

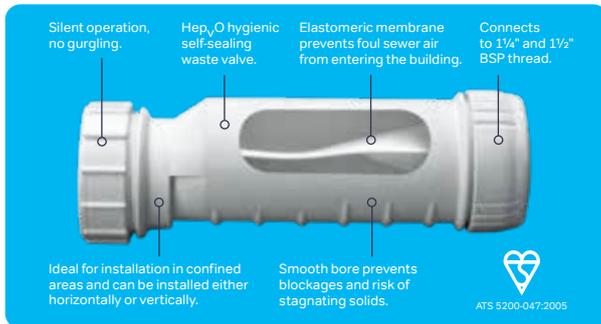
# Wavin

## Management of Condensate Drainage using Hep<sub>v</sub>O Waste Valves

For use in a system with under pressure HVAC equipment including the following: Drainage from Airconditioning, Mechanical Ventilation and Heat Recovery (MVHR) & Dehumidifiers.

### Description

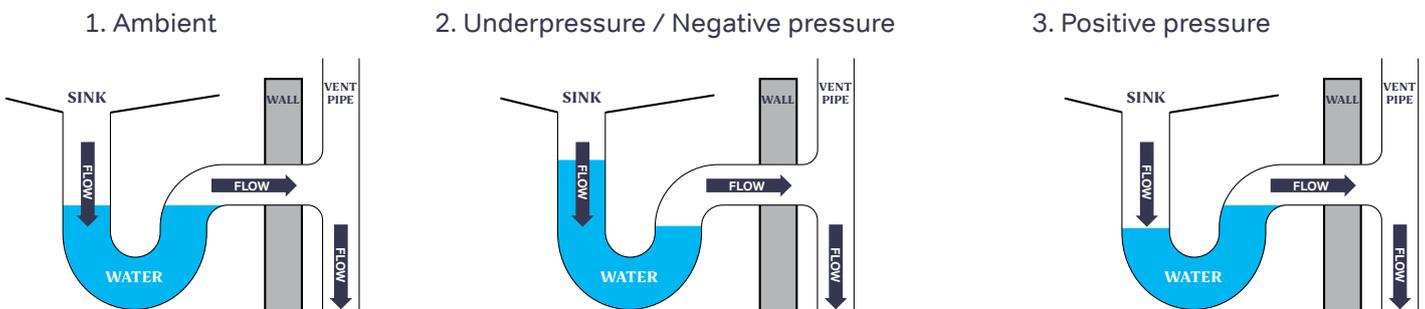
Hep<sub>v</sub>O is a self-sealing waste valve for use as an alternative to a traditional water seal trap, in particular where a water seal trap is not suitable, for example, due to climate, movement of the appliance or because of infrequent use. Its in-line design and the option of either horizontal or vertical installation can save space. The valve can also reduce the requirement for additional venting of some appliances. Hep<sub>v</sub>O is made of a polypropylene body with an elastomeric membrane, in the form of a self-flattening tube, acting as a self-sealing valve. The self-closing membrane prevents foul air from drainage systems from entering the building and also acts as an insect barrier.



The valve is approximately 180mm (7") long and available in two to connect to 32mm (1¼") or 40mm (1½") discharge pipework.

Building Regulations typically require that any drainage system is designed so that foul air does not enter the building. The guidance specifies the minimum water trap seal depth necessary to achieve this requirement for each type of appliance. Good operation of water traps relies on there being a continuous air gap above the wastewater flow in the branch pipe to limit negative pressures and self-siphonage.

In HVAC installations, Hep<sub>v</sub>O can only be used in underpressure or ambient systems:



The design of Hep<sub>v</sub>O makes it particularly suitable to use in Air conditioners, Mechanical Ventilation, Heat Recovery (MVHR) & Dehumidifiers where low flow of wastewater or indeed no flow may occur. The design and operation of the Hep<sub>v</sub>O is not compromised in these situations which would render a water trap inoperable.

## Condensate Drain

The unit's condensation drainpipe must be fitted and connected to the dwelling's foul water drainage system in accordance with the relevant building regulations.

Hep<sub>v</sub>O can be installed horizontally or vertically. For maximum space saving, horizontal installation is usually preferred.

