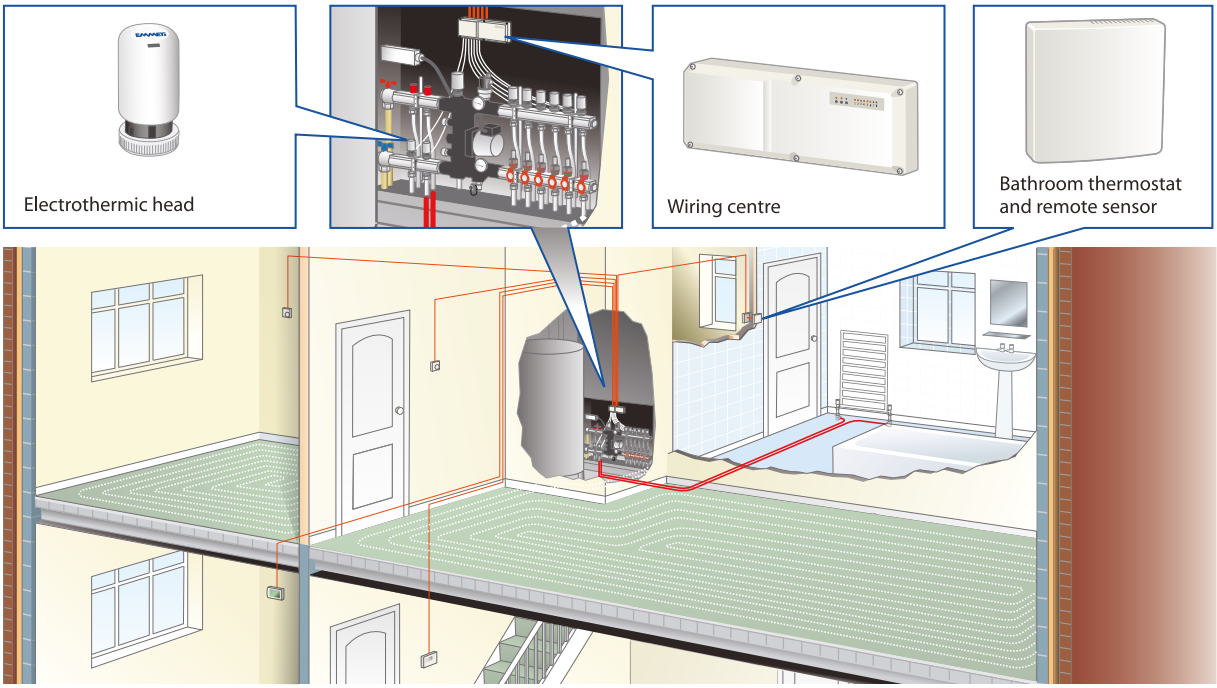
M3V-HE Control Group

M3V-HE Control group for use with Topway T2 manifolds, options for fixed or variable water temperature control for low temperature heating. Includes mixing valve, differential pressure bypass and ErP compliant Wilo Yonos Para circulation pump.

- Pre-assembled M3V-HE Control group constructed from PPA composite with four swivel joints for connection to Topway T2 manifolds on left and right side
- The in-line connection format enables high temperature and low temperature circuits to be connected to each side of the mixing set as one compact unit
- Fitted with a Wilo Yonos Para HU 15/6 Class A Pump
- Built-in automatic air vent and drain/fill valves
- Integrated mixing valve with thermostatic or motorised actuator options (both purchased separately) for fixed or variable temperature applications
- Differential pressure bypass valve included to ensure correct system balancing when commissioning
- Thermostatic mixing valve with remote mixed water sensor provides underfloor heating flow temperatures between 20 - 65°C

Technical Product Guide

FCU-HE Floor Control Unit



The in-line solution for both high and low temperature systems

Manifold solutions are usually thought of as only for underfloor heating applications. Today there are a large number of applications where both underfloor systems and radiators or towel rails are all part of the same heating system.

The FCU-HE Floor Control Unit is designed to cater for both high (wall hung radiators) and low (underfloor heating) temperature applications in a simple to use, compact format. The illustration above shows the convenience of the 'in-line' format of the manifold when connecting to both radiators and underfloor circuits. This means that both radiators and underfloor circuits can be connected in the same way with the same benefits in terms of:

