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Manufacturing Excellence

Victorum

Victorum Pre-Plumb & Victorum Compact Exhaust Air Heat Pump Installation & Maintenance Manual

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UNITED KINGDOM / IRELAND

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benchmark
THE MARK OF QUALITY FOR THE INSTALLATION, COMMISSIONING AND SERVICING OF DOMESTIC HEATING AND HOT WATER SYSTEMS

hot water association
CHARTER MEMBER

ENG-0014-8

Warranty Card

Please register your product online

MUST BE COMPLETED AND THEN REGISTERED ONLINE TO COMPLETE WARRANTY

Homeowner Details

Name

Address

Contact Tel.

Contact Email

Installer Details

Name

Company

Address

Contact Tel.

Contact Email

Design Parameters

System Type

Commissioning Date

Location of Exhaust Air Heat Pump.

Serial No.

Third Party Certifier Details

Name

Company

Address

Contact Tel.

Contact Email

General Checks

Has the system been installed in accordancewith manufacturer's requirements? Y N

Type of ductwork installed

- Rigid Radial
- Rigid Flat-pack
- Semi Rigid

System Recording

Air Flow Measurement - Extract

Room Reference	Measured Air Flow High Rate (l/s)	Design Air Flow High Rate (l/s)	Measured Air Flow Low Rate (l/s)	Design Air Flow Low Rate (l/s)
Kitchen				
Utility				
Bathroom				
En Suite				

Heating System

Test Pressure (Bar)	Fill Pressure (Bar)	Expansion Vessel (Bar)

Installation Checklist

General

Have the correct number and location of extract fans/terminals been installed?	
Is the installation complete with no obvious defects present?	
Has all protection/packaging been removed such that the system is fully functional?	
For ducted systems, has ductwork been installed in such a manner that air resistance and leakage is kept to a minimum?	
Is the ductwork fitted to the correct connections on the exhaust air heat pump?	
Has all the exhaust ductwork been insulated?	
Has the exhaust air heat pump and has all ductwork been effectively insulated where installed in unheated spaces?	
Is flow and return pipework connected correctly?	
Is primary flow + return insulated?	
Has system been completely flushed of air + charged to the correct pressure (2BAR) ?	
Is heating expansion vessel correctly sized, secured and charged to the right pressure?	
Has the correct size electrical circuit breaker been installed?	
Has an electrical isolation switch been installed?	
Has the correct size power cable been used for exhaust air heat pump?	

See Page 12 for cable requirements

NO Pre Paid Meters are to be installed on a Victorum Exhaust Air Heat Pump System

Installation Checklist

Ventilation System

Total floor area of dwelling?	
Total installed equivalent area of background ventilators in dwelling?	
Does the total installed equivalent ventilator area meet the requirements given in Section 1.2 of TGD F?	
Have all background ventilators been left in the open position?	
Have the correct number and location of extract fans/terminals been installed that satisfy relevant Table of Tables 1, 2 and 3 of TGD F?	
Is the installation complete with no obvious defects present?	
Do all internal doors have sufficient undercut to allow air transfer between rooms (i.e. 10 mm over and above final floor finish)?	
Has all protection/packaging been removed (including background ventilators) such that system is fully functional?	
For ducted systems, has the ductwork installation been installed in such a manner that air resistance and leakage is kept to a minimum?	
Are the correct number and size of background ventilators provided that satisfy TGD F?	
Has the entire system been installed such that there is sufficient access for routine maintenance and repair/replacement of components?	
Have appropriate air terminal devices been installed to allow system balance?	
Has and has all ductwork been effectively insulated where installed in unheated spaces?	
Condensate connection is complete and drains to an appropriate location?	
Upon initial start-up, was any abnormal sound or vibration experienced, or unusual smells detected?	

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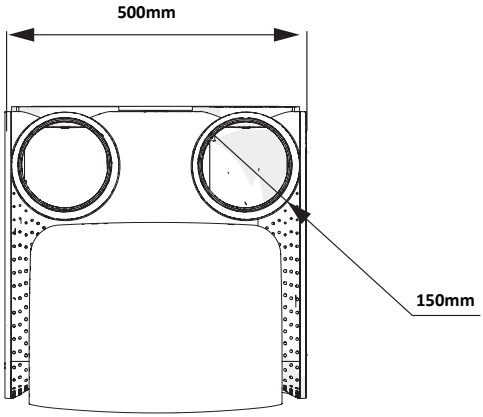
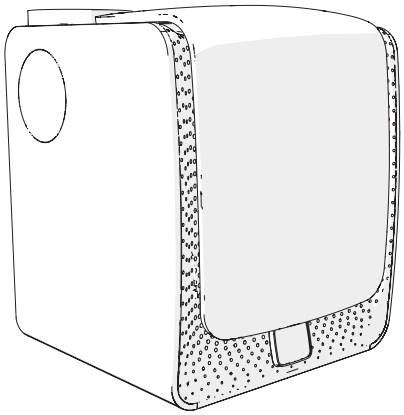
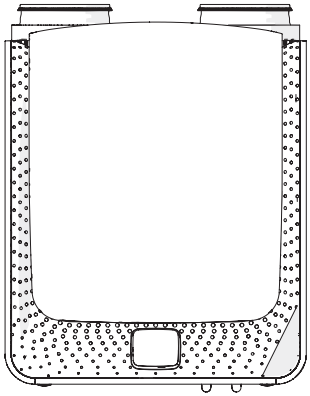
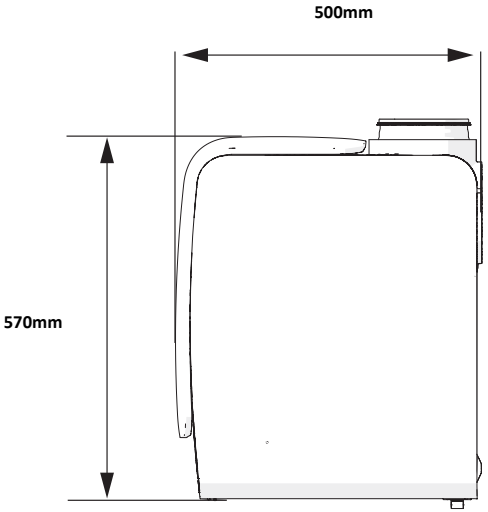
Victorum Dimensions









Technical Specification

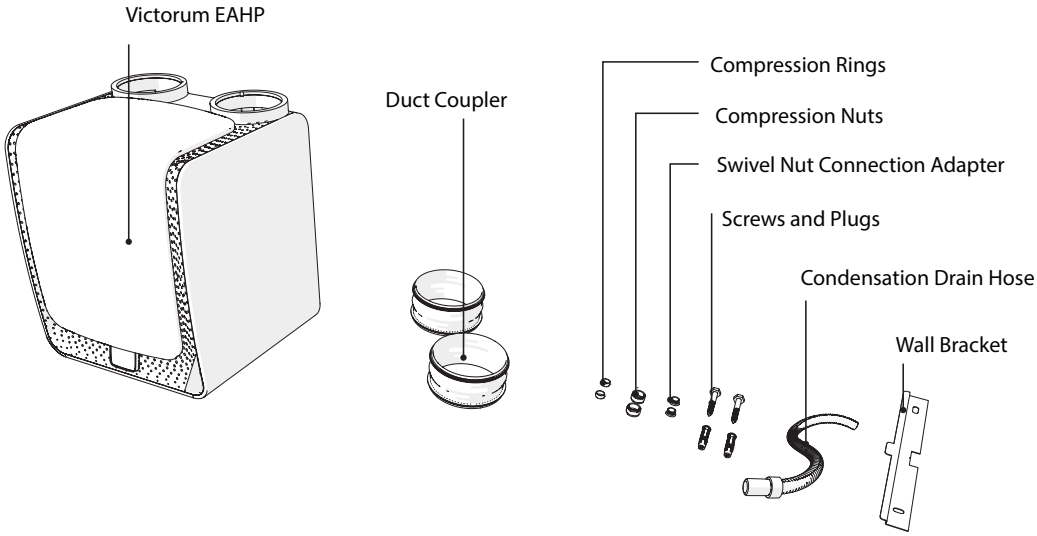
Technical Specifications		
Max Electrical Power Drawn	Watt (w)	620
Average Electrical Power Drawn	Watt (w)	300
Max Delivered Thermal Power	KW	1.7
COP (A20, W45)		4.9
Refrigerant	Type	R134a
Refrigerant Content	g	580
Dimensions & Weights		
Height	mm	570
Width	mm	500
Depth	mm	500
Weight	kg	45
IP Classification	IP	x2
Flow & Return Connections	mm	15
	Inch	1/2
Air Inlet	mm	150
Air Outlet	mm	150
Allowed Water Acidity Level	pH	7.5-8.0
Max Permitted Humidity Installation Space	rH	70%
Max Permissible Temperature Installation Space	°C	35
Max Flow Temperature	°C	65
Ventilation Flow Rate Whilst Heating	m³/h	100-250
Noise Level	dBa	<41
Pressure Drop	Pa	30
SAP Appendix Q - Approved Results		
Kitchen + 1 Wet Room	Specific Fan Power	0.32
Kitchen + 2 Wet Room		0.29
Kitchen + 3 Wet Room		0.29
Kitchen + 4 Wet Room		0.33
Kitchen + 5 Wet Room		0.39
Kitchen + 6 Wet Room		0.45

SAP Appx. Q Certified Approved Results

Contents of the Box

Check that the following parts are included:

- Victorum EAHP
- Wall bracket
- Condensation drain hose
- 2 x 15 mm Compression Rings
- 2 x Compression Nuts
- 2 x Swivel Nut Adapter
- 2 x Screws
- 2 x Plugs
- 2 x Duct Coupler



If any contents are missing please contact your local Joule representative.

Pre-Installation Notes

- Store the manual in a safe place in order to be able to use it as reference after installation. For maximum safety installers should always read the following warnings carefully.
- Store the provided manual in a safe location with the end user after installation, and remember to hand it over to the new end user if the Heat Pump & Cylinder unit is sold or transferred.
- The Exhaust Air Heat Pump is compliant with the requirements of the Low Voltage Directive (2014/35/EU), the EMC Directive (2014/30/EU) and the pressure equipment directive (2014/68/EU).
- The manufacturers shall not be responsible for damage originating from unauthorised changes or the improper connection of electric and hydraulic lines.
- Do not use units if you see some damage on them and notice something untoward such as loud noise, smell or burning.
- In order to prevent electric shocks, fires or injuries, always stop the unit, disable the protection switch and contact Joule's technical support if the unit produces smoke, if the power cable is hot or damaged, or if the unit is very noisy.
- Always remember to inspect the unit, electric connections, refrigerant tubes and protections regularly. These operations shall be performed by qualified personnel only.
- The unit contains moving parts and electrical parts which should always be kept out of the reach of children.
- Unauthorised personnel should not attempt to repair, move, alter or reinstall the unit. These operations may cause product damage, electric shock and fires.
- Do not place containers with liquids or other objects on the unit.
- All the materials used for the manufacture and packaging of the Exhaust Air heat pump are recyclable. The packaging material and exhaust batteries of the remote controller (optional) must be disposed of in accordance with local regulations.
- The Exhaust Air Heat Pump containing a refrigerant must be disposed in an authorised centre or returned to retailer as special wastes.
- To avoid your hands being injured by the edge of the parts wear protective gloves to unpack, move, install, and service the unit. Do not touch the internal parts (water pipes, refrigerant pipes, heat exchangers, etc) while running the units. If you need to adjust and touch the units, allow sufficient time for the unit to cool and be sure to wear suitable personal protective equipment.
- In case of refrigerant leakage, try to avoid contact with the refrigerant as this could result in severe wounds.

First Fix Notes

Primary Pipework From Heat Pump To Pre-plumbed Unit

- **Minimum** pipe size 22mm copper or 25mm Multilayer
- The primary pipework should be fully insulated and protected from water and moisture.
- The supplied flexible hose should be used for piping the condense outlet only, providing a suitable air gap to the drain connection.

Electrical Supply And Cable Requirements

- Power supply to heat pump to be terminated with with a suitable isolator located next to the unit.
- Pre-moulded communication cable from Heat Pump unit to the pre-plumbed unit (Supplied by Joule)

Heat Pump	Breaker Size
HHH-2-0000-VHP	13Amp

Communication	Location
Pre-moulded communication cable	From Heat Pump unit (Ethernet) to pre-plumbed unit (Field Bus 1).

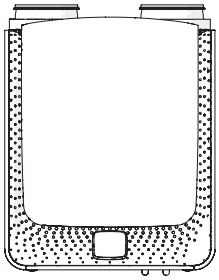
- When installing the Heat Pump take great care to install as per the detailed notes for installation locations. The Exhaust Air Heat Pump must have minimum clearance of 300mm at the top of the unit and 150mm at the bottom of the unit.
- The Exhaust Air Heat Pump must not be installed in a location without these clearances available.
- Condensation will form inside the Heat Pump during normal operation. Ensure the correct pipework is used and that it has a continuous fall to the drain connection.
- An adequate air gap is also required to allow the water to drain correctly.
- The Exhaust Air Heat Pump must be installed vertically and be plumb and level.

First Fix Notes

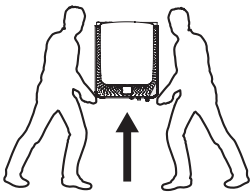
- Underfloor heating pipe centres to be equal to or less than 150mm.
- Radiators are to be sized according to standardized design methods. Eg. SR.50 or MCS.
- An electronic mixing valve is required for underfloor heating. This is to control the flow temperature entering the floor.
- All underfloor heating manifolds must have a suitable sized additional circulating pump to maintain a constant flow rate through the UFH loops.
- All zones to be controlled using 2 port valves (minimum valve size 22mm).
- 3 port valves MUST not be used.
- Mechanical by-pass valve to be installed after the primary circulating pump on the flow pipe but before any heating zone valves (Not applicable to pre-plumbed units as the by-pass is incorporated).
- All underfloor heating circuits to be controlled via a third party underfloor wiring centre. A volt free signal is to be used to signal the pre-plumbed unit.
- The hot water control is managed through the touchscreen controller. Heating is prioritized over hot water production.
- For heating via underfloor heating, the End user interacts with 3rd party controls only. It is the installers responsibility to ensure that attached designs are followed to achieve this or if a uniquely designed system is being installed the designer must allow for the 3rd party controls facility.
- Underfloor heating circuits are controlled by 3rd party room thermostats.
- Use of time clocks to turn off underfloor heating circuits is not recommended.
- Room thermostats in underfloor heating circuits should not be turned off but set back to a lower temperature using appropriate heating setback control for periods of unoccupied use.
- Air is the most prevalent cause of restricted flow in the system. Make sure that all pipework can easily be purged of air and that all air is removed from the system prior to starting the unit. Site visits to solve a flow rate issue due to the presence of air are not covered under EUW and as such will incur a call-out charge.
- Air must be purged from the system using a suitable fill & flush pump via the fill & flush valve. This is the easiest way to purge all air from the system.
- The Heat Pump duct connections are Ø150mm. Flat Pack, Round or Semi Rigid duct is acceptable however, the cross sectional area must not be reduced; it must be maintained or increased to avoid noise in the duct system.

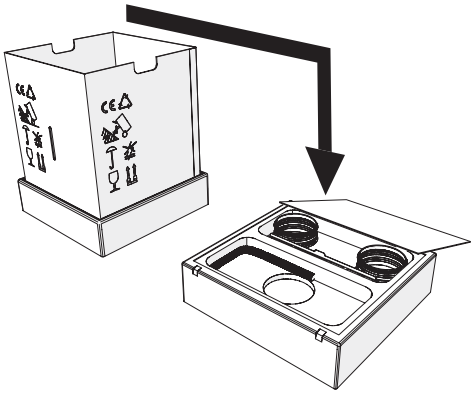
Transport & Handling

Handling Instructions



- Care must be taken when transporting, storing and installing the Heat Pump.
- The Victorum unit is delivered fully packaged and fixed to a wooden pallet base. Care should be taken when transporting the Heat Pump ensuring that the unit is not damaged by impact.
- The Heat Pump must remain in the upright position during transport.
- Do not remove the protective packaging until the Heat Pump unit has reached its final location. This will help protect the heatpump from damage.
- For transport, e.g. via a stairs, the Heat Pump may be tilted for a maximum of 15 minutes up to a maximum angle of 45 degrees.
- The Heat Pump weighs 45kg. At least two people are required to lift the unit at all times.
- The Heat Pump must be stored in a dry area and always stored upright on a level base. The unit must never be dropped during storage or handling
- Packaging should only be removed at the installation location.
- The installation area should be free from frost.
- The Victorum unit only must be installed on a plumb level wall with the required load bearing capability.
- Installation, servicing, maintenance and repair must be carried out by a competent person.



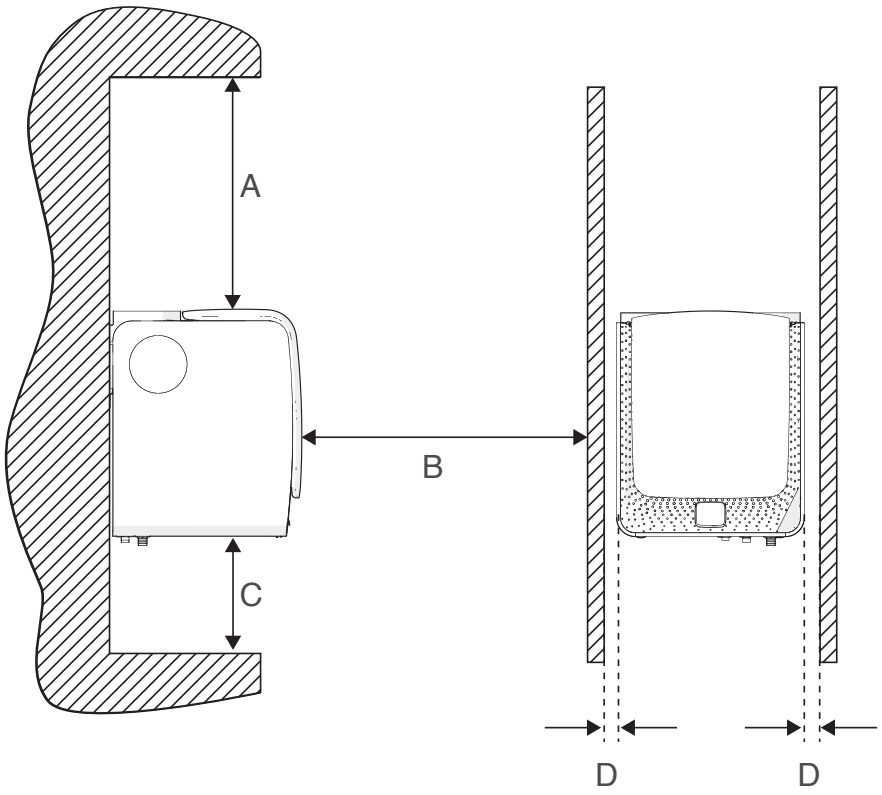


Use a lifting tool if moving the Victorum upstairs.

Installation Location

Installation Area

Certain clearance distances must be adhered to prior to citing an area for installing the unit. Clearance is required to provide sufficient space for installation and maintenance.



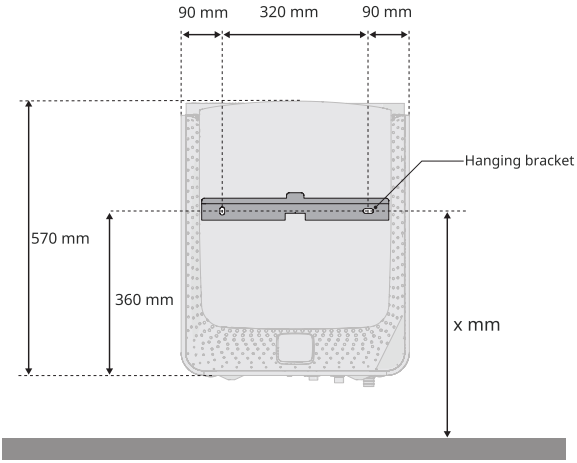
A	B	C	D
300mm min	500 min	150mm min	Min. 10 mm (When using the top connection for incoming ventilation air) Min. 300 mm (When using the side connection for incoming ventilation air)

Mounting the Heat Pump

Wall Mounted

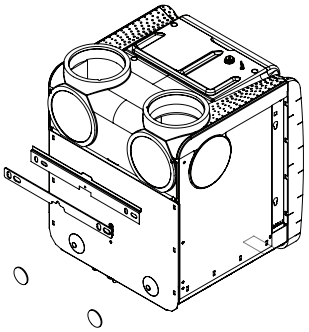
The Victorum can only be hung on a smooth wall capable of holding a mass of 200kg/m². If the mass is lower than this, ensure the recommended wall build-up is adhered to. The Victorum should always be hung level however there is a permitted tolerance of 2°.

1. Measure and mark positions for pilot holes based on the dimensions displayed here.

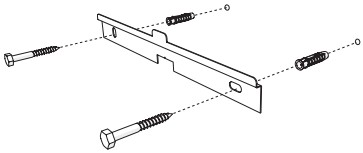


2. Attach anti-vibration pad to suspension bracket using self-Adhesive on one side.

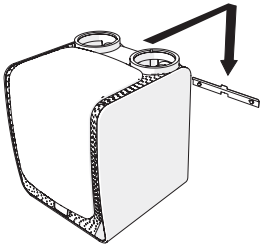
Attach circular vibration pads to mounds on rear of the Victorum.



3. Mount the wall bracket using the supplied screws and plugs or suitable alternatives.



4. Hang the Victorum off the wall bracket.



Wall Build Up Detail

Timber Stud Build-up

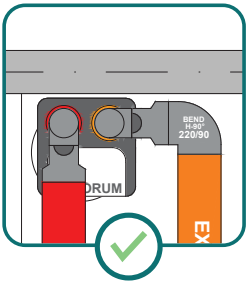
The exploded view on the opposite page details the required wall build-up to adequately support the Heat Pump if the dwelling has timber studs.

The wall build-up incorprates extra timber support noggins for the HeatPump bracket to be directly fixed to. The build-up also incorporates a sheet of 3/4" plywood fixed directly to the stub before the plasteboard is used as the standard wall finish.

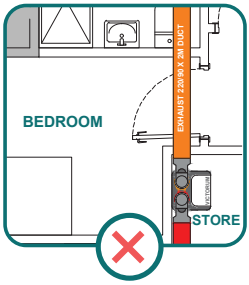
	Description	Part No.	QTY
1	Victorum Rubber Damper Bottom Circle	TZV-MOUNT00-B	2
2	Joule Victorum Vhp (Ie)	HHH-0-0000-VHP	1
3	Victorum Wall Bracket	TZ-W-00-COMP-1	1
4	400mm Timber Noggin	n/a	7
5	Concrete Floor Slab	n/a	1
6	¾" Plywood Sheet	n/a	1
7	Standard Wall Finish	n/a	1
8	Victorum Mounting Bracket Rubber Damper Top	TZV-MOUNT00-T	1
9	B18.2.3.9m - Heavy Hex Flange Screw, M8 X 1.25 X 80 --22n	n/a	2
10	B18.2.2.4m - Hex Flange Nut, M8 X 1.25 --N	n/a	2
11	Timber Stud Wall	n/a	4

N.B. Must be installed using timber studs.

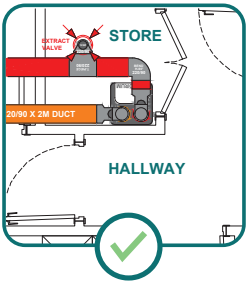
Solid External Party Wall



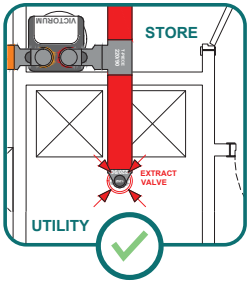
Internal Wall Adjoining Bedroom



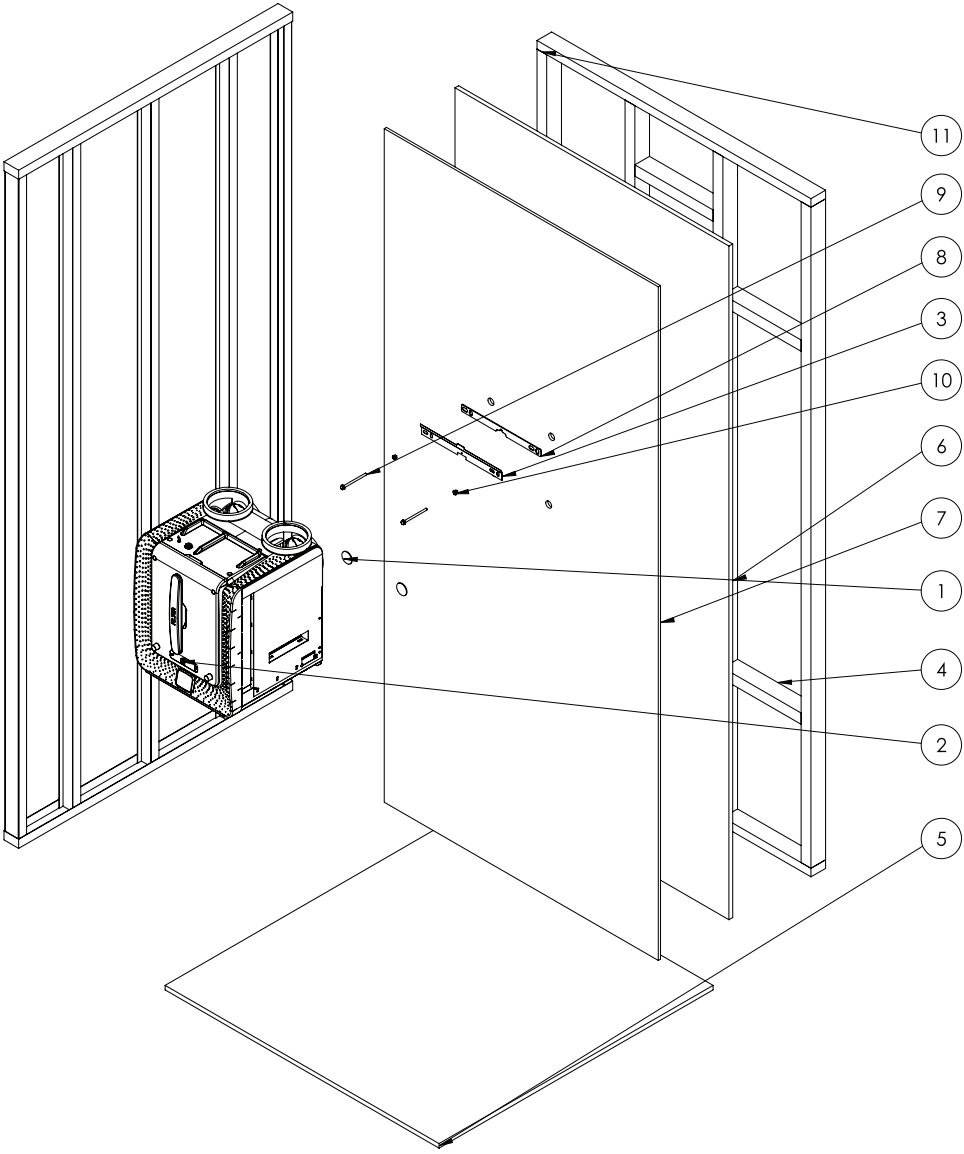
Internal Wall Adjoining Hallway



Internal Wall Adjoining Utility



Wall Build Up Detail



Wall Build Up Detail

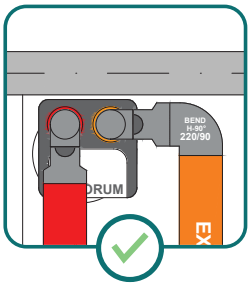
Concrete/Block Wall Build-up

The exploded view on the opposite page details the required wall build-up to adequately support the Heat Pump if the dwelling has Concrete or Block walls- this is the recommended wall type as it can naturally carry the weight of the Heat Pump without reinforcement.

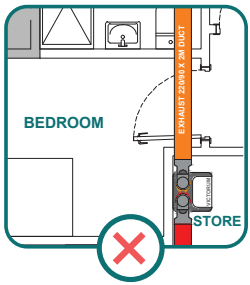
Use the supplied rawplugs and fixings to secure the HeatPump bracket to the wall.

	Description	Part No.	QTY
1	Block Wall	n/a	1
2	Concrete Floor Slab	n/a	1
3	Standard Wall Finish	n/a	1
4	Rawplug-Wall Fixing Bolt Plugs	TZ-W-00-COMP-1	2
5	Victorum Rubber Damper Bottom Circle	TZV-MOUNT-00-B	2
6	Joule Victorum	HHH-0-0000-VHP	1
7	Victorum Wall Bracket	TZ-W-00-COMP-1	1
8	Victorum Mounting Bracket Rubber Damper Top	TZV-MOUNT-00-T	1
9	Metal Stud Wall	n/a	1
10	B18.2.3.9m - Heavy Hex Flange Screw, M8 X 1.25 X 80 --22n	n/a	1
11	B18.2.3.9m - Heavy Hex Flange Screw, M8 X 1.25 X 25 --25n	n/a	1

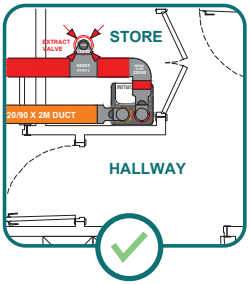
Solid External Party Wall



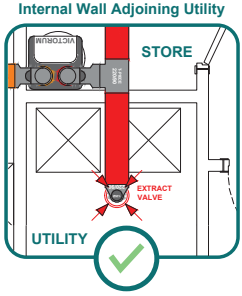
Internal Wall Adjoining Bedroom



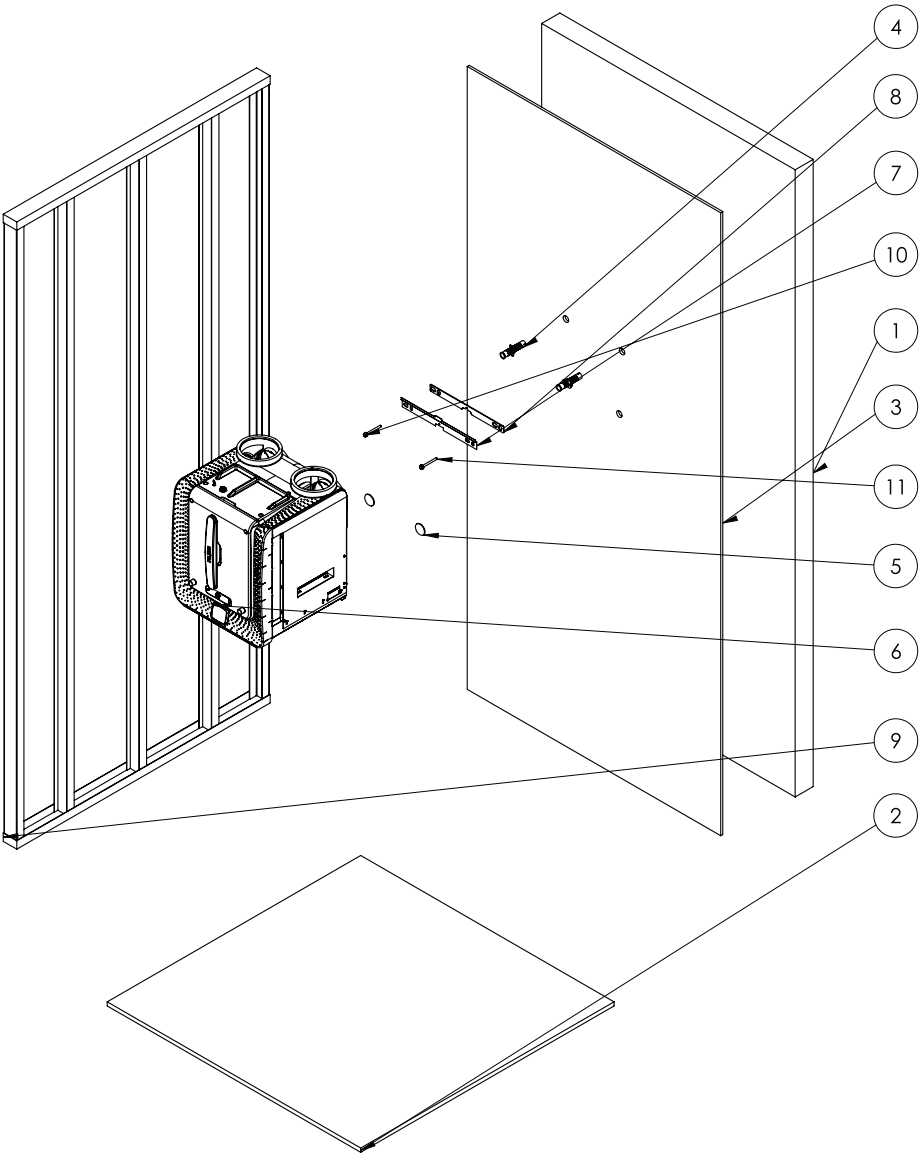
Internal Wall Adjoining Hallway



Internal Wall Adjoining Utility



Wall Build Up Detail



Connecting the Heat Pump

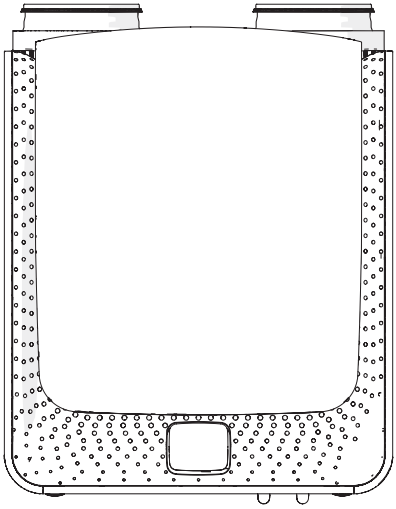
Ventilation Connection

The ventilation ductwork system is essential to the performance of an Exhaust Air Heat Pump. To avoid under performance of the Heat Pump or increased system noise, the following points should be considered when designing/ installing the ductwork:

- Avoid sharp bends or transitions.
- Swept 90° bends or 2x45° bends are preferred.
- Ensure all burrs are removed from duct ends.
- Insulated flexible ducts must be used to connect the ductwork to the Heat Pump.
- The maximum pressure drop across the external grille of the exhaust duct shall not exceed 8 Pa.
- The maximum permissible pressure drop for the entire duct system shall not exceed 150 Pa (excluding the Heat Pump).
- The pressure drop across the Heat Pump is 30 Pa.