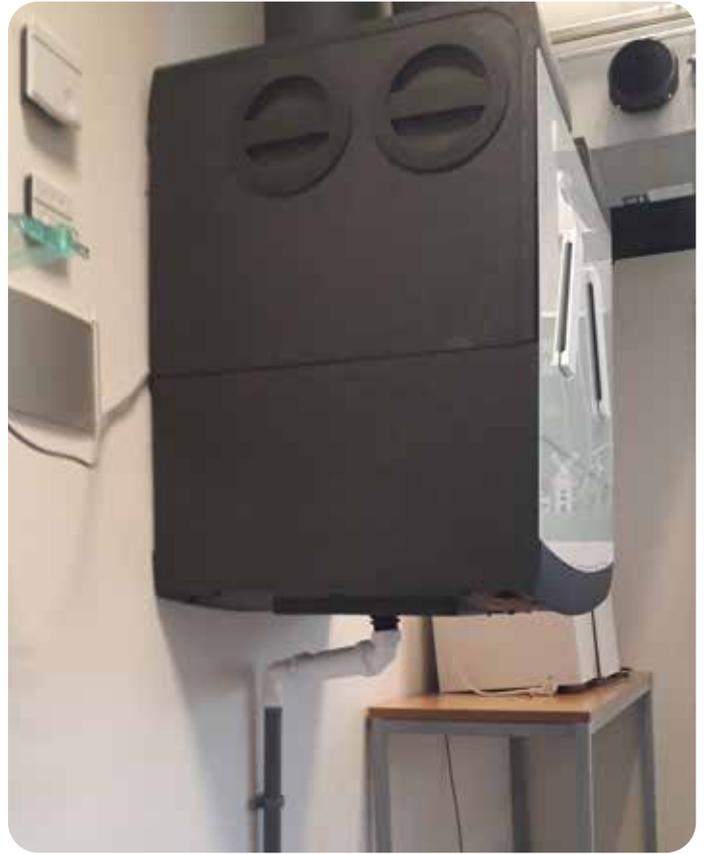
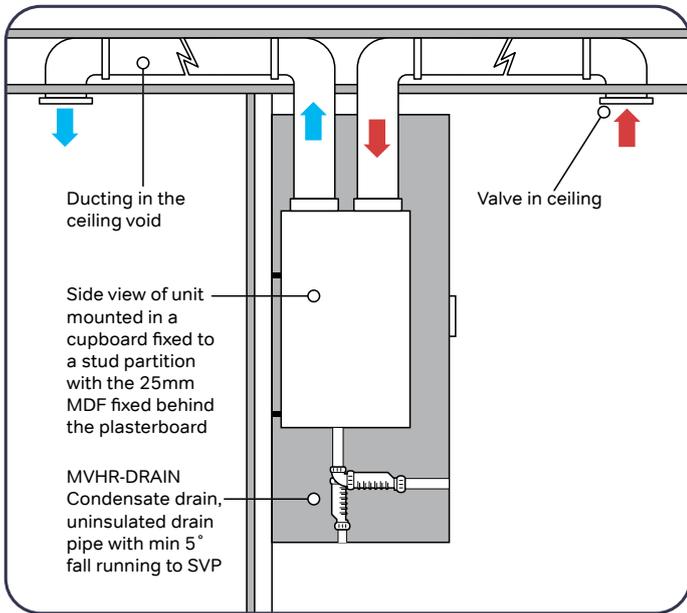


Figure 1. Direct Connection (Vertical)

Figure 2. Direct Connection (Horizontal)

Hep<sub>v</sub>O is designed to connect directly to a 1¼" (32mm valve) or 1½" (40mm valve) male thread. Angled adaptors are available for horizontal installations and running adaptors are available to accept incoming pipe.

