

HFC Series Installation & Operation Manual

Complete installation, operation, and maintenance guide for HFC-19, HFC-28, and HFC-37 horizontal concealed fan coil units.

Version 1.1

Warm Energy Labs Ltd trading as Fan Coil
fancoil.co.uk

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1. Safety Warnings

Warning: Important safety information — read this section carefully before installation or operation.

Before You Begin

This manual must be read in full before installing, commissioning, or operating any HFC series fan coil unit. Failure to follow these instructions may result in damage to the unit, property damage, or personal injury.

Keep this manual for future reference. A copy is also available online at fancoil.co.uk.

General Safety

- Installation must be carried out by a competent person in accordance with current UK Building Regulations, BS 7671 (IET Wiring Regulations), and all applicable local regulations.
- Disconnect all electrical supplies before carrying out any installation, maintenance, or service work.
- The unit must be connected to a suitable earthed electrical supply.
- Do not operate the unit if any part is damaged. Contact Fan Coil for replacement parts.
- This unit is designed for indoor installation only — specifically within ceiling voids / loft spaces. Do not install outdoors or in locations exposed to weather.

Water System Safety

- The chilled/heated water system must be designed and installed by a competent person.
- System pressure must not exceed 1.6 MPa (16 bar) at the coil connections.
- All pipework connections must be pressure-tested before commissioning.
- Ensure adequate frost protection if the system may be exposed to freezing temperatures when not in use.
- Isolation valves must be fitted on both flow and return to allow the unit to be drained and removed for service.

Heat Pump Configuration — Not Our Responsibility

The configuration of your heat pump, its wiring, controls, and the hydraulic design of the chilled/heated water circuit are the responsibility of your heat pump installer/engineer. Fan Coil does not provide support for heat pump configuration, zone valve wiring, buffer tank sizing, or system hydraulic design.

The HFC fan coil unit is a terminal unit — it receives chilled or heated water and conditions the air. It does not control the heat pump. Your heat pump engineer is responsible for:

- Configuring the heat pump to produce chilled water at an appropriate temperature
- Designing the pipework layout, including flow rates to each fan coil
- Sizing and installing any buffer tank, low-loss header, or hydraulic separator
- Wiring zone valves, pump controls, and any integration with the heat pump's own controller
- Ensuring adequate water flow to each fan coil unit

If the fan coil unit is not receiving chilled water at the correct temperature or flow rate, it cannot cool effectively. This is a system design issue, not a fan coil fault.

System Design Recommendations

While the hydraulic design is the responsibility of the heat pump engineer, the following recommendations may help achieve the best results:

- **Flow meters:** Consider installing return flow meters on each fan coil circuit. This allows the installer to verify and balance water flow rates during commissioning. Correct flow is essential for achieving rated cooling/heating capacity.
- **Open loop operation for cooling:** It may be advisable to run the fan coil circuits in open loop (no zone valves restricting flow) while in cooling mode. This ensures continuous water circulation through the coils, avoids stagnant warm water in the pipes, and allows the load-compensated controller to manage output by varying fan speed rather than relying on valve control. The controller will simply stop the fan when cooling is not needed — the water continues to circulate but no heat is exchanged.
- **Water flow rates:** Refer to the Technical Specifications chapter for the rated water flow rate for each model. The system should be designed to deliver at least the rated flow to each unit.
- **Cooling buffer tank:** Most heat pumps will periodically interrupt cooling to run a domestic hot water (DHW) cycle. During this time, no chilled water is produced and the fan coil units will gradually lose cooling output. If uninterrupted cooling is important (e.g. server rooms, or during heatwaves where the house heats up quickly), a separate chilled water buffer tank can be installed to store cooling capacity. The buffer provides chilled water to the fan coils while the heat pump is busy with DHW. The required buffer size depends on the total cooling load, the length of the DHW cycle, and the insulation of the building — your heat pump engineer can calculate whether a buffer is worthwhile for your situation. This is not a hard requirement and many residential installations work perfectly well without one.

Water Filtration — Required

A **strainer filter** and a **magnetic filter** must be installed on the water circuit feeding the fan coil unit(s). These are typically installed on the return pipework, upstream of the heat pump.

- **Strainer filter:** Captures debris, solder flux, jointing compound, and particulates that circulate in the system after installation. Without a strainer, debris will accumulate in the fan coil's heat exchanger, restricting water flow and reducing performance.
- **Magnetic filter:** Captures magnetite (black iron oxide sludge) that forms naturally in hydronic systems over time. Magnetite deposits inside the coil restrict flow and reduce heat transfer.

Both filters must be checked and cleaned as part of annual maintenance.

Warranty: Blocked coils caused by debris or magnetite are not covered. If a warranty claim is made for reduced performance or coil blockage and the system does not have a strainer and magnetic filter installed, the claim will be rejected. The cost of flushing or replacing a blocked coil is not covered.

Electrical Safety

- All electrical work must comply with BS 7671 (18th Edition IET Wiring Regulations).
- The unit must be connected via a suitable fused spur or isolator switch that allows the unit to be fully disconnected for service.
- The unit must be earthed. Do not operate without an earth connection.
- Power supply: 230V / 50Hz / 1-phase. Verify the supply voltage matches the unit rating plate before connecting.