Ductwork – Extract Air

The Extract Air or 'Air In' to the Heat Pump is the heat source to the Exhaust Air Heat Pump system. The extract air is fed via the ductwork to the Heat Pump from all wet rooms within the dwelling.



Ductwork – Exhaust Air

The Exhaust Air or 'Air Out' from the Heat Pump is the exhaust of the cooled air from the Heat Pump to outside the dwelling. It is essential this duct is insulated as the average temperature in the duct will be 4°C under normal operating conditions. When the duct passes through ceiling voids, condensation on the outside of the duct will occur. To avoid this, the entire exhaust duct must be insulated with suitably sized insulation, to local building regulations.

The exhaust ducting from the unit should be connected to the roof/wall terminal using a suitably insulated adapter and grill. The exhaust ducting should be no less than Ø150mm or 220mm x 90mm flat pack. It is necessary to adhere to this duct specification to comply with noise specifications and to prevent potential condensation. 220mm x 90mm flat pack ducting must terminate with a double air brick.

All ductwork insulation MUST be fully sealed at all joints, transitions, air bricks and/or roof cowls.

Connecting the Heat Pump

Ventilation Connection

Ductwork – Insulation Specification

Provision of insulation to ducts and pipes, in accordance with the standards specified in BS 5422:2009, should adequately limit heat loss or heat gain, as appropriate.

Ductwork – Unheated Spaces

Any ductwork passing through an unheated space must be suitably insulated to avoid condensation and/or heat loss or heat gain.
A ceiling void is not considered an unheated space as it is directly above a heated space.

Ductwork – Kitchen Extract Fan

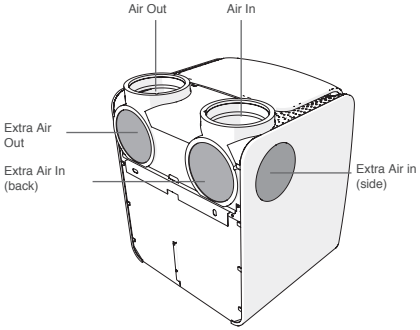
To avoid cooking odors entering the Heat Pump, a distance of 1.5m must be maintained between the kitchen extractor fan to the kitchen ceiling valve of the extract ductwork.
When cooking, always use the kitchen extractor fan.

Installation Options

Before connecting the Insulated flexible ducts to the top of the Heat Pump remove the plastic dust covers from the Heat Pump.
There are 3 connection options for the 'Air In'; top, back & side and 2 options for the 'Air Out'; top & back.
The top connection is the most common.

If either of the other connections are used, the plastic caps must be removed and used to plug the top connection. A flat head screwdriver can be used to remove the caps.

There is the option to use the extra 'Air In' side connection alongside the top connection. A ceiling valve can be connected directly to the side connection (via a suitable transition piece) as the extract valve for the room the Heat Pump is installed in. This would negate the need for an additional ductwork connection in the ceiling above the unit, where space can sometimes be a premium.



Final ventilation connections

Connect the Insulated flexible ducts to the Heat Pump using the metal transition pieces provided with the unit.

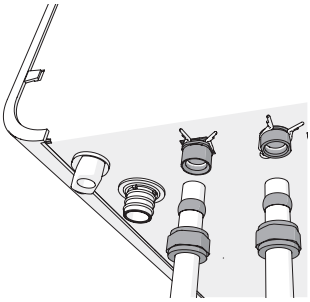
Piping

Primary Pipework

The flow and return connections on the underside of the unit are 15mm compression. Nuts and olives are supplied with the heat pump.

It is advised to increase the size of the primary pipes to 22mm copper or 25mm Alupex to reduce the resistance.

Isolation valves must be installed directly below the unit to allow for maintenance and/or repair of the Heat Pump.



The piping system must be flushed out before the Heat Pump is connected so that any debris will not cause damage to the component parts

Pressure relief valve

The Heat Pump does not have a pressure relief valve incorporated. The installer MUST ensure the system is protected from over-pressurisation. The valve prevents abnomal water pressure from damaging the system by opening at a maximum pressure setting of 3.0 bar.

A pressure relief valve may be incorporated in the pre-plumbed unit. Consult the relevant pre-plumb section for more information

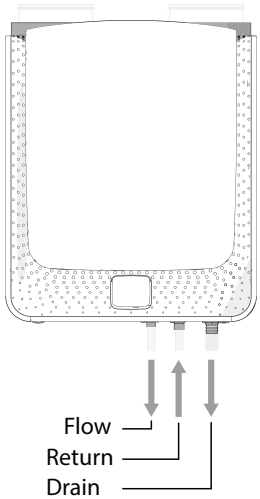
Filter-Ball/ Y-Strainer

Installation of the filter/ strainer is essential to protect the Heat Pump from system debris.

The filter/ strainer must be cleaned after one day of operation and it must be checked periodically to maintain the minimum system flow rate.

Fill & Flush Valve

The fill & flush valve must be installed on the primary return after all system connections have been made. This ensures that when purging air from the system, the entire system is being purged correctly.



Piping insulation

Pipe insulation should comply with BS 5422:2009. Alternatively, insulation of a thickness that provides reduction of heat loss equivilant to material having a thermal conductivity of 0.035 W/mK at 40 °C and thickness equal to the diameter of the pipe (or 40mm, whichever is smaller) may be used.

Piping

Sizing, positioning and pre-charge pressure of the heating system expansion vessel

The Exhaust Air Heat Pump does not have an expansion vessel incorporated. The installer must ensure the system is protected from the effects of expansion by installing a suitably sized expansion vessel.

The vessel prevents water pressure spikes in the system by absorbing the increased pressure as the temperature increases.

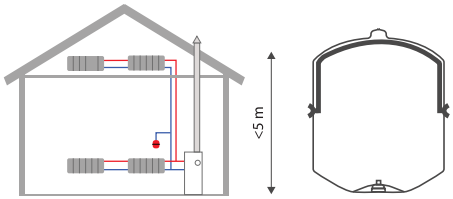
- Only use dry nitrogen or air to set the expansion vessel pressure.
- Inappropriate setting of the expansion vessel pre-charge pressure will lead to malfunction of the system.
- The pressure should only be set and/or adjusted by a competent installer.
- The adjusting of the presure should be done before the expansion vessel is installed - i.e the pipe connection must be open to atmosphere.

The vessel must be sized in accordance with EN 12828. The following system data will assist in sizing a vessel:

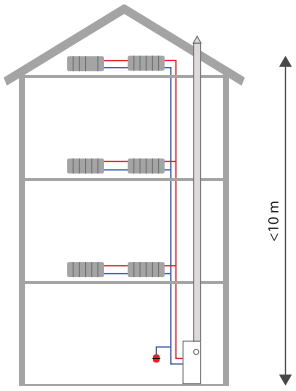
1	Vessel pre-charge pressure	*0.5 bar, recommended
2	Safety valve set pressure	3 bar, industry standard
3	**The difference in height (H)	0 m, typical install setup
4	Total system volume, in litres	Calculated by the installer
5	System maximum temperature	65°C
6	% Antifreeze glycol in the system	Zero, as its an indoor installation

*A pre-charge pressure of 0.5 bar equates to a static head of 5 metres.

**The difference in height (m) is the difference between the position in which the safety valve is installed and the position of the vessel.



Pre-Charge Pressure 0.5 bar



Pre-Charge Pressure 1.0 bar

Calculations:

$$[1]\ Expansion\ Volume\ (EV) = \frac{System\ Volume\ x\ 1.94}{100}$$

$$[2]\ Reserve\ Volume\ (RV), 25\% = EV\ x\ 1.25$$

$$[3.1]\ Required\ Gross\ Volume\ (L) = \frac{RV}{0.63} \sim [if\ pre-charge = 0.5\ bar]$$

$$[3.2]\ Required\ Gross\ Volume\ (L) = \frac{RV}{0.5} \sim [if\ pre-charge = 1.0\ bar]$$

Worked Example:

Using the above calculations and an example system volume of 200 litres;

- A 8L expansion vessel pre-charged to 0.5 bar is sufficient.
- A 10L expansion vessel pre-charged to 1.0 bar is sufficient.

NOTE: if any of the system data values change a different vessel would be required

$$[1]\ Expansion\ Volume\ (EV) = \frac{200\ x\ 1.94}{100} = 3.88\ litres$$

$$[2]\ Reserve\ Volume\ (RV), 25\% = 3.88\ x\ 1.25 = 4.85\ litres$$

$$[3.1]\ Required\ Gross\ Volume\ (L) = \frac{4.85}{0.63} = 7.7\ litres \sim 8\ litres$$

$$[3.2]\ Required\ Gross\ Volume\ (L) = \frac{4.85}{0.5} = 9.7\ litres \sim 10\ litres$$

Positioning the vessel

It is recommended to position the vessel below the heat pump on the primary return pipe.

Pre-charge pressure of the vessel

Deciding the pre-charge pressure of the vessel is part of the vessel sizing procedure. If the vessel is sized at 0.5 bar and the difference in height (H) is zero, then the vessel must be pre-charged to 0.5 bar. If the difference in height increases or decreases, then an additional charge pressure will be required. Use the formula below to calculate the additional charge and add this to the pre-charge pressure:

$$Pg\ (bar) = \left(\frac{H}{(10 + 0.3)}\right)$$

Piping

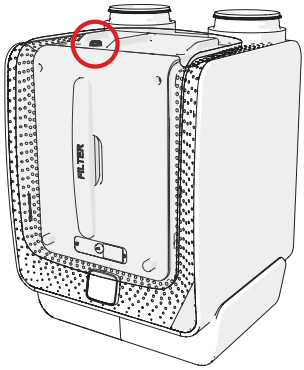
Filling & Venting

Follow the steps below to **Fill and Vent** the system in the correct order:

1. Ensure all system valves are open fully.
2. Fill the system using the incorporated filling loop to the recommended pressure (min 1.0 bar – max 1.5 bar).

While filling the system, air should be released via the manual or automatic air vents within the system.

During the filling process it is important to release air from the heat pump. There is a manual air vent on the top of the unit.



3. Ensure the system is watertight.

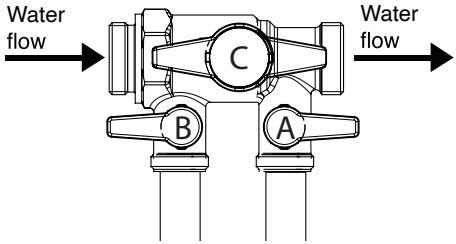
The fill & flush valve MUST be connected on the 'return' pipe to the Heat Pump.

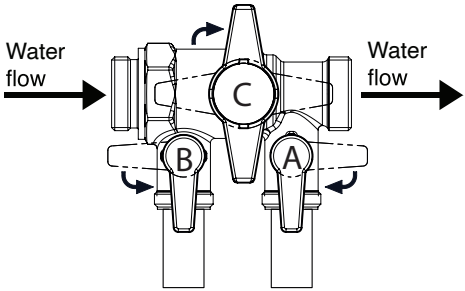
Follow the steps below to **Flush** the system in the correct order:

1. Connect the fill & flush pump to the fill & flush valve (as shown).

It is important to connect the feed hose from the fill & flush pump to **Valve A** and the drain hose to **Valve B**. This ensures the water flows through the Heat Pump first and then out to the open circuit. It also ensures that any trapped air in the Heat Pump and/or the open circuit is pushed back to the fill & flush pump's reservoir and expelled from the system.

2. **Valve C** is turned to the closed position (90° to the pipe direction). Open valves A and B and switch on the fill & flush pump.
3. Water is circulated through the system for a minimum of 45 minutes.





Piping

In this time, the individual circuits can be flushed separately (DHW, Zone 1, Zone 2, etc).

To flush a circuit, first the zone valve for the circuit must be manually opened. This allows circulation of water through the open circuit.

While flushing a circuit, it is essential to flush each emitter separately. As most emitters will be piped down from the main runs at ceiling level, this helps remove all air pockets from each leg.

During the flushing process it is important to regularly release air from the heat pump.

4. Valve C can be intermittently opened and closed to remove air pockets within the fill and flush valve body. Ensure valve C is always returned to the closed position while flushing the system.

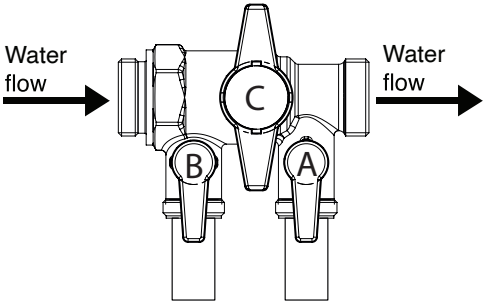
5. After 45 min, if all air has been removed from the system, Valve B should be closed and the pump allowed to pressurise the system. The recommended pre-charge pressure is between 1.0 and 1.5 bar.

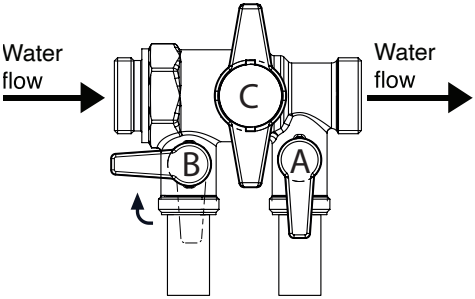
6. When the pre-charge pressure has been reached, Valve A should be closed.

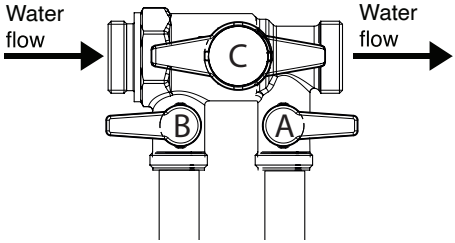
If the pre-charge pressure has exceeded 1.5 bar, Valve B can be opened to allow system pressure to be reduced.

7. Valve C is now opened to allow for normal system operation.

8. The fill and flush pump may now be switched off and the hoses disconnected. The blanking caps can now be replaced on Valves A & B.





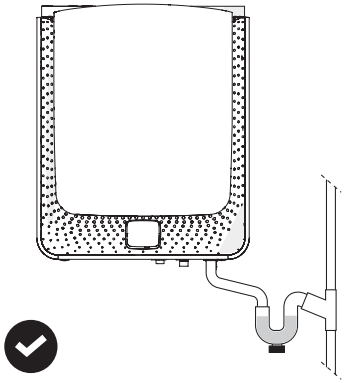


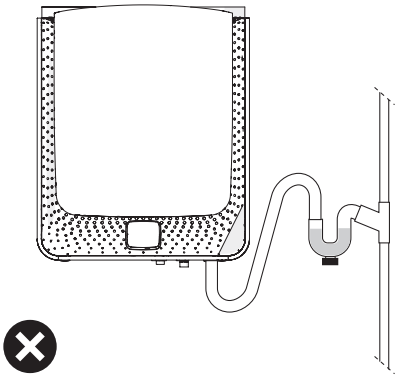
Piping

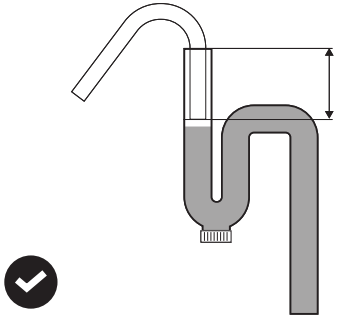
Connecting the Drain Hose

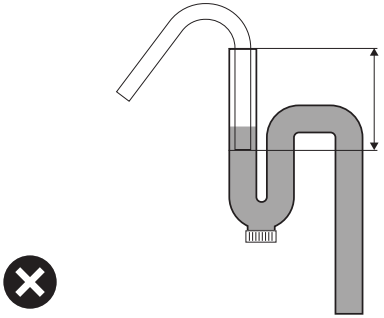
The Exhaust Air Heat Pump absorbs heat from the extracted indoor air. The moisture in the air condenses on the cold evaporator. The condensation water must be drained from the unit to allow the unit to function normally. That is why the Heat Pump must be connected to a drain pipe.

The end of the drain hose must not protrude below the water level of the siphon. The drain hose must also be mounted freely in the drain, creating an air gap, so that the siphon can be aerated and the water cannot run back into the appliance in the event of a blocked drain.









Electrical Connections

Power Specification

	Hz	Volts	Phase	Starting Current	Mains Fuse
HHH-2-0000-VHP	50	230	Single	10A	16A

- The power cable is pre-wired to the Exhaust Air Heat Pump.
- This Equipment complies with IEC 61000-3-12.
- If extension of the power cable is required, use the grade H05V2V2-F or equivalent materials.
- Ensure that main supply connection is made through a switch that disconnects all poles, with contact gap of a least 3 mm.
- Devices disconnected from the power supply should be completely disconnected in the condition of overvoltage category.
- Keep distances of 20mm or more between power cable and communication cable.

Communications Cable Specifications

	Communication cable
Option 1	2 Core Flex 0.75mm^2
Option 2	CAT 6a (SFTP), Supplied by Joule

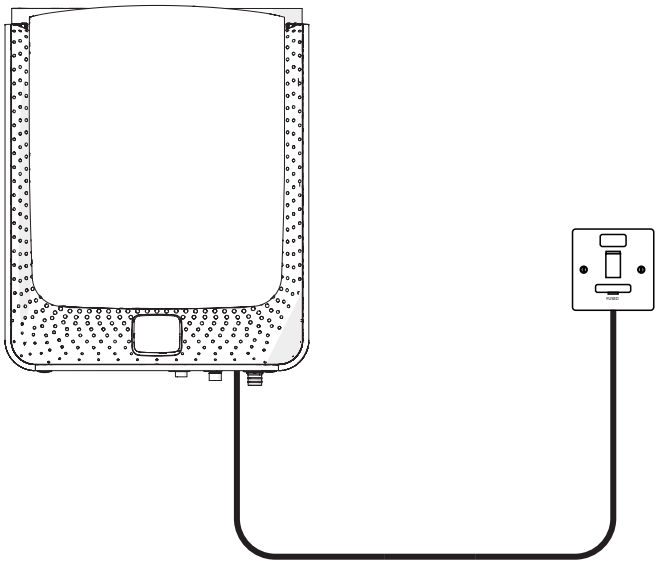
During the unit installation first make the ventilation connections, then the piping connections and then electrical connections. If unit is uninstalled disconnect the unit in the reverse order.

Electrical Connections

Heatpump Power Cable

The Heat Pump power cable is to be connected to a suitably sized isolator which disconnects all poles with a contact gap of at least 3mm. The Isolator allows for isolation of the electrical power supply for maintenance and/or repair of the Heat Pump.

- Check all connections and the mains voltage is correct before powering On the Heat Pump to prevent damage to the Heat Pumps electronics.'
- If the power cable is damaged, contact Joule to have it repaired before powering On the Heat Pump.
- The electrical installation must be carried out by a suitably qualified electrician or under the supervision of one. All installation work and cabling must comply to local building regulations.



The Heat Pump MUST not be powered On unless the system is filled with water and at the recommended pressure

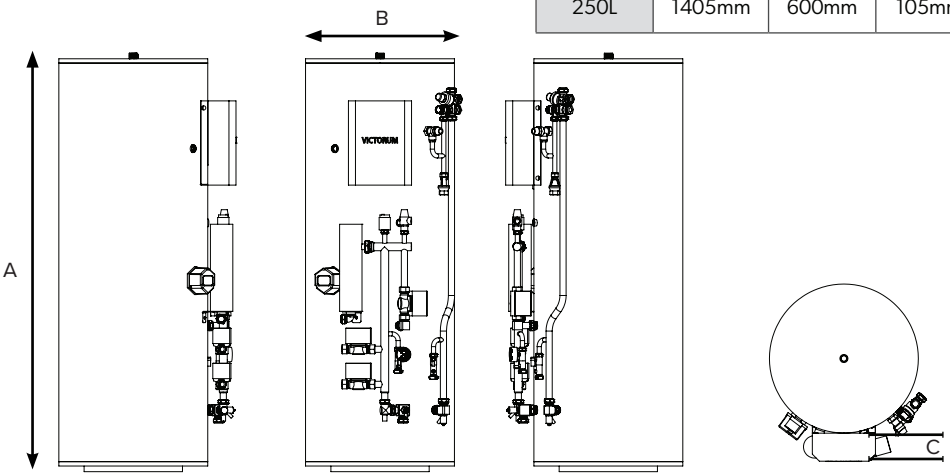
Product Specification

The Victorum PrePlumb unit is a pre-plumbed and wired hot water tank, designed to be installed alongside the Victorum Exhaust Air Heat Pump.

On the mechanical side, the PrePlumb unit incorporates the inline heater, automatic air vent, DHW & heating zone valves, an automatic bypass valve and a 3-bar safety relief valve. The inlet control group, tank cold inlet and tundish are also pre-piped.

On the Electrical side, the unit incorporates the electrical enclosure, system controller, DHW tank Immersion heater and the DHW tank sensor.

	A	B	C
200L	1490mm	530mm	105mm
250L	1405mm	600mm	105mm

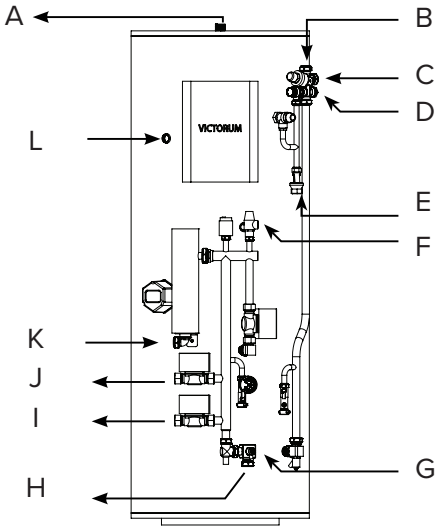


Left Side View **Front View** **Right Side View** **Plan View**

Cyclone Cylinder Specification		
Capacity	200L	250L
Cylinder Material	Stainless Steel Duplex LDX 2101	
Thermal Insulation	Polyurethane foam CFC-Free & HCFC Free	
Casing	Painted Galvanised Carbon Steel DX51D	
Coil Material	Stainless Steel Tube AISI 316L	
Weight (empty) kg	59 kg	69 kg
Weight (full) kg	256kg	315 kg
Max. Operating Pressure	5 (bar)	
Test Pressure	10 (bar)	
Max. Working Temperature	90°c	
Heating Elements	1. No. Incoloy Immersion	
Heat Loss	78 W	87 W
Heat up Time (mins)	31	37
Energy Efficiency Class C	C	
Height (mm)	1490mm	1405mm
Diameter (mm)	530mm	600mm

Product Overview

Preplumb Pipework



Upon filling and commissioning, ensure all connections are completely watertight.

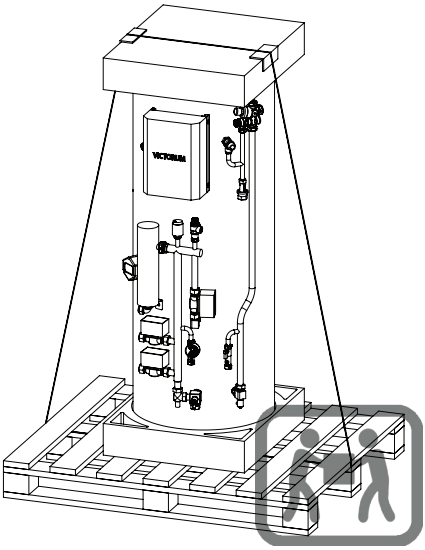
Reference	Description
A	Hot water Outlet
B	Mains/Boosted Supply Inlet
C	Balanced Cold Outlet
D	Potable Expansion Vessel
E	Tundish
F	Heating Circuit Safety relief valve
G	Common Heating Return
H	Primary Return
I	Heating Zone 2 Flow
J	Heating Zone 1 Flow
K	Primary Flow
L	Secondary Return

Transporting the unit

Transport and Handling

The Victorum PrePlumb unit is delivered fully packaged and fixed to a wooden pallet base. Care should be taken when transporting the cylinder unit ensuring that the casing is not damaged by impact.

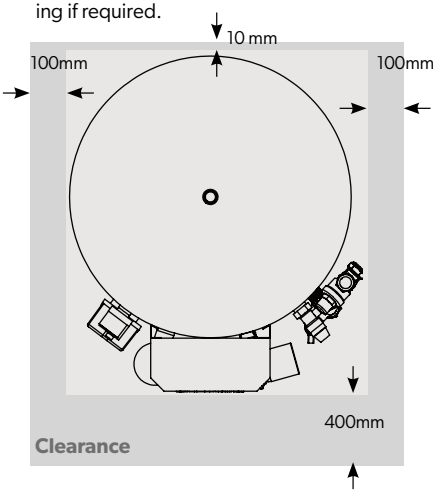
At least two people should lift the cylinder to prevent injuries. The cylinder must be stored in a dry area and must never be dropped during handling. Packaging should only be removed at the installation location. This will help protect the structure and the components. The cylinder must be installed on a level floor with the required load bearing capability.



The cylinder unit must be transported in an upright position only.

Suitable Location

Care should be taken that there is a minimum distance in front of the unit for service and maintenance works to be carried out. Enough access to allow maintenance of the valves should be considered. In addition, the immersion heater is 400mm in length and this distance should be considered to allow withdrawal for servicing if required.



Install the cylinder unit where it is not exposed to water/excessive moisture. Particular attention is needed if sitting in a garage or outbuilding as the unit should be protected from frost. All exposed pipework must be insulated. The unit must be installed upright on a base capable of supporting its weight when full (please see the technical specification section for weights).

Installing the unit

Moving the PrePlumb unit

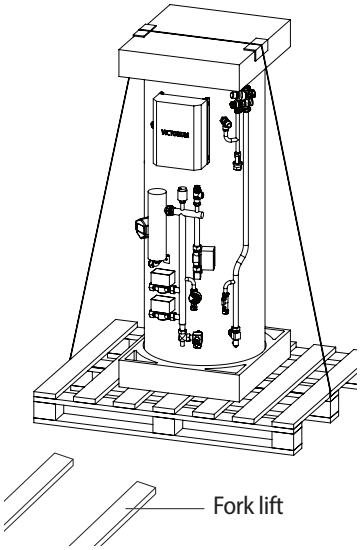
Select the moving route in advance.
Be sure that moving route is safe from weight of the cylinder.

Moving the PrePlumb unit with a fork lift.

Insert the fork into the wooden pallet at the bottom of the cylinder carefully. Be careful that the fork does not damage the indoor unit.

When moving the cylinder, be careful to not damage the cylinder by impact.

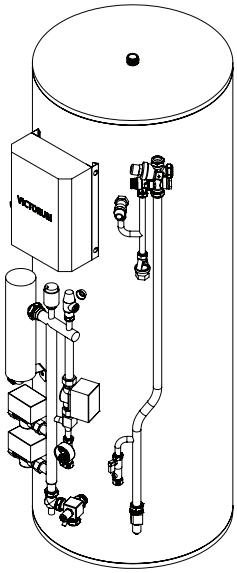
Do not remove the packaging until cylinder has reached its final installation location.



Installation space

Ensure to leave the appropriate space as indicated in the drawing.

Adhering to the installation space guidelines will ensure adequate ventilation so that the components of indoor unit will not be damaged from overheating.



Piping

Connecting To The Cylinder

It is recommended to use copper pipes where possible. If plastic pipes are used, they must be approved for a temperature of 95°C at a pressure of 10 bar.

If Alupex pipes are used, it is recommended to increase the pipe size by one diameter as crimp connections incorporate an insert which dramatically reduces the inner diameter.

It is also recommended to install a thermostatic mixer on the hot outlet of the tank to prevent the risk of scalding.

Heat Pump Primary Connections

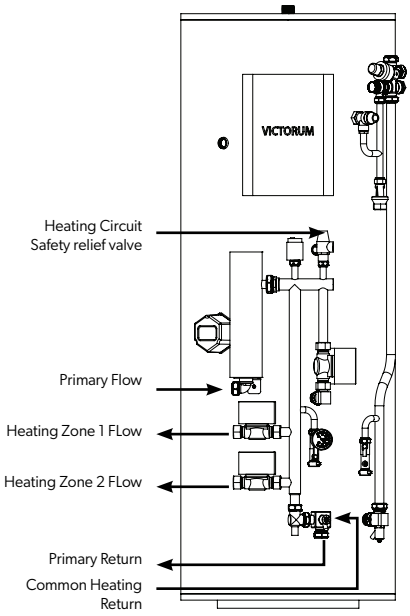
Connect the primary connections from the Heat Pump to the unit as shown below.

The primary flow connection is on the bottom of the inline heater and is a 3/4" internal thread. The primary return connection is on the return block of the pre-plumbed manifold and is a 22mm compression connection.

Heating System Pipe Conenctions

Connect the heating zone connections as shown below. In the Victorum PrePlumb unit the heating zone valves are pre-installed. The hot water zone valve is also pre-installed.

All heating zone return pipes should be joined at the cylinder and return via the common heating return as shown below.



Heating Expansion Vessel

The PrePlumb unit does not have an expansion vessel incorporated. The installer must ensure the system is protected from the effects of expansion by installing a suitably sized expansion vessel.

Refer to section 'Sizing, positioning and pre-charge pressure of the heating system expansion vessel' for vessel sizing.

Piping

Connecting to the Inlet Control Group

Excess pressure can lead to the cylinder bursting. The inlet control set supplied has an expansion relief valve with a 15mm connection to allow it to be connected to a tundish, this is pre-plumbed. Make sure that there is enough space for future maintenance and for connection of the discharge pipe for the expansion relief valve. It is essential that this connection is not covered or closed.

The cold inlet must be piped into the top of the inlet control group. It is recommended to install a full bore isolation valve on the cold inlet for maintenance and servicing of the valve.

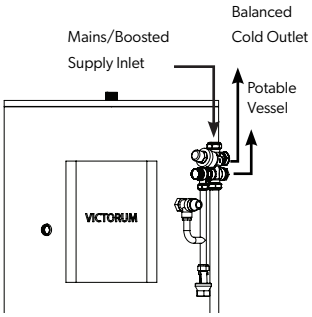
Water Supply

The performance of any unvented system is only as good as the mains water supply available. To this effect the maximum possible water demand should be assessed, with the knowledge that the mains supplies both hot and cold services simultaneously. The hot water storage tank/ water heater itself operates at a pressure of 3bar, controlled by the inlet control set, and is capable of delivering over 50 litres per minute. The high quality inlet control set has been designed to make the most of the low rates available.

The water supply should be checked to ensure it can meet these requirements. If necessary, consult the local water authority regarding the likely pressure and flow rate availability. Consideration should be given to upgrading existing 1⁄2" (15mm) cold mains pipework to a larger size if the recommended minimum pressure / flow rateis not being achieved. Joule™ recommend that primary pipework used has a minimum diameter of 22mm to ensure low pressure loss.

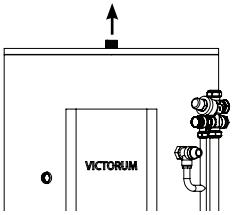
Potable Expansion Vessel

The expansion vessel receives the increased water volume when expansion takes place as the system heats up and it maintains a positive pressure in the system. The expansion vessel contains a flexible diaphragm, which is initially charged on one side with nitrogen, but can be topped up with air when required. Select a suitable position for the expansion vessel. Mount it to the wall using the bracket provided (0-24L only, 35L and above are floor standing) and hard fix into pipework and insulate. Ensure that the top of the vessel is accessible for servicing. The pipe connecting the expansion vessel to the system should have a diameter of not less than 15mm and must not contain any restrictions.



Hot Water Outlet

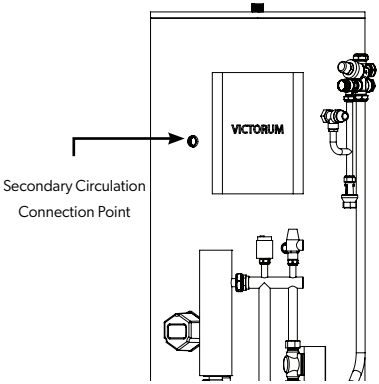
Run the first part of the hot water distribution pipework in 22mm. This can be reduced to 15mm and 10mm as appropriate for the type of tap etc. Your aim should be to reduce the volume of the hot draw-off pipe-work to a practical minimum so that the time taken for the hot water is as quick as possible. Do not use monobloc mixer tap or showers if the balanced cold connection is not provided. Outlets of this type can back pressurise the unit and result in discharge.



Piping

Secondary Circulation

On larger installations long pipe runs to draw-off points can cause significant volumes of water to be drawn off before an acceptable temperature can be reached. Secondary pumped circulation using a stainless steel or a bronze pump and combined with effective time and temperature controls can overcome this problem. Where secondary return circulation is required the pipework should be run in 15mm pipe and the pipework must be insulated to prevent excessive heat loss, leading to high running costs. A check valve must also be installed to prevent back flow. The secondary circulation tank connection can be seen 'in the diagram shown here.



Commissioning

Filling the Potable System

Before beginning to fill the hot water tank, the precharge pressure in the potable expansion vessel must be checked to verify it is 0.3 bar below the inlet group setting ex. 3 bar inlet = 2.7 vessel. The pre-charge pressure can be adjusted by the Schrader Valve located on the vessel.. The adjusting of the presure should be done before the expansion vessel is installed - i.e the pipe connection must be open to atmosphere.

Check all the connections for water tightness including any factory-made connections such as the immersion heater and the temperature and pressure relief valve.

