HEAT SAVIOUR PLUS

# Manufacturer's Instructions

MADE IN UK

Patent No: GB2616652

## Introduction

Any water distribution or central heating installation must comply with the relevant recommendations of the current editions of all applicable Building Regulations and British Standards.

## Building Regulations

- I.E.E. Requirements for Electrical Installations (BS 7671)
- Water Regulations
- Manual Handling Operations Regulations

## British Standards

BS 6798, BS 5449, BS 5546, BS 5440: Part 1, BS 5440: Part 2

CP 331: Part 3, BS 6700, BS 7593, BS 7671 & Health and Safety Document No. 635

This product must only be installed by suitably qualified and experienced heating engineers.

Manufacturer's instructions must be followed at all times.

When installing an unvented hot water cylinder, the requirements of Part G3 of the Building Regulations must be adhered to.

## Important Notice

Please note that Heat Saviour accepts no responsibility for matters relating to system design, product selection, specification, or the overall performance and effectiveness of any installation incorporating this product.

**Contents**

## Heat Saviour Plus

## Manufacturer's Installation & Commissioning Instructions

### 1. Product Overview

Heat Saviour Plus is designed to improve compatibility and efficiency between modern heat sources and existing heating systems. It is suitable for use with approved air-to-water heat pumps and gas boiler systems when installed in accordance with these instructions.

Failure to follow these instructions may invalidate the product warranty.

### 2. Technical Specification

**Cylinder Dimensions for 170 Litre**

| Specification | Value |
|---|---|
| Capacity | 170 Litres |
| Height | 1800mm |
| Diameter | 508mm |
| Empty Weight | 67kg |
| Full Weight | 237kg |
| Installation Space Required | 600mm x 600mm x 2200mm |

**Cylinder Dimensions for 130 Litre**

| Specification | Value |
|---|---|
| Capacity | 130 Litres |
| Height | 1615mm |
| Diameter | 508mm |
| Empty Weight | 62kg |
| Full Weight | 207kg |
| Installation Space Required | 600mm x 600mm x 2200mm |

**Important:** Manual handling precautions must be observed.

**Volumiser Specification:**

| Specification | Value |
|---|---|
| Water Volume | 24 Litres |
| Maximum Flow Rate | 8 $m^3$/h |
| Number of Plates | 16/32 |
| Plate Surface Area | 0.512 $m^2$ |
| Heating Element | 1¾" x 11" 3kW |
| Thermostat Set Point | 70°C |
| Thermal Protection | High Limit Thermostat |
| Plate Flow Configuration | Co-current |
| Recorded Pressure Drop | 17 kPa |

**Important:**

In co-current configuration the heat pump must modulate and maintain a ΔT of 5°C.

**3. Heat Saviour Plus Compatibility**

Compatible Heat Sources

**Air-to-water heat pumps**

- Compatible with R32 and R290 refrigerant types.
- Maximum heat output: 10kW.
- Flow temperature range: 38°C to 70°C.

**Natural gas boilers**

- Compatible with heat-only boilers.
- Compatible with system boilers.
- Maximum output: 16kW.
- Must include overheat limit thermostat protection.