CRITICAL: Pipework Insulation — Condensation Risk

This is the most common cause of water damage in chilled water installations. Read this section carefully.

When your heat pump produces chilled water (typically 5–12°C), every pipe, valve, and fitting carrying that water will be below the dew point of the surrounding air. **Moisture from the air will condense on any exposed cold surface** — exactly like a cold glass on a summer day. In a loft space in summer, this condensation can be severe.

If pipework insulation is not installed correctly, you will get persistent dripping from pipes, valves, and fittings. This will cause water damage to ceilings, walls, and the building structure.

Requirements

- **ALL chilled water pipework must be insulated** — every pipe, every fitting, every valve, every connection point. Any exposed cold surface will condensate.
- **Insulation must be closed-cell** (e.g. Armaflex, Kaiflex, or equivalent). Closed-cell insulation does not absorb moisture. Open-cell or fibrous insulation (mineral wool, fibreglass) **must not be used** — it absorbs moisture, becomes saturated, and stops working, making the problem worse.
- **All joints in the insulation must be sealed** with compatible adhesive or tape. Any gap — even a small one — will allow warm moist air to reach the cold pipe surface and condensate inside the insulation.
- **Insulate valves and fittings** as well as straight pipe runs. Isolation valves, tees, elbows, and hose connections are commonly missed and will drip.
- **Insulation thickness:** Minimum 13mm wall thickness for pipes in loft spaces. In hot, humid environments (e.g. loft in summer), 19mm or thicker is recommended.

What Happens If You Get This Wrong

- Water drips from pipes onto ceiling plasterboard, eventually staining and collapsing it
- Continuous moisture encourages mould growth in the loft space
- Wet insulation loses its thermal properties permanently — once saturated, it must be replaced
- Water damage to electrical installations in the ceiling void

Alternative: Running Above Dew Point

If insulation cannot be installed to the required standard (e.g. existing pipework in an inaccessible location), it is possible to set the heat pump to produce water at a temperature **above the dew point** of the surrounding air. This eliminates condensation risk entirely but **significantly reduces cooling capacity**.

The dew point depends on air temperature and humidity. In a typical UK loft in summer (30–40°C, 40–60% relative humidity), the dew point may be 15–22°C. Running chilled water at 15°C instead of 7°C is safe from condensation but delivers much less cooling.

Recommendation: Insulate all pipework correctly with closed-cell insulation. It is always the better option. Running above dew point should only be used as a last resort for pipework that cannot be accessed or insulated.

Warranty Note

Water damage caused by inadequate or incorrect pipework insulation is not covered under warranty. This includes damage caused by using open-cell insulation, leaving gaps in insulation, or failing to insulate valves and fittings.

Condensate Drainage

- Condensate will be produced at the fan coil unit whenever it is operating in cooling mode. This is normal — the unit has a built-in drain tray to collect it.
- The condensate drain must be connected and routed to a suitable drain point before the unit is operated.
- If gravity drainage is not possible, a separate condensate pump must be installed (not included).
- Failure to properly drain condensate may result in water damage to the property.
- Consider installing a float switch (connected to the controller) for overflow protection — see the Controller chapter.

Weight and Mounting

Model	Net Weight
HFC-19	14 kg
HFC-28	17 kg
HFC-37	19 kg

Ensure the ceiling void structure can support the weight of the unit plus the weight of water in the coil. Use appropriate fixings rated for the total suspended weight.

2. Product Overview

About the HFC Series

The HFC series are horizontal concealed fan coil units designed for installation in ceiling voids and loft spaces. They connect to a chilled or heated water circuit from an air source heat pump and deliver conditioned air to the room below via ductwork.

What's Included

Each unit is supplied complete with:

- HFC fan coil unit with 3-row copper heat exchanger
- 200mm plenum box for duct connection
- Washable air filter
- Fan Coil load-compensated controller (mounted on the unit)

The unit is controlled entirely by the Fan Coil load-compensated controller board mounted on the unit. No separate thermostat or remote control is required.

How It Works

1. Chilled (or heated) water from your heat pump flows through the 3-row copper coil inside the unit.
2. The fan draws room air in through the return air box and filter.
3. Air passes over the coil, where heat is exchanged — cooling the air in summer, or warming it in winter.
4. Conditioned air exits through the 200mm plenum and is distributed via ductwork to ceiling vents in the room below.
5. Condensate produced during cooling is collected in the built-in drain tray and exits via the condensate drain connection.

Product Range

Model	Cooling	Heating	Airflow (Min–Max)	Noise	Dimensions (W × L × H)	Weight
HFC-19	1,920 W	3,135 W	170–340 m³/h	37 dB(A)	740 × 515 × 230 mm	14 kg
HFC-28	2,810 W	4,550 W	260–510 m³/h	39 dB(A)	840 × 515 × 230 mm	17 kg
HFC-37	3,720 W	5,982 W	340–680 m³/h	41 dB(A)	940 × 515 × 230 mm	19 kg

Pipe Connection Side

All HFC units can have their pipe connection side switched between left and right on site. See the Installation chapter for instructions. When switched, the cooling and heating capacity correction coefficient is 0.9.

3. Fan Coil Controller

Overview

Every HFC unit ships with a Fan Coil load-compensated controller pre-mounted on the unit.

