set point.

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