

# Installation X-L Pipe

## Materials:

1. Heating system X-L PIPE – consists of the following elements:

1) Heating wire : the sheath of the cable shall be a rubber product, which is excellent in heat resistance and electrical insulating properties, and shall have at least two layers (1st: heat-resistant silicon rubber sheath, 2nd: water-resistant and chemical – resistant teflon rubber insulation).

2) Energy-saving electric hot water tube

- These products are divided according to their length (capacity) and connected in parallel for assembling.
- The capacity of super energy-saving electric hot water tubes shall be specified in the unit of product. (220V40W±4°/meter)

3) Pressure-absorbing device and leakage prevention

- X-L pipe can be used at the temperature -20°C and higher
- A patented product which absorbs the internal pressure of hot water tubes shall be used. (Patent application No. 10-2007-0118056)
- The sealing device of electric hot water tubes (Utility model application No. 20-2007-10649)

2. Power distribution box

Service and maintenance are easy to carry out after the installation

3. Temperature controller

- The temperature controller shall be able to set the maximum limit.
- The temperature sensor shall have the functions of not only temperature sensing, but also leakage prevention and excessive temperature rise.

4. Accessories:

Silver coated insulation sheets – 3 mm, reinforcing steel net #20 (metal or plastic) for fixation of X-L pipe on it, tile supports and fixing pins (U-pins).

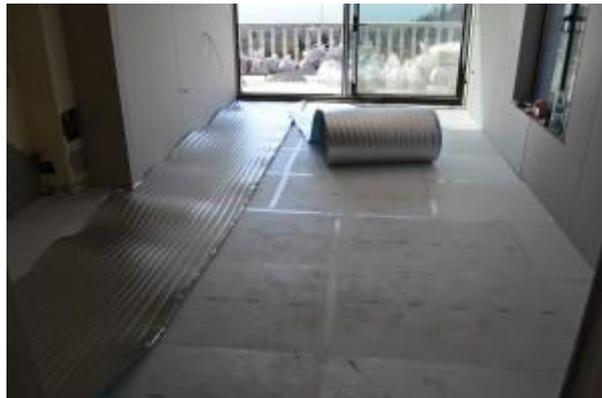
## Preparation:

- Make sure X-L tube is filled with liquid.

- Check the insulation condition. More than 50mm of bubble concrete or more than 30mm of compressed styrofoam should be laid.

### **Installation:**

1. **Insulation** – once you have covered the floor with foam concrete or Styrofoam, place insulation sheets with silver side up on it.



2. **Reinforcing steel net placement** – place reinforcing steel net and fix it.



3. **Installation of power distribution box**

- The power distribution box shall be installed horizontally. The top of the power distribution box shall be at a level with the height of the mortar.
- The power distribution box shall be installed allowing enough space between it and the wall so that the cover of the power distribution box can be easily opened after completing its installation.
- The power distribution box shall be firmly fixed so that it does not get loose.



#### 4. *Installation of energy-saving electric hot water tube*

- Bending shall be done as follows. The products should not be folded or twisted. The hot water tubes should maintain level.
- Bending length: 800mm / Bending diameter: 220mm
- They shall be fixed with coil supports (clip bars) and fixing pins (U pins) (when the floor is finished with bubble concrete).



- Fixing pins for straight tubes around coils shall be used at a distance of every 8 meters and those for other straight tubes shall be used at a distance of 0.5 meters
- There are more than 2 places for 90° bended tubes. Refer to the design drawings and fix them firmly so that coils do not get lifted and loose.
- In case the floor is finished with insulation materials (styrofoam), lay wire mesh and then install energy-saving electric hot water tubes. The tubes shall be tightly fixed to wire mesh with cable ties so that they may not be pushed while mortar coating.
- Energy-saving electric hot water tubes shall be installed 250mm ~ 300mm away from the wall.

## **5. Wiring work**

The lead wires for energy-saving electric hot water tubes shall be thicker than those specified on the drawings. They shall be connected to the output terminals of the temperature controller in parallel.

## **6. Installation of temperature sensor**

The temperature sensor and the excessive temperature rise protector shall be inserted into the bellows tubes, installed 10mm away from energy-saving electric hot water tubes, and fixed on the floor.