The controller is located on the fan coil unit itself, in the ceiling void / loft space. It has a small display screen and buttons for configuration.

What the Controller Does

The controller continuously monitors five temperature sensors and uses them to make intelligent decisions about fan operation:

Sensor	Location	Purpose
Water flow temperature	Pipe sensor on water inlet	Detects whether heat pump is producing chilled or heated water
Water return temperature	Pipe sensor on water outlet	Measures the temperature delta across the coil
Air supply temperature	At the air outlet / plenum	Measures the temperature of conditioned air leaving the unit
Air return temperature	At the return air inlet	Measures room temperature (proxy) via the air returning from the room. See note below on ceiling height adjustment.
Ambient / loft temperature	On the controller board	Measures the environment around the FCU. Used to distinguish between genuinely chilled/heated water and water that is simply at ambient temperature because the heat pump is off (important in summer when loft temperatures can be very high)

Return Air Temperature and Ceiling Height

The return air temperature sensor measures the air being drawn back into the unit from the room. Because warm air rises, the air at ceiling height will be warmer than the air at head height or floor level where people actually are.

In a typical room with a 2.4m ceiling, the difference is usually 1–2°C. In rooms with higher ceilings, the difference can be greater.

Recommendation: When setting your target temperature, account for this difference. If you want the room to feel like 21°C at head height, you may need to set the controller target to 22–23°C, because the return air at ceiling level will read warmer than the occupied zone below.

The exact offset depends on room height, insulation, and how much the system has been running. Adjust the target based on how the room feels and fine-tune over a few days.

Automatic Operation

The controller detects the operating mode automatically by comparing the water temperature to the loft ambient temperature:

- **Cooling mode:** When the water flow temperature is significantly below the loft ambient temperature, the controller knows the heat pump is actively producing chilled water and activates cooling.
- **Heating mode:** When the water flow temperature is significantly above the loft ambient temperature, the controller activates heating. **Heating mode can be disabled** in the controller settings if you only want to use the unit for cooling.

- **Standby:** When the water temperature is close to the loft ambient (heat pump off or in transition), the controller keeps the fan off. This is important in summer — loft temperatures can exceed 40°C, so water sitting idle in pipes will be warm. The controller uses the ambient sensor to recognise this as "no active heating" rather than mistaking it for hot water from the heat pump.
- There is no manual seasonal switching. The controller adapts automatically.

Fan Speed Control

The controller drives the fan with **variable speed modulation** — continuously adjustable between a minimum and maximum speed, not fixed steps. The fan speed is adjusted based on:

- The difference between the target temperature and the current return air temperature
- The water temperature delta (flow vs return)
- The rate of temperature change

This means the fan runs faster when the room is far from target and slows down as it approaches. In cooling mode, as the room nears the target temperature, the fan will reduce to its minimum speed rather than switching off abruptly — this maintains gentle air circulation and prevents the temperature from bouncing above and below the target. The fan only stops fully when the room is at or below the target temperature.

Customer Settings

The controller is configured via the display and buttons on the unit. The primary settings are:

Setting	Description	Default
Target temperature	The desired room temperature in °C	21°C
Threshold	The temperature difference (delta) above/below target before the fan activates	1°C
Heating mode	Enable or disable heating mode. When disabled, the unit will only operate for cooling.	Enabled

Example: With a target of 21°C and a threshold of 1°C in cooling mode, the fan will activate when the return air temperature exceeds 22°C and will modulate down as the return air approaches 21°C.

Accessing the Controller

The controller is mounted on the fan coil unit in the loft / ceiling void. To adjust settings:

1. Access the ceiling void via the loft hatch or access panel.
2. Locate the controller on the fan coil unit — it has a small illuminated display.
3. Use the buttons to navigate the menu and adjust settings.
4. Settings are saved immediately and persist through power cycles.

Future connectivity: Modbus support is planned for a future firmware update, allowing integration with building management systems and smart home platforms.

Load Compensation

Traditional fan coil controllers run the fan at a fixed speed regardless of conditions. The Fan Coil load-compensated controller is different — it continuously measures the actual cooling (or heating) load and adjusts the fan output to match.

What this means in practice:

- The controller monitors the water flow and return temperatures to calculate the available cooling/heating energy from the heat pump.

- It monitors the air supply and return temperatures to calculate the actual room demand.
- It combines these to determine how hard the fan needs to work right now.

Example — cooling mode:

Condition	Water Temp	Room Demand	Fan Response
Hot day, room well above target	5°C flow	High	Fan runs at high speed for maximum output
Mild day, room slightly above target	12°C flow	Low	Fan runs slowly — quieter, more efficient
Room at target	Any	None	Fan stops, controller monitors

The result is that the unit only uses the energy it needs. Less noise, less electricity, and the room stays at a stable temperature without the on/off cycling of a traditional thermostat.

The customer sets their target temperature and threshold once. The controller handles everything else automatically.

Float Switch Input (Optional)

The controller has an optional float switch input for condensate overflow protection. A float switch can be installed in the condensate drain tray or drain line.