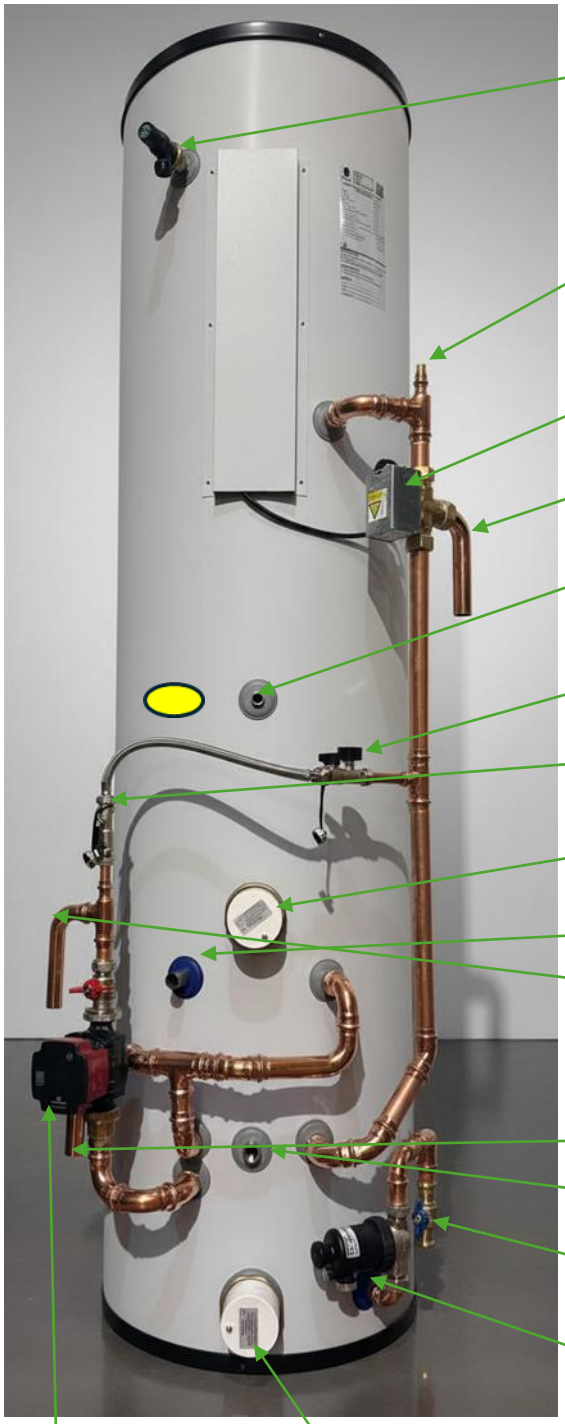
**4. Installation Requirements**

General Installation

- Primary flow and return pipework must be sized correctly to achieve optimum flow rates in accordance with the heat pump manufacturer's instructions.
- Ensure adequate structural support is available for the full operational weight of the cylinder.
- **A maximum 3.5 bar PRV safety valve must be installed on both sides of the plate-to-plate separation.**
- Correctly sized expansion vessels must be fitted to both pressure sides of the plate-to-plate separation.
- A pressure gauge must be fitted to the secondary heating circuit in an accessible position.
- A fill and flush valve must be fitted on the primary return pipework, preferably externally.
- Primary flushing must be completed in accordance with Section 6.
- Fit 19mm insulation to all exposed primary pipework.
- Install a cold feed / ballofix valve to allow both primary and secondary circuits to be filled and topped up. The preferred area marked  **(Refer to Heat Saviour Plus diagram)**
- The front cylinder mounting plate is designed to accommodate switches and interface controls.

- Do not use solder fittings on the secondary return connection, as excessive heat may damage press-fit seals.
- Protect all external primary pipework against freezing weather conditions should the following occur:
    - Power failure
    - Heat pump fault conditions
- Follow all filling, flushing, and commissioning instructions before operation.