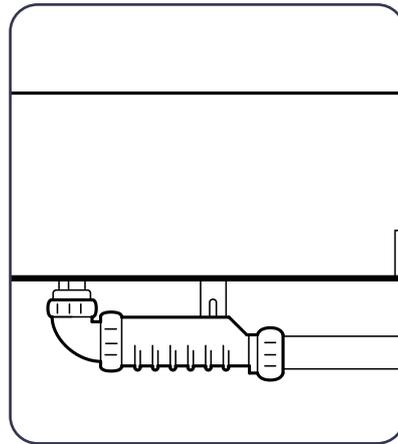
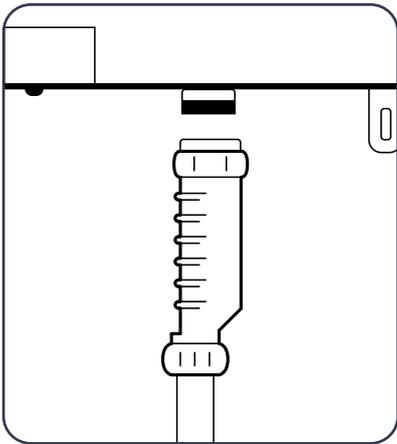
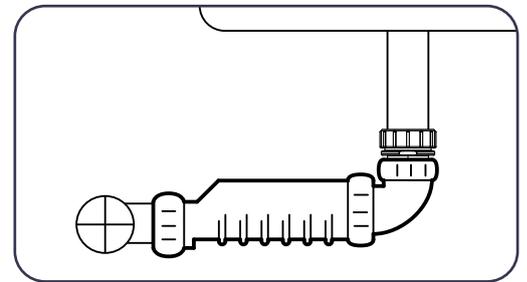


Figure 3. Indirect Connection



## The Condensate Drain

- Must incorporate a suitable trap, which must act as an air lock and must be sealed.
- Must be adequately secured along its length.
- Must be insulated if any part of the pipe passes through an unheated void or a space which could fall below 4°C (39°F) to prevent freezing of the condensate.
- Must be installed to have a fall in accordance with local waste pipe fall regulations. Wavin angled adaptors are designed for this purpose and feature an angle of 2.5°
- In these applications it is recommended to use a Hep<sub>v</sub>O self-sealing plastic waste valve, which is a diaphragm type waste valve, in place of a conventional water U or P trap which could dry out in these situations. A dried-out P trap will allow a significant volume of contaminated air into the living space of the building, particularly where negative pressure is present. Contaminated air and droplets of condensation can also enter the HVAC fan and impair the performance and hygiene of the unit, for instance through mould growth.

# Hep<sub>v</sub>O Performance Tests

## Test Description

A number of tests were performed with the apparatus shown over a range of negative pressures. Adjustments were made to the vacuum pump controls to change the vacuum level in the system and produce the following conditions:-

- -1.2kPa (12cm / 4.7" water column)
- -2.6kPa (26cm / 10.2" water column)
- -4.3kPa (43cm / 16.9" water column)

The vertical water column is visible in Image B below and was maintained without leakage at each of the negative test pressures.

The results demonstrate that the Hep<sub>v</sub>O valve positioned in the lower corner of the image was completely airtight over the range of negative test pressures. The valve in this arrangement is closed and no air is admitted from the outlet of the unit. Once the negative pressure in the vertical column above the valve inlet is removed the water in the column passes through the valve outlet to waste.

The conclusion of these tests is that the Hep<sub>v</sub>O valve is perfectly suitable as an air lock for condensate drainage of heat recovery units and other applications generating condensate under negative pressures to a level of -4kPa.

## Example pipework calculation

It is recommended that the minimum vertical distance from the condensate tray to the valve is based on the operating pressure of the fan. This distance being:

Fan Pressure (in mm vacuum) + 10% + 10mm or  
Fan Pressure (inches vacuum) + 10% + 0.4".

Hence for a 600Pa static pressure fan, the minimum vertical distance would be 60mm + 10% + 10mm = 76mm (or 2.4" + 10% + 0.4" = 3.0") below the condensate tray. The construction of the HVAC unit may already accommodate all or part of the required head, so it is recommended that you check the construction of the unit with the manufacturer. Also, please note that 40mm (1.5") of the required head is already accommodated within the body of the Hep<sub>v</sub>O valve. (see diagram Figure 4).



Hep<sub>v</sub>O is Certified and Listed by both IAPMO and ICC-ES as meeting the requirements of ASME A112.18.8.

Devices Listed to ASME A112.18.8 meet the requirements for Condensate Drainage applications under the Uniform Plumbing Code (2024) Section 814.4 and the Uniform Mechanical Code (2024) Section 310.4.

Image A



Image B



Figure 4. Hep<sub>v</sub>O valve