How it works:

- When the float switch circuit is **open** (normal operation), the unit operates normally.
- When the float switch circuit is **closed** (condensate level too high — drain is blocked or overwhelmed), the controller will:
 1. Stop the fan immediately
 2. Sound an audible buzzer alarm

Important: The float switch will not prevent all condensation. When the fan stops, the chilled water coil will still be cold and condensation will continue to form on the coil surface until the water circuit is isolated or the water warms up. The float switch limits the amount of condensate produced by stopping the fan, but it is not a substitute for a properly installed and maintained condensate drain.

If the float switch alarm activates:

1. Check the condensate drain for blockages and clear if necessary.
2. Empty any accumulated water from the drain tray.
3. Once the drain is clear and the float switch resets (circuit opens), the controller will resume normal operation automatically.

4. Technical Specifications

HFC-19

Parameter	Value
Cooling capacity	1,920 W
Heating capacity	3,135 W
Airflow (Min–Max)	170–340 m³/h
Power input (30 Pa)	44 W
Sound level (30 Pa)	37 dB(A)
Water flow rate	319 L/h
Water pressure loss	~30 kPa
Air outlet (W × H)	460 × 130 mm
Return air box inlet (W × H)	460 × 175 mm
Unit dimensions (W × L × H)	740 × 515 × 230 mm
Net weight (without return air box)	14 kg

HFC-28

Parameter	Value
Cooling capacity	2,810 W
Heating capacity	4,550 W
Airflow (Min–Max)	260–510 m³/h
Power input (30 Pa)	59 W
Sound level (30 Pa)	39 dB(A)
Water flow rate	478 L/h
Water pressure loss	~30 kPa
Air outlet (W × H)	620 × 130 mm
Return air box inlet (W × H)	620 × 175 mm
Unit dimensions (W × L × H)	840 × 515 × 230 mm
Net weight (without return air box)	17 kg

HFC-37

Parameter	Value
Cooling capacity	3,720 W
Heating capacity	5,982 W
Airflow (Min–Max)	340–680 m³/h
Power input (30 Pa)	72 W
Sound level (30 Pa)	41 dB(A)
Water flow rate	638 L/h
Water pressure loss	≤30 kPa
Air outlet (W × H)	650 × 130 mm
Return air box inlet (W × H)	650 × 175 mm
Unit dimensions (W × L × H)	940 × 515 × 230 mm
Net weight (without return air box)	19 kg

Common Specifications (All Models)

Parameter	Value
Coil type	3-row copper tube with high-efficiency louvred aluminium fins
Coil working pressure	≤1.6 MPa
Pipe connection	¾" BSP tapered (internal thread)
Condensate connection	¾" BSP (external thread)
Fan type	Forward multi-vane low-noise centrifugal
Motor type	Class B insulation, capacitor start
Power supply	230V / 50Hz / 1-phase
Protection class	IP20
Power lines	0.5 mm² × 3
Plenum connection	200mm
Controller	Fan Coil load-compensated (5 sensors, variable speed)

Nominal Test Conditions

- **Cooling:** Indoor 27°C dry bulb / 19.5°C wet bulb. Water entering at 7°C, leaving at 12°C.
- **Heating:** Indoor 21°C dry bulb. Water entering at 60°C.
- Noise is tested in a semi-anechoic chamber. Actual values will vary with installation conditions.
- Pipe connection side can be switched on site. Correction coefficient: 0.9 for both cooling and heating.

5. Pre-Installation Checklist

Before You Start

- ☐ Read the safety warnings chapter in full
- ☐ Verify the unit model matches the design specification
- ☐ Check the unit for transport damage — inspect the coil fins, fan, drain tray, and controller
- ☐ Confirm the ceiling void / loft has adequate space for the unit plus service access
- ☐ Confirm the structure can support the unit weight (14–19 kg plus water in coil)
- ☐ Confirm chilled/heated water pipework is available at the installation location
- ☐ Confirm a suitable electrical supply (230V / 50Hz / fused spur) is available
- ☐ Confirm a condensate drain route is available (gravity or separate pump)
- ☐ Confirm 200mm ductwork route from plenum to ceiling vent is planned

Tools Required

- Drill and fixings for ceiling void suspension
- Spirit level
- Pipe wrenches / adjustable spanners
- PTFE tape (for BSP threaded connections)
- Screwdrivers (Phillips and flat)
- Wire strippers
- Multimeter
- Tape measure

Materials Required (Not Included)

- Threaded rod, channel, and fixings for suspension (rated for unit weight + water)
- ¾" BSP isolation valves × 2 (flow and return)
- Strainer filter (if not already fitted to the system)
- Magnetic filter (if not already fitted to the system)
- ¾" BSP flexible hoses or copper pipe with fittings
- **Closed-cell pipe insulation** (Armaflex, Kaiflex, or equivalent) — minimum 13mm wall, 19mm recommended for loft spaces. **Do not use mineral wool or fibreglass.** Include insulation for all valves and fittings.
- Insulation adhesive and compatible tape for sealing all joints
- 200mm insulated flexible duct
- 200mm ceiling vent grille(s)
- 200mm duct clamps (2 per duct run)
- Condensate drain pipe (or separate condensate pump if gravity drain not possible)
- Anti-vibration mounts / rubber isolator hangers
- Float switch for condensate overflow protection (optional but recommended)
- Electrical cable (fused spur to unit)

6. Installation Steps

1. Mount the Unit

The unit must be hung from the ceiling rafters or joists. Do not mount from plasterboard or lightweight battens.