Prior to filling, open the hot tap furthest away from the cylinder to expel air. Open the cold main isolation valve and allow the unit to fill. Once the cylinder has been fully commissioned it should be heated to its normal operating temperature.

Heating System

Before beginning to fill the heating system ensure all components are installed and respect any recommended direction of flow. Ensure all connections are water tight and sound.

It is recommended to check the pre-charge pressure of the heating expansion vessel before filling the system and to adjust it if necessary.

Commissioning

Filling & Venting

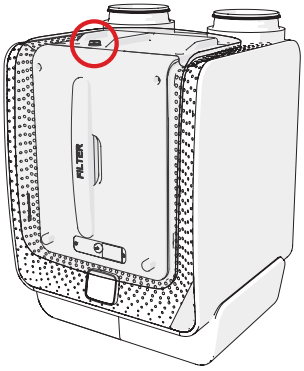
Follow the steps below to **Fill and Vent** the system in the correct order:

1. Ensure all system valves are open fully.
2. Fill the system using the incorporated filling loop to the recommended pressure (min 1.0 bar – max 1.5 bar).

While filling the system, air should be released via the manual or automatic air vents within the system.

During the filling process it is important to release air from the heat pump. There is a manual air vent on the top of the unit.

3. Ensure the system is watertight.



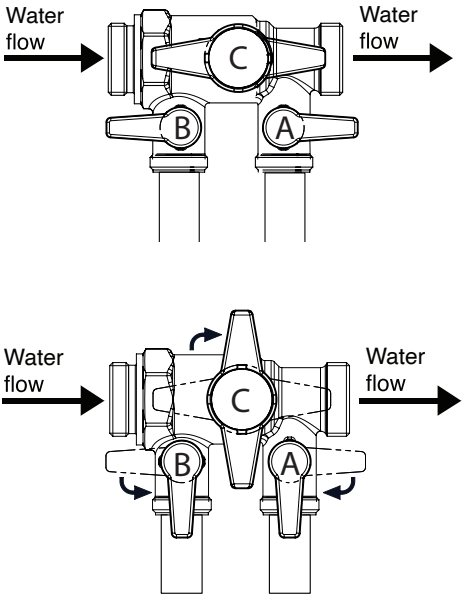
The fill & flush valve MUST be connected on the 'return' pipe to the Heat Pump.

Follow the steps below to **Flush** the system in the correct order:

1. Connect the fill & flush pump to the fill & flush valve (as shown).

It is important to connect the feed hose from the fill & flush pump to **Valve A** and the drain hose to **Valve B**. This ensures the water flows through the Heat Pump first and then out to the open circuit. It also ensures that any trapped air in the Heat Pump and/or the open circuit is pushed back to the fill & flush pump's reservoir and expelled from the system.

2. **Valve C** is turned to the closed position (90° to the pipe direction). Open valves A and B and switch on the fill & flush pump.
3. Water is circulated through the system for a minimum of 45 minutes.



Commissioning

In this time, the individual circuits can be flushed seperatly (DHW, Zone 1, Zone 2, etc).

To flush a circuit, first the zone valve for the circuit must be manually opened. This allows circulation of water through the open circuit.

While flushing a circuit, it is essential to flush each emitter separately. As most emitters will be piped down from the main runs at ceiling level, this helps remove all air pockets from each leg.

During the flushing process it is important to regularly release air from the heat pump.

4. Valve C can be intermittently opened and closed to remove air pockets within the fill and flush valve body. Ensure valve C is always returned to the closed position while flushing the system.

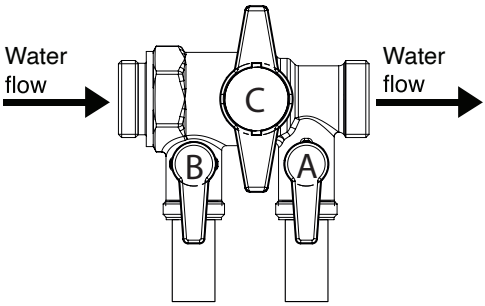
5. After 45 min, if all air has been removed from the system, Valve B should be closed and the pump allowed to pressurise the system. The recommended pre-charge pressure is between 1.0 and 1.5 bar.

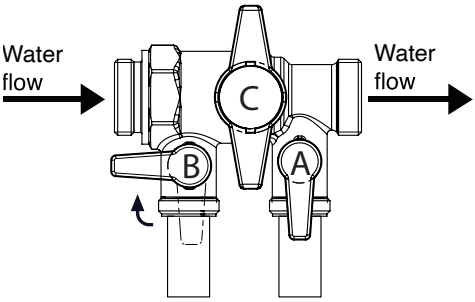
6. When the pre-charge pressure has been reached, Valve A should be closed.

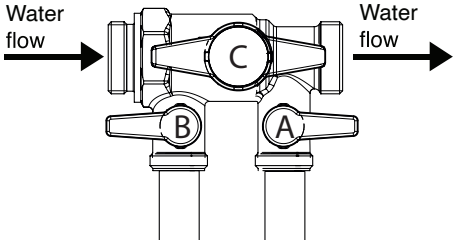
If the pre-charge pressure has exceeded 1.5 bar, Valve B can be opened to allow system pressure to be reduced.

7. Valve C is now opened to allow for normal system operation.

8. The fill and flush pump may now be switched off and the hoses disconnected. The blanking caps can now be replaced on Valves A & B.







Temperature & Pressure Relief Valve

Connect the tundish and route the discharge pipe which must be routed in accordance with Building Regulations - Part G3 of schedule 1.

When operating normally water will not be discharged from the temperature and pressure relief valve. Water discharge from the temperature and pressure valve will only occur under fault conditions. The tundish is pre-fitted as shown below.

The discharge pipe (D2) coming from the tundish should terminate in a safe place where there is no risk to persons near the discharge, be of metal and:

- Be at least one pipe size larger than the nominal outlet size of the safety device unless its total equivalent hydraulic resistance exceeds that of a straight pipe 9m long, i.e. discharge pipes between 9m and 18m equivalent resistance length should be at least two sizes larger than the nominal outlet size of the safety device, between 18 and 27m at least 3 sizes larger, and so on.

- Bends must be taken into account in calculating the flow resistance. Refer to Table 1 and the worked example. An alternative approach for sizing discharge pipes would be to follow BS6700 Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages.

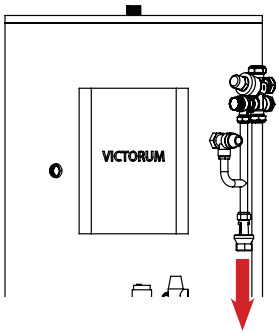
- Be installed with a continuous fall. The discharge must be visible at the final point of discharge.

TABLE 1

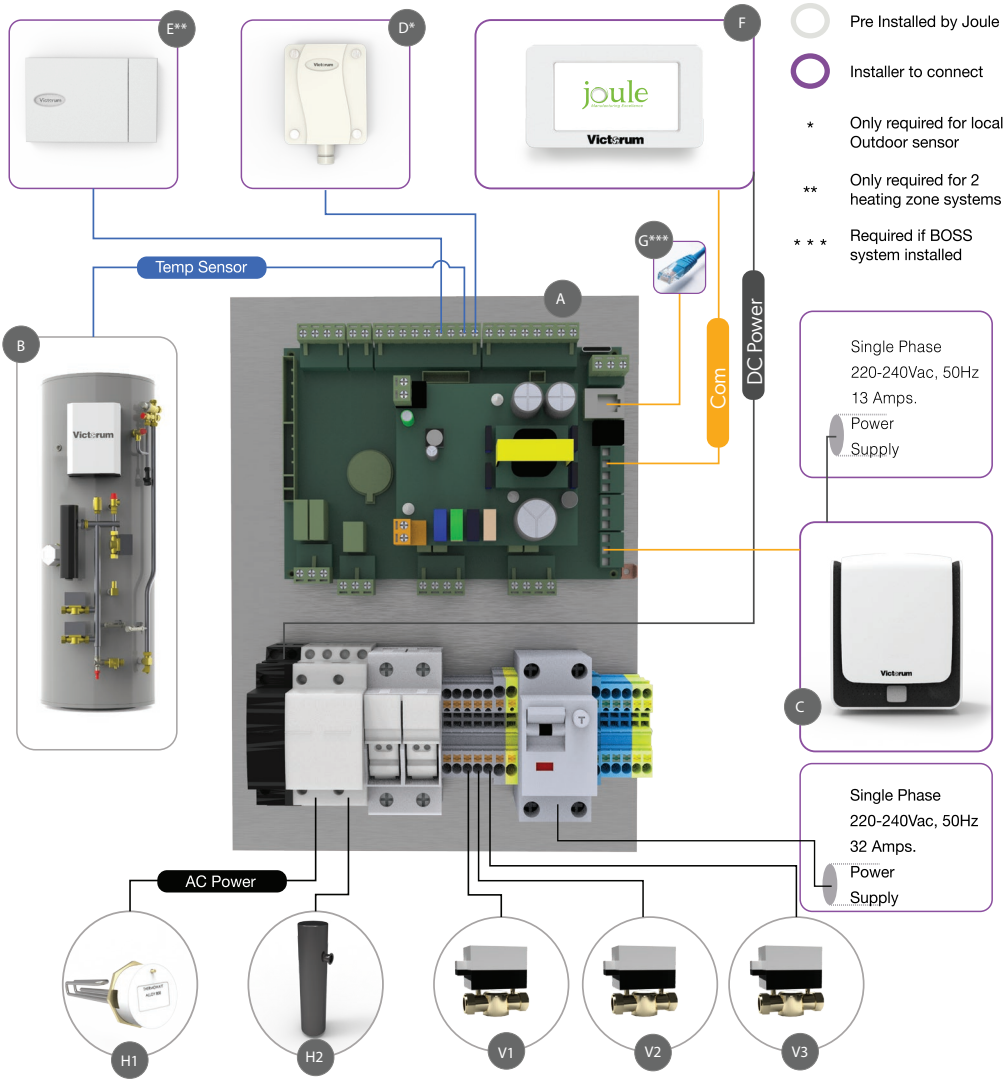
	G1/2			G3/4			G1		
Min. size of discharge pipe D1	15mm			22mm			28mm		
Min. size of discharge pipework D2 from tundish	22mm	28mm	35mm	28mm	35mm	42mm	35mm	42mm	54mm
Max. length of straight pipe (no bends or elbows)	Up to 9m	Up to 18m	Up to 27m	Up to 9m	Up to 18m	Up to 27m	Up to 9m	Up to 18m	Up to 27m
Deducts the below from the maximum length for each bend or elbow in the discharge pipe	0.8m	1m	1.4m	1.0m	1.4m	1.7m	1.4m	1.7m	2.3m

Sizing of copper discharge pipe (D2) for a temp, relief valve with a G1/2 outlet size (as supplied)

Image below shows the position of the tundish outlet.



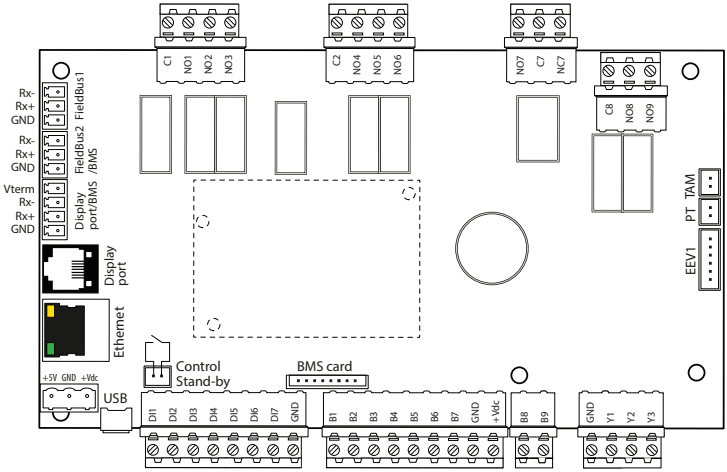
Electrical



	Description		Description
A	Joule Electrical Enclosure	H1	Immersion
B	PrePlumb Unit	H2	Back up Heater
C	Heat Pump	V1	DHW Valve
D	Ouddoor Sensor	V2	Heating Zone valve 2
E	Heating Zone 2 Sensor	V3	Heating zone valve 1
F	Touchscreen		
G	RJ45- BOSS system connection		

Electrical

Overview



Victorum Compact Power Supply

The table below outlines the power requirements for the Victorum Compact Pre-Plumb unit.

	Hz	Volts	Phase	MCA	MFA
Victorum PrePlumb	50	230	Single	30A	32A

Power Supply Cable Entry

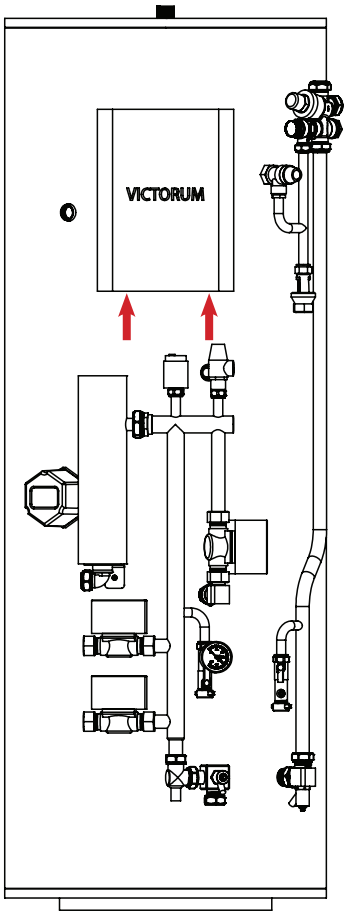
All electrical wiring must be carried out by a competent installer and be installed in accordance with current local Wiring Regulations.

The cable entry point can be seen the diagram on the right. Remove the front panel to access the electrical enclosure. Cable entry to the enclosure is via an M25 cable gland. Ensure all cables are secured using the fixings provided.

Power Supply Connections

Connect 'Live' and 'Neutral' power lines with the terminals marked 'L' & 'N' of the ELCB, which is located inside the electrical enclosure.

Connect the 'Protective Earth' line with the Earth terminal inside the electrical enclosure. The rear casing of the electrical enclosure is the termination point for all Protective Earth Connections. Please use the earth termination points provided.



Connecting the Outdoor Sensor

The Outdoor Sensor monitors the outside air temperature and is installed on the exterior of the dwelling on a north facing wall, if possible. Otherwise, the sensor must be kept away from direct sunlight.

The exterior wall material must be considered, as materials like Zinc can act as a heat sink. This can affect the sensor reading, producing higher readings.

The outdoor sensor requires a two core 0.75mm2 cable and it is not polarity sensitive.

The sensor is connected to 'B1' and 'Gnd' on the controller.

Connecting the Touchscreen

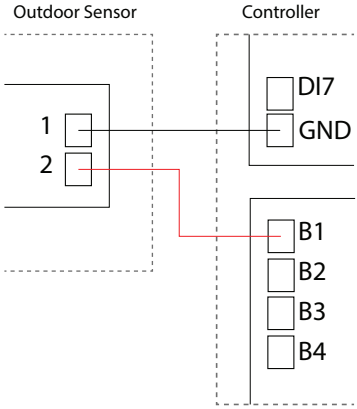
The entire system is controlled via the Touchscreen- heating, hot water and ventilation. The touchscreen is typically installed in the living area (zone 1), where it also acts as the temperature sensor for that zone.

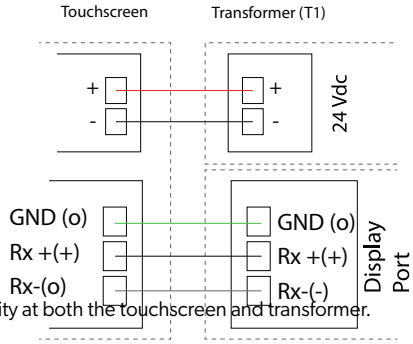
The recommended location for the touchscreen is 1.5m off the floor and kept away from sources of heat and/or cooling like radiators, drafts or direct sunlight. Local regulations should be adhered to when planning the location of any room sensor.

Room thermostats/ sensors need a free flow of air to operate correctly, so they must not be covered by curtains or blocked by furniture. Nearby electric fires, televisions, walls or table lamps may also prevent the sensor from sensing the correct temperature.

Always mount the thermostat/ sensor at eye level. Read instructions fully so you get the best from the product. Do not push hard on the LCD screen as this may cause irreparable damage.

The touchscreen requires a separate low voltage power supply, 24Vdc. A power supply transformer is pre-installed in the electrical enclosure.





Connect the Positive (+) and Negative (-) respecting the polarity at both the touchscreen and transformer.

The touchscreen requires a separate communication cable from the power supply cable. It is recommended to use Belden 8723 or equivalent, as this cable type incorporates a drain wire which is imperative for clean communication between the touchscreen and the controller.

The touchscreen communication cable is connected to 'Rx+', 'Rx-' and 'Gnd' on the 'Display port' of the controller. The cable core colours must be matched on the rear of the touchscreen as the communication is polarity sensitive.

It is important that at the electrical enclosure end, the drain wire is connected to the metal chassis via the 'Fast-On' tab provided. At the touchscreen end, the drain wire is to be wrapped around the outer sheath of the cable and insulated with insulating tape to isolate the connection. The drain is used to eliminate any electrical noise from the communication.

Electrical

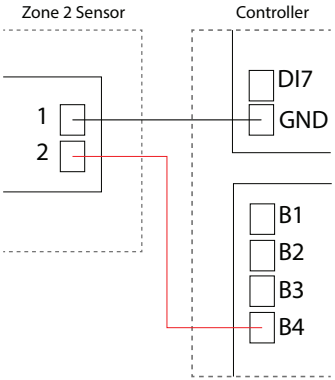
Connecting the Zone 2 Room Sensor

The second zone sensor is used to sense the temperature in the second heating zone of the dwelling.

All the installation guidelines for the touchscreen apply to the Zone 2 room sensor- installation height, avoiding heat sources, etc.

The second zone sensor requires a two core 0.75mm2 cable and it is not polarity sensitive.

The sensor is connected to 'B4' and 'Gnd' on the controller.

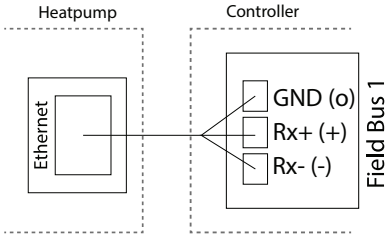


Communication Cable – Heat Pump to Pre-Plumbed Cylinder unit

The communication cable between the Heat Pump to Pre-Plumbed Cylinder unit is supplied in the kit with the Cylinder unit. It is a pre-molded Ethernet cable and does not require and alteration.

The connection point on the Heat Pump is the Ethernet port on the bottom of the unit, on the front right-hand side.

The communication cable is connected to 'Rx+', 'Rx-' and 'Gnd' on the 'Field Bus 1' of the controller. The cable core colours are clearly labelled as the communication is polarity sensitive.



Underfloor Heating Wiring

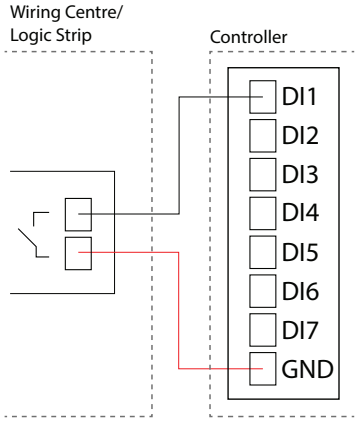
If the system incorporates underfloor heating and an external wiring centre/ logic strip and individual room thermostats, then the touchscreen is only used to control the hot water and ventilation functions of the system.

To enable this setup, the Digital Inputs (DIN) on the controller of the Pre-Plumbed Cylinder unit must be utilized.

The wiring centre/ logic strip must support a volt free output via a relay to enable the heating signal on the controller of the Pre-Plumbed Cylinder unit.

The heating signal enable is to be wired using a two core 0.75mm2 cable and it is NOT polarity sensitive.

The sensor is connected to 'DI1' and 'Gnd' on the controller.

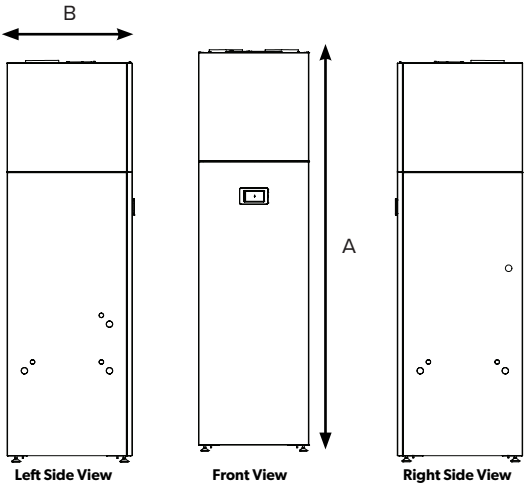


Product Specification

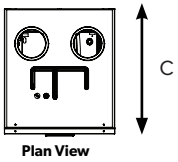
The Victorum Compact is a pre-plumbed and wired unit containing the Victorum Exhaust Air Heat Pump in a cased white good.

On the mechanical side, the Compact unit incorporates the hot water tank, an inline heater, automatic air vent, DHW & heating zone valves, an automatic bypass valve and a 3-bar safety relief valve. The inlet control group, tank cold inlet and tundish are also pre-piped.

On the Electrical side, the unit incorporates the electrical enclosure, system controller, DHW tank Immersion heater, the DHW tank sensor and the Modbus communication cable to the Heat Pump.



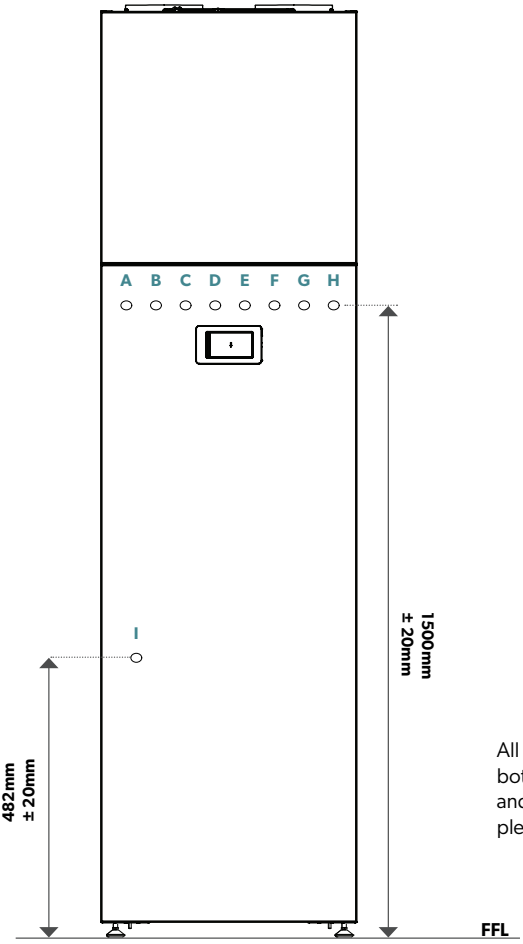
	A	B	C
180L	2100mm	592mm	672mm

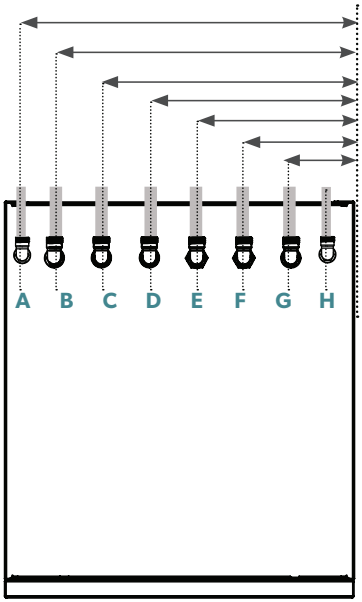


Victorum Compact EAHP Specification	
Total Heating Capacity	5 Kw
Total Compressor Output	2 Kw
Max Circuit Amps (MCA)	30A
Max Fuse Amps (MFA)	32A
COP (A20, W35)	4.9
Refrigerant	R 134a
Max Flow Temperature	65°C
Heat Pump airflow range:	100-250m3/h
Trickle airflow range	50-350 m3/h
Height:	2100mm
Width:	592mm
Depth:	672mm
Shipping Weight:	125kg
Air Inlet/ Outlet Connections:	150mm

Product Overview

Product components





Bottom Section
Plan View

All the pipework connections are off the top of the bottom section- at the back of the unit. Upon filling and commissioning, ensure all connections are completely watertight.

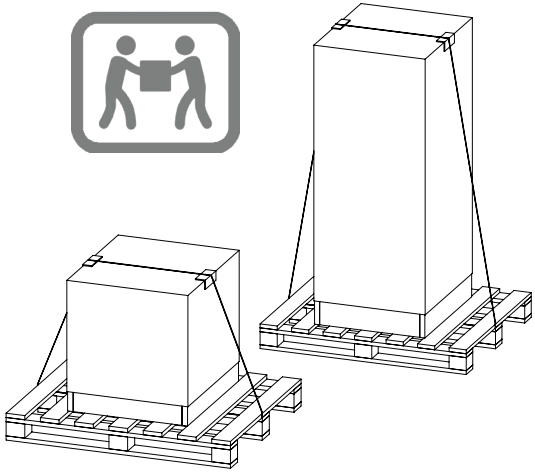
	Description	Connection Size	From Right Casing Edge (mm)
A	Potable Expansion Vessel	1/2" Comp	530
B	Balance Cold Outlet	3/4" Comp	490
C	Mains/Boosted Supply Inlet	3/4" Comp	410
D	Hot Outlet	3/4" Comp	330
E	Heating Zone 1 Flow	3/4" Comp	250
F	Heating Zone 2 Flow	3/4" Comp	170
G	Common Heating Return	3/4" Comp	90
H	Heating Expansion Vessel	1/2" Comp	-
I	High/Low Condensate	22mm/1/2"Comp	-

Transporting the unit

Transport and Handling

The Victorum Compact unit is delivered fully packaged and fixed to a wooden pallet base. Care should be taken when transporting the unit ensuring that the casing is not damaged by impact.

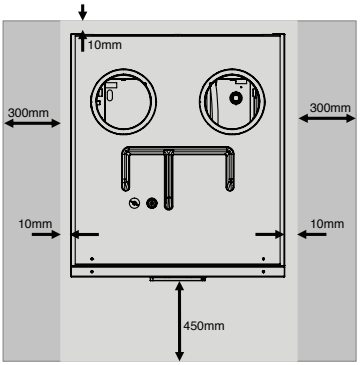
At least two people should lift the unit to prevent injuries. The unit must be stored in a dry area and must never be dropped during handling. Packaging should only be removed at the installation location. This will help protect the casing and components. The unit must be installed on a level floor with the required load bearing capability.



Both pallets must be transported in an upright position only.

Suitable Location

Care should be taken that the recommended minimum distance around the unit for service and maintenance works to be carried out, are adhered to. Access to allow maintenance of the valves should be considered. In addition, the immersion heater is 400mm in length and this distance should be considered.



The side clearances stated as 300mm can be reduced to 10mm as long as the object inside of the 300mm space is removable to allow access for service and/or maintenance works. An example would be a removable panel that allows sufficient access to the top, front or sides of the unit.

When using the adjustable feet, ensure that the floor is strong enough. Install the unit where it is not exposed to water/excessive moisture. Particular attention is needed if sitting in a garage or outbuilding as the unit should be protected from frost. All exposed pipework must be insulated. The unit must be installed upright on a base capable of supporting its weight when full (please see the technical specification section for weights).

Installing the unit

Moving the Indoor unit

Select the moving route in advance.

Be sure that moving route is safe for the weight of the unit.

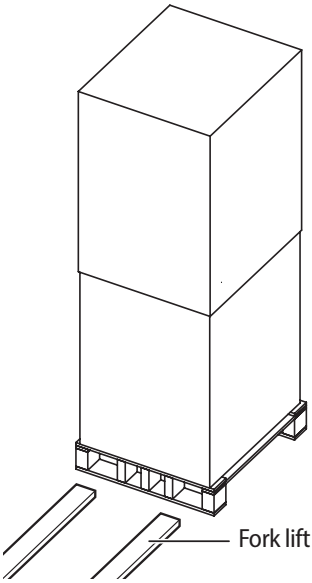
Moving the unit with a fork lift.

carefully insert the fork into the wooden pallet at the bottom of the unit.

Be careful that the fork does not damage the unit.

When moving the unit, be careful not to damage the unit with impact.

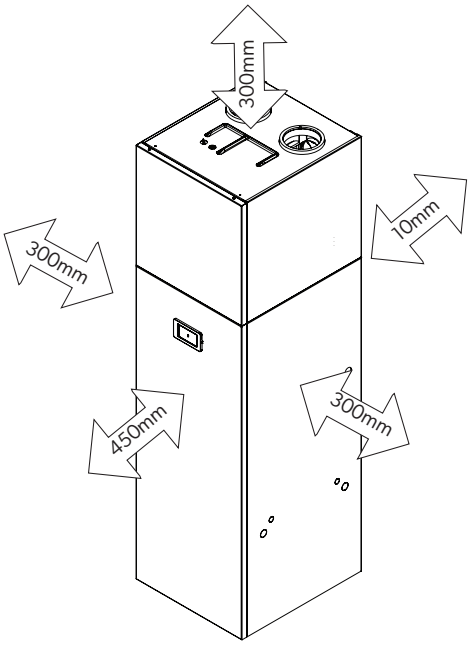
Do not remove the packaging until unit has reached the final installation location.



Installation space

Ensure to leave the appropriate space as indicated in the drawing.

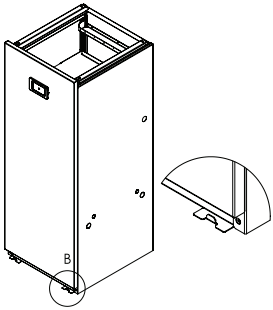
Installation site should be secured with adequate ventilation so that the components of indoor unit will not be damaged from overheating.



Assembling the Heat Pump

Adjusting the feet

Position the bottom section of the Victorum Compact on a suitable base that can take the weight of the unit. Use the product's adjustable feet to ensure the Heat Pump is level and stable. The adjustment is approx. 20mm on each foot.

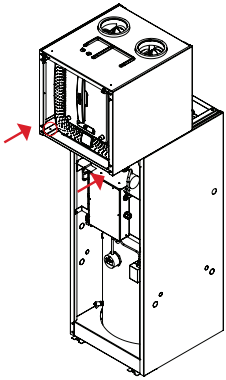


It is recommend that the units pipework is connected to the bottom section before placing the top section on

Assembling the top & bottom sections

The Victorum Compact is delivered in two sections- the top Heat Pump section and the bottom Cylinder section. The two sections must be assembled on-site to marry the two sections into one single unit.

The following steps and images will demonstrate the marrying of the two sections.

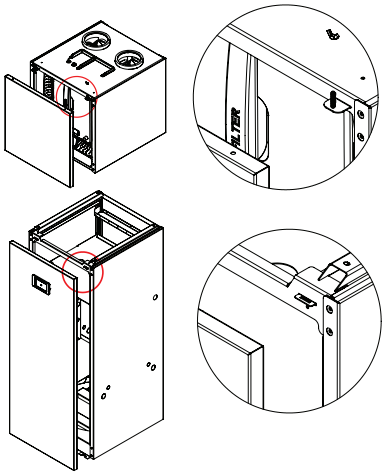


WARNING! A minimum of 2 people is required when lifting

Removing the Front Panels

Remove the two wing nuts from the top of front panel on the top section. Slide the panel upwards and remove carefully.

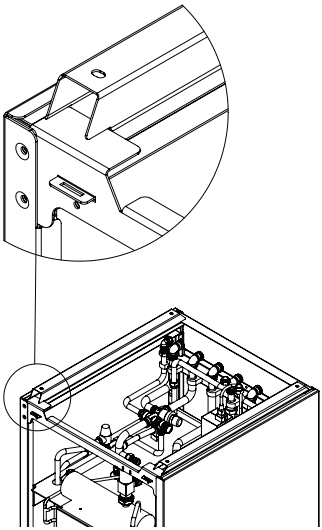
Slide front panel of the bottom section upwards slightly and remove carefully. Disconnect the quick release cable coupler connecting the touchscreen to the control board (Only applicable if the touchscreen is installed in the front panel of the unit).



Assembling the Heat Pump

Guide Rail Bracket

The top section is guided onto the bottom section by using the incorporated rails, shown in the image. Care is required to ensure all services on the underside of the top Heat Pump section do not snag during the sliding process.

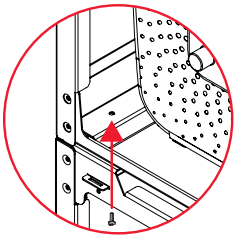


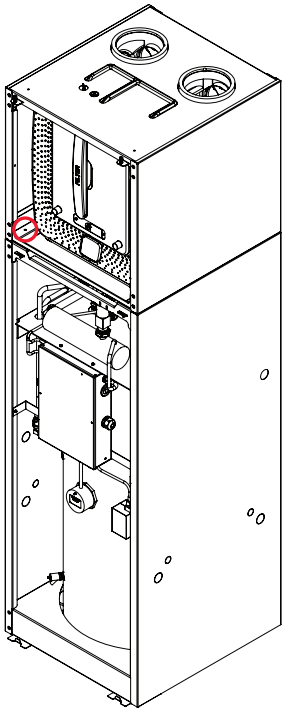
Attaching

The top section weights 62.6kg so extreme care is required when lifting to avoid injury to the installer. Two people, as a minimum, are required to attach the two sections.

Place the top section carefully onto the front of the guide rails and slowly slide the top section backwards until the two sections align flush on the front.

The two sections are fixed together using the screws provided. The screws are inserted in the underside of the top section, at the front of the unit.





