THE ESSENTIAL HEAT PUMP GOOD PRACTICE INSTALLATION GUIDE

- Anti Freeze Valves
- Pipe work insulation
- Glycol/Antifreeze
- Filters and inhibitiors
- Outdoor Unit location
- Electrical connections
- Flexible hoses
- Condense drains

HOW TO STAY MCS COMPILANT

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Installer Heat Pump

Installation requirements

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The installation practices in this document must be completed before commissioning

Completing these jobs/tasks will ensure a smooth customer commissioning and handover, and more importantly help stay compliant with MCS.

Installation practice 1: Pipe work lagging through the wall.

We require all external pipe work to be insulated with Primary –Pro insulation for the insulation of the outdoor unit pipe work.

This is available at most suppliers

- The pipe work must be insulated completely through the length of the wall.
- The Insulation must be a minimum of 19mm thick for up to 20 metres external pipe work
- Class O Insulation is not UV stable, therefore must not be used
- Climaflex Polyethylene Pipe Insulation (Grey Lagging) must not be used out-side
- **All joints must be fully sealed to reduce heat loss from the system.**

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Installation requirements

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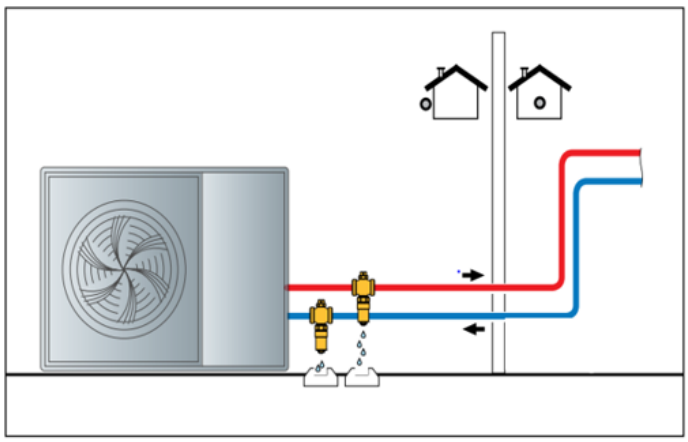
Installation Practice 2: The Installation of Anti-freeze valve

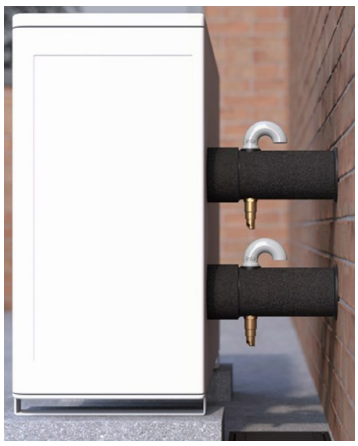
The Antifreeze valves must be fitted at the lowest point of the outdoor unit, to allow the outdoor unit to drain.

There must be 150mm clearance below the valve and the ground level, also 100mm clearance between the two valves to stop water freezing on top of the valve below.

Unless the valves are fitted with air pipe Zero guard as shown in the right hand picture. They must also be installed in a vertical position and not angled to avoid another pipe below.

The valve body also need to be fully insulated.



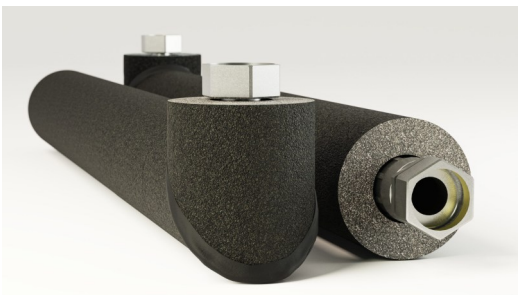


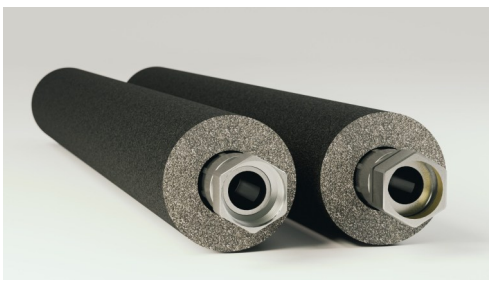
Installation Practice: 3 The Installation of Flexible hoses

The flexible hoses must be installed between the outdoor unit connections and the pipe work entering the building.

These flexible hoses remove vibration through the solid copper pipe work.