Before mounting, check the joist loading:

Model	Unit Weight	Estimated Weight with Water	With Plenum & Duct
HFC-19	14 kg	~18 kg	~22 kg
HFC-28	17 kg	~22 kg	~26 kg
HFC-37	19 kg	~25 kg	~30 kg

Check that the joists or rafters at the mounting location can support the total suspended weight. If the mounting point spans between joists, use a noggin or cross-brace to distribute the load.

Installation steps:

- Choose the mounting position in the ceiling void. The unit should be level and accessible for future service (controller access, filter changes).
- Install threaded rod or channel hangers from the ceiling rafters/joists.
- Use anti-vibration mounts** (rubber isolators or anti-vibration hangers) between the fixings and the unit. This prevents fan vibration from transmitting through the ceiling structure into the room below. Without anti-vibration mounts, low-frequency hum may be audible in the room.
- The unit must be installed level. Use a spirit level on the drain tray. A slight tilt toward the condensate drain (1–2°) is acceptable to assist drainage.
- After mounting, check all fixings are secure and the unit does not rock or sway.

Minimum clearances:

- Above:** 50 mm for air circulation
- Below:** sufficient for filter access and controller access
- Return air side:** do not obstruct — this is where room air enters
- Plenum side:** clear path for 200mm duct connection

2. Connect Water Pipework

- Verify water filtration is installed.** A strainer filter and magnetic filter must be fitted on the system (typically on the return, upstream of the heat pump). These protect the coil from debris and magnetite. **This is a warranty requirement.**
- Identify the flow and return connections on the unit — ¾" BSP internal thread.
- Install isolation valves on both flow and return pipes.
- Connect pipework using PTFE tape on all threaded joints.
- Insulate ALL chilled water pipework with closed-cell insulation (Armaflex, Kaiflex, or equivalent).** This includes every pipe run, valve, fitting, tee, elbow, and hose connection. Seal all insulation joints with adhesive or compatible tape. Any exposed cold surface will condensate and drip. **Do not use mineral wool or fibreglass insulation — only closed-cell.** Refer to the "CRITICAL: Pipework Insulation" section in the Safety Warnings chapter for full requirements.

6. Pressure test the system to 1.5× working pressure before commissioning. Check for leaks at all joints.

3. Connect Condensate Drain

1. The condensate drain is a ¾" BSP external thread connection on the built-in drain tray.
2. Route the condensate pipe to a suitable drain point — internal waste pipe, external drain, or a separate condensate pump.
3. If using gravity drainage, the pipe must fall continuously at minimum 1:50 gradient.
4. Do not reduce the pipe diameter below the drain connection size.

Warning: The unit will produce condensate whenever operating in cooling mode. Failure to connect the condensate drain will result in water damage.

4. Connect Ductwork

1. Attach 200mm insulated flexible duct to the plenum box.
2. Secure with a 200mm duct clamp at each end (plenum and ceiling vent).
3. Keep duct runs as short and straight as possible — every bend reduces airflow.
4. Insulate the duct to prevent condensation when carrying cold air.
5. Install the 200mm ceiling vent grille in the room below.

5. Electrical Connection

1. **Disconnect the electrical supply** before making any connections.
2. The unit requires 230V / 50Hz via a fused spur or isolator switch (3A fuse is sufficient for all models).
3. Open the electrical connection box on the unit.
4. Connect Live (brown), Neutral (blue), and Earth (green/yellow) to the terminal block.
5. Close the connection box and secure all cable glands.
6. The Fan Coil controller is pre-wired to the fan motor — no additional wiring is needed for the controller.

All electrical work must comply with BS 7671 (IET Wiring Regulations).

6. Changing Pipe Connection Side

The unit ships with pipe connections on one side. To change to the other side:

1. Remove the centrifugal fan, cover plate, and electrical box screws.
2. Move the side plate at the air outlet to the other side.
3. Rotate the fan assembly and cover plate 180° and refix.
4. Move the electrical box to the other side and refix.

When the pipe side is switched, the correction coefficient for both cooling and heating capacity is 0.9.

7. Electrical Connections

Power Supply

Terminal	Connection	Cable Colour
L	Live	Brown
N	Neutral	Blue
E / ?	Earth	Green/Yellow

Supply: 230V AC, 50Hz, single phase. Via fused spur or isolator switch.

Power Consumption

Model	Input Power (30 Pa)	Recommended Fuse
HFC-19	44 W	3A
HFC-28	59 W	3A
HFC-37	72 W	3A

Controller Wiring

The Fan Coil controller is **pre-wired** to the fan motor and all sensors at the factory. No additional controller wiring is required during installation.

The controller receives power from the same supply as the fan motor via the unit's internal wiring.