Connecting the Heat Pump

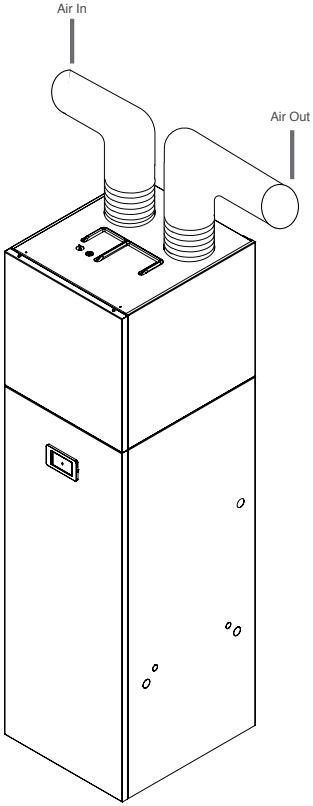
Air Out (Exhaust) Terminal

The air Out (Exhaust) terminal size is 150mm.

Air In (Extract) Terminal

The air In (Extract) terminal size is 150mm.

Spigots are supplied with the unit and these are needed to connect a flexible duct to the top of the unit.



Designing/Installing the Victorum

To avoid under performance of the Victorum or increased noise the following points should be considered when designing/installing the ducting.

- Avoid sharp bends or transitions.
- Swept 90° bends are preferred.
- Ensure all burrs are removed from duct ends.
- Flexible ducting should be considered above the unit for ease of installation.
- The maximum External Static Pressure of the ducting system should not exceed 110Pa's (Note; this is exclusive of the heat pump)

Piping

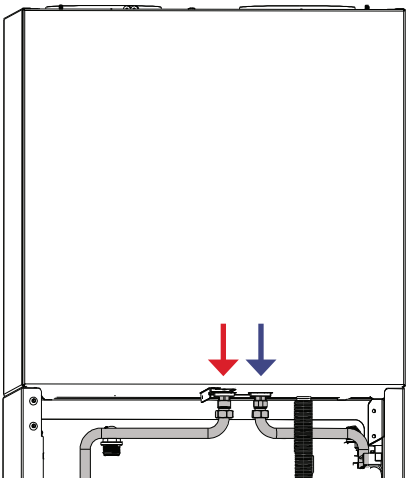
Heat Pump Primary Connections

The Flow and Return connection sizes are Ø15mm compression.

Flow colour reference - red

Return colour reference - blue

The primary flow and return pipes are pre-installed in the bottom section using flexible pipe sections. Connect the primary pipes to the tails on the bottom of the top section using the swivel nuts on the flexible pipes and insert the DN12 gaskets provided.



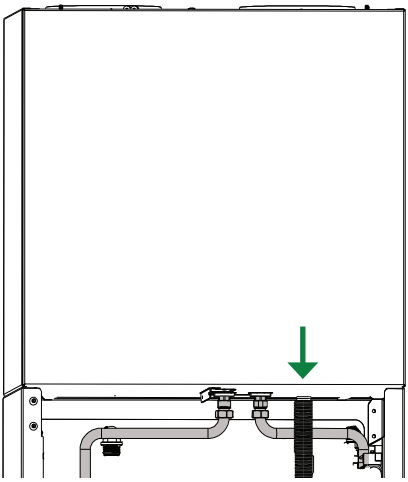
Connecting the Drain Hose

The drain pipe is pre-installed in the bottom section and there is a flared copper section underneath the drain spigot of the top section. The flexible hose supplied with the unit must be used to connect the top section to the flared copper upstand.

Cut the flexible hose to the correct length so it inserts halfway into the copper upstand. Insert the hose into the copper upstand first and then slide upwards over the spigot on the Heat Pump.

Terminating the Drain Pipe

The drain pipe terminates in the bottom section beside the Tundish on the left hand side. It is the installers responsibility to connect the drain pipe to a suitable location to allow sufficient drainage from the unit.



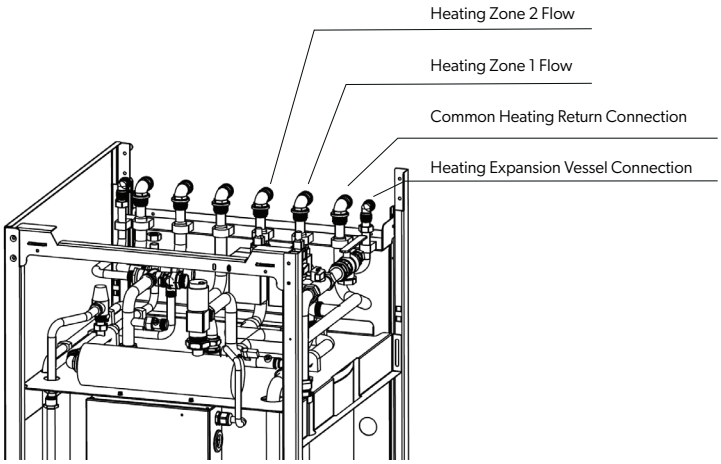
Piping

Heating System Pipe Connections

The heating zone valves are pre-installed along with the expansion vessel (8L), pressure relief valve (3 bar), filling loop and backup heater (3kW).

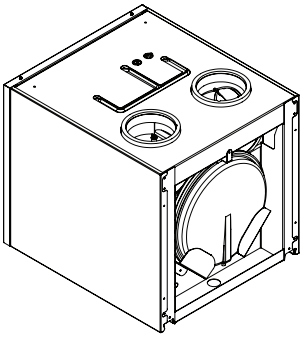
Connect the flow pipe from the applicable zone to the corresponding zone valve. The zone valves are labelled in the image below.

The return connection from the heating zones is a common connection. All heating zone returns should be joined at the unit and return via the common heating return connection, as shown below.



Heating Expansion Vessel

The unit incorporates an 8 litre expansion vessel which is pre-mounted and piped using a flexible pipe within the top section of the unit. The flexible pipe must be connected to the expansion vessel connection, as shown in the image.



Piping

Hot and Cold Pipework

The Inlet control group is pre-installed in the bottom section. The mains/boosted cold supply, balanced cold outlet and the cylinder feed are pre-piped so the installer only has to pipe up-to the unit. The Inlet control group pressure relief valve is also pre-installed and pre-piped alongside the T&P valve outlet to the tundish.

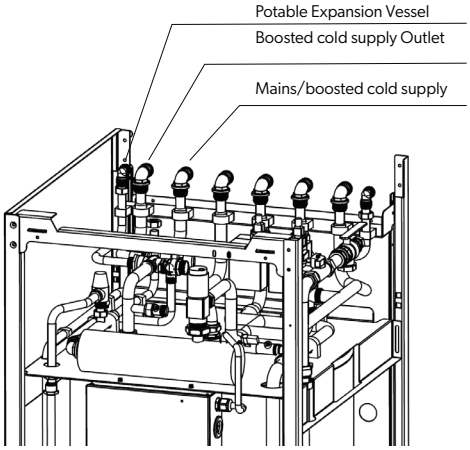
The connection for the potable expansion vessel is also pre-installed. The potable vessel is not included in the unit and it is the installers responsibility to mount and connect the potable vessel to the pipe provided.

Connect the mains/boosted cold supply inlet and the balanced cold supply outlet from the unit to the connections shown below.

Water Supply

The performance of any unvented system is only as good as the mains water supply available. To this effect the maximum possible water demand should be assessed, with the knowledge that the mains supplies both hot and cold services simultaneously. The hot water storage tank/water heater itself operates at a pressure of 3bar, controlled by the inlet control set, and is capable of delivering over 50 litres per minute. The high quality inlet control set has been designed to make the most of the low rates available.

The water supply should be checked to ensure it can meet these requirements. If necessary, consult the local water authority regarding the likely pressure and flow rate availability.
Consideration should be given to upgrading existing 1⁄2" (15mm) cold mains pipework to a larger size if the recommended minimum pressure / flow rate is not being achieved. Joule™ recommend that primary pipework used has a minimum diameter of 22mm to ensure low pressure loss.



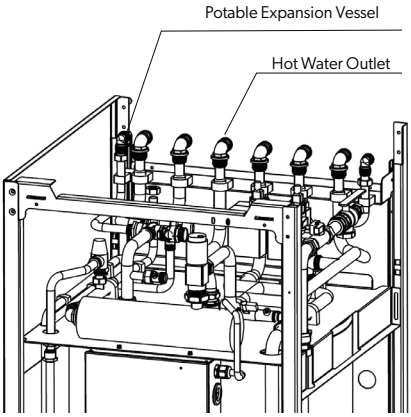
Hot Water Outlet

Run the first part of the hot water distribution pipework in 22mm. This can be reduced to 15mm and 10mm as appropriate for the type of tap etc. The aim should be to reduce the volume of the hot draw-off pipework to a practical minumum so that the time taken for the hot water is as quick as possible. Do not use monobloc mixer taps or showers if the balanced cold connection is not provided. Outlets of this type can back pressurise the until and result in discharge from the T&P valve.

Piping

Potable Expansion Vessel

The expansion vessel receives the increased water volume when expansion takes place as the system heats up and it maintains a positive pressure in the system. The expansion vessel contains a flexible diaphragm, which is initially charged on one side with nitrogen, but can be topped up with air when required. Select a suitable position for the expansion vessel. Mount it to the wall using the bracket provided (0-24L only, 35L and above are floor standing) and hard fix into pipework and insulate. Ensure that the top of the vessel is accessible for servicing. The pipe connecting the expansion vessel to the system should have a diameter of not less than 15mm and must not contain any restrictions.



Commissioning

Filling the Potable System

Before beginning to fill the hot water tank, the the precharge pressure in the potable expansion vessel must be checked to verify it is 0.3 bar below the inlet group setting ex. 3 bar inlet = 2.7 vessel. The valve is of the Schrader car tyre type. The adjusting of the presure should be done before the expansion vessel is installed - i.e the pipe connection must be open to atmosphere.

Check all the connections for water tightness including any factory-made connections such as the immersion heater and the temperature and pressure relief valve.

Prior to filling, open the hot tap furthest away from the cylinder to expel air. Open the cold main isolation valve and allow the unit to fill. Once the cylinder has been fully commissioned it should be heated to its normal operating temperature.

Heating System

Before beginning to fill the heating system ensure all components are installed and respect any recommended direction of flow. Ensure all connections are water tight and sound.

It is recommended to check the pre-charge pressure of the heating expansion vessel before filling the system and to adjust it if necessary.

Commissioning

Filling & Venting

Follow the steps below to **Fill and Vent** the system in the correct order:

1. Ensure all system valves are open fully.
2. Fill the system using the incorporated filling loop to the recommended pressure (min 1.0 bar – max 1.5 bar).

While filling the system, air should be released via the manual or automatic air vents within the system.

During the filling process it is important to release air from the heat pump. There is a manual air vent on the top of the unit.

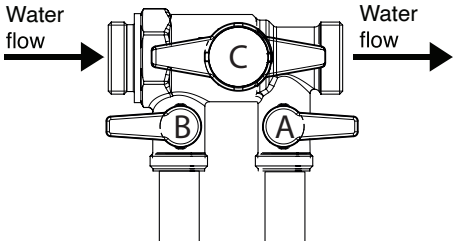
3. Ensure the system is watertight.

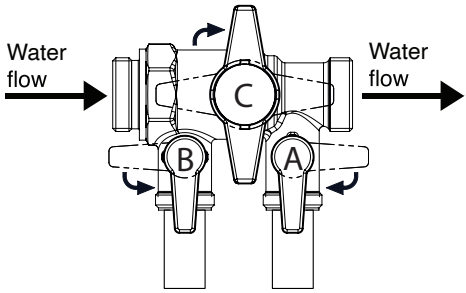
Follow the steps below to **Flush** the system in the correct order:

1. Connect the fill & flush pump to the fill & flush valve (as shown).

It is important to connect the feed hose from the fill & flush pump to **Valve A** and the drain hose to **Valve B**. This ensures the water flows through the Heat Pump first and then out to the open circuit. It also ensures that any trapped air in the Heat Pump and/or the open circuit is pushed back to the fill & flush pump's reservoir and expelled from the system.

2. **Valve C** is turned to the closed position (90° to the pipe direction). Open valves A and B and switch on the fill & flush pump.
3. Water is circulated through the system for a minimum of 45 minutes.





Commissioning

In this time, the individual circuits can be flushed seperatly (DHW, Zone 1, Zone 2, etc).

To flush a circuit, first the zone valve for the circuit must be manually opened. This allows circulation of water through the open circuit.

While flushing a circuit, it is essential to flush each emitter separately. As most emitters will be piped down from the main runs at ceiling level, this helps remove all air pockets from each leg.

During the flushing process it is important to regularly release air from the heat pump.

4. Valve C can be intermittently opened and closed to remove air pockets within the fill and flush valve body. Ensure valve C is always returned to the closed position while flushing the system.

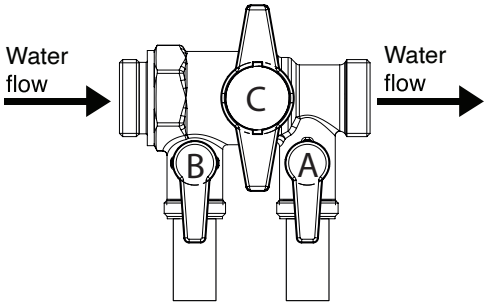
5. After 45 min, if all air has been removed from the system, Valve B should be closed and the pump allowed to pressurise the system. The recommended pre-charge pressure is between 1.0 and 1.5 bar.

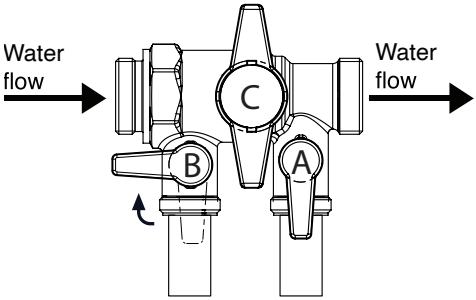
6. When the pre-charge pressure has been reached, Valve A should be closed.

If the pre-charge pressure has exceeded 1.5 bar, Valve B can be opened to allow system pressure to be reduced.

7. Valve C is now opened to allow for normal system operation.

8. The fill and flush pump may now be switched off and the hoses disconnected. The blanking caps can now be replaced on Valves A & B.





Examples of Discharge Arrangements

Before placing the unit into position take note of the temperature and pressure relief discharge pipe route options. There are left and right points on the units casing to exit the relief pipework.

To access and connect the pipe work follow guidelines listed below

Connect the tundish and route the discharge pipe which must be routed in accordance with Building Regulations - Part G3 of schedule 1.

- Be at least one pipe size larger than the nominal outlet size of the safety device unless its total equivalent hydraulic resistance exceeds that of a straight pipe 9m long, i.e. discharge pipes between 9m and 18m equivalent resistance length should be at least two sizes larger than the nominal outlet size of the safety device, between 18 and 27m at least 3 sizes larger, and so on.
- Bends must be taken into account in calculating the flow resistance. Refer to diagram 1, Table 1 and the worked example. An alternative approach for sizing discharge pipes would be to follow BS6700 Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages.
- Be installed with a continuous fall. The discharge must be visible at the final point of discharge.
- The tundish is pre-installed in the unit. The outlet from the safety device is 15mmand the outlet from the tundish is 22mm. From the table below, this represents a maximum outlet length of 9 metres. If the run is longer than 9m, including the resistance for elbows, the tundish outlet pipe size may need to be increased

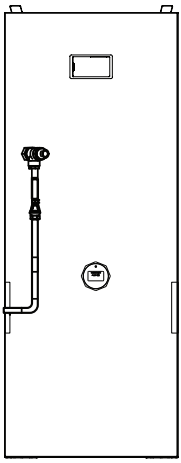
	G1/2			G3/4			G1		
Min. size of discharge pipe D1	15mm			22mm			28mm		
Min. size of discharge pipework D2 from tundish	22mm	28mm	35mm	28mm	35mm	42mm	35mm	42mm	54mm
Max. length of straight pipe (no bends or elbows)	Up to 9m	Up to 18m	Up to 27m	Up to 9m	Up to 18m	Up to 27m	Up to 9m	Up to 18m	Up to 27m
Deducts the gure below from the maximum length for each bend or elbow in the discahrge pipe	0.8m	1m	1.4m	1.0m	1.4m	1.7m	1.4m	1.7m	2.3m

Sizing of copper discharge pipe (D2) for a temp, relief valve with a G1/2 outlet size (as supplied)

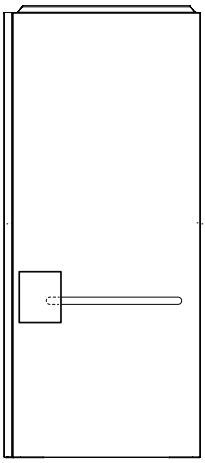
Temperature & Pressure Relief Valve

Examples of Discharge Arrangements

Left Side Pipe Exit

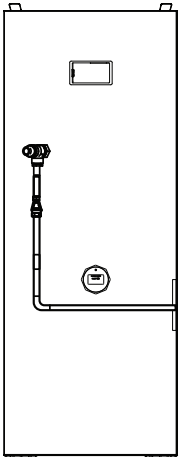


Front View

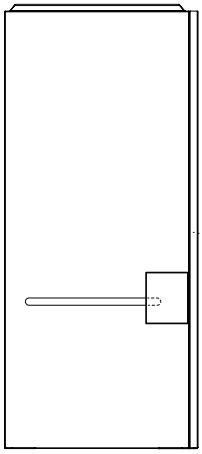


Side View

Right Side Pipe Exit

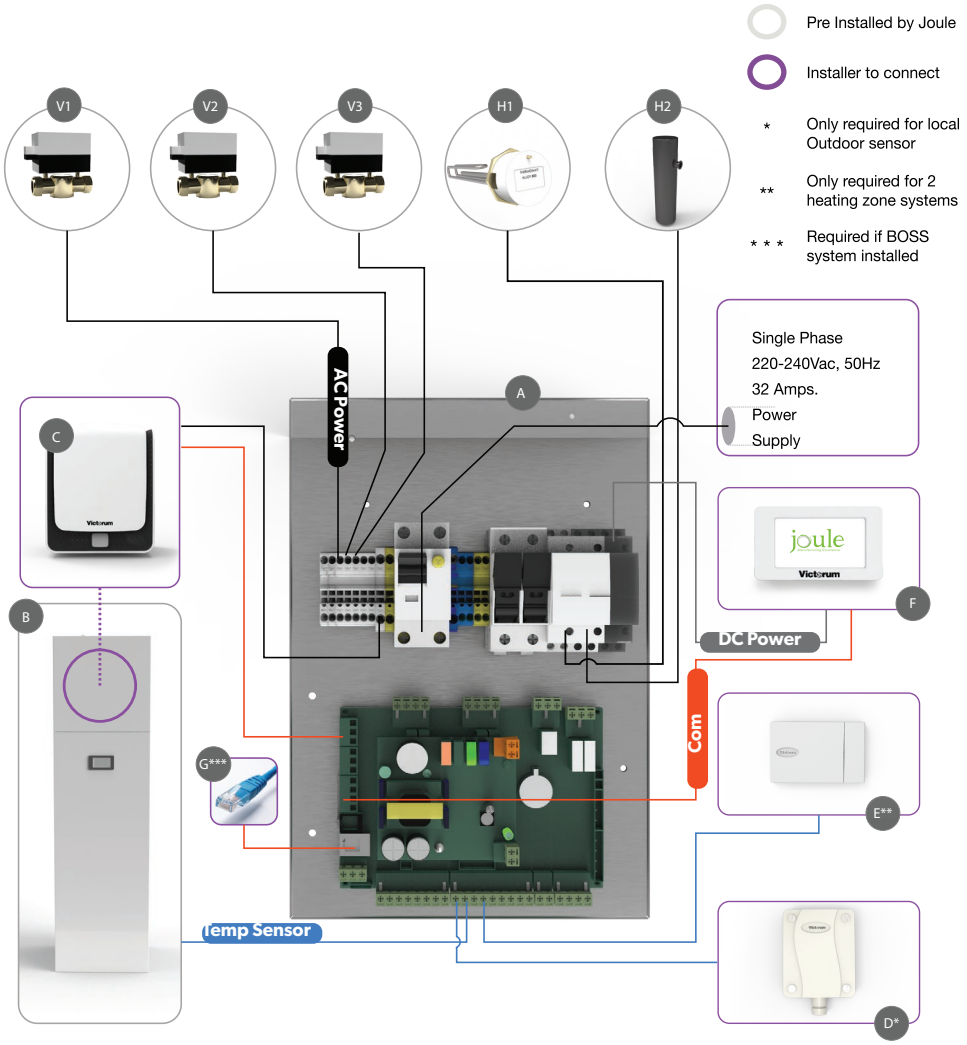


Front View



Side View

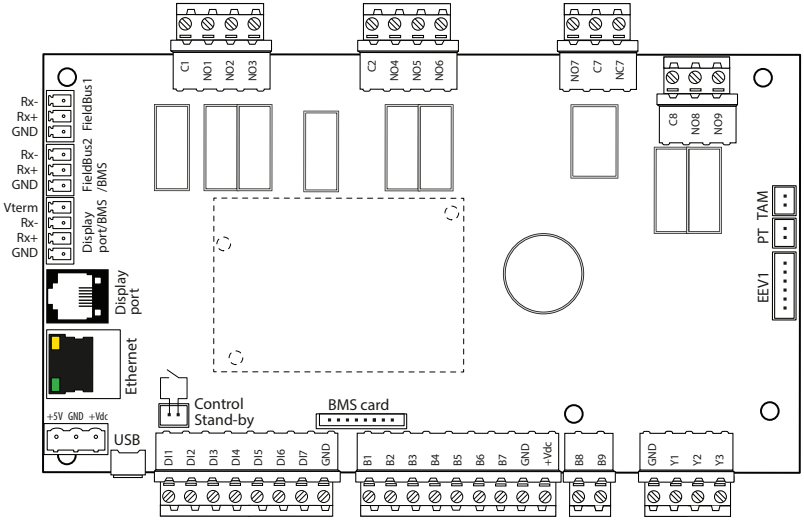
Electrical



	Description		Description
A	Joule Electrical Enclosure	H1	Immersion
B	PrePlumb Unit	H2	Back up Heater
C	Heat Pump	V1	DHW Valve
D	Outdoor Sensor	V2	Heating Zone valve 2
E	2nd Zone Sensor	V3	Heating zone valve 1
F	Touchscreen		
G	RJ45 BOSS system connection		

Electrical

Overview



Victorum Compact Power Supply

The table below outlines the power requirements for the Victorum Compact Pre-Plumb unit.

	Zones	Hz	Volts	Phase	MCA	MFA
HXVC-PP-011	2	50	230	Single	30A	32A
HXVC-PP-012	3	50	230	Single	30A	32A

Power Supply Cable Entry

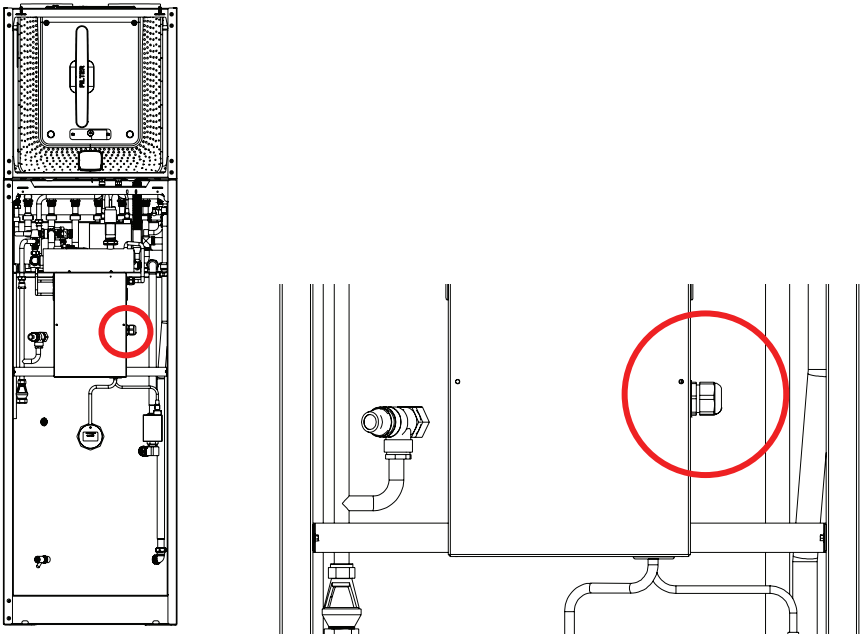
All electrical wiring must be carried out by a competent installer and be installed in accordance with current local Wiring Regulations.

The cable entry point can be seen the diagram on the right. Remove the front panel to access the electrical enclosure. Cable entry to the enclosure is via an M25 cable gland. Ensure all cables are secured using the fixings provided.

Power Supply Connections

Connect 'Live' and 'Neutral' power lines with the terminals marked 'L' & 'N' of the ELCB, which is located inside the electrical enclosure.

Connect the 'Protective Earth' line with the Earth terminal inside the electrical enclosure. The rear casing of the electrical enclosure is the termination point for all Protective Earth Connections. Please use the earth termination points provided.



Connecting the Outdoor Sensor

The Outdoor Sensor monitors the outside air temperature and is installed on the exterior of the dwelling on a north facing wall, if possible. Otherwise, the sensor must be kept away from direct sunlight.

The exterior wall material must be considered, as materials like Zinc can act as a heat sink. This can affect the senor reading, producing higher readings.

The outdoor sensor requires a two core 0.75mm2 cable and it is not polarity sensitive.

The sensor is connected to 'B1' and 'Gnd' on the controller.

Electrical

Connecting the Touchscreen

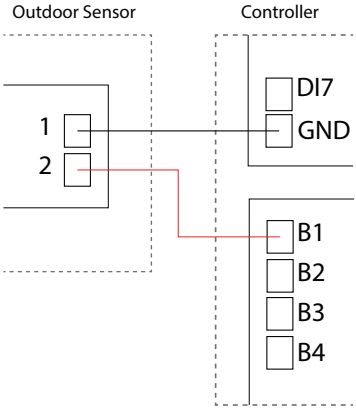
The entire system is controlled via the Touchscreen- heating, hot water and ventilation. The touchscreen is typically installed in the living area (zone 1), where it also acts as the temperature sensor for that zone.

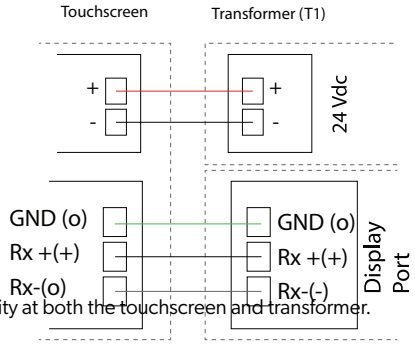
The recommended location for the touchscreen is 1.5m off the floor and kept away from sources of heat and/or cooling like radiators, drafts or direct sunlight. Local regulations should be adhered to when planning the location of any room sensor.

Room thermostats/ sensors need a free flow of air to operate correctly, so they must not be covered by curtains or blocked by furniture. Nearby electric fires, televisions, walls or table lamps may also prevent the sensor from sensing the correct temperature.

Always mount the thermostat/ sensor at eye level. Read instructions fully so you get the best from the product. Do not push hard on the LCD screen as this may cause irreparable damage.

The touchscreen requires a separate low voltage power supply, 24Vdc. A power supply transformer is pre-installed in the electrical enclosure.





Connect the Positive (+) and Negative (-) respecting the polarity at both the touchscreen and transformer.

The touchscreen requires a separate communication cable from the power supply cable. It is recommended to use Belden 8723 or equivalent, as this cable type incorporates a drain wire which is imperative for clean communication between the touchscreen and the controller.

The touchscreen communication cable is connected to 'Rx+', 'Rx-' and 'Gnd' on the 'Display port' of the controller. The cable core colours must be matched on the rear of the touchscreen as the communication is polarity sensitive.

It is important that at the electrical enclosure end, the drain wire is connected to the metal chassis via the 'Fast-On' tab provided. At the touchscreen end, the drain wire is to be wrapped around the outer sheath of the cable and insulated with insulating tape to isolate the connection. The drain is used to eliminate any electrical noise from the communication.

Electrical

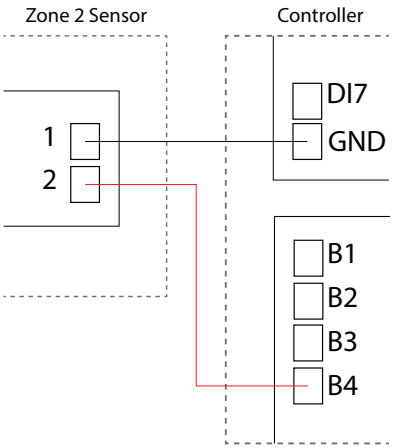
Connecting the Zone 2 Room Sensor

The second zone sensor is used to sense the temperature in the second heating zone of the dwelling.

All the installation guidelines for the touchscreen apply to the Zone 2 room sensor- installation height, avoiding heat sources, etc.

The second zone sensor requires a two core 0.75mm2 cable and it is not polarity sensitive.

The sensor is connected to 'B4' and 'Gnd' on the controller.

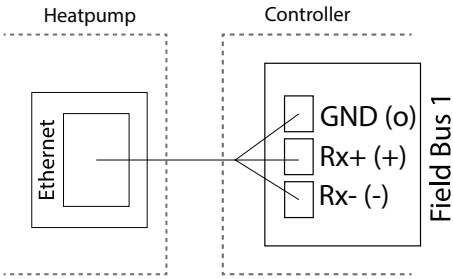


Communication Cable – Heat Pump to Pre-Plumbed Cylinder unit

The communication cable between the Heat Pump to Pre-Plumbed Cylinder unit is supplied in the kit with the Cylinder unit. It is a pre-molded Ethernet cable and does not require and alteration.

The connection point on the Heat Pump is the Ethernet port on the bottom of the unit, on the front right-hand side.

The communication cable is connected to 'Rx+', 'Rx-' and 'Gnd' on the 'Field Bus 1' of the controller. The cable core colours are clearly labelled as the communication is polarity sensitive.



Underfloor Heating Wiring

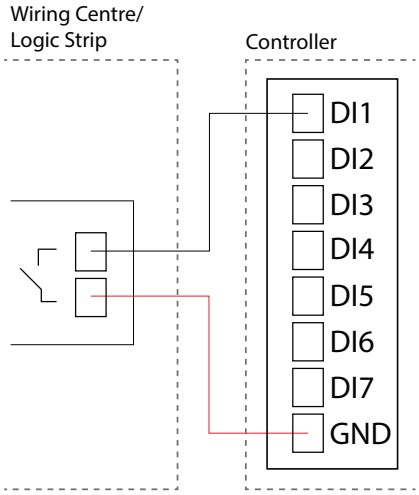
If the system incorporates underfloor heating and an external wiring centre/ logic strip and individual room thermostats, then the touchscreen is only used to control the hot water and ventilation functions of the system.

To enable this setup, the Digital Inputs (DIN) on the controller of the Pre-Plumbed Cylinder unit must be utilized.

The wiring centre/ logic strip must support a volt free output via a relay to enable the heating signal on the controller of the Pre-Plumbed Cylinder unit.

The heating signal enable is to be wired using a two core 0.75mm2 cable and it is NOT polarity sensitive.

The sensor is connected to 'DI1' and 'Gnd' on the controller.



Product Specification

Combi Pipework

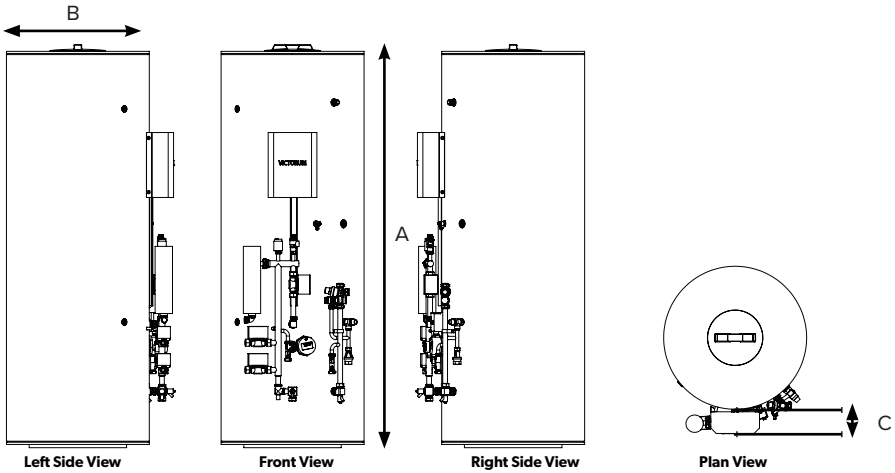
The Victorum Cased Combi unit is a pre-plumbed and pre-wired hot water tank, designed to be installed alongside the Victorum Exhaust Air Heat Pump. The unit consists of a 220 litre cold water storage tank and a 180 litre hot water tank that is designed to be pressurised.

On the mechanical side, the PrePlumb unit incorporates a 3kW inline heater, automatic air vent, DHW & heating zone valves, an automatic bypass valve and a 3-bar safety relief valve. The inlet control group and tundish are also pre-piped and the ball cock is installed in the cold water storage tank.

There is a Ø 180mm access hatch on the top of the unit for service and/or maintenance work.

On the Electrical side, the unit incorporates the electrical enclosure, system controller, DHW tank Immersion heater and the DHW tank sensor.