## **7. Protection of power distribution box:**

The power distribution box shall be sealed with OPP tapes or blue tapes to protect it from moisture while mortar coating.

## **8. Inspection of mortar coating**

- Be careful not to block the power distribution box while mortar coating.
- If the mortar is thicker than the power distribution box, the effect of heating will be drastically reduced. Mortar thickness: 30~40mm – Monoleum, Decotile, Ondol (Korean floor heating system) floor, 20mm – marble

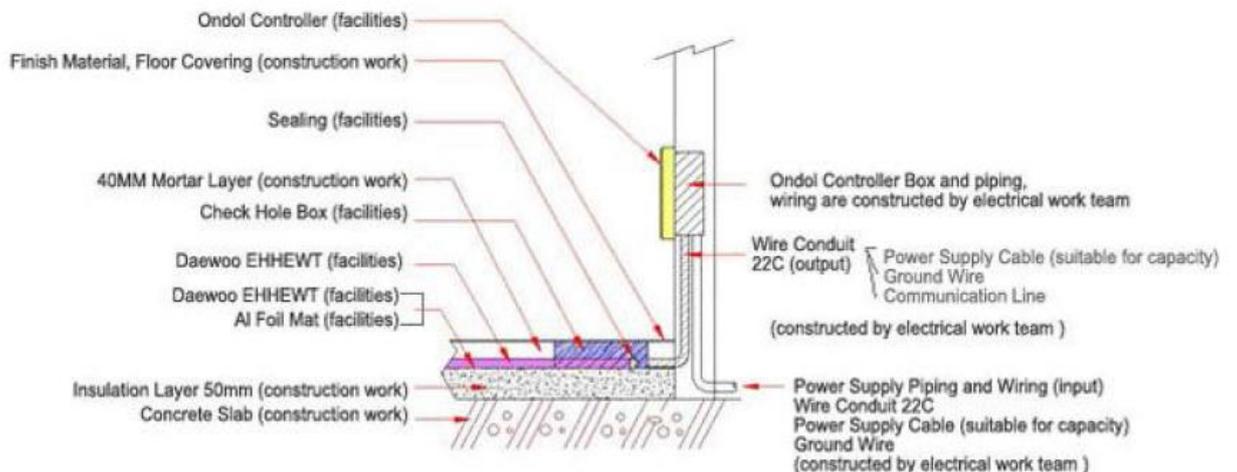
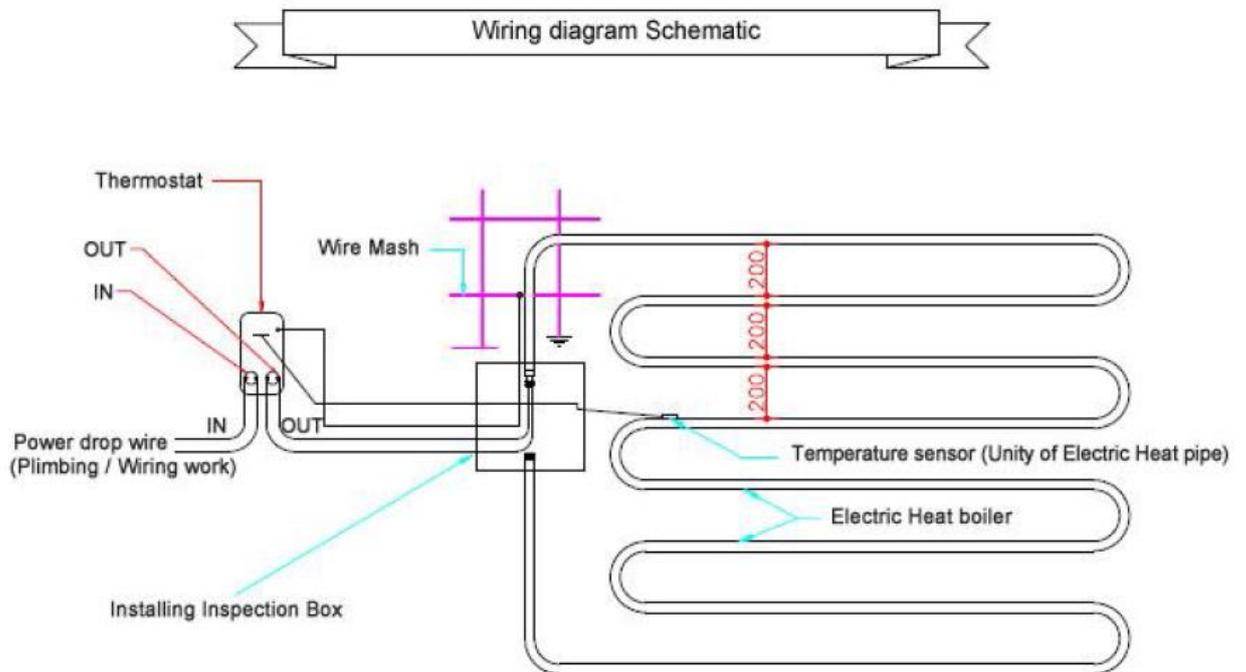
## **9. Installation of temperature controller**