Notes

- Minimum cable cross-section: 0.5 mm² × 3 core
- The fused spur should be accessible without removing ceiling panels
- Cable entry via glands on the electrical connection box — use appropriate glands for cable diameter
- The unit must be earthed. Do not operate without an earth connection

8. Commissioning

Pre-Commissioning Checks

Before switching on for the first time:

1. **Water system:** System is filled, pressurised, and leak-free. All isolation valves are open.
2. **Condensate drain:** Drain is connected and tested (see drain flow test below).
3. **Ductwork:** All ducts connected and clamped. Ceiling vent(s) installed.
4. **Electrical:** All connections secure. Earth connected. Fused spur is OFF.
5. **Filter:** Filter is installed in the return air box.
6. **Clearances:** Nothing is resting on or obstructing the unit, ducts, or return air path.
7. **Controller:** The Fan Coil controller display is visible and undamaged.

First Start

1. Switch on the electrical supply at the fused spur.
2. The controller display will illuminate and show the current sensor readings.
3. Set the target temperature and threshold on the controller (default: 21°C target, 1°C threshold).
4. If the heat pump is producing chilled or heated water, the controller will detect this and activate the fan automatically.
5. Verify air is flowing from the ceiling vent(s).
6. Check for unusual noise or vibration.

Condensate Drain Flow Test

This test is mandatory before commissioning and is required for warranty registration.

Why This Matters

In cooling mode, the unit removes moisture from the air. On a hot, humid day this can produce a significant amount of water. If the drain cannot keep up, the tray overflows and water damages the ceiling below.

Worst-Case Condensate Production

The following rates are calculated for extreme UK conditions (27°C, 80% relative humidity — a very muggy day with windows open):

	Moisture Removed	Condensate Rate	Per Minute
Inlet air (27°C / 80% RH)	18 g moisture per kg of air	—	—
Air leaving coil (~12°C saturated)	8.7 g/kg	—	—
Moisture removed per kg of air	9.3 g/kg	—	—

Model	Max Airflow	Air Mass Flow	Condensate Rate
HFC-19	340 m³/h	~408 kg/h	~3.8 litres/hour
HFC-28	510 m³/h	~612 kg/h	~5.7 litres/hour
HFC-37	680 m³/h	~816 kg/h	~7.6 litres/hour

The Test

Pour the following amount of water into the drain tray **in one go** and verify it drains completely within 60 seconds:

Units on This Drain	Test Volume
1× HFC-19	1 litre
1× HFC-28	1 litre
1× HFC-37	1.5 litres
2 units sharing a drain	2 litres
3 units sharing a drain	3 litres
4+ units sharing a drain	1 litre per unit

If **multiple fan coil units share a common condensate drain line**, the drain must be able to handle the combined output of all units running simultaneously at full capacity. Test with the combined volume.

Pass / Fail

- **Pass:** Water drains completely within 60 seconds. No leaks at any joint.
- **Fail:** Water pools, drains slowly, or leaks. **Do not commission the unit.** Re-route or increase the drain pipe diameter, increase the gradient, or clear any blockage. Re-test.

Record the test result when submitting installation photographs for warranty registration.

Post-Start Checks (after 10 minutes)

- Air temperature at the supply vent should be noticeably cooler (or warmer) than the room
- Water flow pipe should feel cold (cooling) or hot (heating)
- Water return pipe should be slightly warmer than flow (cooling) or cooler (heating)
- Condensate is draining (in cooling mode — may take a few minutes to begin)
- No water leaks at any pipe joints
- Controller display shows sensible temperature readings on all 5 sensors

Record Keeping

Record the commissioning date, installer details, and sensor readings for the property records.

9. Operation

Day-to-Day Use

The HFC unit is designed for fully automatic operation. Once commissioned:

1. **Set your target temperature** on the controller (accessed in the loft). For example, 21°C.
2. **Set your threshold** — the temperature difference before the fan activates. For example, 1°C means the fan starts when the room is 1°C above target in cooling mode.
3. **That's it.** The controller handles everything else automatically.

The controller detects whether the heat pump is producing chilled water (cooling) or heated water (heating) and adjusts accordingly. No manual seasonal switching is required.

What the Controller Does Automatically

Condition	Controller Action
Heat pump producing chilled water + room above target + threshold	Fan activates, speed modulates to match demand
Room temperature reaches target	Fan speed reduces to minimum, then stops
Heat pump producing heated water + room below target	Fan activates for heating
Heat pump off / water at ambient temperature	Fan stays off (standby)
Mild day, warmer chilled water	Fan runs slower — quieter, more efficient
Hot day, very cold chilled water	Fan runs faster to maximise cooling

Adjusting Settings

To change the target temperature or threshold:

1. Access the unit in the loft / ceiling void.
2. Use the buttons on the controller to navigate the settings menu.
3. Adjust the target temperature or threshold as needed.
4. Settings save immediately.

When the Unit is Not in Use

If the unit won't be used for an extended period:

1. Switch off at the fused spur.
2. Close the isolation valves on the water connections.
3. Leave the filter in place to prevent dust entering the unit.
4. When restarting, open isolation valves and verify system pressure before switching on.