Flexible hoses are available in 300mm, 500mm & 750mm length, and with elbows or a straight connection





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Installation requirements

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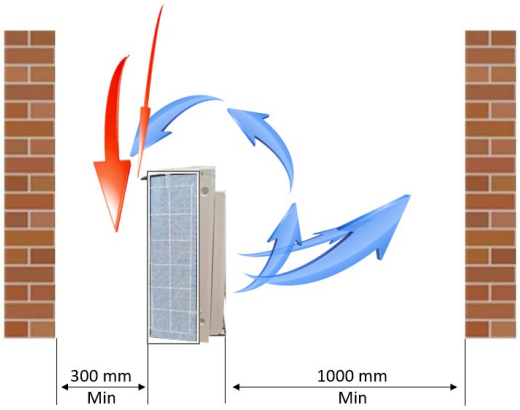
Installation Practice 4: Location of outdoor unit

The outdoor unit location should be fitted in accordance with the manufacturers specification or installation instructions.

Each manufacturer will provide minimum clearances behind the unit and in front of the unit to ensure sufficient air flow to stop freezing and poor performance.

Also check manufacturers minimum clearances to the sides for future servicing.



Installation Practice 5 : Securing the outdoor unit

The outdoor unit can be fitted to rubber feet or a wall brackets and condense trays.

The unit height above the ground should allow for possible Snow fall.

The condense from the outdoor unit should be controlled or drained away and not be allowed to collect around the base of the unit causing a slip hazard.

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Installation requirements

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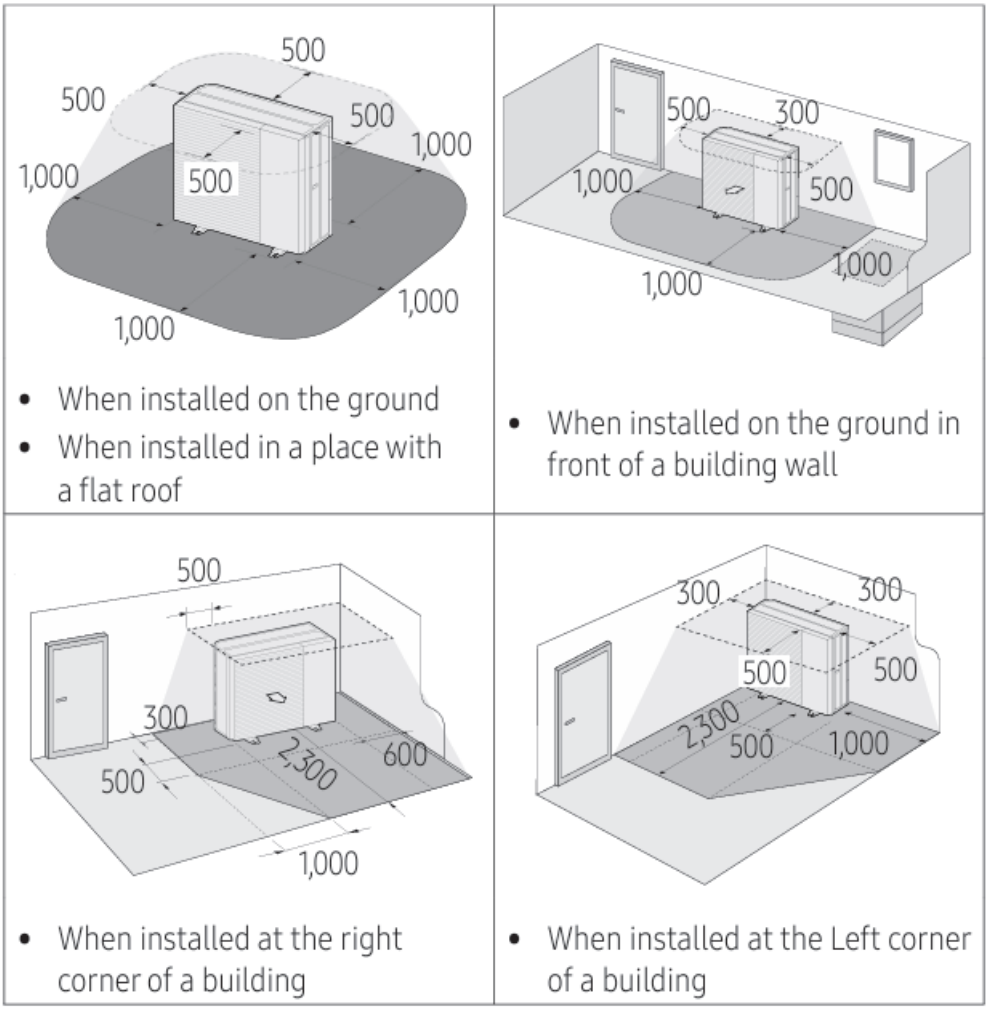
Installation Practice 6: Location of R290 refrigerant Heat Pumps

The outdoor unit location for R290 Refrigerant should be fitted to comply with the R290 safely zone, consideration should be taken to the location of doorways, windows and drains. Please check manufacturers instructions.