- **Installation** - point to point plumbing - no joints to leak below floor level and the convenience of flexible plastic pipes to and from the manifold for each circuit
- **Ease of commissioning** - because each circuit can be separately balanced using our patented flowmeters and lockshields, each circuit is accurately balanced at a single central control point to ensure optimum performance
- **Controlability** – each room, whether heated by radiators or underfloor circuit can be controlled separately with its own thermostat. Emmeti have a great range of controls for both wired and wireless applications together with wiring centres and remote sensors to ensure that the installer has a range of solutions to meet any system application
- **Economy** – precisely because the system can be accurately controlled, room by room, zone by zone, it offers great scope for reducing room temperatures and minimising operating times, with the use of programmable thermostats, the user can save as much as 20% (depending on the property and system) so saving energy costs.
- **Flexibility** – the M3V-HE control group at the heart of the manifold assembly is purpose designed to offer both fixed temperature thermostatic control of the underfloor heating system or variable temperature control such as weather compensation using the same control group with different controls from the Emmeti range to give exactly the kind of performance being looked for
- **Convenience** – the 'in-line' format of the manifold means that both underfloor heating and radiator circuits can be connected in exactly the same way. The FCU-HE Floor Control Unit is available with a selection of high and low temperature circuits pre-assembled to the M3V-HE control group in a range of options designed to give maximum flexibility in meeting the requirements of the heating system. It is also available as a control group only so that the customer can match their requirements from Emmeti's comprehensive manifold range

M3V-HE Control Group

How does it work?

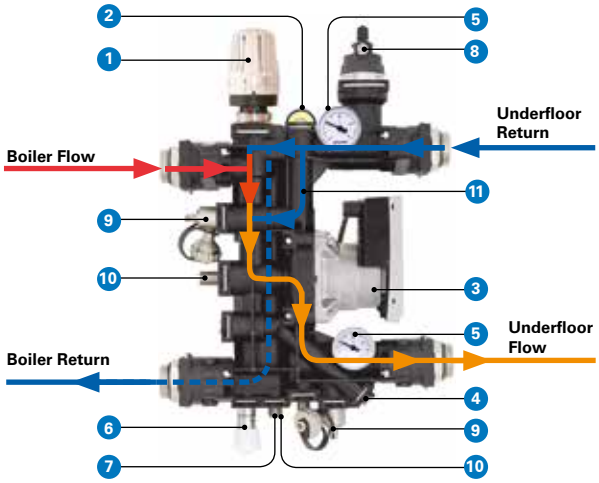


Fig. 1

1. Thermostatic mixing valve with thermostatic head and remote sensor, delivering temperatures between 20 and 65°C*
2. Underfloor flow increase adjusting valve
3. Wilo Yonos Para HU 15/6 Class A Pump
4. Remote sensing probe pocket
5. Flow (mixed) and return temperature thermometers between 0 and 80 °C
6. Differential pressure by-pass valve (between 0.1 and 0.6 bar)
7. Circulator Isolating and balancing valve, for servicing
8. ½" automatic air vent
9. A pair of drain/fill valves with swivel connection and cap
10. Circulator isolating valve, for servicing pump
11. Underfloor flow increase channel controlled by 2, for flow management

* *3-point actuator available for heating or heating and cooling applications*

General

At the heart of the FCU-HE Floor Control Unit is the M3V-HE Control Group which uses a PPA composite resin moulding to create a compact format with built-in components such as the mixing valve, air vent, fill and drain valve. The FCU-HE Floor Control Unit has a ErP compliant Wilo Yonos Para HU 15/6 Class A circulating pump along with built-in isolating valves to facilitate replacement of the pump if necessary.

A choice of temperature control head for the mixing valve is available. The thermostatic head and remote sensor for fixed temperature heating applications (provided) and a 3-point motorised actuator (not provided) which can be used in variable temperature applications for both heating and cooling combined systems, with a BEMS system.

Operation

In normal operation, the mixed low temperature water supplied to the underfloor heating system is controlled either by the thermostatic head with remote temperature sensor (illustrated and purchased separately or alternatively the 230V, 3-point motorised actuator fitted to the mixing valve (optional extra).

The flow paths through the M3V-HE control group are shown in Fig.1 above left. The calibration and bypass valve (2) controls the bypass flow rate of the underfloor heating system, ensuring that the design ΔT is reached.

Differential pressure bypass valve operation

The high temperature bypass valve 6 in Fig. 2 keeps the inlet pressure constant, consistent with the maximum high temperature flow rate required by the system, in the event of manual or automatic shut-off of high temperature circuits that are installed.

The FCU-HE Floor Control Unit has a variable speed circulator which automatically keeps the pump pressure constant and so does not require a low temperature bypass valve.

Fig. 2

High temperature differential pressure bypass valve

M3V-HE Control Group & Accessories

M3V-HE Control Group with Class A circulating pump, mixing valve and auto bypass

Description	Pcs/Pack	Code
1"	1	28158300
1¼"	1	28158310

For use with Topway T2 manifolds, this sophisticated Control Group allows both fixed or variable control of water temperature for low temperature heating. Available in 1" and 1¼" sizes for use with the largest Topway manifolds. This ilustration shows connectivity on the left hand side for high temperature wall hung radiator circuits, and on the right hand side for low temperature underfloor heating systems.

The compact assembly is moulded in PPA composite resin and incorporates a number of features all designed to make the installer's task easier. These include a Wilo Yonos Para Hu 15/6 variable speed Class A pump with pump isolating valves, differential pressure by-pass, return balancing valves for adjusting ΔT underfloor heating flow, a pair of drain/fill valves, pump isolators and flow and return temperature gauges.