10. Maintenance

Maintenance Schedule

Task	Frequency	Who
Clean the air filter	Every 2–8 weeks depending on room (see below)	Homeowner or installer
Check condensate drain is clear	Every 6 months	Homeowner or installer
Inspect water connections for leaks	Annually	Installer
Check fan operation and noise	Annually	Installer
Clean the coil fins (if accessible)	Annually	Installer
Check electrical connections	Annually	Qualified electrician
Verify controller sensor readings	Annually	Installer
Clean strainer filter	Annually (or more if water is dirty)	Installer
Clean magnetic filter	Annually	Installer

Cleaning the Filter

The filter is washable and reusable. How often you need to clean it depends on the room the unit serves:

Room Type	Recommended Cleaning Frequency	Why
Bedroom	Every 6–8 weeks	Low dust, minimal foot traffic
Living room	Every 4–6 weeks	Moderate dust, soft furnishings, foot traffic
Kitchen / kitchen-diner	Every 2–4 weeks	Cooking grease and particles build up quickly
Home office	Every 4–6 weeks	Similar to living room
Room with pets	Every 2–3 weeks	Pet hair and dander clog filters fast
New build / recently renovated	Every 1–2 weeks initially	Construction dust settles over weeks after completion

How to Clean

1. Switch off the unit at the fused spur.
2. Access the unit in the loft / ceiling void.
3. Slide out the filter.
4. Wash under running water. Use a mild detergent if needed. Do not use hot water — it can damage the filter media.
5. Allow to dry completely before refitting. Do not refit a wet filter.
6. Slide the filter back in and check it sits flush.

A blocked filter is the most common cause of poor performance. It reduces airflow, increases energy consumption, can cause the coil to ice up in cooling mode, and makes the fan work harder (increasing noise). If performance drops, check the filter first.

Cleaning the Condensate Drain

1. Switch off the unit.
2. Locate the condensate drain connection.
3. Disconnect the drain pipe if accessible.
4. Flush with clean water to clear any algae or debris.
5. Reconnect and verify the drain flows freely.

Coil Cleaning

The coil can be cleaned with a soft brush or compressed air at low pressure. Do not use sharp objects or high-pressure water — the aluminium fins are fragile and bending them reduces performance.

Do Not

- Operate the unit without a filter installed
- Spray water directly into the unit or onto electrical components / controller
- Block the return air inlet or supply air outlet
- Hang anything from the unit
- Attempt to repair electrical components or the controller yourself

11. Troubleshooting

Common Issues

Symptom	Possible Cause	Solution
Unit does not start	No power	Check fused spur is on. Check fuse.
Controller display is off	No power to unit	Check electrical connections and fused spur.
Fan does not run	Water temp close to ambient — controller in standby	Normal behaviour. Fan will activate when heat pump produces chilled/heated water.
Fan does not run	Room temperature within threshold of target	Normal. Fan activates when room exceeds target + threshold.
Fan runs but no cooling effect	Heat pump not producing chilled water	Check heat pump is in cooling mode and running. This is a heat pump configuration issue — contact your heat pump engineer.
Fan runs but no cooling effect	Isolation valves closed	Open both flow and return valves.
Fan runs but no cooling effect	Insufficient water flow	Check flow rate. Install flow meters to verify. Check for restrictions, closed valves, or failed circulation pump. Contact heat pump engineer.
Fan runs but no cooling effect	Air lock in coil	Bleed air from the highest point of the water circuit.
Weak airflow	Blocked filter	Clean or replace the filter.
Weak airflow	Kinked or crushed duct	Inspect and straighten duct runs.
Water dripping from ceiling	Condensate drain blocked	Clear the drain.
Water dripping from pipes or ceiling	Pipework insulation missing, damaged, or not closed-cell	All chilled water pipework must be insulated with closed-cell insulation. Check every pipe, valve, and fitting. Replace any open-cell or fibrous insulation. Seal all joints. See Safety Warnings chapter.
Unusual noise	Loose suspension fixings	Check and tighten all hangers.
Unusual noise	Foreign object in fan	Switch off, inspect, remove debris.
Unit vibrating	Not level	Re-level using spirit level.
Cooling/heating output has reduced over time	Coil blocked with debris or magnetite	Check and clean the strainer and magnetic filters. If performance does not improve, the coil may need flushing — contact an installer.
Controller shows unexpected readings	Sensor fault	Contact Fan Coil for support.
Buzzer sounding, fan stopped	Float switch triggered — condensate drain blocked	Clear the drain, empty tray. Unit resumes when float switch resets.

Controller Sensor Readings

If the controller display shows temperature readings that seem wrong:

- **Water flow/return both at ambient:** Heat pump is off or not circulating. This is normal when the system is idle.
- **Air supply and return identical:** Fan may not be running, or duct is disconnected.
- **Loft temp very high:** Normal in summer. The controller accounts for this.

For any persistent issue, contact Fan Coil at hello@fancoil.co.uk with:

- Your unit model and order reference
- The sensor readings shown on the controller display
- A description of the issue

12. Warranty

Your Statutory Rights

Nothing in this warranty affects your statutory rights under the Consumer Rights Act 2015. If you are a consumer, you have legal rights in relation to goods that are faulty or not as described. These statutory rights are not affected by this warranty.

This warranty provides benefits in addition to — not instead of — your statutory rights.

Warranty Terms

Two Warranty Tiers

	Standard Warranty	Extended Warranty
Duration	1 year from date of delivery	3 years from date of commissioning
Requirement	None — applies to all units sold	Registered installer + installation photos + annual service
Covers	Manufacturing defects (parts only)	Manufacturing defects + component failure under normal use (parts only)

Standard Warranty (1 Year)

All HFC series fan coil units are covered by a **1-year standard warranty from the date of delivery**. This applies to every unit regardless of who installs it. The delivery date is recorded automatically when your order is dispatched.