When working with R290 refrigerant, the designated safety zone must adhere to the following guidelines:

1. **No structural openings**: The safety zone should be free from windows, doors, light wells, skylights, and air inlets or outlets of ventilation systems.
2. **No depressions or excavations**: R290 refrigerant is denser than air and tends to sink, so there should be no depressions or excavations within the safety zone.
3. **No sources of ignition**: The work area must be free from naked flames and sparking electrical devices.

(Unit : mm)



- When installed on the ground
- When installed in a place with a flat roof

- When installed on the ground in front of a building wall

- When installed at the right corner of a building

- When installed at the Left corner of a building

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Installation requirements

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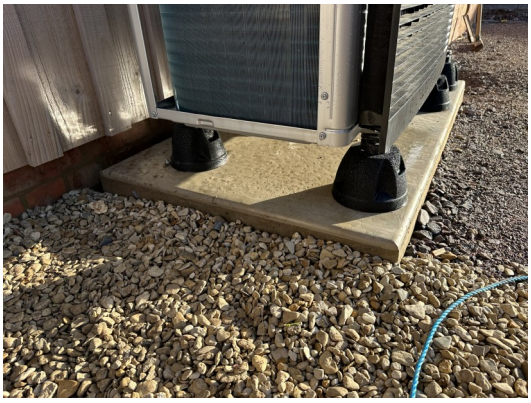
Installation Practice 7: Condense drain control

The outdoor unit condense should be controlled, water must not be allowed to build up around the unit causing a safety issue or slip hazards



Key Details for Installation and Use:

- **Purpose:** Safely disposes of condensate where direct drain routing is not available, preventing water from freezing on paths/driveways.
- **Design:** Pre-bagged with geotextile fabric and recycled rubber chippings to allow water to disperse while preventing soil ingress.
- **Capacity:** Designed for domestic heat pumps up to 16 kW, handling 10-15 litres/hour.
- **Location/Soil:** Not suitable for clay-based soils. Should ideally be located at least 5 meters from buildings or roads.
- **Installation:** Installed beneath the heat pump, with a 32mm inlet, often used with mounting slabs or drip trays.
- **Compliance:** Designed to meet standards like MIS 3005 and BRE 365.

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Installation requirements

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Installation Practice 8: Pipe work insulation for internal pipes around the cylinder and main flow and return pipes

All pipe work insulation must be applied according to the requirements of Doc L as described by items a) – c) below?

a) Primary circulation pipes for heating circuits where they pass outside the heated living space, including where

pipework passes into voids.

b) All primary circulation pipes for domestic hot water.

c) All pipes that are connected to hot water storage vessels, for at least 1m from the point at which they connect to the hot water storage tank.

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Installation requirements

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Installation Practice 9 : Clean heating system

The existing heating should be clear of sludge, debris, and other contaminants, its important to completely flush all pipe work and radiators in the existing heating system. If required the system should be power flushed. 99% of breakdown faults of a heat pump are due to poor quality water in the system.

Installation Practice 10: Glycol Anti-freeze protection

If Glycol/Antifreeze is chosen to protect the outdoor unit from freezing, the installer must refer to the manufacturers instructions, most manufacturers require 25% glycol or minus 10 - minus 15 degrees protection.

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Installation requirements

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Installation Practice 11: Installation of Filter Valve

Most outdoor units will be supplied with a filter valve, this is normally found in the packaging and must be fitted by the installer.

The filter is normally fitted externally to the return pipe work near the outdoor unit, this must be fitted in a horizontal position to allow the debris to fall directly verticial.

Some heat pumps have a built in filter valve fitted internally

Installation Practice 12 Installation of Magnetic filter

A Magnetic filter must be installed within the heating system fitted on the return pipe work to the heat pump.

We highly recommend the Adey Magnaclean Heat Pump filter, as this won`t reduce the flow rate of the system.

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Installation requirements

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Installation Practice 13: Installation of Biocide and Inhibitor

There is many manufacturers of Biocide and inhibitor including Adey, Fernox and Sentinel

Biocide

Biocide cleaner prevents the formation and growth of bacterial contamination, algae and micro-organisms in low-temperature systems.