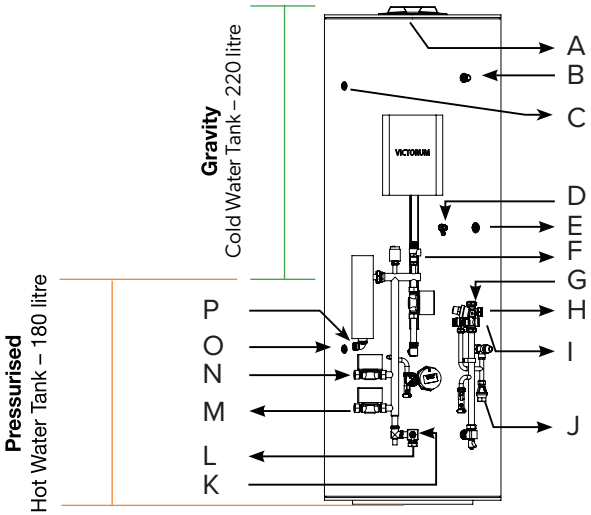
	A	B	C
220L	1850mm	660mm	105mm



Combi Cylinder Specification	
DHW Capacity	180L
Cold Water Storage Capacity	220L
Cylinder Material	Stainless Steel Duplex LDX 2101
Thermal Insulation	Polyurethane foam CFC-Free & HCFC Free
Coil Material	Stainless Steel Tube AISI 316L
Weight (empty)	TBC kg
Weight (full)	TBC kg
Max. Operating Pressure	5 (bar)
Test Pressure	10 (bar)
Max.Working Temperature	90°c
Heating Elements	1. No. Incoloy Immersion
Heat Loss	TBC W
Energy Efficiency	Class C
Height (mm)	1850 mm
Diameter (mm)	660 mm

Product Overview

Product components



Upon filling and commissioning, ensure all connections are completely watertight.

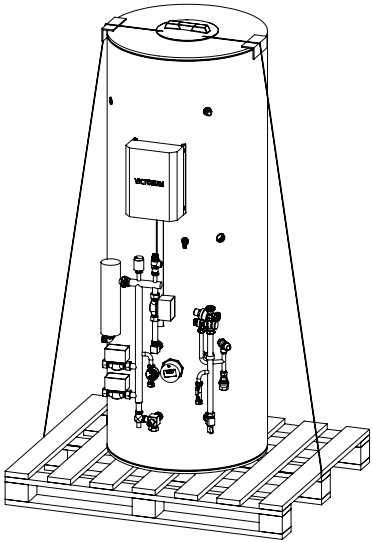
Reference	Description
A	Inspection Hatch – Ø 180mm
B	Mains Inlet - Cold Water Tank
C	Overflow - Cold Water Tank
D	Drain Valve - Cold Water Tank
E	Gravity Cold Outlet - Cold Water Tank
F	Heating Circuit Safety Relief Valve
G	Mains/ Boosted Supply Inlet
H	Balanced Cold Outlet
I	Expansion vessel
J	Tundish
K	Common Heating Zones Return C
L	Primary Return
M	Heating Zone 2 Flow
N	Heating Zone 1 Flow
O	Hot Water Outlet
P	Primary Flow

Transporting the unit

Transport and Handling

The Victorum Combi unit is delivered fully packaged and fixed to a wooden pallet base. Care should be taken when transporting the cylinder unit ensuring that the casing is not damaged by impact.

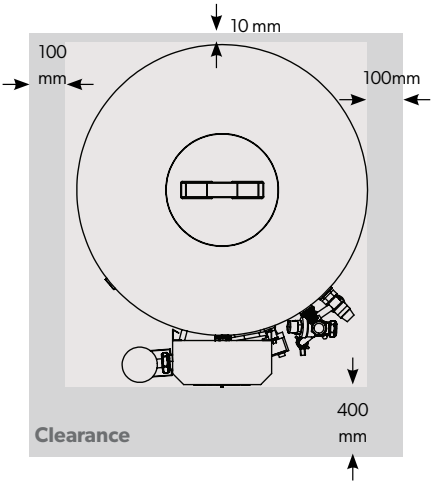
At least two people should lift the cylinder to prevent injuries. The cylinder must be stored in a dry area and must never be dropped during handling. Packaging should only be removed at the installation location. This will help protect the structure and the components. The cylinder must be installed on a level floor with the required load bearing capability.



The cylinder unit must be transported in an upright position only.

Suitable Location

Care should be taken that there is a minimum distance in front of the unit for service and maintenance works to be carried out. Enough access to allow maintenance of the valves should be considered. In addition, the immersion heater is 400mm in length and this distance should be considered to allow withdrawal for servicing if required.



Install the cylinder unit where it is not exposed to water/excessive moisture. Particular attention is needed if sitting in a garage or outbuilding as the unit should be protected from frost. All exposed pipework must be insulated. The unit must be installed upright on a base capable of supporting its weight when full (please see the technical specification section for weights).

Installing the unit

Moving the Indoor unit

Select the moving route in advance.

Be sure that moving route is safe from weight of the unit.

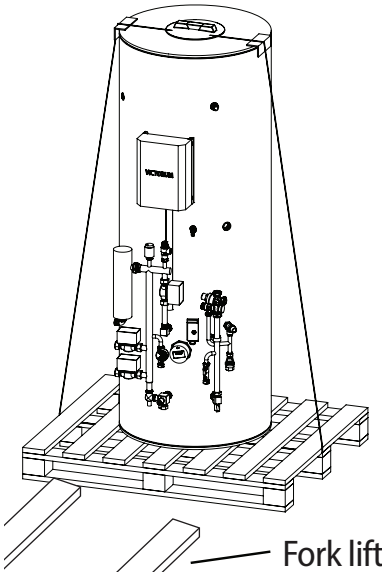
Moving the unit with a fork lift.

Insert the fork into the wooden pallet at the bottom of the unit carefully.

Be careful that the fork does not damage the unit.

When moving the unit, be care the damage of unit by impact.

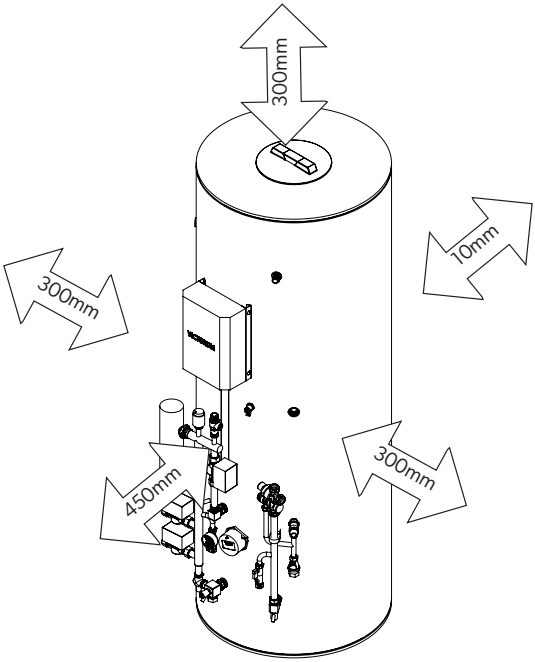
Do not remove the packaging until unit reach the final installation location.



Installation space

Ensure to leave the appropriate space as indicated in the drawing.

Installation site should be secured with adequate ventilation so that the components of indoor unit will not be damaged from overheating.



Piping

Piping

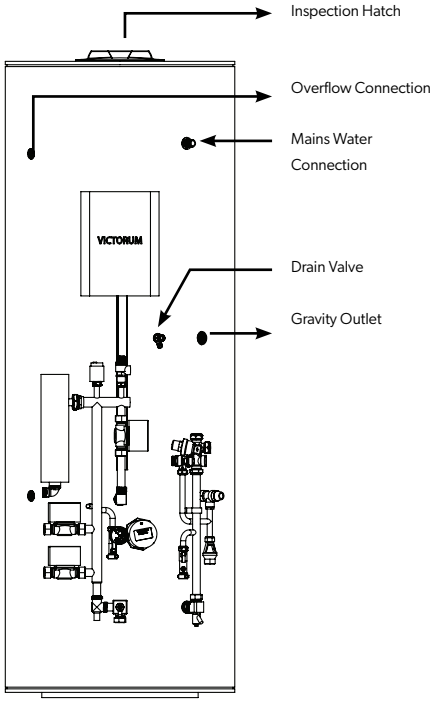
The Preplumbed Combi unit consists of a 220 litre cold-water storage cistern and a 180 litre pressurised hot water storage tank. The Combi unit is designed to be installed alongside a booster pump so the hot and cold services within the dwelling are pressurised.

Connecting To The Unit

It is recommended to use copper pipes where possible. If plastic pipes are used, they must be approved for a temperature of 95°C at a pressure of 10 bar.

If Alupex pipes are used, it is recommended to increase the pipe size by one diameter as crimp connections incorporate an insert which dramatically reduces the inner diameter.

It is also recommended to install a thermostatic mixing valve on the hot outlet of the tank to prevent the risk of scalding



Mains Water Connection

The mains water supply to the cistern should be taken directly from the service pipe supplying water to the dwelling. The mains pipe to the cistern should be provided with a stopcock with a crutch wheel for manual operation in a convenient position.

The high-pressure ball cock & 4" plastic float is pre-installed inside the cistern.

The mains connection is a ½" internal thread.

Overflow Connection

The cistern should be kept properly covered, using the access hatch provided, but not airtight. It should be accessible for cleaning and replacement and fitted with an overflow pipe so located as to discharge in a manner that will give ready warning of the occurrence of overflow without causing any nuisance or any dampness in the dwelling.

The Overflow connection point is a ¾" internal thread.

Piping

Gravity Cold Outlet Connection

The cold-water storage cistern includes a 1” internal thread connection as standard. This can be used as a gravity supply to a booster pump.

The Gravity Cold Outlet Connection includes is a 1” internal thread connection.

Cold-Water Cistern Drain Connection

The cold-water storage cistern incorporates a drain valve for service and/or maintenance of the tank and its components.

Boosted Water Supply

The performance of any unvented system is only as good as the boosted water supply available. To this effect the maximum possible water demand should be assessed, with the knowledge that the boosted supply, supplies both hot and cold services simultaneously. The hot water storage tank itself operates at a pressure of 3 bar, controlled by the inlet control group, and is capable of delivering over 50 litres per minute. The high quality inlet control group has been designed to make the most of the low rates available.

A high static (no flow) mains pressure is no guarantee of good flow availability. In a domestic installation 6bar and 25ltr/min should be regarded as the minimum. The maximum mains pressure that the inlet set can cope with is 10bar

The water supply should be checked to ensure it can meet these requirements. If necessary, consult the booster pump’s datasheet regarding the likely pressure and flow rate available. Joule™ recommend that the pipe connection sizes on all components are respected and not reduced. This will ensure low pressure loss.

Connecting to the Inlet Control Group

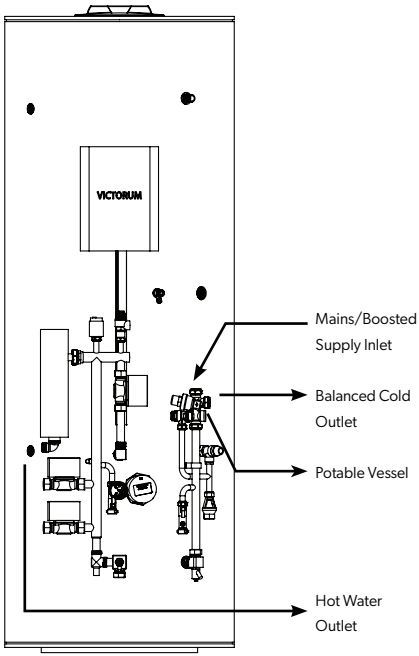
Excessive pressure can lead to the cylinder being damaged. The inlet control group supplied has a 6 bar expansion relief valve with a 15mm connection to allow it to be connected to a tundish, this is pre-plumbed. Make sure that there is enough space for future maintenance and for connection of the discharge pipe for the expansion relief valve. It is essential that this connection is not covered or closed.

The cold inlet must be piped into the top of the inlet control group. It is recommended to install a full bore isolation valve on the cold inlet for service and/or maintenance of the valve.

Piping

Balanced Cold Outlet

The Balanced Cold outlet connection is incorporated into the inlet control group. The connection is designed to supply all cold outlets within the dwelling, and it ensures that all cold and hot water pressures and flows are balanced. This is critical for mixing showers and taps to provide accurate mixing of the supplies, otherwise mixing can be difficult to achieve. The connection is a 22mm compression connection.



Potable Expansion Vessel

The expansion vessel receives the increased water volume when expansion takes place as the system heats up and it maintains a positive pressure in the system. The expansion vessel contains a flexible diaphragm, which is initially charged on one side with nitrogen, but can be topped up with air when required. Select a suitable position for the expansion vessel. Mount it to the wall using the bracket provided (0-24L only) and hard fix into pipework and insulate. Ensure that the top of the vessel is accessible for service and/or maintenance. The pipe connecting the expansion vessel to the system should have a diameter of not less than 15mm and must not contain any restrictions.

Hot Water Outlet

Run the first part of the hot water distribution pipework in 22mm. This can be reduced to 15mm and 10mm as appropriate for the type of tap etc. Your aim should be to reduce the volume of the hot draw-off pipework to a practical minimum so that the time taken for the hot water is as quick as possible. Do not use monobloc mixer tap or showers if the balanced cold connection is not provided. Outlets of this type can back pressurise the unit and result in discharge.

Piping

PrePlumb Primary Connections

Connect the primary connections from the Heat Pump to the unit as shown below.

The primary flow connection is on the bottom of the inline heater and is a 3/4" internal thread. The primary return connection is on the return block of the preplumbed manifold and is a 22mm compression connection.

Heating System Pipe Connections

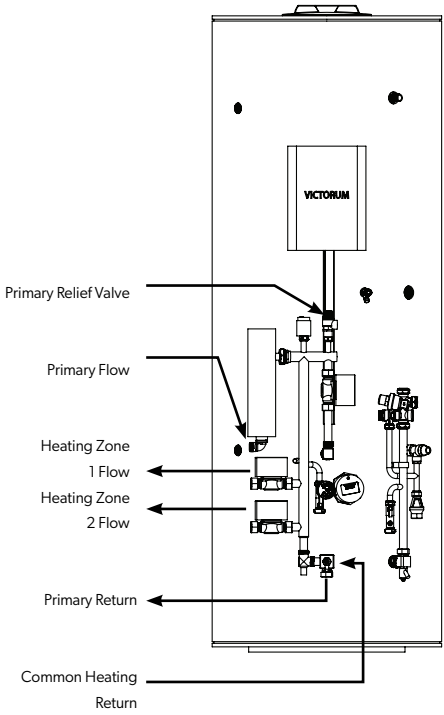
Connect the heating zone connections as shown below. In the Victorum Combi unit the heating zone valves are pre-installed. The hot water zone valve is also pre-installed.

All heating zone return pipes should be joined at the cylinder and return via the common heating return as shown below.

Pressure relief valve Connection

The 3-bar pressure relief valve is incorporated on the manifold of the PrePlumb tank. The termination point of the relief pipe must discharge in a manner that will give ready warning of the occurrence of overpressurisation without causing any nuisance or any dampness in the dwelling.

The connection is a ½" internal thread.



Heating Expansion Vessel

The PrePlumb unit does not have an expansion vessel incorporated. The installer must ensure the system is protected from the effects of expansion by installing a suitably sized expansion vessel. Refer to section 'Sizing, positioning and pre-charge pressure of the heating system expansion vessel' for vessel sizing.

Commissioning

Filling the Cold-Water Storage Cistern

Before beginning to fill the cold-water storage cistern check all the connections for water tightness including any factory-made connections such as the ball cock and drain valve. The orientation of the ball cock and float should be checked as misalignment will result in the valve not closing correctly and water being expelled from the overflow connection.

Filling the Potable System

Before beginning to fill the hot water tank, ensure the cold-water cisterns gravity outlet connection has been purged and cleared of any installation debris. Failure to do so could lead to debris entering the inlet control group, causing damage to the valve and the possibility of the unvented system underperforming.

The pre-charge pressure in the potable expansion vessel must be checked to verify it is 0.3 bar below the inlet control group setting ex. 3 bar inlet = 2.7 vessel. The valve is of the Schrader car tyre type. The adjusting of the pressure should be done before the expansion vessel is installed - i.e the pipe connection must be open to atmosphere.

Check all the connections for water tightness including any factory-made connections such as the immersion heater and the temperature and pressure relief valve.

Prior to filling, open the hot tap furthest away from the cylinder to expel air. Open the isolation valve prior to the inlet control group and allow the unit to fill. Once the cylinder has been fully commissioned it should be heated to its normal operating temperature.

Heating System

Before beginning to fill the heating system ensure all components are installed and respect any recommended direction of flow. Check all the connections for water tightness including any factory-made connections.

It is recommended to check the pre-charge pressure of the heating expansion vessel before filling the system and to adjust it if necessary.

Commissioning

Filling & Venting

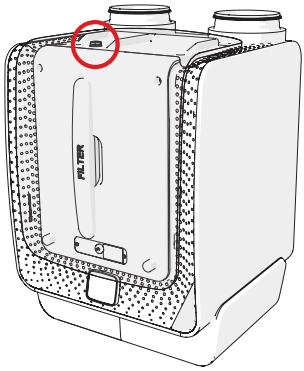
Follow the steps below to **Fill and Vent** the system in the correct order:

1. Ensure all system valves are open fully.
2. Fill the system using the incorporated filling loop to the recommended pressure (min 1.0 bar – max 1.5 bar).

While filling the system, air should be released via the manual or automatic air vents within the system.

During the filling process it is important to release air from the heat pump. There is a manual air vent on the top of the unit.

3. Ensure the system is watertight.



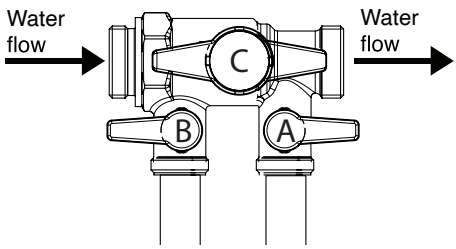
The fill & flush valve MUST be connected on the 'return' pipe to the Heat Pump.

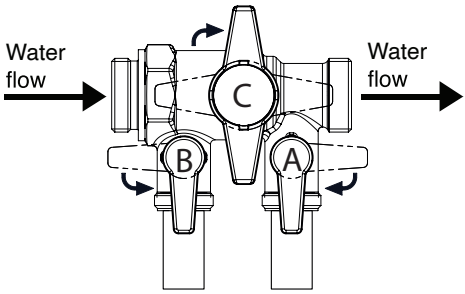
Follow the steps below to **Flush** the system in the correct order:

1. Connect the fill & flush pump to the fill & flush valve (as shown).

It is important to connect the feed hose from the fill & flush pump to **Valve A** and the drain hose to **Valve B**. This ensures the water flows through the Heat Pump first and then out to the open circuit. It also ensures that any trapped air in the Heat Pump and/or the open circuit is pushed back to the fill & flush pump's reservoir and expelled from the system.

2. **Valve C** is turned to the closed position (90° to the pipe direction). Open valves A and B and switch on the fill & flush pump.
3. Water is circulated through the system for a minimum of 45 minutes.





Commissioning

In this time, the individual circuits can be flushed seperatly (DHW, Zone 1, Zone 2, etc).

To flush a circuit, first the zone valve for the circuit must be manually opened. This allows circulation of water through the open circuit.

While flushing a circuit, it is essential to flush each emitter separately. As most emitters will be piped down from the main runs at ceiling level, this helps remove all air pockets from each leg.

During the flushing process it is important to regularly release air from the heat pump.

4. Valve C can be intermittently opened and closed to remove air pockets within the fill and flush valve body. Ensure valve C is always returned to the closed position while flushing the system.

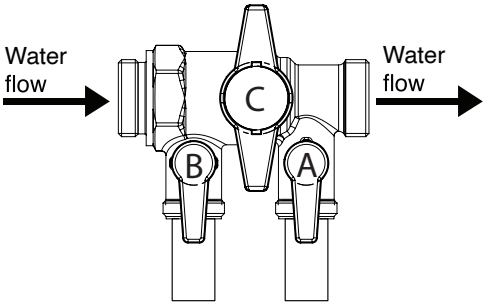
5. After 45 min, if all air has been removed from the system, Valve B should be closed and the pump allowed to pressurise the system. The recommended pre-charge pressure is between 1.0 and 1.5 bar.

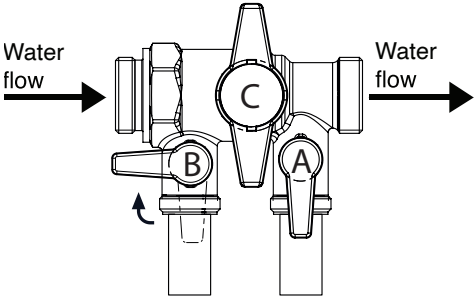
6. When the pre-charge pressure has been reached, Valve A should be closed.

If the pre-charge pressure has exceeded 1.5 bar, Valve B can be opened to allow system pressure to be reduced.

7. Valve C is now opened to allow for normal system operation.

8. The fill and flush pump may now be switched off and the hoses disconnected. The blanking caps can now be replaced on Valves A & B.





Temperature & Pressure Relief Valve

Connect the tundish and route the discharge pipe which must be routed in accordance with Building Regulations - Part G3 of schedule 1.

When operating normally water will not be discharged from the temperature and pressure relief valve. Water discharge from the temperature and pressure valve will only occur under fault conditions. The tundish is pre-fitted as shown below.

The discharge pipe (D2) coming from the tundish should terminate in a safe place where there is no risk to persons near the discharge, be of metal and:

- Be at least one pipe size larger than the nominal outlet size of the safety device unless its total equivalent hydraulic resistance exceeds that of a straight pipe 9m long, i.e. discharge pipes between 9m and 18m equivalent resistance length should be at least two sizes larger than the nominal outlet size of the safety device, between 18 and 27m at least 3 sizes larger, and so on.

- Bends must be taken into account in calculating the flow resistance. Refer to Table 1 and the worked example. An alternative approach for sizing discharge pipes would be to follow BS6700 Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages.

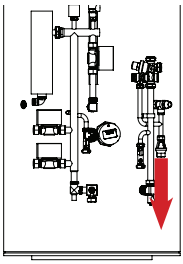
- Be installed with a continuous fall. The discharge must be visible at the final point of discharge.

TABLE 1

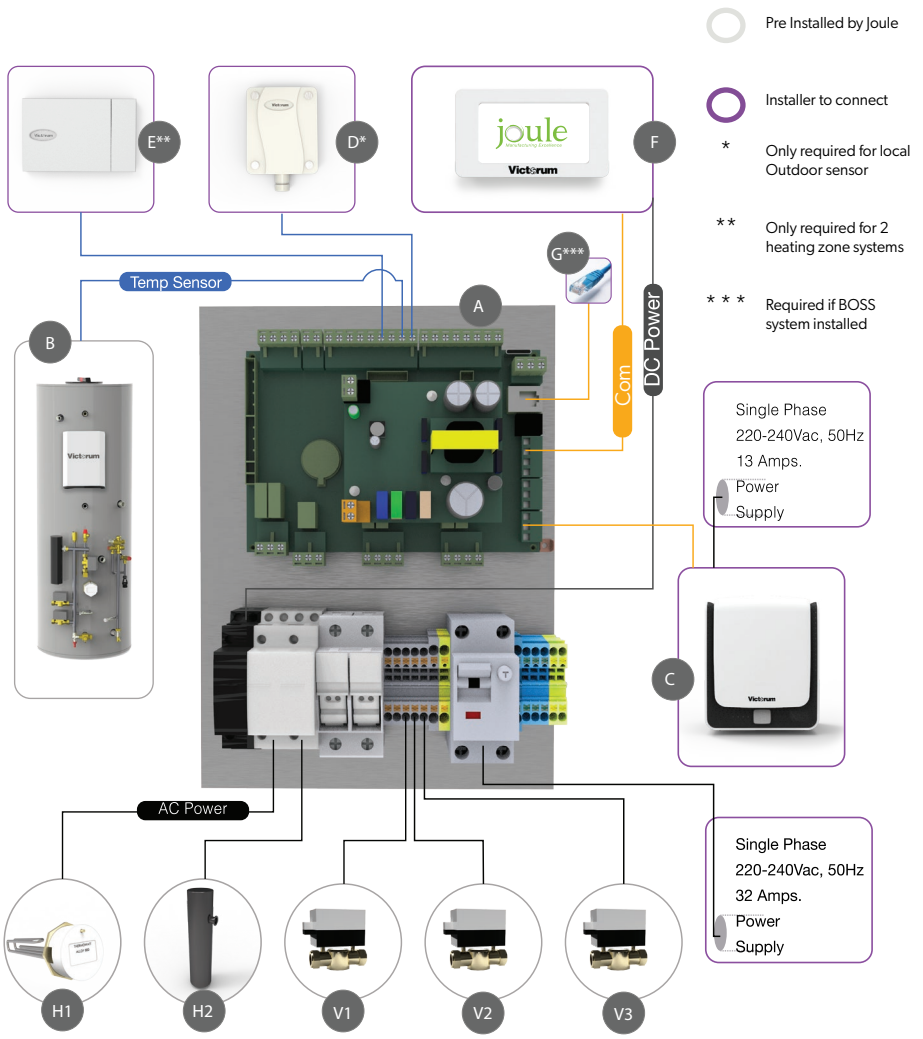
	G1/2			G3/4			G1		
Min. size of discharge pipe D1	15mm			22mm			28mm		
Min. size of discharge pipework D2 from tundish	22mm	28mm	35mm	28mm	35mm	42mm	35mm	42mm	54mm
Max. length of straight pipe (no bends or elbows)	Up to 9m	Up to 18m	Up to 27m	Up to 9m	Up to 18m	Up to 27m	Up to 9m	Up to 18m	Up to 27m
Deducts the below from the maximum length for each bend or elbow in the discharge pipe	0.8m	1m	1.4m	1.0m	1.4m	1.7m	1.4m	1.7m	2.3m

Sizing of copper discharge pipe (D2) for a temp, relief valve with a G1/2 outlet size (as supplied)

Image below shows the position of the tundish outlet.



Electrical



	Description	Item Codes		Description	Item Codes
A	Joule Electrical Enclosure		H1	Immersion	
B	Combi Unit		H2	Back up Heater	
C	Heat Pump		V1	DHW Valve	
D	Outdoor Sensor		V2	Heating Zone valve 2	
E	2nd Zone Sensor		V3	Heating zone valve 1	
F	Touchscreen				
G	RJ45 BOSS system connection				

Electrical

Victorum Combi Power Supply

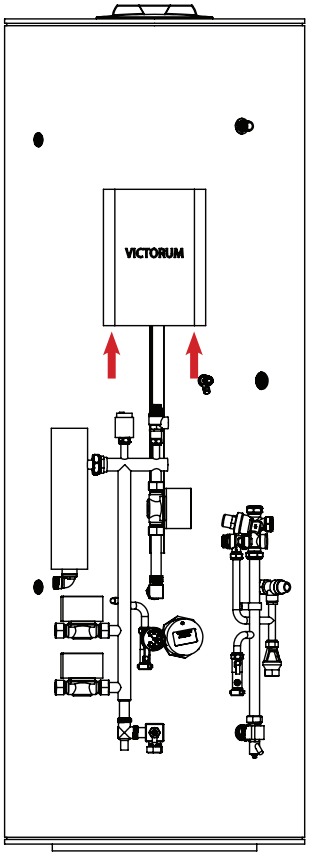
The table below outlines the power requirements for the Victorum Compact Pre-Plumb unit.

	Hz	Volts	Phase	MCA	MFA
XUVI-C2201802C	50	230	Single	30A	32A

Power Supply Cable Entry

All electrical wiring must be carried out by a competent installer and be installed in accordance with current local Wiring Regulations.

The cable entry point can be seen the diagram on the right. Remove the front panel to access the electrical enclosure. Cable entry to the enclosure is via an M25 cable gland. Ensure all cables are secured using the fixings provided.



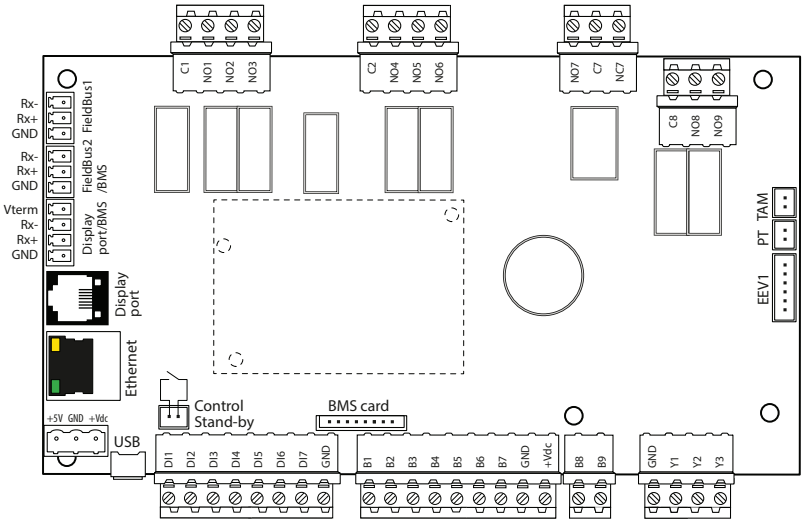
Power Supply Connections

Connect 'Live' and 'Neutral' power lines with the terminals marked 'L' & 'N' of the ELCB, which is located inside the electrical enclosure.

Connect the 'Protective Earth' line with the Earth terminal inside the electrical enclosure. The rear casing of the electrical enclosure is the termination point for all Protective Earth Connections. Please use the earth termination points provided.

Electrical

Overview



Connecting the Outdoor Sensor

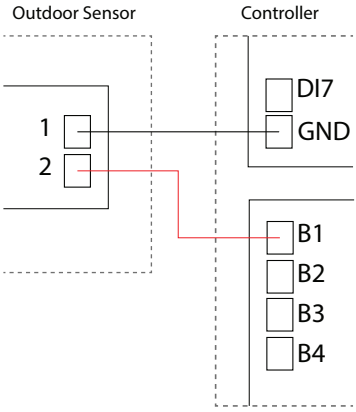
The Outdoor Sensor monitors the outside air temperature and is installed on the exterior of the dwelling on a north facing wall, if possible. Otherwise, the sensor must be kept away from direct sunlight.

The exterior wall material must be considered, as materials like Zinc can act as a heat sink. This can affect the senor reading, producing higher readings.

The outdoor sensor requires a two core 0.75mm2 cable and it is not polarity sensitive.

The sensor is connected to 'B1' and 'Gnd' on the controller.

Connect the Positive (+) and Negative (-) respecting the polarity at both the touchscreen and transformer.



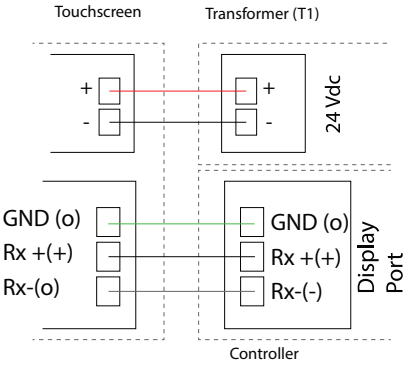
Electrical

Connecting the Touchscreen

The touchscreen requires a separate communication cable from the power supply cable. It is recommended to use Belden 8723 or equivalent, as this cable type incorporates a drain wire which is imperative for clean communication between the touchscreen and the controller.

The touchscreen communication cable is connected to 'Rx+', 'Rx-' and 'Gnd' on the 'Display port' of the controller. The cable core colours must be matched on the rear of the touchscreen as the communication is polarity sensitive.

It is important that at the electrical enclosure end, the drain wire is connected to the metal chassis via the 'Fast-On' tab provided. At the touchscreen end, the drain wire is to be wrapped around the outer sheath of the cable and insulated with insulating tape to isolate the connection. The drain is used to eliminate any electrical noise from the communication.



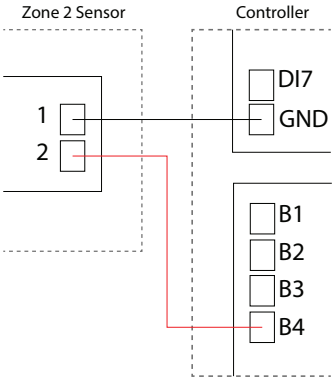
Connecting the Zone 2 Room Sensor

The second zone sensor is used to sense the temperature in the second heating zone of the dwelling.

All the installation guidelines for the touchscreen apply to the Zone 2 room sensor- installation height, avoiding heat sources, etc.

The second zone sensor requires a two core 0.75mm2 cable and it is not polarity sensitive.

The sensor is connected to 'B4' and 'Gnd' on the controller.



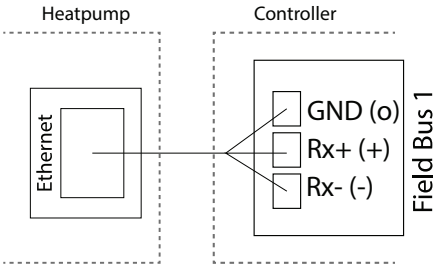
Electrical

Communication Cable – Heat Pump to Pre-Plumbed Cylinder unit

The communication cable between the Heat Pump to Pre-Plumbed Cylinder unit is supplied in the kit with the Cylinder unit. It is a pre-molded Ethernet cable and does not require and alteration.

The connection point on the Heat Pump is the Ethernet port on the bottom of the unit, on the front right-hand side.

The communication cable is connected to 'Rx+', 'Rx-' and 'Gnd' on the 'Field Bus 1' of the controller. The cable core colours are clearly labelled as the communication is polarity sensitive.



Underfloor Heating Wiring

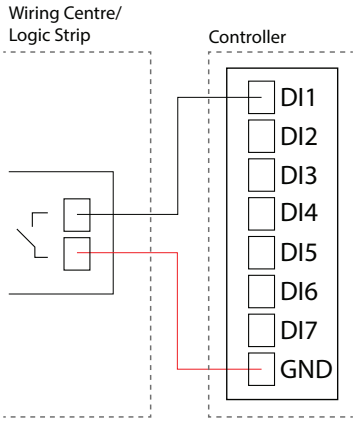
If the system incorporates underfloor heating and an external wiring centre/ logic strip and individual room thermostats, then the touchscreen is only used to control the hot water and ventilation functions of the system.

To enable this setup, the Digital Inputs (DIN) on the controller of the Pre-Plumbed Cylinder unit must be utilized.

The wiring centre/ logic strip must support a volt free output via a relay to enable the heating signal on the controller of the Pre-Plumbed Cylinder unit.