# Heat Saviour Plus Diagram



TPVR

Manual Air Vent

Honeywell V4044 Diverter Valve Power Open for Hot Water Demand

Primary Flow 28mm

Hot Water Senor Pocket

Primary Circuit Filling Loop and Pressure Gauge

Secondary Circuit Filling Loop

3KW Immersion Heater

Cold Main Inlet

Secondary Circuit Flow

Primary Return 28mm

Volumiser Air Vent

Secondary Circuit Flow

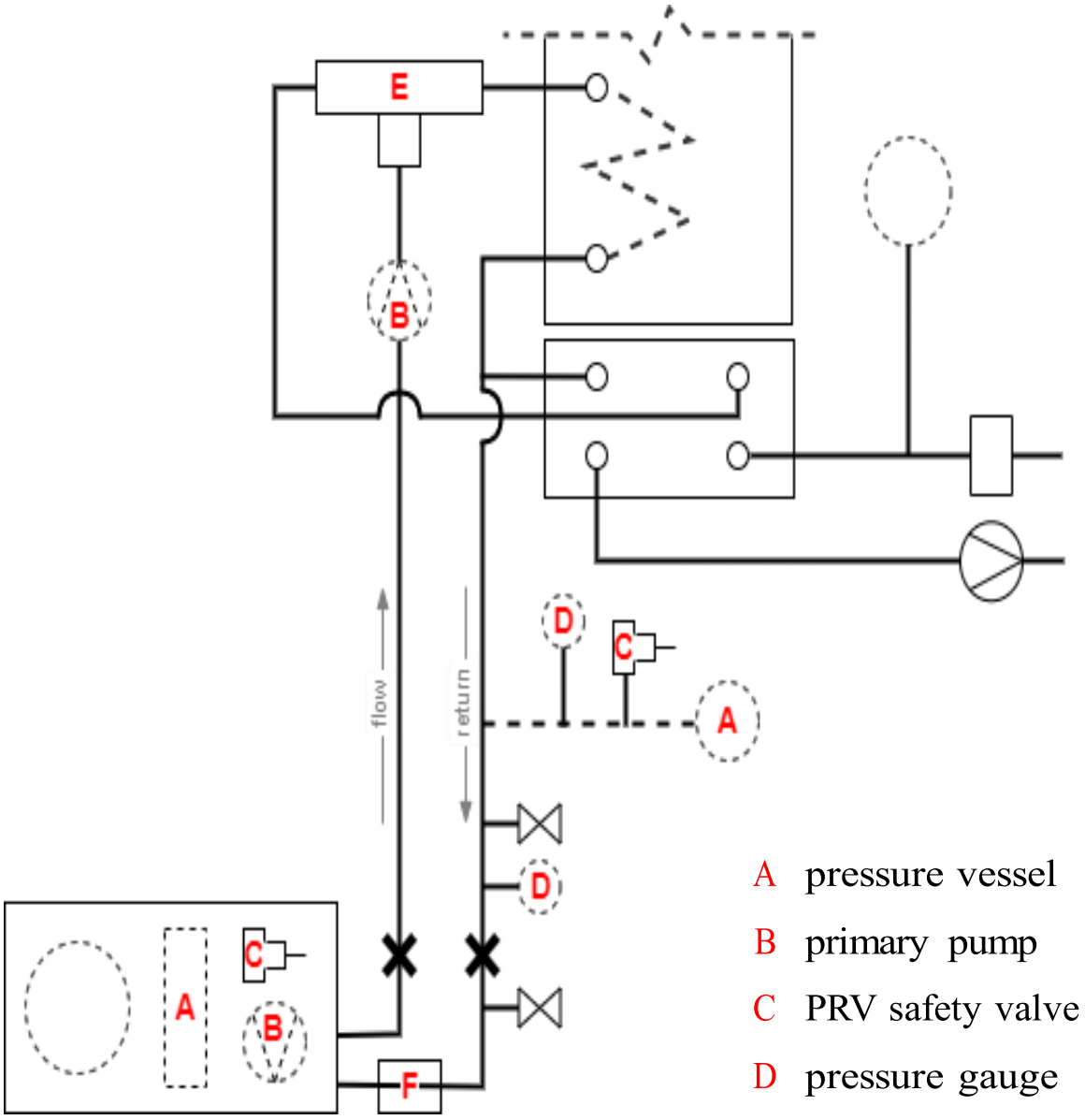
Magnetic Filter and Volumiser Drain

Secondary Circuit Circulation Pump

3KW Immersion Heater Secondary Circuit Back Up Heating Element

**Heat Pump Installation Design:**

The diagram below depicts a typical installation using various heat pump manufacturers. Many modern monobloc heat pumps incorporate a pressure relief valve (PRV), modulating circulation pump, and expansion vessel within the external unit. Always consult the heat pump manufacturer's installation instructions, as additional third-party components, such as circulation pumps or expansion vessels, may still be required.



**5. Secondary Circuit Requirements**

Pressure Stabilisation

Heat Saviour Plus is designed primarily for retrofit heating applications.