One 500ml bottle will provide effective long-term treatment for 125 litres.

Inhibitor

Inhibitor must be inserted to prevent corrosion and scale build up, inhibitor will protect the central heating system.

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Installation requirements

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Installation Practice 14: Hot water installation

- Is the D1 pipe the correct length (less than 600mm from T&P valve outlet to inlet of tundish) ? (AD G3 3.54)
- Is there a minimum of 300mm vertical drop in the pipework below the tundish and does the D2 pipe fall continuously? (AD G3 3.56 a & b
- Has a tundish been fitted between D1 & D2 pipes, is the tundish visible? (AD G3 3.55)
- Is the Temperature and Pressure relief valve present and visible? (AD G3 3.17 b)
- Is the manufacturer's composite / combination valve accessible for maintenance or repair? (Manufacturer Instruction's)
- Pipe work should be extended to the floor and fitted with a cage around the pipe.

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Installation requirements

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Installation requirements

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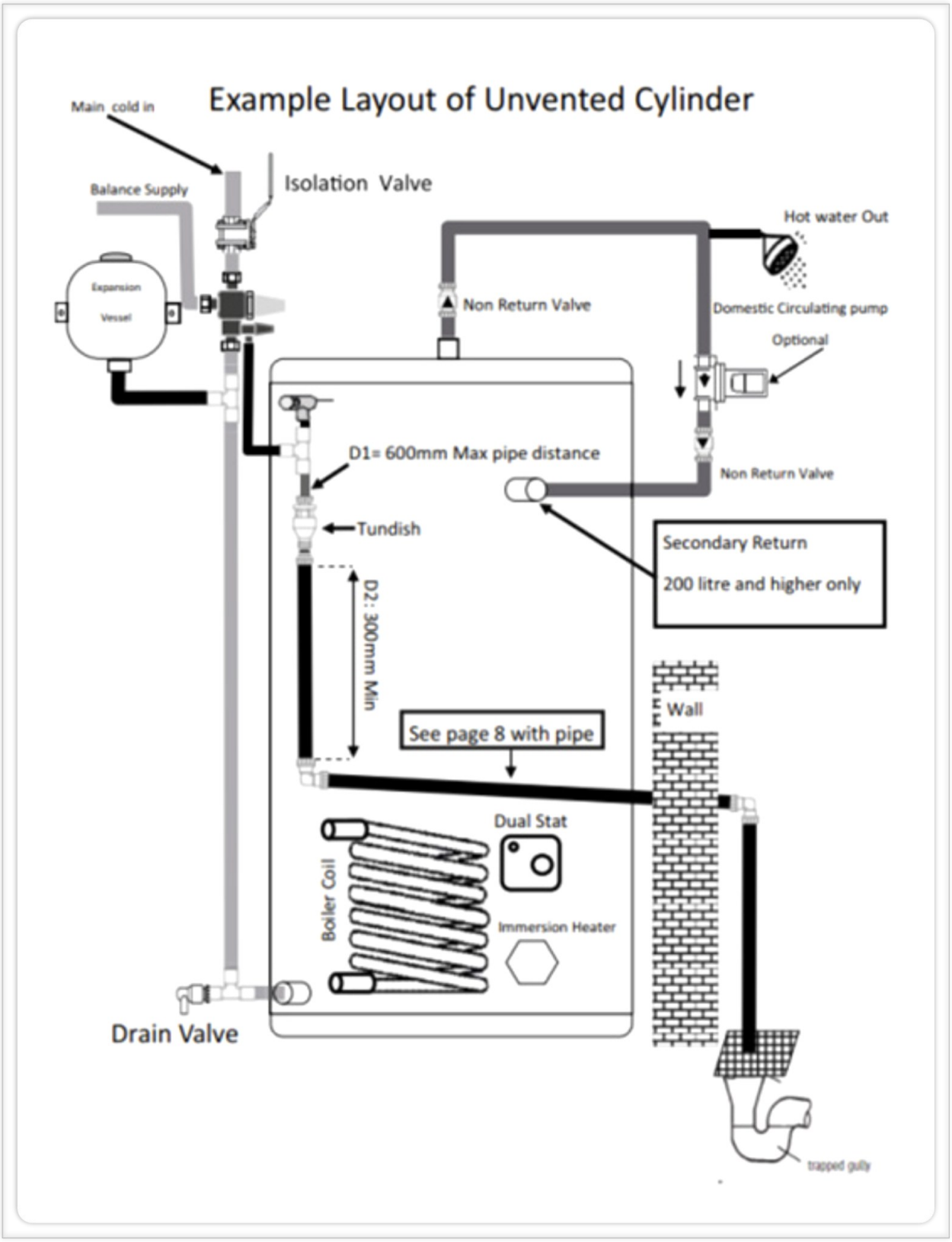