The standard warranty covers:

- Manufacturing defects in materials or workmanship
- Components that are dead on arrival or fail within 1 year due to a manufacturing fault
- Replacement parts shipped free of charge

The standard warranty does not require installer registration or installation photos.

Extended Warranty (3 Years)

To qualify for the **3-year extended warranty from the date of commissioning**, all of the following must be met:

1. Commissioning Date

The registered installer sets the commissioning date when submitting installation photographs via their Fan Coil account. This is the date the unit was first powered on and tested — not the delivery date. The 3-year extended warranty period runs from this date.

If units are purchased in advance and stored before installation, the extended warranty does not begin until the installer registers the commissioning date. However, the commissioning date must be within **6 months of the delivery date**. Units commissioned more than 6 months after delivery revert to the 1-year standard warranty from the delivery date.

2. Registered Installer

The unit must be installed by an installer who is registered with Fan Coil and holds an active account on fancoil.co.uk.

Register at: fancoil.co.uk/register

3. Installation Photographs

The installer must submit photographs of each installed unit via their Fan Coil account within **30 days of the commissioning date** (extensions may be granted at our discretion on request). The following photographs are required:

Photo	What to Show
Unit mounted	The unit suspended from the ceiling structure, showing fixings and anti-vibration mounts
Pipework connections	Flow and return connections with isolation valves visible
Pipework insulation	All pipework fully insulated with closed-cell insulation, joints sealed
Water filtration	Strainer filter and magnetic filter installed on the circuit
Condensate drain	Drain connection and drain route (or condensate pump if fitted)
Ductwork	200mm duct connected to plenum with clamps, routed to ceiling vent
Electrical connection	Fused spur / isolator and cable entry to the unit
Controller display	Controller powered on showing sensor readings
Rating plate	The model and serial number label on the unit

4. Annual Service

The unit must be serviced annually by a registered installer, with a service record logged on the installer's Fan Coil account. The annual service must include:

- Filter cleaned or replaced
- Condensate drain checked and cleared
- Strainer and magnetic filters checked and cleaned
- Visual inspection of pipework insulation
- Check of electrical connections
- Verification of controller sensor readings
- Record of any issues found

If the unit has not been serviced within the 12 months prior to a warranty claim, the extended warranty may not apply.

What Is Covered (Both Tiers)

The warranty covers **replacement parts only**. It does not cover labour, call-out charges, or any costs associated with removing, refitting, or accessing the unit.

Covered components:

- Motor, fan assembly, coil, drain tray
- Fan Coil controller board and sensors
- Replacement parts shipped free of charge to the registered address

What Is Not Covered (Both Tiers)

Labour and access costs are never covered. This includes but is not limited to:

- Call-out charges and installer labour to diagnose, remove, or refit units
- Costs of accessing the unit (scaffolding, loft access, ceiling removal)
- Costs of draining and refilling the water system — isolation valves must be fitted to avoid this

The following are also not covered under either tier:

- Damage caused by incorrect installation (including failure to follow this manual)
- Damage caused by inadequate or incorrect pipework insulation (must be closed-cell — see Safety chapter)
- Damage caused by operation outside specified parameters (voltage, pressure, temperature)
- Damage caused by failure to maintain the unit (e.g. blocked filter, blocked condensate drain)
- Damage from modifications or unauthorised repairs
- Damage from water quality issues (e.g. corrosion from untreated system water)
- Condensate or water damage of any kind caused by installation deficiencies
- **Blocked or restricted coils** caused by debris, magnetite, or system contamination — a strainer filter and magnetic filter must be installed on the water circuit
- Normal wear items (filters, etc.)
- Consequential losses to the extent permitted by law

Isolation Valves

Isolation valves **must** be fitted on both flow and return water connections. This is required for both warranty tiers.

If isolation valves are not fitted:

- Manufacturing defect claims are still accepted
- However, all costs of draining and refilling the water system to access the unit are the responsibility of the installer/customer

Condensate Drain Testing

The condensate drain must be tested during commissioning using the drain flow test in the Commissioning chapter. The installer should confirm this when submitting installation photographs.

Making a Warranty Claim

1. Log in to your account at **fancoil.co.uk**
2. Navigate to your orders and find the relevant order
3. Submit a warranty claim with:
 - Unit serial number (on the rating plate)
 - Description of the fault
 - Controller sensor readings from the display
 - Photographs of the fault
4. We will assess the claim and respond within 2 working days.
5. If approved, replacement parts will be shipped free of charge.
6. **Installation labour for fitting replacement parts is not covered** under either warranty tier.

Homeowner Information

If you are a homeowner:

- The **1-year standard warranty** applies to your unit automatically.
- To benefit from the **3-year extended warranty**, ensure your installer is registered with Fan Coil, submits installation photos, and carries out an annual service.
- The warranty is linked to the unit, not to you personally. It transfers if you sell the property.
- For extended warranty claims, the claim must be submitted by a registered installer. Contact your installer or Fan Coil to find a registered installer in your area.
- Keep a record of your installer's name, the installation date, and your order reference number.