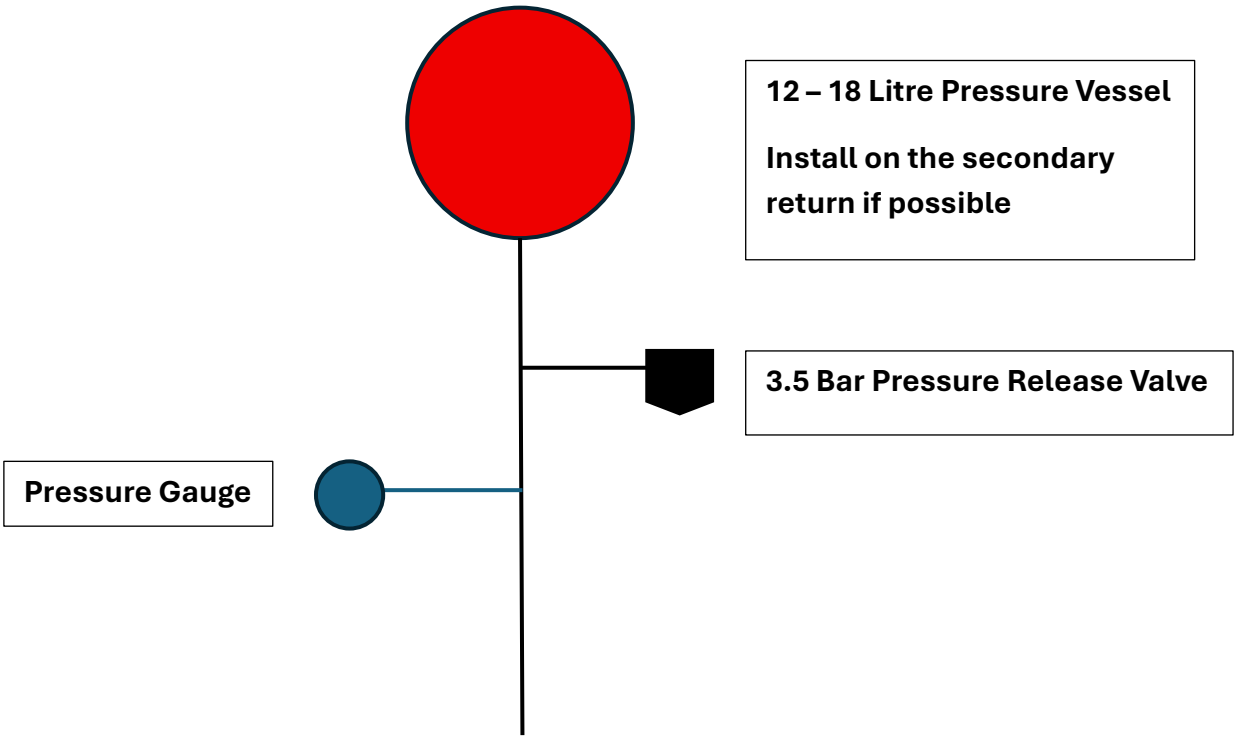
**Open Vented Systems:** Not recommended. Where unavoidable: Secondary pump must be fitted on the secondary return. Feed and expansion pipework must be within 150mm of each other. Failure to comply may result in:

- Pump overruns
- System oxidation

**System Boilers:** Where a system boiler is removed: Install a suitably sized expansion vessel & install a 3.5 bar PRV safety valve.

**Heat-Only Boilers:** Where converting from open vented: Remove vented arrangement. Install suitable sealed system kit including:

- Expansion vessel
- PRV (Robokit) safety valve



## 6. Filling & Flushing Procedure

Important Warranty Notice

Failure to correctly flush both primary and secondary circuits will invalidate the Heat Saviour Plus warranty.

Poor flushing procedures may result in:

- Reduced heat pump efficiency
- Blocked strainers
- Poor flow rates
- Increased maintenance visits
- Reduced product lifespan
- Recommended Equipment

A dedicated flushing pump is strongly recommended.

Example:

- Rothenberger Rosolar

### Filling & Flushing Procedure

Step 1

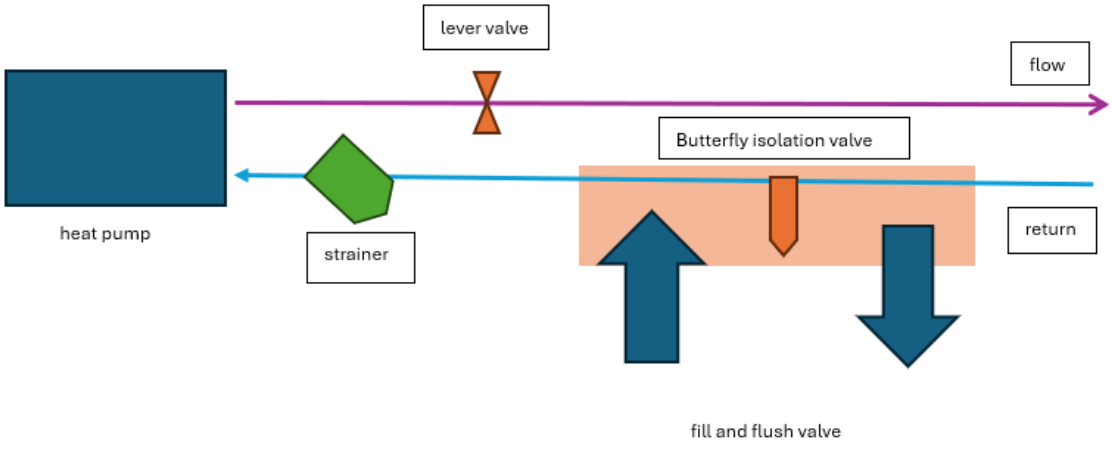
- Check all mechanical fittings are secure.

Step 2

- Connect hoses to the fill and flush valve outlet ports.

Step 3

- Confirm circulation direction through the primary circuit is correct.



Step 4

- Open the lever valve and close the butterfly isolation valve.

Step 5

- Ensure flushing pump contains clean water and filters are debris-free.

**Important:**

**Manually lock the diverter valve into the hot water position before flushing.**

Step 6

- Start the flushing pump.

Step 7

- Do not exceed the PRV pressure limit.

Step 8

- Inspect all primary pipework for leaks.

Step 9

- Continue flushing until water is clean.

Step 10

- Stop the flushing pump and isolate fill/flush valves.

Step 11

- Open the butterfly isolation valve.

Step 12

- Pressurise the primary circuit to the heat pump manufacturer's specified operating pressure.

Step 13

Vent the system using:

- Manual air vent above diverter valve
- Cylinder coil vent points

Step 14

- Run the heat pump on domestic hot water mode.

Step 15

- Once operating temperature is achieved, isolate power.

Step 16

- Repeat flushing cycle as required.

Step 17

- Drain the primary circuit.

Step 18

- Remove and clean strainer.

Step 19

- Clean flushing pump filters.

Step 20

- Add approved chemicals:
    - Biocide
    - Glycol mixture

**Warning:**

Do not add neat glycol directly to the system.

Minimum glycol protection:

- -10°C

Step 21

- Recommission the heat pump in accordance with manufacturer instructions.

**7. Flushing Without Pump Station**

This method is not recommended.

An external tap and hosepipe may be used only where:

- Anti-freeze valves are installed

Requirements:

- Discharge unrestricted to suitable drain
- Do not exceed PRV pressure limit

**Only follow flushing steps 1–14.**

**8. Electrical Requirements**

Important

All electrical work must be carried out by a competent qualified person.

**Required Supplies**

- 1 x 16A supply to heat pump rotary isolator
- 2 x 16A supplies to cylinder position
- 12-core 0.75 SY cable (or equivalent) between heat pump and cylinder

**9. Backup Heating Element**

3kW Immersion Heater

Specification:

- 1¾" x 11" immersion heater
- Integrated thermostat
- High limit thermostat protection

**Functions**

- Emergency Backup Heating
- Can provide temporary heating during heat pump failure.
- Extreme Weather Support
- Can supplement heat pump output during unusually cold conditions.
- Freeze Recovery Assistance
- Can assist rapid warm-up following anti-freeze valve discharge events.

**Volumiser 3KW Back Up Heating Element**

1¾" x 11" 3kW immersion heater complete with thermostat and high-limit safety thermostat.