The heating signal enable is to be wired using a two core 0.75mm2 cable and it is NOT polarity sensitive.

The sensor is connected to 'DI1' and 'Gnd' on the controller.



Victorum EAHP UFH ESBE electronic mixing valve

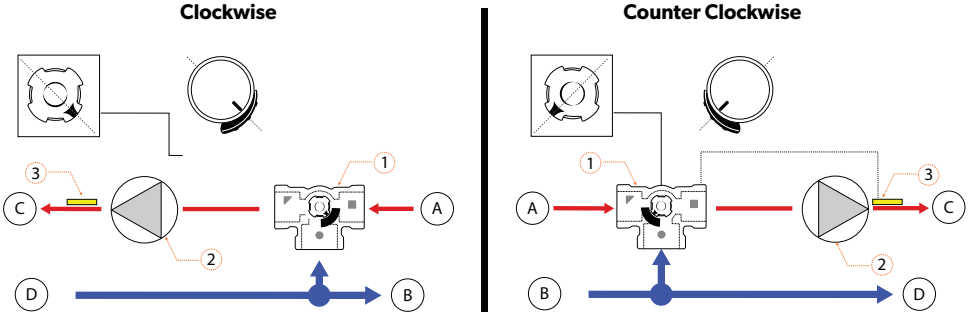
The ESBE VRG 13x electronic mixing valve and CRA 110 controller are essential to control the maximum water temperature entering the UFH system.

A second circulating pump, external to the Heat Pump, is required to maintain a constant flow through the UFH floor loops. The mixing valve must be installed on the flow pipe before it enters the UFH manifold and the pump between the mixing valve and the UFH manifold.

Follow the steps below to install and setup the mixing valve, controller, UFH circulating pump & by-pass valve.

Installation

1. Identify the installation position and the orientation of the mixing valve in the system. The orientation is either Clockwise or Counter clockwise



Legend

A – Flow from zone valve

B – Return

C – Flow to UFH manifold

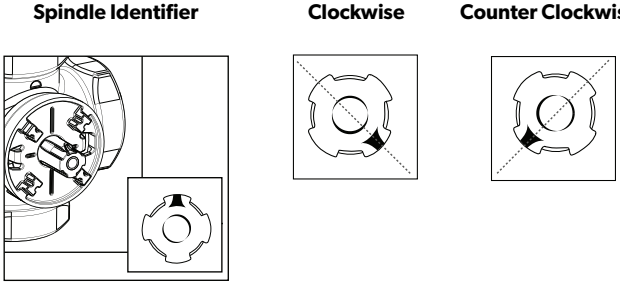
D – Return from UFH manifold

1 – ESBE VRG 13x mixing valve

2 – UFH circulating pump

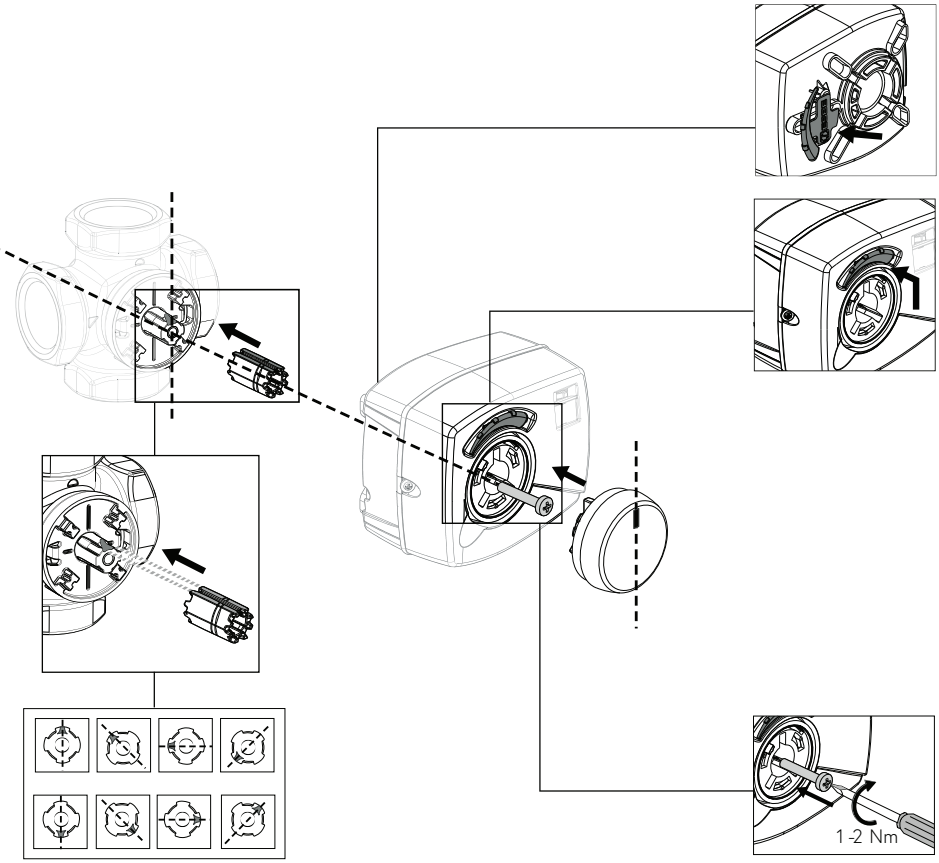
3 – Flow temperature sensor

2. When the valve is installed, the spindle position must be set to match the installation orientation.



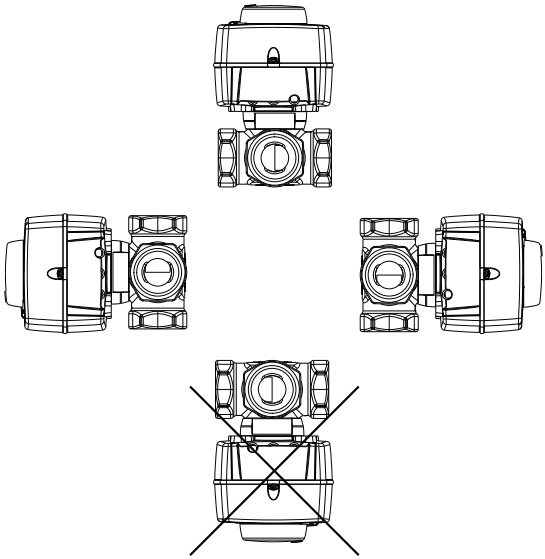
Victorum EAHP UFH ESBE electronic mixing valve

3. Mount the controller using the fixings provided.

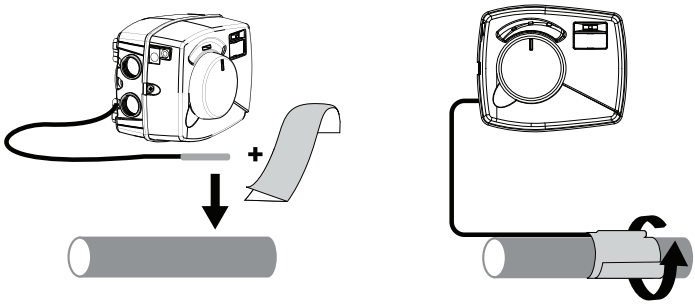


Victorum EAHP UFH ESBE electronic mixing valve

NOTE: Orientation of the valve body and controller actuator must be respected.



4. Fix the Flow temperature sensor to a metal pipe upstream of the UFH circulating pump. Use the aluminium tape provided.



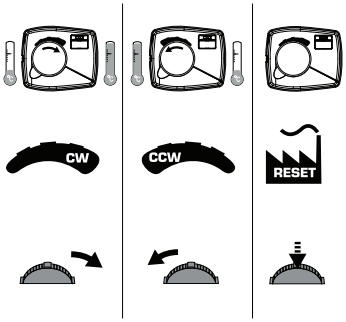
Victorum EAHP UFH ESBE electronic mixing valve

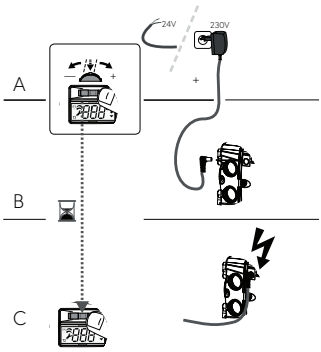
Setup

1. Set the working direction of the controller by pressing the joystick to right for clockwise opening or left for counter clockwise opening (A).

2. Keep the joystick in the desired direction and connect power (B).

3. Wait 2 seconds until joystick is released (C), the correct working direction is now set

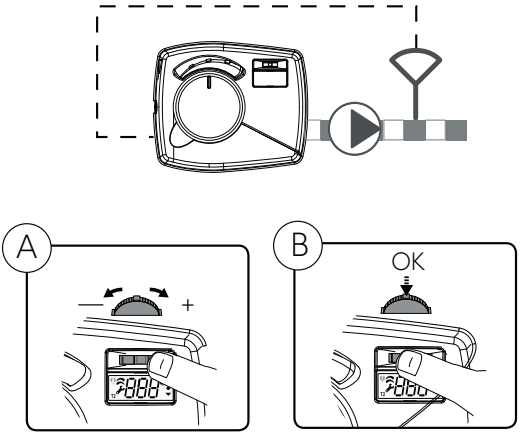




Changing of target temperature

1. In order to change the target flow temperature, press the joystick to the right or to the left (A).

2. Press the joystick down to confirm new target temperature (B).



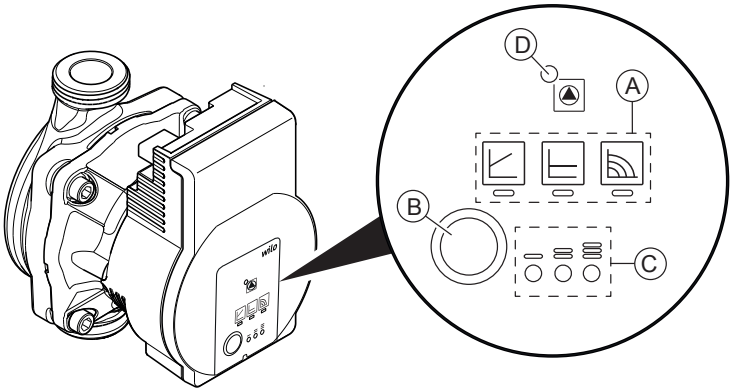
Victorum EAHP UFH ESBE electronic mixing valve

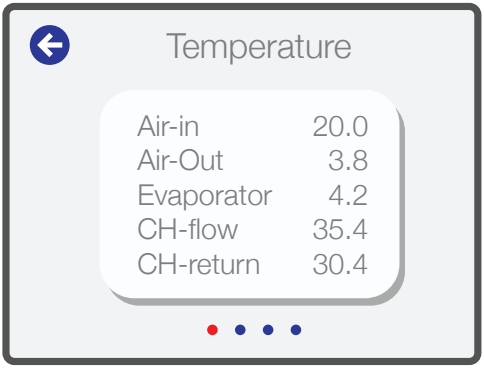
Setting the UFH circulating pump speed

Setting the speed of the UFH circulating pump is essential in ensuring the capacity of the Heat Pump is not effected. The required pump speed will differ from install to install and careful setup is needed.

The pump control mode 'Constant Speed' is recommended and its best practise to start the pump on it's lowest speed and increase as necessary.

1. Set the pump control mode (A), using the operation button (B).
2. The speed setting is indicated by the LED (C).
3. Check the Delta T across the Heat Pump is 5 (CH-flow - CH-return = 5).



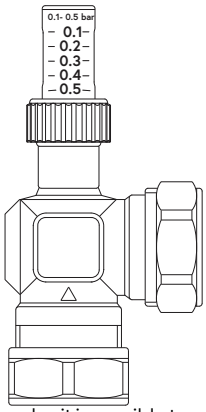


Victorum EAHP UFH ESBE electronic mixing valve

Setting the differential by-pass valve

Setting the differential by-pass valve is essential in ensuring the Heat Pumps internal circulating pump has a clear circuit and does not dead head. This would lead the Heat Pump to overheat and damage the pump.

The by-pass valve is pre-plumbed on the tank and can be located using the image below as a reference.



To carry out rapid adjustment of the by-pass valve it is possible to use the following method:

1. The system must be operating in heating mode and the corresponding zone valve must be fully open.

NOTE: 1) The DHW zone valve MUST be closed during this process.

2. Set the by-pass valve to its maximum value (0.5 bar).

3. Fully close the ESBE mixing valve, using the manual feature (pull out control knob & rotate the valve manually).

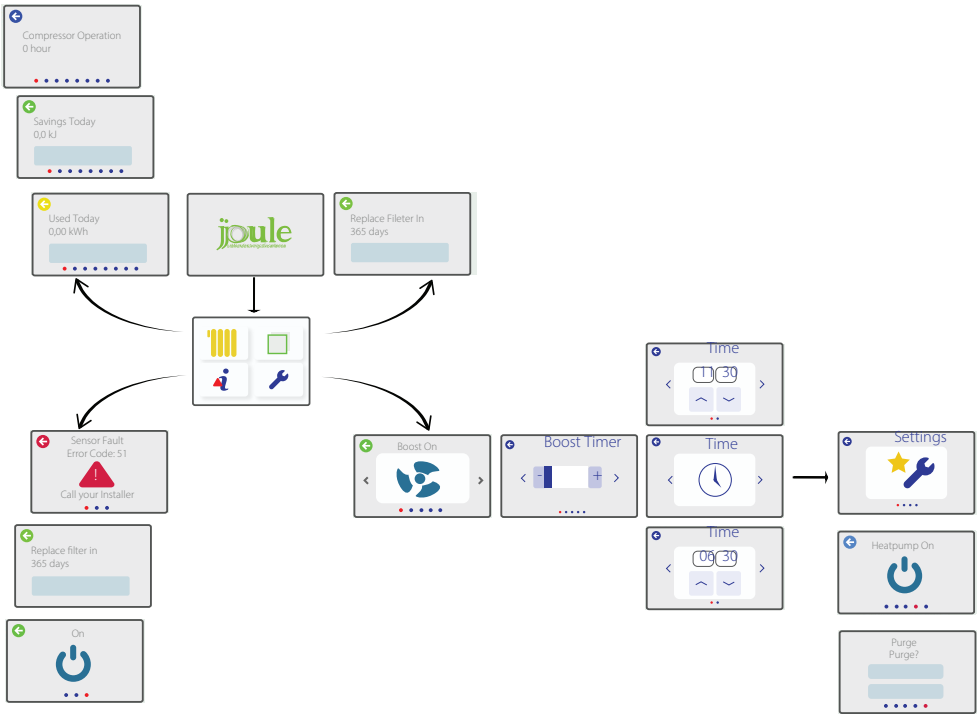
NOTE: 2) It may be necessary to wait until the system begins to warm up before continuing.

4. Gradually open the by-pass valve, by rotating the red control knob. When the hot water is felt to be flowing through the by-pass circuit, stop opening the by-pass valve. Use a thermometer or your hand to detect the hot water flowing through the by-pass circuit.

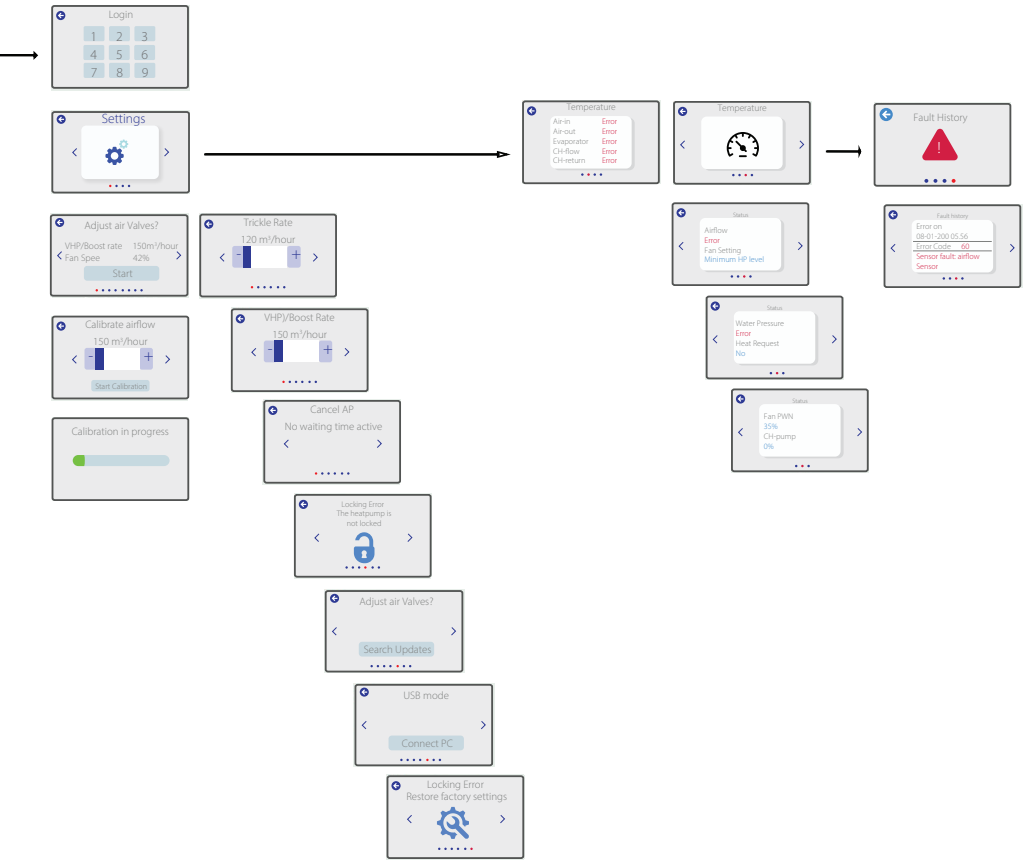
5. As soon as a rise in the temperature is noted, open the ESBE mixing valve again and check that the hot water stops flowing through the by-pass circuit.

6. If the water does not flow through the by-pass then it is set correctly. Mark the final position on the red plastic casing, using a permanent marker, to indicate the final position for future repair and/or maintenance of the system.

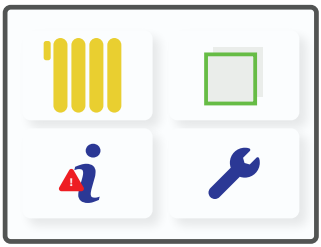
Victorum EAHP Menu Overview



Victorum EAHP Menu Overview

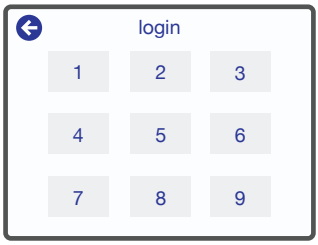


To access the installer functions of the Victorum unit, navigate to the spanner icon on the home screen.



Next, scroll to the right to the Settings tile and press the icon.

Enter the login code to access the installer functions. The installer code is issued during the Victorum EAHP installer training program.

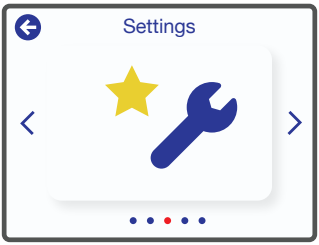


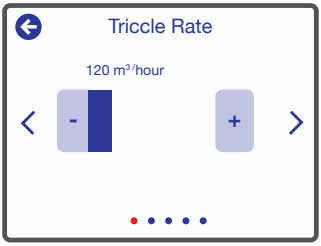
Setting the Trickle air flow rate

To set the Trickle air flow rate, press the Settings icon on the second Settings tile and scroll to the right to the Trickle Rate setting.

Here the Trickle Rate for the dwelling is set. The airflow is in m3/hr and can be increased or decreased in increments of 10, using the plus and minus buttons.

Once the airflow has been selected, you will be prompted to save the changes. Pless Yes to save and No to cancel.

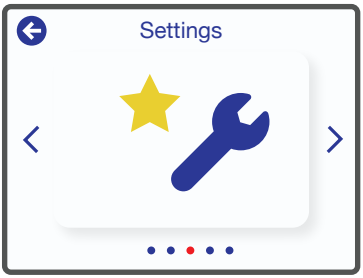




Victorum Setup – Installer Functions

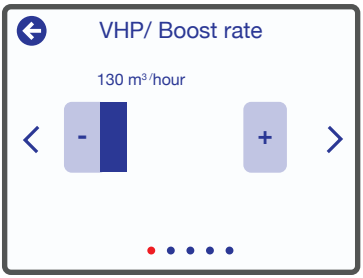
Setting the Boost air flow rate

To set the Boost air flow rate, press the Settings icon on the second Settings tile and scroll to the right to the VHP/Boost Rate setting.



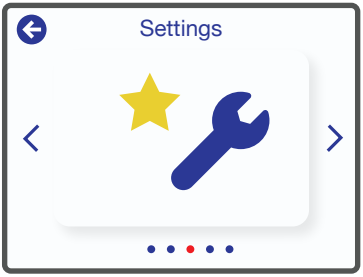
Here the Boost Rate for the dwelling is set. The airflow is in m3/hr and can be increased or decreased in increments of 10, using the plus and minus buttons.

Once the airflow has been selected, you will be prompted to save the changes. Pless Yes to save and No to cancel.

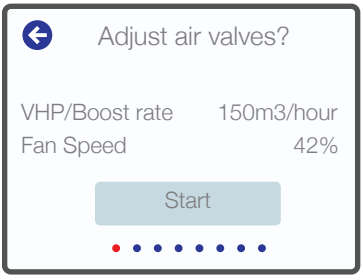


Balancing the extract valves & Calibrating the fan

To balance the extract valves within the dwelling, the function must be activated on the unit. To activate the function, navigate to and press the Settings icon on the second Settings tile and navigate to the Adjust air valves? setting.



To begin the process, press start on the Adjust air valves? setting.

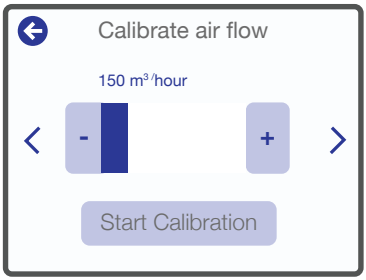


Victorum Setup – Installer Functions

The ceiling valves can now be adjusted. Set the applicable airflow if this is not already done.

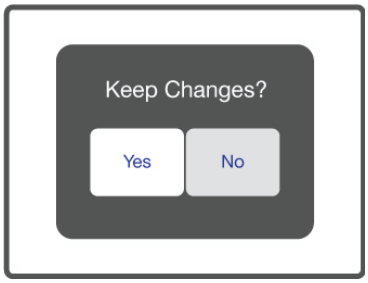
NOTE: during the process of adjusting the ceiling valves, the fan will increase/decrease to keep the total airflow constant.

The airflow can also be adjusted in real-time on this screen.



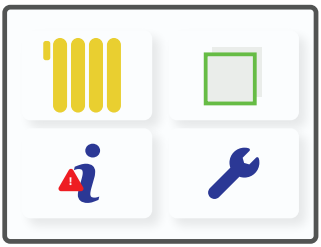
Once the ceiling valves have been set, press Start Calibration on the Calibrate airflow screen to begin the process.

NOTE: the process takes 2 minutes to complete. The first minute is used to measure and set the Trickle fan speed. The second minutes is used to measure and set the Boost fan speed.

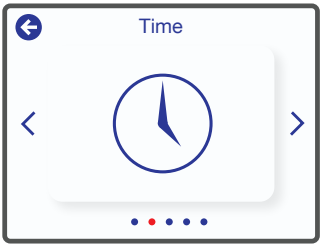


Victorum Setup – Date & Time

Setting the correct date and time is important for the correct operation of the unit. To access the Date and Time settings, navigate to the spanner icon on the home screen.

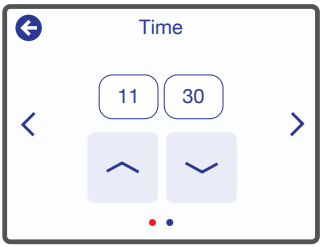


Next, scroll to the right to the Time tile and press the icon.



To change the hour, press the number and it can be adjusted up or down. Once the correct value has been set, save the changes.

Follow the same process for the minutes.



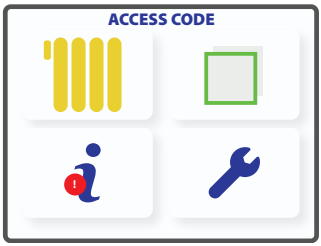
To change the Date, scroll to the right. Press the number to be changed and it can be adjusted up or down. Once the correct value has been set, save the changes.

Follow the same process for the month and year.

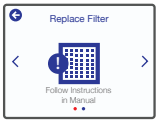
Error Codes & Troubleshooting

The Victorum EAHP will display a warning icon on the display if there is something wrong that requires attention. There are two types of warning icons, both are detailed below.

The first type of warning icon looks like this. This icon means that the Victorum EAHP continues to operate but it may be less efficient.



If you press the icon, you will see one of the following screens.

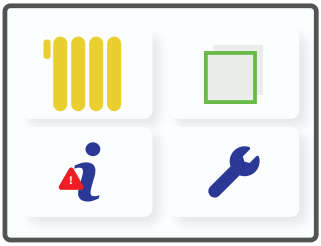
Warning Screen	Error Code	Error Meaning	Possible Solution
	10	Water Pressure low (<0.8bar)	Increase water pressure
	11	Replace filter	Air filter to be replaced
	51	Air In sensor error	Check sensor. Replace if necessary
	52	Air Out sensor error	Check sensor. Replace if necessary
	53	Evaporator sensor error	Check sensor. Replace if necessary
	54	Heating return sensor error	Check sensor. Replace if necessary
	55	Heating flow sensor error	Check sensor. Replace if necessary
	56	Hot gas sensor error	Check sensor. Replace if necessary
	60	Air flow sensor error	Check sensor. Replace if necessary
	70	Water pressure sensor error	Check sensor. Replace if necessary
	80*	No Temp diff across Condensor	Check circulating pump operation or possible air in the system
			
	81*	No Temp diff across Evaporator	Check fan operation or a possible blockage in the duct system

*Temporary blocking of the Heat Pump. The Heat Pump automatically restarts after 1 hour

Error Codes & Troubleshooting

The second type of warning icon looks like this. This icon means that the Victorum EAHP is locked and out of operation.

Only an installer can manually override this lock.



Warning Screen	Error Code	Error Meaning	Possible Solution
	90	Compressor locked (repeated error 80)	Remove error 80
	94	Compressor locked (repeated error 81)	Remove error 81
	95**	Water pressure is critcally low (<0.3bar)	Increase water pressure

**Automatically resets when water pressure is increased.

Maintenance & Servicing

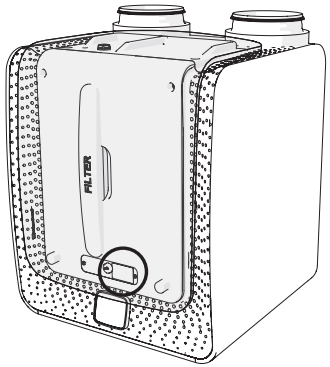
Identification

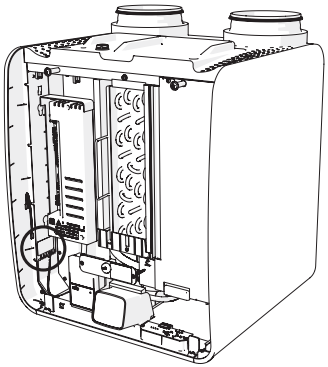
Serial Number Plate

The serial number plate is located in two positions on the machine:

1. Under the plastic cover- on the type plate.

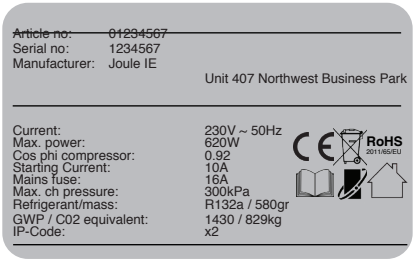
2. Behind the main EPP cover on the left hand side- beside the Earth tab





Serial Number

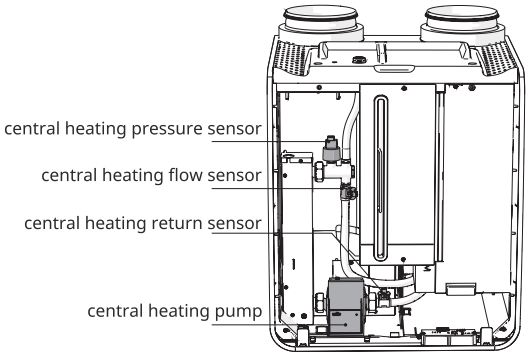
On the type plate you will find the serial number. This is a unique number to the machine you are installing. This number will be required during the installation or maintenance to enable additional help.

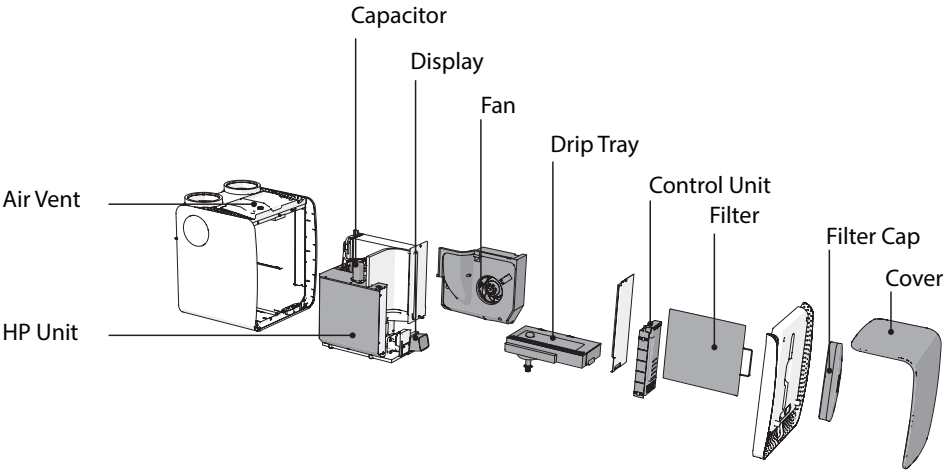


Maintenance & Servicing

Planning And Organising Your Project

The design and operation of an exhaust air heat pump system has a direct link to its output and efficiency. Consideration should be given to heating and ventilation at an early stage in any project as the system requires to be integrated with construction and building project process.





Safety

- Do not use this appliance for functions other than those described in this booklet.
- Never touch the appliance with wet or damp hands, or when barefoot.
- Do not store inflammable products in the neighbourhood of the unit.
- The unit is only suitable for 230 VAC/50Hz electric mains.
- Never modify the fan or electronics by yourself.

Organising Your Victorum Project Customer / Client

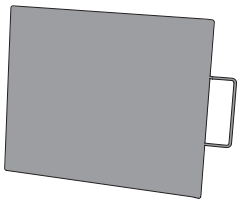
- Supply up to date plans and relevant information to system designer.

Maintenance & Servicing

Air Filter - 6 - 12 Months

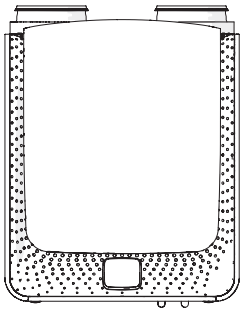
The first inspection of all air filters for contamination and replacement is required after 6 months and;

- Every year thereafter
- Reset filter change timer



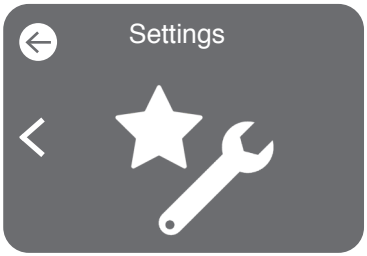
Victorum - 1 Year

Inspection and cleaning, if necessary, of the heat exchangers, fans. Inspection of condensation discharge pipe and siphon every 1 year.



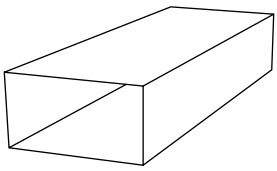
Operation of Heating and Hot Water - 1 Year

- Inspection and cleaning of Y-Strainer, if necessary.
- Ensuring system pressure is correct and the system is free from air.
- Ensuring control parameters are still set correctly and that there are no heat pump errors.



Air Distribution System - 2 Years

- Inspection of duct work where possible.
- Check air flow rate on all ceiling extract valves.

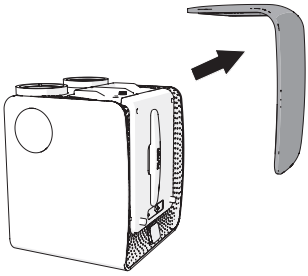


Filter

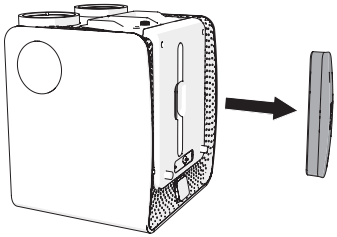
Replacing the Filter

For the unit to continue to operate at its optimum it is required to maintain and change the filter periodically. There is a reminder on the Victorum controller to change the filter once every year..

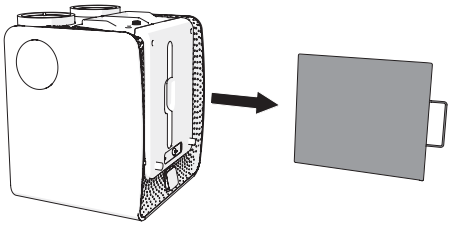
1. Remove the Victorum cover.



2. Remove the filter cap.



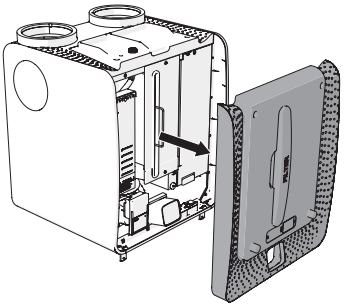
3. Lastly remove the filter by pulling the tab



Accessing Internal Aspects of the Victorum

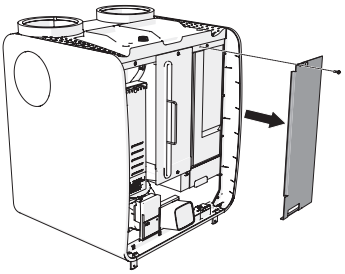
Cleaning the Drawer

The tray must be cleaned periodically. To clean the tray, do the following.