- The temperature controller shall be installed vertically and horizontally and the temperature sensor shall be properly connected to prevent malfunction.
- The temperature controller (individual heating system) shall be installed at the height of 1.2 meters above the floor so that it can not be obstructed by furniture. If it must be installed close to an electric switch, the horizontal distance between the switch and the controller shall be more than 200mm.
- One temperature controller can control up to 72 meters (20 m<sup>2</sup>) of super energy-saving electric hot water tubes.

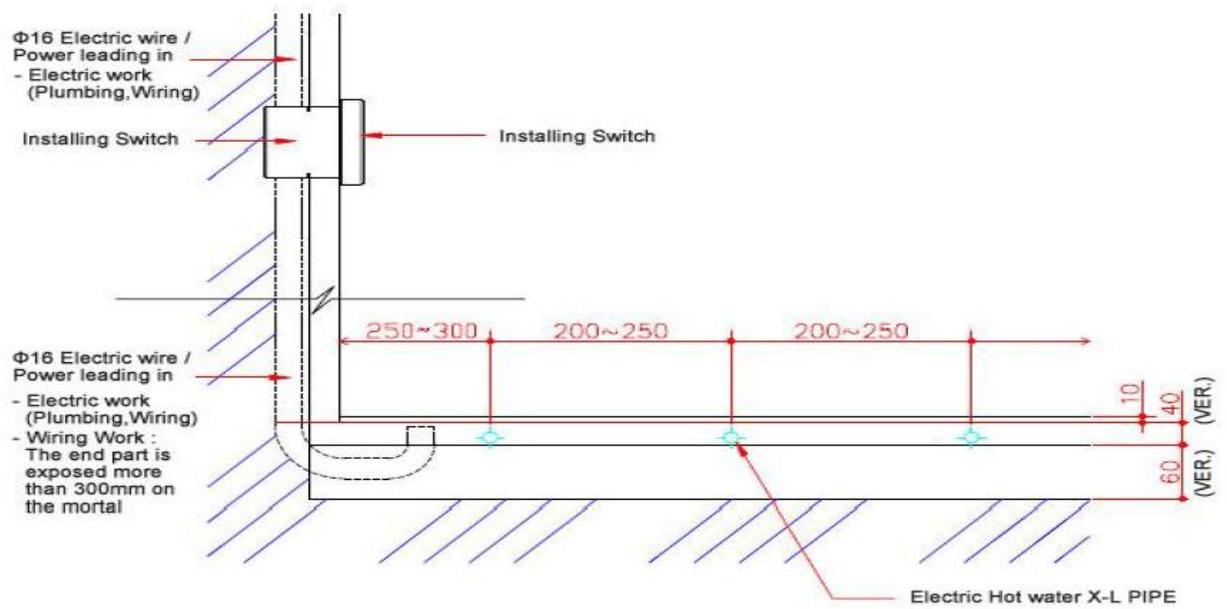
## **10. Performance check and trial run**

- After the mortar is completely dried up, check if there is any electrical short in the wiring on the side of outputs and then supply electrical power.
- Check if the temperature controller works properly at the set value. (A space is created between the hot water tube and the mortar)
- Using a load (current) measuring instrument, check if the electrical output is correct in accordance with its specification.
- Check if the temperature controller is properly set.

## DRAWING OF INSTALLATION Hot water X-L PIPE



Detailed view of Installing Thermostat



Detailed view of Installing Inspection Box on the floor