The 3kW heating element provides the installer and end user with multiple operating options:

1. Temporary Back-Up Heating

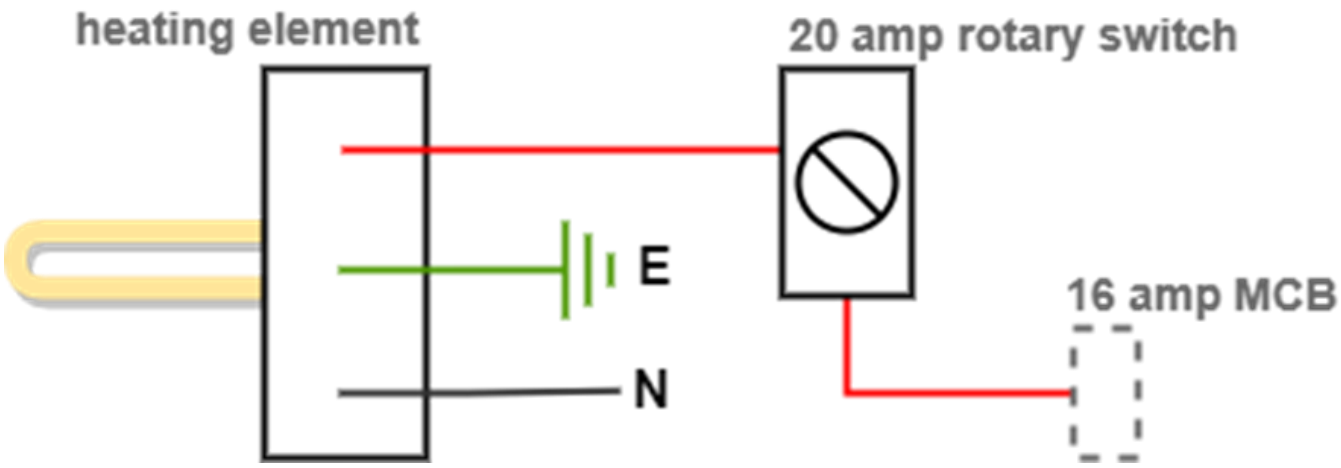
When the secondary circulation pump operates in conjunction with a third-party control system, the heating element can provide a temporary back-up heat source in the event of heat pump failure.

2. Supplemental Heating During Extreme Weather

Heat pumps are typically designed around an external heat loss temperature of approximately -2°C, depending on the property location. During extreme freezing conditions, if the property heat loss exceeds the heat pump output, the heating element can be manually activated to provide additional heating capacity. This can help reduce unnecessary heat pump oversizing.

3. Assistance Following Anti-Freeze Valve Discharge

On conventional installations, anti-freeze valve discharge can present issues during freezing weather conditions. Although only a minimal amount of system fluid is usually lost from the primary circuit, once the fault has been rectified the back-up heater can rapidly deliver warm water to assist the heat pump during initial start-up, significantly reducing engineer time on site.



## 10. Safety Information

Important Safety Notices

- Do not exceed 3.5 bar operating pressure
- Protect all exposed pipework from freezing
- Ensure all PRV discharge pipework complies with regulations
- Never energise immersion heaters unless fully submerged
- Only use approved glycol mixtures

## 11. Warranty

Failure to comply with:

- Installation instructions
- Flushing procedures
- Commissioning requirements

May invalidate the Heat Saviour Plus warranty.

## 12. Manufacturer Support

For technical support, servicing, or warranty enquiries please contact us on:

Email: info@heatsaviour.uk

Tel: 01452 525854 Option 1, Option 4

**Midea Air to Water Heat Pump**

Refer to the manufacturer's installation instructions.

Wiring Diagram for Third-Party Controls and Back-Up Heating Element

**Important:**

All electrical wiring must be installed by a competent and qualified person in accordance with current electrical regulations.