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Installation requirements

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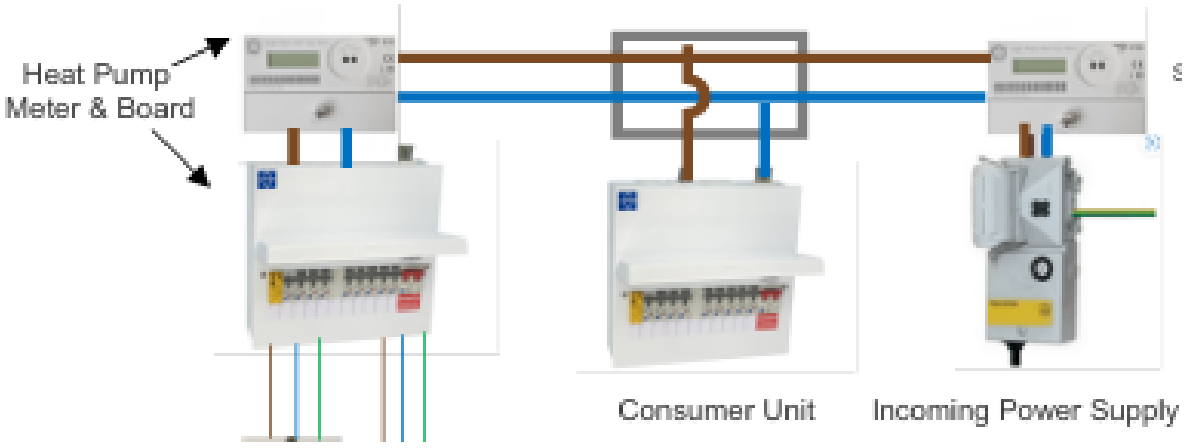
Installation Practice 15: power supplies to heat pump

Electrical installations should comply with current wiring regulations, we require electrical test certificates before MCS certificates are created.

- The Heat Pump MCB or RCBO should be labelled
- We highly recommend a dedicated Heat Pump fuse board and meter to monitor the heat pump usage, especially connected to an existing electrical installation
- As a minimum the Heat Pump outdoor unit must have an electric meter fitted.
- Installing a separate fuse board will eliminate any existing issues with the home-owners electrical installation.
- We recommend Type “C” MCB`s (Miniature Circuit Breakers)
- Surge Protection device fitted to the circuit.
- Check the manufacturers manual to confirm the correct size eg: 6kw heat pump 16amp or 14 kw heat pump 32amp



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Installation requirements

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Installation Practice 16: External cable installation

Electrical installations should comply with current wiring regulations, we require the electrical test certificates before MCS certificates are created.

- External wiring must comply with wiring installation regulations.
- If Twin & earth cable, SY cable or standard flex are used, these must be protected with suitable sleeving, these types of cable must not be exposed.
- Plastic cable ties cannot be used as they` re not UV stable, Metal cable ties must be used to strap cables together.

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Installation requirements

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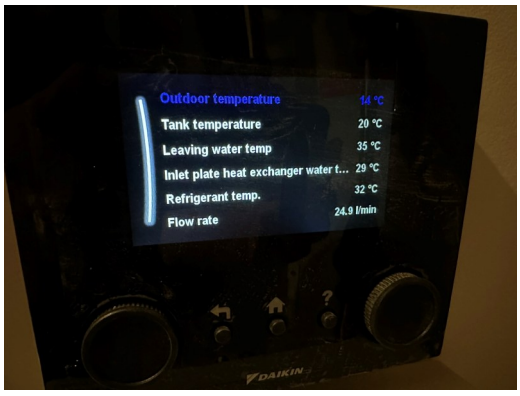
Installation Practice 16: Commissioning Heating system

To achieve ultimate efficiency of the Heat Pump system we require 5 degree delta T through the radiator / under-floor heating system.

Each radiator should be balanced to achieve the correct delta T

Using temperature probes on the inlet and outlet will ensure each radiator is balanced correctly through the lock shield valve.

Each manufacturer will have recommended settings to configure the heat pump system, for installers carrying out the commissioning they must attend the commissioning training course.



For more technical advice and support call us on Tel: 01570 570102

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