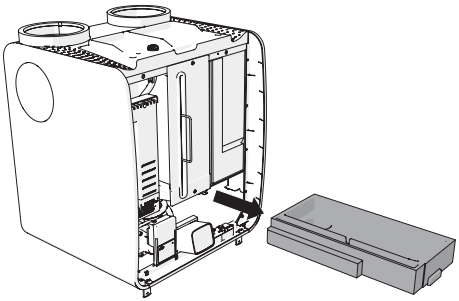


1. Remove Victorum Cover

2. Remove EPP cover
2.1 Remove 2 top screws
2.2 Loosen 2 bottom screws
2.3 Pull cover forward to remove



3. Remove Stainless Steel Cover Plate
3.1 Loosen top screw
3.2 Slide plate down
3.3 Pull plate forward to remove



4. Clean tray using a damp cloth

Warranty

Joule Victorum EAHP Warranty Terms & Conditions

Registrations

It is a condition of the warranty that the Commissioning Checklist is completed and left in the Handover Pack, and the online Warranty Application is completed once the system is fully commissioned.

The Heat Pump must be registered with Joule within 30 days of purchase. This is carried out by fully completing and returning the warranty registration form that accompanied the Heat Pump.

Warranty

Joule hereby guarantees to you, the purchaser of the exhaust air heat pump system to which this warranty is attached that the product will be free from defects in materials and workmanship, for a period of two (2) years from the date such product was purchased; provided that the product is installed in accordance with

a) The accompanying Victorum Installation Manual;

b) Any special written design or installation guidelines provided by Joule;

c) All applicable laws, rules, regulations, codes and standards applying in the territory in which the product is installed, including without limitation, all applicable local building and electrical codes.

This warranty is transferable to subsequent owners of the product.

Exclusions

If Joule finds the product to be defective as a sole result of defects in material or workmanship - then, during the Warranty Period, upon receipt of due notice from you and subject to the terms of this Warranty –

Joule shall:

- Repair the product
- Refund the cost for repair of the Product, as well as labour and materials required to repair the Product
- Replace the Product, or parts thereof; or
- Refund part or all the original purchase price.

The warranty does not cover, and Joule shall not be held liable for any of the following damages:

a) damages caused, wholly or partially, due to abuse, misuse, negligence, application and/or maintenance not as recommended by Joule

b) damages to the product caused by workers, visitors on the job site, or post-installation work;

c) damages caused by accident, natural disasters (such as fire, floods, lightning, etc.) force majeure, sabotage, or any unforeseen circumstances;

d) special, indirect, incidental, secondary, consequential or any other damages of any nature arising out of ownership or use of the product including inconvenience or loss of use.

Joule refuses any warranty not provided herein, including any implied warranty of the merchant ability or implied warranty of fitness for a particular purpose. There are no warranties, which extend beyond the face of this document. No agent or representative of Joule has any authority to extend or modify this warranty unless such extension or modification is made in writing by a corporate officer.

Warranty

Joule Cyclone PrePlumb Warranty

Terms & Conditions

The JOULE Cyclone stainless steel vessel carries a fully transferable 25-year guarantee against faulty materials or manufacture provided that:

•It has been installed in the United Kingdom or the Republic of Ireland as per the instructions provided in the installation manual provided with the cylinder and in accordance with all of the relevant standards, regulations and codes of practice in force at the time;

•It has not been modified in any way, other than by JOULE;

•It has not been misused, tampered with or subjected to neglect;
•The system is fed from the public mains water supply;

•It has only been used for the storage of potable water;

•It has not been subjected to frost damage.

•The unit has been serviced annually;

•The Service Log Book has been completed after each annual service;

•The warranty card is filled in and a copy is sent by email to warranty@joule.ie.

Exclusions

The guarantee does not cover cylinders affected by the following:

•The effects of scale build up on the cylinder;

•Any labour charges associated with replacing the unit or its parts;

•Any consequential losses caused by the failure or malfunction of the unit.

Please note that invoices for servicing may be requested to prove that the unit has been serviced annually.

nted Kit & Other Components
The expansion vessel and cold water controls supplied with JOULE models carry a 2-year guarantee.

All other components that are fitted to, or supplied, with the unit carry a 2-year guarantee.

The Joule 25-year warranty covers Joule cylinders installed in domestic properties against corrosion for a period of 25 years from the date of purchase.

All other components, including valves, expansion vessels, immersion heaters, fittings and controls are covered by a 2-year warranty from the date of purchase of the Joule product which includes one year's parts and labour and one year parts only.

Joule Wellmaster

The Joule Wellmaster stainless steel vessel carries a fully transferable 10-year guarantee against faulty materials or manufacture provided that:

•It has been installed in the United Kingdom or the Republic of Ireland as per the instructions provided in the installation manual provided with the cylinder and in accordance with all of the relevant standards, regulations and codes of practice in force at the time;

•It has not been modified in any way, other than by Joule;

•It has not been misused, tampered with or subjected to neglect;

•It has only been used for the storage of potable water;

•The sacrificial anode is removed for inspection within 3 months of the cylinder installation. If there are signs of corrosion on the anode it must be replaced;

Warranty

•A replacement schedule for the anode must be put in place based on the findings of the initial 3 month inspection;

•Maximum interval between anode inspections is 12 months;

•The warranty card is filled in and a copy is sent by email to warranty@joule.ie.

Exclusions

The guarantee does not cover cylinders affected by the following:

•Wellmaster cylinders where the anode has not been routinely maintained;

•Any labour charges associated with replacing the unit or its parts;

•Any consequential losses caused by the failure or malfunction of the unit.

Please note that invoices for servicing may be requested to prove that the unit has been serviced annually. Joule fully endorse the Benchmark scheme and the code of practice can be obtained from www.centralheating.co.uk

Warning To The User

•Do not remove or adjust any part of this unvented water heater.

•If the unvented water heater develops fault, such as a flow of water from the discharge pipe switch the heater off.

•In all cases contact a competent installer.

•The Benchmark Checklist at the end of the manual must be filled in at annual service.

Warning To The Installer

•Read the installation instructions before commencing.

•Unvented water heaters are a controlled service as defined in the latest edition of the Building Regulations and should only be fitted by a competent installer.

•The installation is subject to approval.

•You must notify the local authority of intention to install.

•After installation the instructions manual must be completed and left with the householder.

•Use only manufacturer's recommended replacement parts.

Pre Plumbed Installation

Electrical Diagram

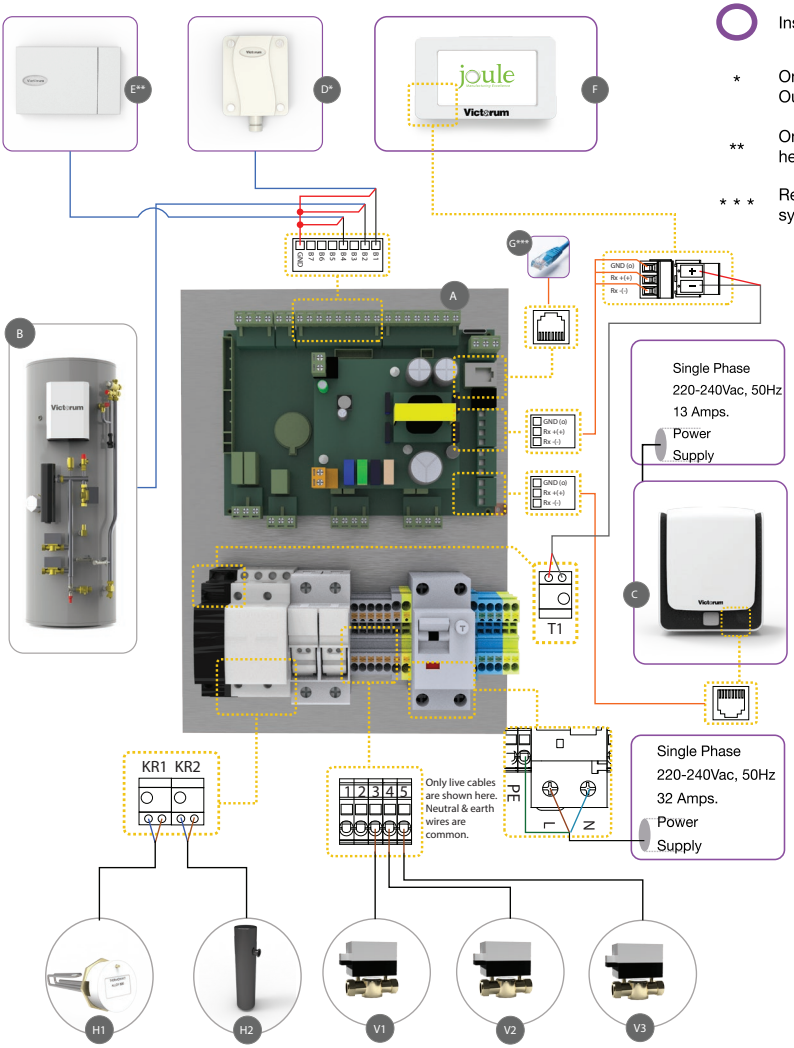
Pre Installed by Joule

Installer to connect

* Only required for local Outdoor sensor

** Only required for 2 heating zone systems

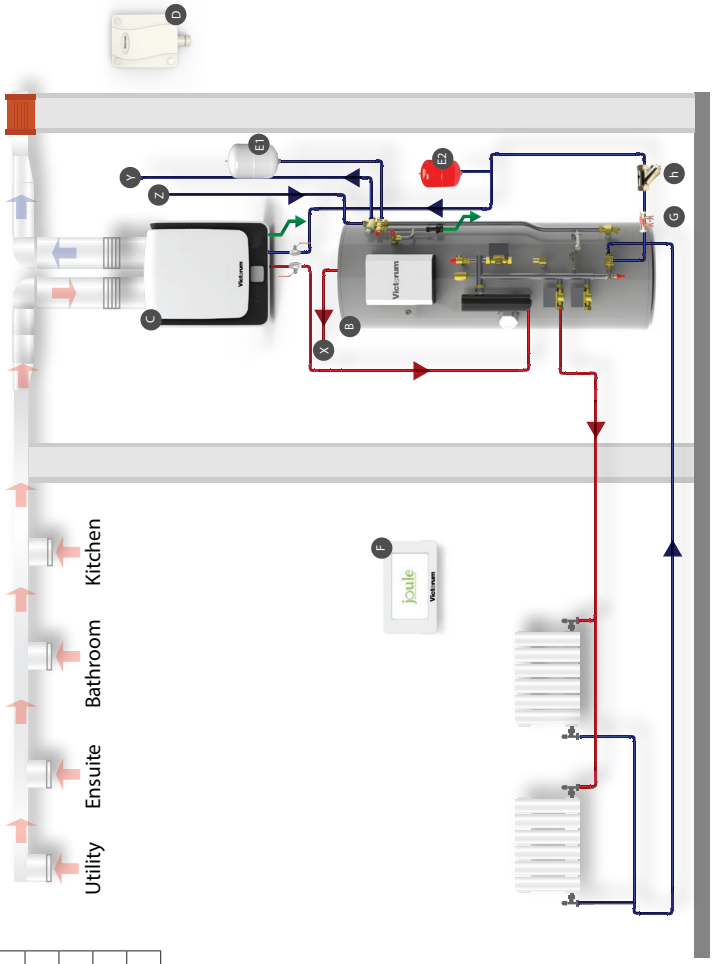
* * * Required if BOSS system installed



	Description		Description
A	Joule Electrical Enclosure	H1	Immersion
B	PrePlumb Unit	H2	Back up Heater
C	Heat Pump	V1	DHW Valve
D	Outdoor Sensor	V2	Heating Zone valve 2
E	Heating Zone 2 Sensor	V3	Heating zone valve 1
F	Touchscreen		
G	RJ45- BOSS system connection		

EAHP & Cyclone Pre-Plumbed Cylinder 1 DHW & 1 Zone Radiators

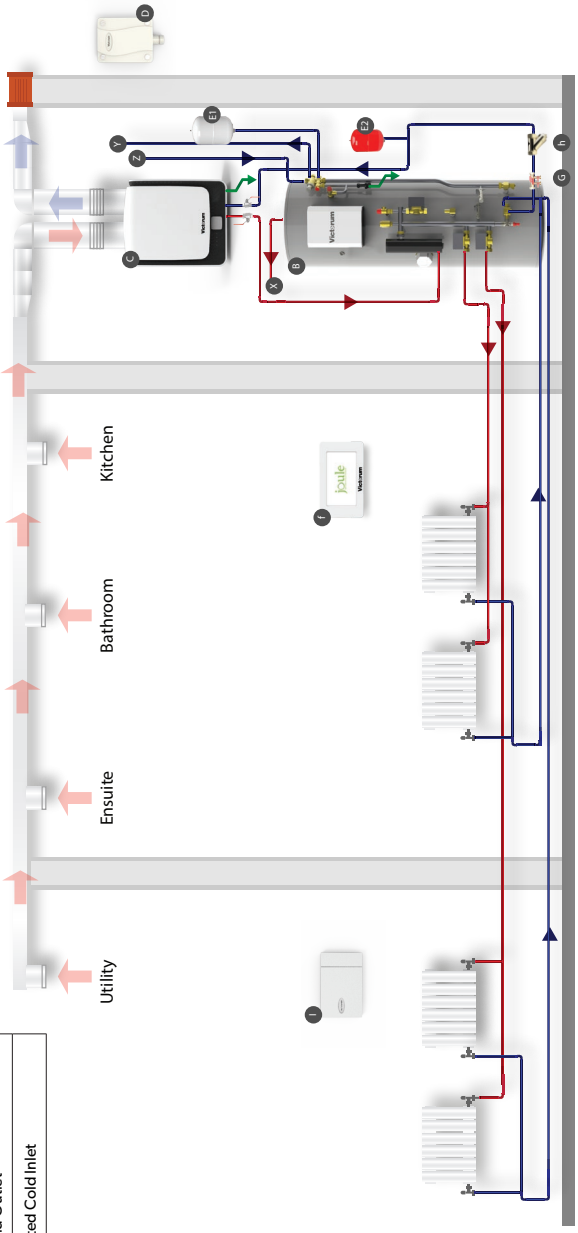
Mechanical Diagram



	Description
B	PrePlumb Unit
C	Heat Pump
D	Outdoor Sensor
E1	Potable Expansion Vessel
E2	Heating Expansion Vessel
F	Touchscreen (Zone 1 sensor)
G	Fill & Flush Valve
H	Y-Strainer/ Filterball
X	Hot Outlet
Y	Balanced Cold Outlet
Z	Mains/Boosted Cold Inlet

EAHP & Cyclone Pre-Plumbed Cylinder
1 DHW & 2 Zone Radiators

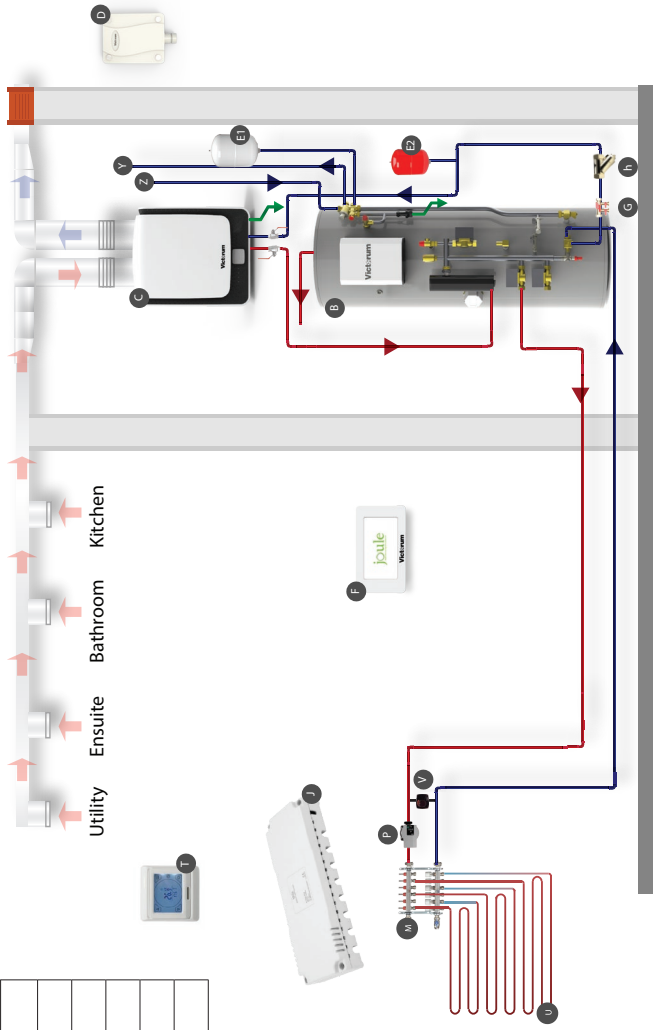
Mechanical Diagram



	Description
B	PrePlumb Unit
C	Heat Pump
D	Outdoor Sensor
E1	Potable Expansion Vessel
E2	Heating Expansion Vessel
F	Touchscreen (Zone 1 sensor)
G	Fill & Flush Valve
H	Y-Strainer/ Filterball
I	2nd Zone Sensor
X	Hot Outlet
Y	Balanced Cold Outlet
Z	Mains/Boosted Cold Inlet

EAHP & Cyclone Pre-Plumbed Cylinder
1 DHW & 1 Zone UFH

Mechanical Diagram



	Description
B	PrePlumb Unit
C	Heat Pump
D	Outdoor Sensor
E1	Potable Expansion Vessel
E2	Heating Expansion Vessel
F	Touchscreen (Zone 1 sensor)
G	Fill & Flush Valve
H	Y-Strainer/ Filterball
M	UFH Manifold
P	UFH Circulation Pump
T	Joule E91 thermostat
U	Underfloor Heating
V	ESBE Mixing Valve
J	UFH Wiring Centre

Compact Installation

Electrical Diagram

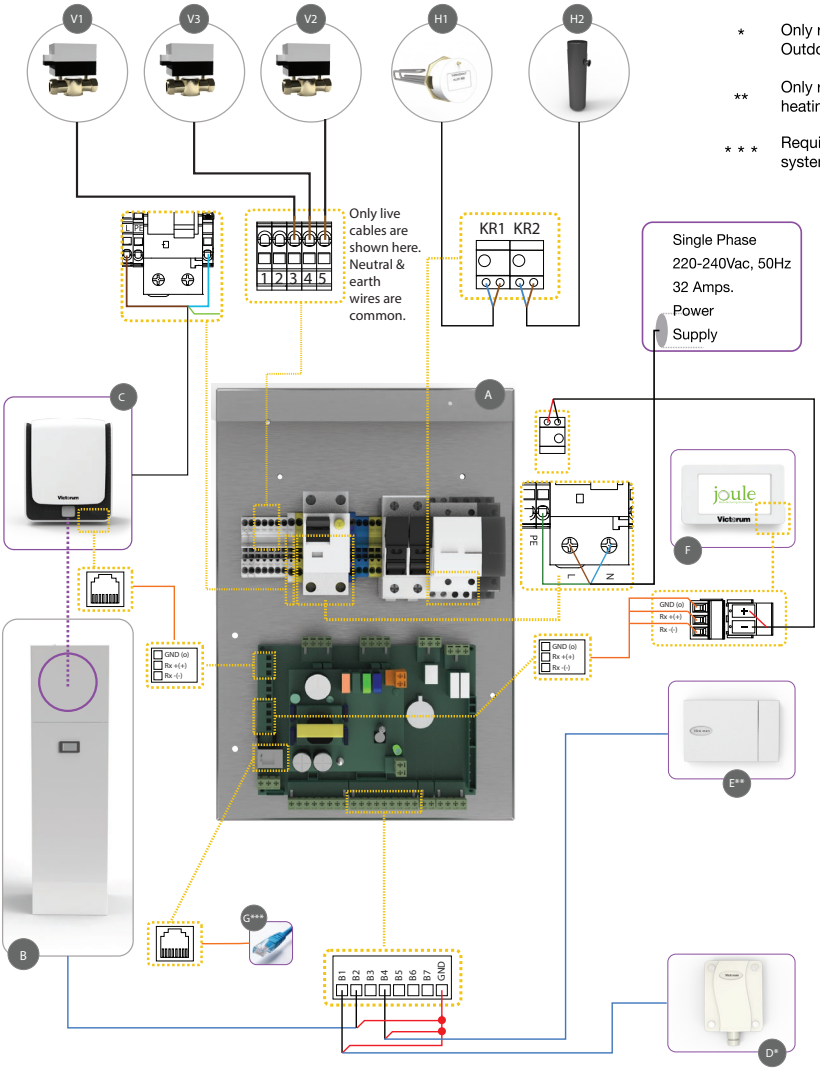
Pre Installed by Joule

Installer to connect

* Only required for local Outdoor sensor

** Only required for 2 heating zone systems

* * * Required if BOSS system installed

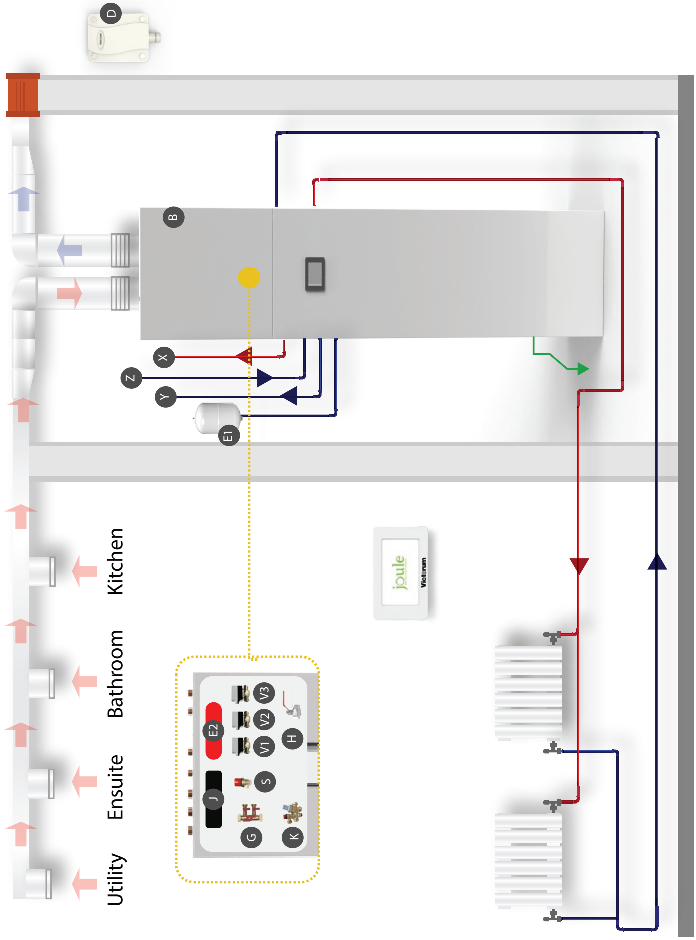


	Description		Description
A	Joule Electrical Enclosure	H1	Immersion
B	PrePlumb Unit	H2	Back up Heater
C	Heat Pump	V1	DHW Valve
D	Outdoor Sensor	V2	Heating Zone valve 1
E	2nd Zone Sensor	V3	Heating zone valve 2
F	Touchscreen		
G	RJ45- BOSS system connection		

Victrum

EAHP Compact 1 DHW & 1 Zone Radiators

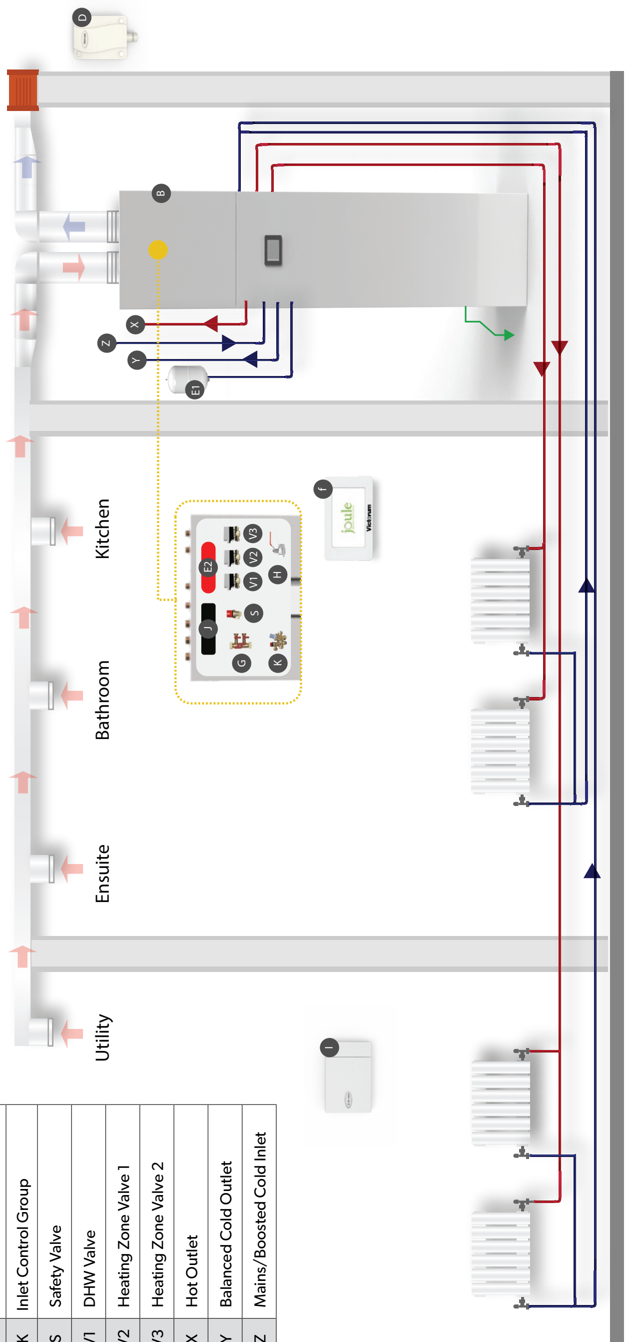
Mechanical Diagram



	Description
B	Compact Unit
C	Heat Pump
D	Outdoor Sensor
E1	Potable Expansion Vessel
E2	Heating Expansion Vessel
F	Touchscreen (Zone 1 sensor)
G	Fill & Flush Valve
H	Y-Strainer/ Filterball
I	2nd Zone Sensor
K	Inlet Control Group
J	Back-Up Heater
S	Safety Valve
V1	DHW Valve
V2	Heating Zone Valve 1
V3	Heating Zone Valve 2
X	Hot Outlet
Y	Balanced Cold Outlet
Z	Mains/Boosted Cold Inlet

EAHP Compact 1 DHW & 2 Zone Radiators

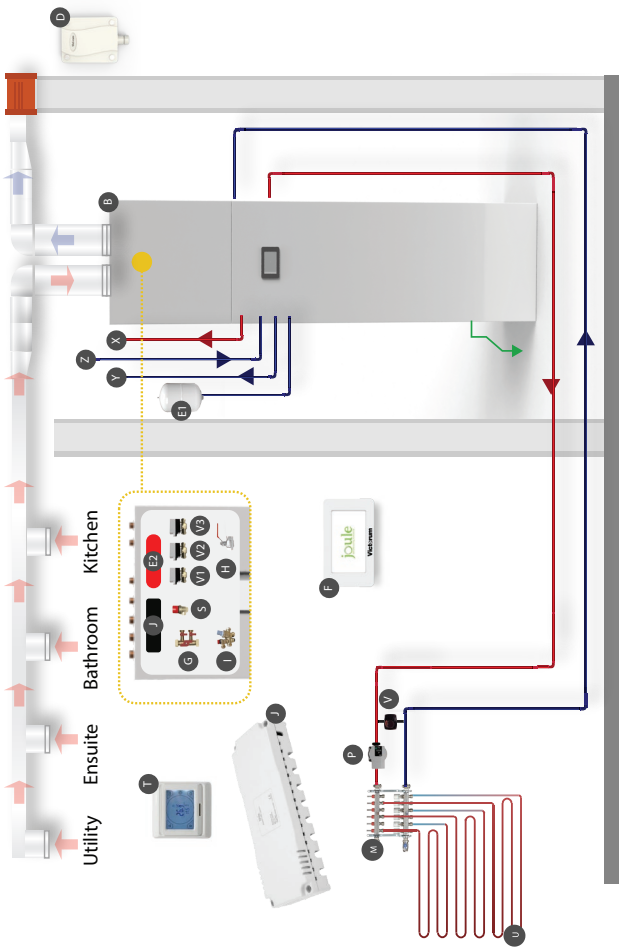
Mechanical Diagram



	Description
B	Compact Unit
C	Heat Pump
D	Outdoor Sensor
E1	Potable Expansion Vessel
E2	Heating Expansion Vessel
F	Touchscreen (Zone 1 sensor)
G	Fill & Flush Valve
H	Y-Strainer/ Filterball
I	2nd Zone Sensor
J	Back-Up Heater
K	Inlet Control Group
S	Safety Valve
V1	DHW Valve
V2	Heating Zone Valve 1
V3	Heating Zone Valve 2
X	Hot Outlet
Y	Balanced Cold Outlet
Z	Mains/Boosted Cold Inlet

EAHP Compact 1 DHW & 1 Zone UFH

Mechanical Diagram



	Description
B	Compact Unit
C	Heat Pump
D	Outdoor Sensor
E1	Potable Expansion Vessel
E2	Heating Expansion Vessel
F	Touchscreen (Zone 1 sensor)
G	Fill & Flush Valve
H	Y-Strainer/ Filterball
I	2nd Zone Sensor
J	Back-Up Heater
K	Inlet Control Group
M	UFH Manifold
P	UFH Circulation Pump
S	Safety Valve
T	E91 Thermostat
U	Underfloor Heating
V	ESBE Valve
J	UFH Wiring Centre
V1	DHW Valve
V2	Heating Zone Valve 1
V3	Heating Zone Valve 2
X	Hot Outlet
Y	Balanced Cold Outlet
Z	Mains/Boosted Cold Inlet

Combi Installation

Electrical Diagram

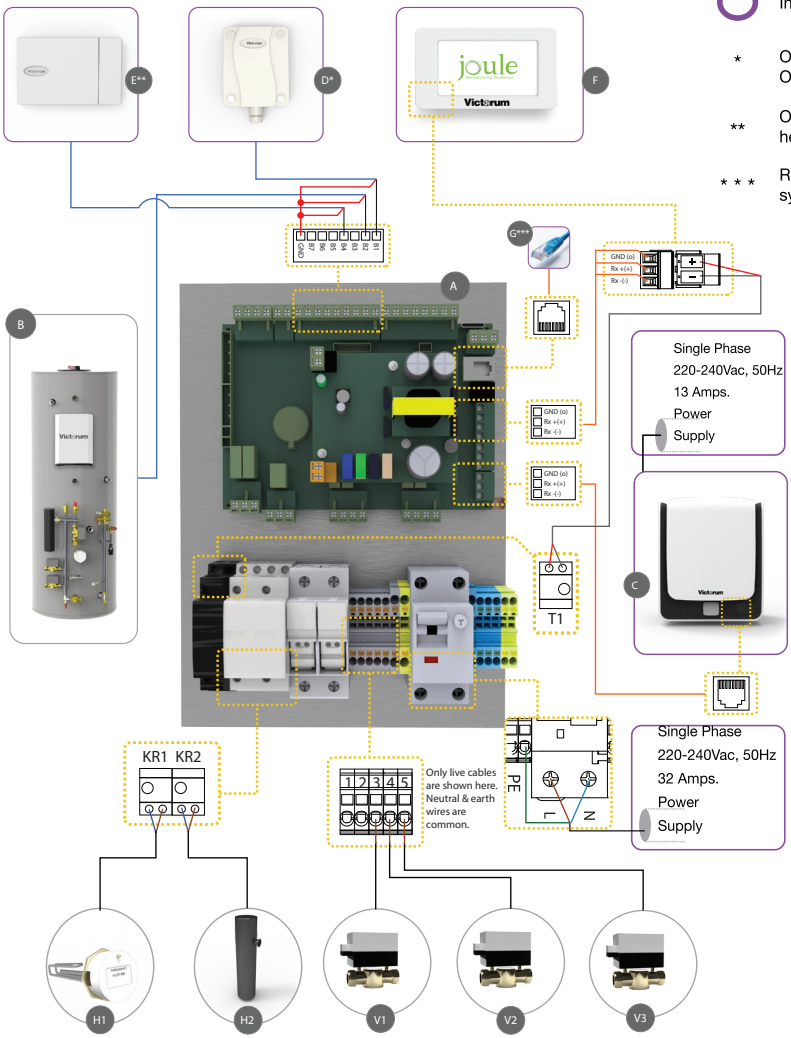
Pre Installed by Joule

Installer to connect

* Only required for local Outdoor sensor

** Only required for 2 heating zone systems

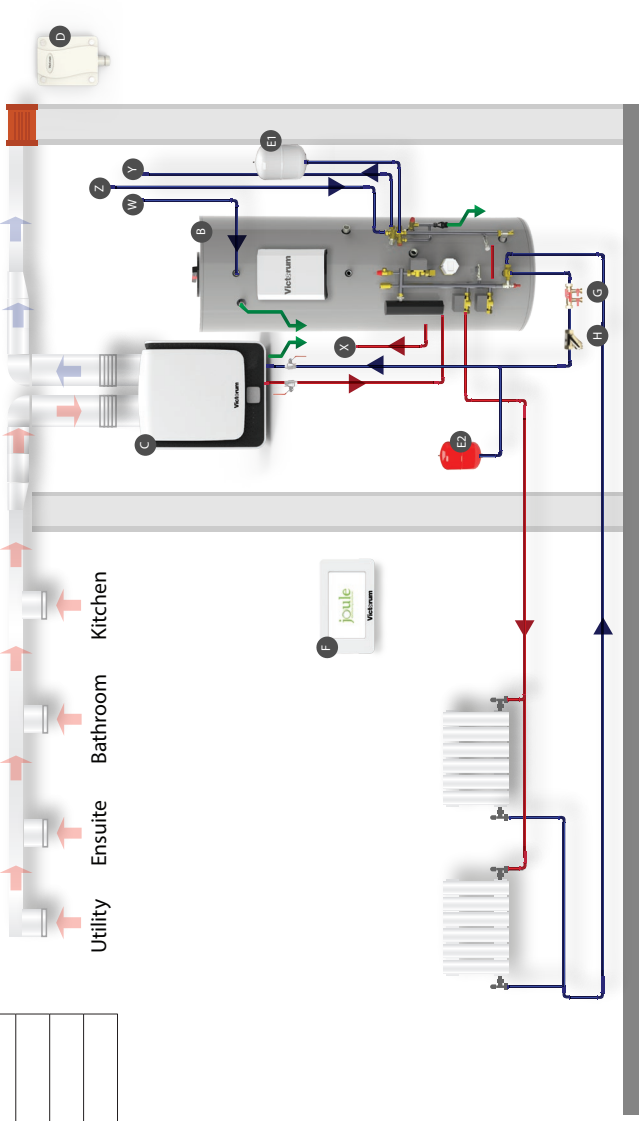
* * * Required if BOSS system installed



	Description		Description
A	Joule Electrical Enclosure	H1	Immersion
B	PrePlumb Unit	H2	Back up Heater
C	Heat Pump	V1	DHW Valve
D	Ouddoor Sensor	V2	Heating Zone valve 2
E	Heating Zone 2 Sensor	V3	Heating zone valve 1
F	Touchscreen		
G	RJ45- BOSS system connection		