For use with either a thermostatic head 90046750, 230V 3-point actuator 28157210 or 24V 0-10V 3-point actuator 28157220.

RCE Weather compensating kit for heating and cooling

Description	Pcs/Pack	Code
RCE weather compensator	1	28139070

The RCE is an electronic temperature controller that has three modes of operation; Weather Compensation, Fixed Point, and Modulating. It can be used for low temperature Underfloor Heating and cooling and high temperature radiator heating.

Includes electronic control unit, remote mounting box, 2 sensors, probe holders and extension connector. The RCE can control 230V or 24V 0-10V mixing actuators.

Thermostatic actuator with remote sensor for M3V-HE Control Group

Pcs/Pack	Code
1	90046750

Note: Not for Firstbox groups, only for M3V-HE Control Groups.
Temperature range 20°C - 65°C.
Connection size M30 x 1.5, capillary length 2m.

Thermostatic actuator with remote sensor for use with TM3, M3V-HE, FMU2 and FCU-HE control groups

Type	Pcs/Pack	Code
Remote sensing thermostatic actuator	1	90060890

A remote sensing thermostatic actuator with a shortened and sleeved capillary tube (400mm) to give added protection.

Temperature range between 20-65°C with range limiting pins.

3-point actuator for M3V-HE Control Group

	Pcs/Pack	Code
230V	1	28157210
24V 0-10V	1	28157220

230V 3-point actuator for use with RCE weather compensating kit 28139070 above.

Pump wiring box with safety over temperature thermostat

Pcs/Pack	Code
1	28130632

This safety thermostat is wired to stop the pump operating when the mixed flow temperature reaches a certain preset level.

Insulating shell for FCU-HE Floor Control Unit and M3V-HE Control Group

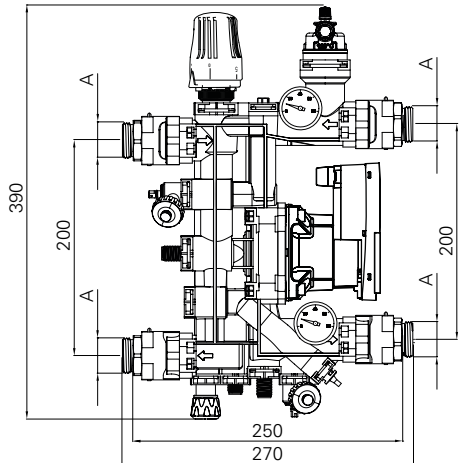
Pcs/Pack	Code
1	01306510

In closed-cell crosslinked expanded polyethylene.
When installing the insulating shell, fit the shell before making any water or electrical connections to the M3V-HE mixing unit.
If the shell is being installed on an assembly inside a metal cabinet, it is recommended that the assembly be installed maintaining a distance of 135 mm between the back of the box and the wall.

M3V-HE Control Group & Accessories

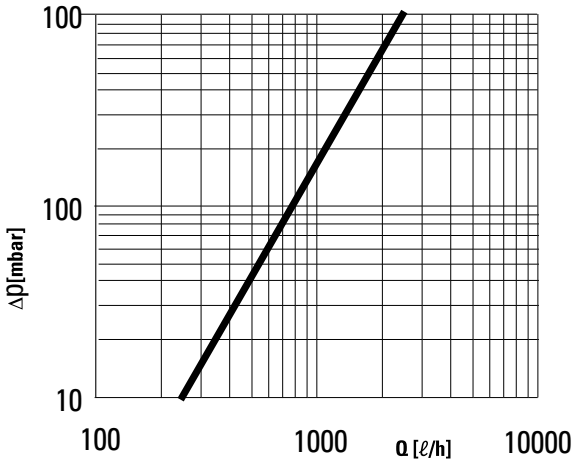
Connections and Dimensions

M3V-HE Control Group



Model	A
1"	G 1"
1¼"	G 1¼"

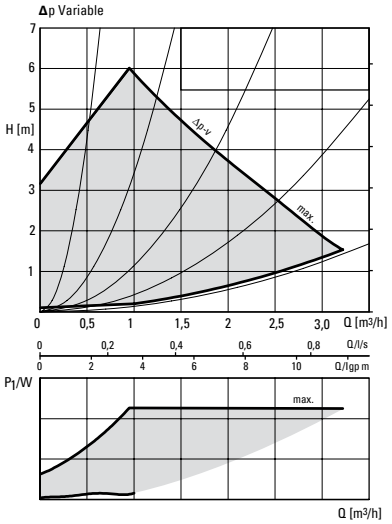
Mixing valve pressure loss for M3V-HE and FCU-HE Floor Control Units



Pressure drop mixing valve kv (Dt=2K) = 2.5

Pump performance chart for Wilo Yonos Para HU 15/6

Variable Differential Pressure "Δp-v" (default setting).



Constant Differential Pressure "Δp-c" (default setting).