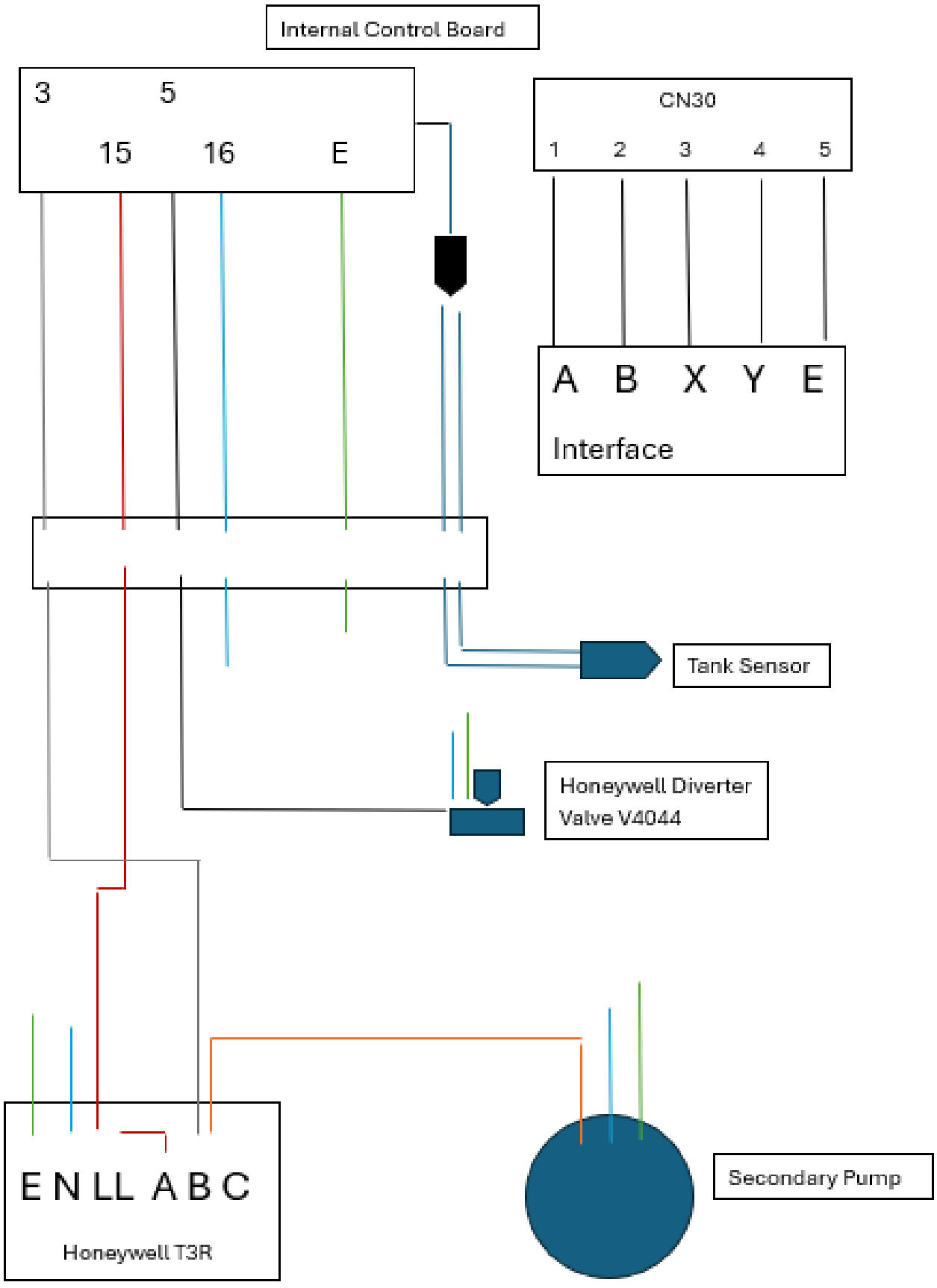
Required Electrical Supplies

- 1 no. 16A supply from the consumer unit to a 20A rotary isolator switch located adjacent to the heat pump.
- 2 no. 16A supplies from the consumer unit to the hot water cylinder position.
- 12-core 0.75mm$^2$ SY cable (or equivalent) from the heat pump location to the hot water cylinder position.

**Control Wiring Connections**

| Terminal | Function | Voltage |
|---|---|---|
| 3 | Switch Live | 240 Volts |
| 15 | Permanent Live | 240 Volts |
| 5 | Diverter Valve | Demand |
| 16 | Neutral | |
| E | Earth | |

Always verify terminal designations and wiring requirements against the latest manufacturer's documentation before installation or commissioning.


Internal Control Board
3
5
15
16
E
CN30
1
2
3
4
5
A
B
X
Y
E
Interface
Tank Sensor
Honeywell Diverter
Valve V4044
E N LL A B C
Honeywell T3R
Secondary Pump