EAHP Combi PP 1Z RADS

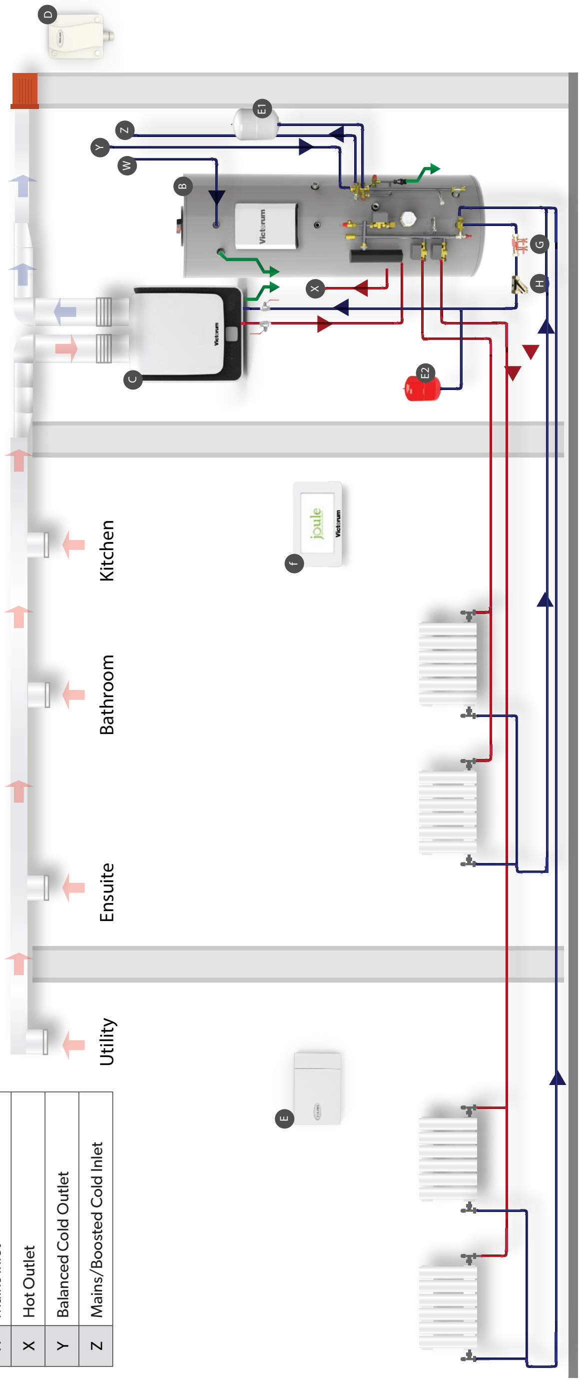
Mechanical Diagram



	Description
B	Combi Unit
C	Heat Pump
D	Outdoor Sensor
E1	Potable Expansion Vessel
E2	Heating Expansion Vessel
F	Touchscreen (Zone 1 sensor)
G	Fill & Flush Valve
H	Y-Strainer/ Filterball
W	Mains Inlet
X	Hot Outlet
Y	Balanced Cold Outlet
Z	Mains/Boosted Cold Inlet

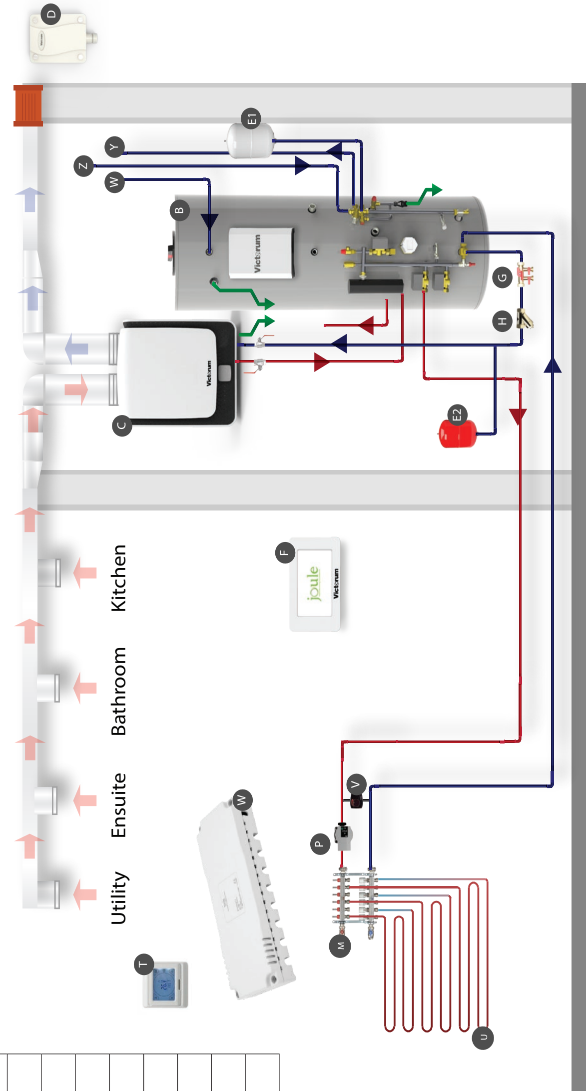
EAHP Combi PP 2Z RADS

Mechanical Diagram



	Description
B	Combi Unit
C	Heat Pump
D	Outdoor Sensor
E1	Potable Expansion Vessel
E2	Heating Expansion Vessel
F	Touchscreen (Zone 1 sensor)
G	Fill & Flush Valve
H	Y-Strainer/ Filterball
I	2nd Zone Sensor
W	Mains Inlet
X	Hot Outlet
Y	Balanced Cold Outlet
Z	Mains/Boosted Cold Inlet

Mechanical Diagram



	Description
B	PrePlumb Unit
C	Heat Pump
D	Outdoor Sensor
El	Potable Expansion Vessel
E2	Heating Expansion Vessel
F	Touchscreen (Zone 1 sensor)
G	Fill & Flush Valve
H	Y-Strainer/ Filterball
M	UFH Manifold
P	UFH Circulation Pump
T	Joule E91 thermostat
U	Underfloor Heating
V	ESBE Mixing Valve
J	UFH Wiring Centre
W	Mains Inlet
X	Hot Outlet
Y	Balanced Cold Outlet
Z	Mains/Boosted Cold Inlet

Product Identifier

Joule Victorum 62010020 –	Space Heater
Joule Victorum HW 7784292 –	Combination Heater
Joule Victorum Compact 62210018 –	Combination Heater
Joule Victorum Compact 62210022 –	Combination Heater
Joule Victorum DHW 73310033 –	Heat Pump Water Heater

ERP Information

Declaration of Conformity

Supplier's declaration of conformity (DoC) on the Ecodesign of energy related products
Unique identification number of this DoC: 1004092020

We, the manufacturer:
Chewbay Ltd. T/A Joule Ireland
Unit 407 Northwest Business Park,
Cappagh Road, Dublin 11,
Ireland. D11 HD36

Tel: +353 (1) 623 7080
e-mail: info@joule.ie

declare under our sole responsibility that the product:

Product:	**Combination Heater & Package Combination Heater**
Product Reference:	***Victorum 62010020 & Joule 200L H.G Cyclone***
Variant Model:	***Victorum HW 7784292 & Joule 200L Cyclone***
	Victorum Compact 62210018 & Joule 180L Cyclone
	Victorum Compact 62210022 & Joule 230L Cyclone

to which this declaration relates is in conformity with the essential requirements and other relevant requirements of Directive 2009/125/EC on the Ecodesign of energy related products. The product is in conformity with the following standards and/or other normative documents:

European Standard EN 14825:2016, Air conditioners, liquid chilling packages and heat pumps, with electrically driven compressors, for space heating and cooling. Testing and rating at part load conditions and calculation of seasonal performance.

European Standard EN 16147:2017, Heat pumps with electrically driven compressors - Testing, performance rating and requirements for marking of domestic hot water units.

and that the product also complies with the provisions of the following European Directives:

Commission Delegated Regulation (EU) No 813/2013 supplementing Directive 2009/125/EC, Ecodesign requirements for space heaters and combination heaters.

In addition, those models which can be fitted with immersion heating elements, have been designed and built according to EN60335 European Standard concerning safety in electric appliances and similar equipment and comply with 2014/35/EU European Low Voltage Directive.

Place and date of issue:
Dublin, Ireland. 7th of September 2020

Signed by the manufacturer:

Name: Ian Barrett

Title: Director

Note: This declaration is only valid where no modifications have been made to the product and to the applicable legislation.

ERP Information

COMMISSION DELEGATED REGULATION (EU) No 811/2013

PRODUCT FICHE (ENERGY LABELLING OF COMBINATION HEATER)

a	**Supplier's name or trademark**		-	**Joule**
b	Supplier's model identifier		-	Victorum HW 7784292 & Joule 200L H.G Cyclone
ba	Variant models		-	Compact 62210022, Compact 62210018
	Airflow			
	Rated Air Flow		m^3/hr	155
c	For space heating		-	Medium-temperature application
ca	For water heating	Load profile	-	L
d	Seasonal space heating energy efficiency class	Medium-temperature	-	A++
		Low-temperature	-	A+++
da	**Water heating energy efficiency class**		-	A+
e	Rated heat output (Average)	Medium-temperature	kW	1,6
		Low-temperature	kW	2,0
f	Annual energy consumption for space heating (Average)	Medium-temperature	kWh	1105
		Low-temperature	kWh	831
fa	**Annual electricity consumption for water heating (Average)**		kWh	737
g	Seasonal space heating energy efficiency (Average)	Medium-temperature	%	147
		Low-temperature	%	196
ga	Water heating energy efficiency (Average)		%	139
h	L_{WA} (sound power level, indoor)		dB	59
i	Work only during off-peak hours		(Yes/No)	No
j	Specific precautions [1]		-	
k	Rated heat output (Colder)	Medium-temperature	kW	1,6
		Low-temperature	kW	2,0
ka	Rated heat output (Warmer)	Medium-temperature	kW	1,6
		Low-temperature	kW	2,0
l	Annual energy consumption for space heating (Colder)	Medium-temperature	kWh	1307
		Low-temperature	kWh	979
la	Annual energy consumption for space heating (Warmer)	Medium-temperature	kWh	730
		Low-temperature	kWh	552
lb	**Annual electricity consumption for water heating (Colder)**		kWh	737
lc	**Annual electricity consumption for water heating (Warmer)**		kWh	737
m	Seasonal space heating energy efficiency (Colder)	Medium-temperature	%	148
		Low-temperature	%	198
ma	Seasonal space heating energy efficiency (Warmer)	Medium-temperature	%	144
		Low-temperature	%	191
mb	Water heating energy efficiency (Colder)		%	139
mc	Water heating energy efficiency (Warmer)		%	139
n	L_{WA} (sound power level, outdoor)		dB	-

j [1] Precautions as described in the installation/user manual must be taken when assembling, installing and maintaining this product

PRODUCT FICHE (ENERGY LABELLING OF PACKAGE OF COMBINATION HEATER)

a	**Supplier's name or trademark**	-	**Joule**
b	Supplier's model identifier	-	Victorum HW 7784292 / µPC3 / Joule 200L H.G Cyclone
ba	Variant models	-	Compact 62210022, Compact 62210018
	Preferential heater		
d	Seasonal space heating energy efficiency class (Average)	-	A++
g	Seasonal space heating energy efficiency (Average)	%	148.5
m	Seasonal space heating energy efficiency (Colder)	%	149.5
ma	Seasonal space heating energy efficiency (Warmer)	%	145.5
II	Weight factor (Preferential and Supplementary heater)	-	0
III	Value of III [294/(11 x • Prated)]	-	13,4
IV	Value of IV [115/(11 x • Prated)]	-	5,2
V	Difference between the seasonal space heating energy efficiencies under average and colder climate conditions	%	1
VI	Difference between the seasonal space heating energy efficiencies under warmer and average climate conditions	%	3
	Water heating		
I	Seasonal water heating energy efficiency class (Average)	-	A+
I	Water heating energy efficiency of the combination heater (Average)	%	139
II	Value of [(220 x Qref)/Qnonsol]	%	-
III	Value of [(Qaux x 2,5)/(220 x Qref)]	%	-
	Declared load profile (Average)	-	L
	Temperature controls		
a	Supplier's name or trademark	-	Carel
b	Supplier's model identifier	-	µPC3
c	the class of the temperature control	-	Class III
d	the contribution of the temperature control	%	1.5

Applicable date: 07/09/2020
Revision: 2.0
Document Control No. COM0036

ERP Information

COMMISSION REGULATION (EU) No. 813/2013

Information requirements for heat pump space heaters and heat pump combination heaters

Model: Joule Victorum 62010200

Variant models: Victorum 7784292, 62210018, 62210022

Air-to-water heat pump: Yes, Exhaust Air Heat Pump

Water-to-water heat pump: No

Brine-to-water heat pump: No

Low-temperature heat pump: No

Equipped with supplementary heater: Yes

Heat pump combination heater: Yes

Parameters are declared for: Low-temp application, **35°C**

Harmonised standards applied: EN14511:2013, EN14825:2016, EN16147:2017, BS EN3743-1:2010

Parameters are declared for: **Average** climate conditions

Item	Symbol	Value	Unit
Rated heat output (*)	***Prated***	**1.5**	**kW**
Declared capacity for heating for part load at indoor temperature 20°C and outdoor temperature T_j			
Tj = -7 °C	*Pdh*	1.5	kW
Tj = +2 °C	*Pdh*	1.4	kW
Tj = +7 °C	*Pdh*	1.4	kW
Tj = +12 °C	*Pdh*	1.5	kW
Tj = bivalent temperature	*Pdh*	1.4	kW
Tj = operation limit temperature	*Pdh*	1.5	kW
For air-to-water heat pumps: Tj = -15°C (if TOL < -20°C)	*Pdh*	-	kW
Bivalent temperature	*Tbiv*	2	°C
Cycling interval capacity for heating	*Pcych*	-	kW
Degradation co-efficient (**)	*Cdh*	0.9	-
Power consumption in modes other than active mode			
Off mode	P_{OFF}	0.058	kW
Thermostat-off mode	P_{TO}	0.058	kW
Standby mode	P_{SB}	0.054	kW
Crankcase heater mode	P_{CK}	0.000	kW
Other items			
Capacity control		Fixed	
Sound power level, indoors/ outdoors	L_{WA}	59/-	dB
Emissions or nitrogen oxides	NO_x	-	mg/kWh
For heat pump combination heater:			
Declared load profile		-	
Daily electricity consumption	Q_{elec}	-	kWh

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	η_s	**157**	**%**
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20°C and outdoor temperature T_j			
Tj = -7 °C	*COPd*	4.43	-
Tj = +2 °C	*COPd*	4.55	-
Tj = +7 °C	*COPd*	4.61	-
Tj = +12 °C	*COPd*	4.82	-
Tj = bivalent temperature	*COPd*	4.55	-
Tj = operation limit temperature	*COPd*	4.43	-
For air-to-water heat pumps: Tj = -15°C (if TOL < -20°C)	*Pdh*	-	-
For air-to-water heat pumps: Operation limit temperature	*TOL*	-10	°C
Cycling interval efficiency	*COPcyc*	-	-
Heating water operating limit temperature	*WTOL*	60	°C
Supplementary heater			
Rated heat output (*)	P_{sup}	3	kW
Type of energy Input		electrical	
For air-to-water heat pumps: Rated air flow rate, outdoors		97	m^3/h
For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	-	m^3/h
Water heating energy efficiency	η_{wh}	-	%
Daily fuel consumption	Q_{fuel}	-	kWh

Contact details: Joule Ireland, Unit 407 North West Business Park, Cappagh Road, Dublin 11, Ireland. D11 HD36

(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *Prated* is equal to the design load for heating *Pdesignh* , and the rated output of a supplementary heater *Psup* is equal to the supplementary capacity for heating *sup(Tj)* .
(**) If *Cdh* is not determined by measurement then the default degradation coefficient is *Cdh* =0.9.

Precautions as described in the installation/user manual must be taken when assembling, installing, maintaining, disassembly, recycling and/or disposal at end-of-life of this product.

Applicable date: 25/01/2021
Revision: 4.0
Document Control No. COM0027

ERP Information

COMMISSION REGULATION (EU) No. 813/2013

Information requirements for heat pump space heaters and heat pump combination heaters

Model: Joule Victorum 62010200

Variant models: Victorum 7784292, 62210018, 62210022

Air-to-water heat pump: Yes, Exhaust Air Heat Pump

Water-to-water heat pump: No

Brine-to-water heat pump: No

Low-temperature heat pump: No

Equipped with supplementary heater: Yes

Heat pump combination heater: Yes

Parameters are declared for: Low-temp application, **35°C**

Parameters are declared for: **Average** climate conditions

Harmonised standards applied: EN14511:2013, EN14825:2016, EN16147:2017, BS EN3743-1:2010

Item	Symbol	Value	Unit
Rated heat output (*)	***Prated***	**2.0**	**kW**
Declared capacity for heating for part load at indoor temperature 20°C and outdoor temperature T_j			
Tj = -7°C	*Pdh*	1.8	kW
Tj = +2°C	*Pdh*	1.9	kW
Tj = +7°C	*Pdh*	1.9	kW
Tj = +12°C	*Pdh*	1.8	kW
Tj = bivalent temperature	*Pdh*	1.9	kW
Tj = operation limit temperature	*Pdh*	1.8	kW
For air-to-water heat pumps: Tj = -15°C (if TOL < -20°C)	*Pdh*	-	kW
Bivalent temperature	*Tbiv*	2	°C
Cycling interval capacity for heating	*Pcych*	-	kW
Degradation co-efficient (**)	*Cdh*	0.9	-
Power consumption in modes other than active mode			
Off mode	P_{OFF}	0.058	kW
Thermostat-off mode	P_{TO}	0.058	kW
Standby mode	P_{SB}	0.054	kW
Crankcase heater mode	P_{CK}	0.000	kW
Other items			
Capacity control		Fixed	
Sound power level, indoors/ outdoors	L_{WA}	59/-	dB
Emissions or nitrogen oxides	NO_x	-	mg/kWh
For heat pump combination heater:			
Declared load profile		-	
Daily electricity consumption	Q_{elec}	-	kWh

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	η_s	**196**	**%**
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20°C and outdoor temperature T_j			
Tj = -7°C	*COPd*	5.53	-
Tj = +2°C	*COPd*	5.74	-
Tj = +7°C	*COPd*	5.78	-
Tj = +12°C	*COPd*	5.81	-
Tj = bivalent temperature	*COPd*	5.74	-
Tj = operation limit temperature	*COPd*	5.53	-
For air-to-water heat pumps: Tj = -15°C (if TOL < -20°C)	*Pdh*	-	-
For air-to-water heat pumps: Operation limit temperature	*TOL*	-10	°C
Cycling interval efficiency	*COPcyc*	-	-
Heating water operating limit temperature	*WTOL*	60	°C
Supplementary heater			
Rated heat output (*)	P_{sup}	3	kW
Type of energy Input		electrical	
For air-to-water heat pumps: Rated air flow rate, outdoors		155	m^3/h
For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	-	m^3/h
Water heating energy efficiency	η_{wh}	-	%
Daily fuel consumption	Q_{fuel}	-	kWh

Contact details: Joule Ireland, Unit 407 North West Business Park, Cappagh Road, Dublin 11, Ireland. D11 HD36

(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *Prated* is equal to the design load for heating *Pdesignh* , and the rated output of a supplementary heater *Psup* is equal to the supplementary capacity for heating *sup(Tj)* .
(**) If *Cdh* is not determined by measurement then the default degradation coefficient is *Cdh* =0.9.

Precautions as described in the installation/user manual must be taken when assembling, installing, maintaining, disassembly, recycling and/or disposal at end-of-life of this product.

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Revision: 4.0
Document Control No. COM0028

ERP Information

COMMISSION REGULATION (EU) No. 813/2013

Information requirements for heat pump space heaters and heat pump combination heaters

Model: Joule Victorum 62010200

Variant models: Victorum 7784292, 62210018, 62210022

Air-to-water heat pump: Yes, Exhaust Air Heat Pump

Water-to-water heat pump: No

Brine-to-water heat pump: No

Low-temperature heat pump: No

Equipped with supplementary heater: Yes

Heat pump combination heater: Yes

Parameters are declared for: Medium-temp application, **55°C**

Harmonised standards applied: EN14511:2013, EN14825:2016, EN16147:2017, BS EN3743-1:2010

Parameters are declared for: **Average** climate conditions

Item	Symbol	Value	Unit
Rated heat output (*)	***Prated***	**1.4**	**kW**
Declared capacity for heating for part load at indoor temperature 20°C and outdoor temperature T_j			
Tj = -7 °C	*Pdh*	1.3	kW
Tj = +2 °C	*Pdh*	1.4	kW
Tj = +7 °C	*Pdh*	1.4	kW
Tj = +12 °C	*Pdh*	1.4	kW
Tj = bivalent temperature	*Pdh*	1.4	kW
Tj = operation limit temperature	*Pdh*	1.3	kW
For air-to-water heat pumps: Tj = -15°C (if TOL < -20°C)	*Pdh*	-	kW
Bivalent temperature	*Tbiv*	2	°C
Cycling interval capacity for heating	*Pcych*	-	kW
Degradation co-efficient (**)	*Cdh*	0.9	-
Power consumption in modes other than active mode			
Off mode	P_{OFF}	0.058	kW
Thermostat-off mode	P_{TO}	0.058	kW
Standby mode	P_{SB}	0.054	kW
Crankcase heater mode	P_{CK}	0.000	kW
Other items			
Capacity control		Fixed	
Sound power level, indoors/ outdoors	L_{WA}	59/-	dB
Emissions or nitrogen oxides	NO_x	-	mg/kWh

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	η_s	**128**	**%**
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20°C and outdoor temperature T_j			
Tj = -7 °C	*COPd*	3.36	-
Tj = +2 °C	*COPd*	3.74	-
Tj = +7 °C	*COPd*	3.98	-
Tj = +12 °C	*COPd*	4.15	-
Tj = bivalent temperature	*COPd*	3.74	-
Tj = operation limit temperature	*COPd*	3.36	-
For air-to-water heat pumps: Tj = -15°C (if TOL < -20°C)	*Pdh*	-	-
For air-to-water heat pumps: Operation limit temperature	*TOL*	-10	°C
Cycling interval efficiency	*COPcyc*	-	-
Heating water operating limit temperature	*WTOL*	60	°C
Supplementary heater			
Rated heat output (*)	P_{sup}	3	kW
Type of energy Input		electrical	
For air-to-water heat pumps: Rated air flow rate, outdoors		97	m^3/h
For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	-	m^3/h

For heat pump combination heater:

Declared load profile		L		**Water heating energy efficiency**	η_{wh}	139	%
Daily electricity consumption	Q_{elec}	3,558	kWh	Reference hot water temperature	-	53.89	°C
Annual electricity consumption	*AEC*	737	kWh	DHW volume accounted for in test	*V*	200	L
Standby cylinder heat loss	*S*	2.064	kWh				

Contact details: Joule Ireland, Unit 407 North West Business Park, Cappagh Road, Dublin 11, Ireland. D11 HD36

(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *Prated* is equal to the design load for heating *Pdesignh* , and the rated output of a supplementary heater *Psup* is equal to the supplementary capacity for heating *sup(Tj)* .
(**) If *Cdh* is not determined by measurement then the default degradation coefficient is *Cdh* = 0,9.

Precautions as described in the installation/user manual must be taken when assembling, installing, maintaining, disassembly, recycling and/or disposal at end-of-life of this product.

Applicable date: 25/01/2021
Revision: 4.0
Document Control No. COM0029

ERP Information

COMMISSION REGULATION (EU) No. 813/2013

Information requirements for heat pump space heaters and heat pump combination heaters

Model: Joule Victorum 62010200

Variant models: Victorum 7784292, 62210018, 62210022

Air-to-water heat pump: Yes, Exhaust Air Heat Pump

Water-to-water heat pump: No

Brine-to-water heat pump: No

Low-temperature heat pump: No

Equipped with supplementary heater: Yes

Heat pump combination heater: Yes

Parameters are declared for: Medium-temp application, **55°C**

Parameters are declared for: **Average** climate conditions

Harmonised standards applied: EN14511:2013, EN14825:2016, EN16147:2017, BS EN3743-1:2010

Item	Symbol	Value	Unit
Rated heat output (*)	***Prated***	**1.6**	**kW**
Declared capacity for heating for part load at indoor temperature 20°C and outdoor temperature T_j			
Tj = -7 °C	*Pdh*	1.6	kW
Tj = +2 °C	*Pdh*	1.6	kW
Tj = +7 °C	*Pdh*	1.6	kW
Tj = +12 °C	*Pdh*	1.6	kW
Tj = bivalent temperature	*Pdh*	1.6	kW
Tj = operation limit temperature	*Pdh*	1.6	kW
For air-to-water heat pumps: Tj = -15°C (if TOL < -20°C)	*Pdh*	-	kW
Bivalent temperature	*Tbiv*	2	°C
Cycling interval capacity for heating	*Pcych*	-	kW
Degradation co-efficient (**)	*Cdh*	0.9	-
Power consumption in modes other than active mode			
Off mode	P_{OFF}	0.058	kW
Thermostat-off mode	P_{TO}	0.058	kW
Standby mode	P_{SB}	0.054	kW
Crankcase heater mode	P_{CK}	0.000	kW
Other items			
Capacity control		Fixed	
Sound power level, indoors/ outdoors	L_{WA}	59/-	dB
Emissions of nitrogen oxides	NO_x	-	mg/kWh
For heat pump combination heater:			
Declared load profile		L	
Daily electricity consumption	Q_{elec}	3,558	kWh
Annual electricity consumption	*AEC*	737	kWh
Standby cylinder heat loss	*S*	2.064	kWh

Item	Symbol	Value	Unit
Seasonal space heating energy efficiency	η_s	**147**	**%**
Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20°C and outdoor temperature T_j			
Tj = -7 °C	*COPd*	3.88	-
Tj = +2 °C	*COPd*	4.17	-
Tj = +7 °C	*COPd*	4.44	-
Tj = +12 °C	*COPd*	4.68	-
Tj = bivalent temperature	*COPd*	4.17	-
Tj = operation limit temperature	*COPd*	3.88	-
For air-to-water heat pumps: Tj = -15°C (if TOL < -20°C)	*Pdh*	-	-
For air-to-water heat pumps: Operation limit temperature	*TOL*	-10	°C
Cycling interval efficiency	*COPcyc*	-	-
Heating water operating limit temperature	*WTOL*	60	°C
Supplementary heater			
Rated heat output (*)	P_{sup}	3	kW
Type of energy Input		electrical	
For air-to-water heat pumps: Rated air flow rate, outdoors		155	m^3/h
For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	-	m^3/h
Water heating energy efficiency	η_{wh}	139	%
Reference hot water temperature	-	53.89	°C
DHW volume accounted for in test	*V*	200	L

Contact details	Joule Ireland, Unit 407 North West Business Park, Cappagh Road, Dublin 11, Ireland. D11 HD36

(*) For heat pump space heaters and heat pump combination heaters, the rated heat output *Prated* is equal to the design load for heating *Pdesignh* , and the rated output of a supplementary heater *Psup* is equal to the supplementary capacity for heating *sup(Tj)* .
(**) If *Cdh* is not determined by measurement then the default degradation coefficient is *Cdh* = 0,9.

Precautions as described in the installation/user manual must be taken when assembling, installing, maintaining, disassembly, recycling and/or disposal at end-of-life of this product.

Applicable date: 25/01/2021
Revision: 4.0
Document Control No. COM0030

ERP Information

Declaration of Conformity

Supplier's declaration of conformity (DoC) on the Ecodesign of energy related products
Unique identification number of this DoC: 1005092020

We, the manufacturer:
Chewbay Ltd. T/A Joule Ireland
Unit 407 Northwest Business Park,
Cappagh Road, Dublin 11,
Ireland. D11 HD36

Tel: +353 (1) 623 7080
e-mail: info@joule.ie

declare under our sole responsibility that the product:
Product: **Heat Pump Water Heater**
Product Reference: ***Victorum 73310033 & Joule 200L Cyclone***

to which this declaration relates is in conformity with the essential requirements and other relevant requirements of Directive 2009/125/EC on the Ecodesign of energy related products. The product is in conformity with the following standards and/or other normative documents:

European Standard EN 16147:2017, Heat pumps with electrically driven compressors - Testing, performance rating and requirements for marking of domestic hot water units.

and that the product also complies with the provisions of the following European Directives:

Commission Regulation (EU) implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for water heaters and hot water storage tanks.

In addition, those models which can be fitted with immersion heating elements, have been designed and built according to EN60335 European Standard concerning safety in electric appliances and similar equipment and comply with 2014/35/EU European Low Voltage Directive.

Place and date of issue:
Dublin, Ireland. 22nd of January 2021

Signed by the manufacturer:

Name: Ian Barrett

Title: Director

Note: This declaration is only valid where no modifications have been made to the product and to the applicable legislation.

ERP Information

COMMISSION DELEGATED REGULATION (EU) No 812/2013

PRODUCT FICHE (ENERGY LABELLING OF HEAT PUMP WATER HEATERS)

a	**Supplier's name or trademark**		**Joule**
b	Supplier's model identifier		Victorum 73310033
c	Declared Load Profile	-	L
	Typical usage	kWh	11,655
d	Water heating energy efficiency class (Average)	-	A+
e	Water heating energy efficiency (Average)	%	139
f	Annual electricity consumption (Average)	kWh	737
g	Other applicable load profiles	-	N/A
gc	Typical usage	kWh	-
gd	Water heating energy efficiency class (Average)	-	-
ge	Water heating energy efficiency (Average)	%	-
gf	Annual electricity consumption (Average)	kWh	-
h	Thermostat Temperature Setting	°C	45-55
i	L_{WA} (sound power level, indoor)	dB	59
j	Work only during off-peak hours	(Yes/No)	No
k	Specific precautions [1)]		
l	Value of smart control	-	0
m	Water heating energy efficiency (Colder)	%	139
	Water heating energy efficiency (Warmer)	%	139
n	Annual electricity consumption (Colder)	kWh	737
	Annual electricity consumption (Warmer)	kWh	737

k	[1)] Precautions as described in the installation/user manual must be taken when assembling, installing and maintaining this product

Applicable date: 07/09/2020
Revision: 2.0
Document Control No. COM0037

ERP Information

COMMISSION REGULATION (EU) No. 812/2013

Technical Documentation - Heat Pump Water Heater

a	**Contact details:**	Joule Ireland, Unit 407 North West Business Park, Cappagh Road, Dublin 11, Ireland. D11 HD36
b	Model:	Victorum 73310033
c	Harmonised Standards:	Commission Delegated Regulation (EU) No 813/2013
d	Technical Standards and specifications:	EN 16147: 2017
e	Empowered by:	
		Ian Barrett
	Position:	Joule Group MD

f **Technical Parameters: measurements**

Daily electricity consumption	Q_{elec}	3,558	kWh
Declared load profile	-	L	-
Sound power level, *indoors*	-	59	dB
Sound power level, *outdoors*	L_{WA}	-	dB

g **Technical Parameters: calculations**

Parameters calculated for: Average, Colder & Warmer climate conditions

Water heating energy efficiency	η_{wh}	139	%
Annual electricity consumption	*AEC*	737	kWh

h Precautions as described in the installation/user manual must be taken when assembling, installing and maintaining this product

Applicable date:	25/01/2021
Revision:	2.0
Document Control No.	COM0038

JOULE IE

Unit 407 NW Business Park, Cappagh Road,
Ballycoolin, Blanchardstown, Dublin
tel 353 (1) 6237080
mail info@joule.ie
web www.joule.ie

JOULE UK

Unit 3, Leftfield Park, Park Road, Pontefract,
West Yorkshire, WF8 4PS, UK
tel 0330 808 8488
mail info@jouleuk.co.uk
web www.jouleuk.co.uk

JOULE PL

Strzegomska 55D, 53-611 Wroclaw, Polska
tel +48 12 881 11 71
mail biuro@joule-pl.pl
web www.joule-pl.pl

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