HOT WATER
HEAT PUMPS LTD
SINCE 1980

Econergy®
The smarter way to heat water™

HP4000LT Heat Pump Water Heater Installation Guide

FOR QUALIFIED PERSONNEL ONLY

20260803

IMPORTANT: Please note the following before installing the unit:

NOTE TO INSTALLERS

Installation must be completed by qualified and licensed Tradesmen to National Codes and in strict accordance with this manual.

WARNING

A pre-made CAT -5/6 cable is required for installation of Econergy heat pumps.

WARNING

Incorrect connection of CAT cable **WILL** cause fault or board failure.

ALL UNITS ARE TESTED BEFORE SHIPPING.

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Location of the Water Heater Unit

Econergy® water heat units are designed to be installed outside, in the ceiling cavity (if one exists), under the house or in a garage, adjacent to the hot water cylinder (HWC). The Econergy® water heater should not be located within living areas as the unit produces cold air.

Location of the Econergy® water heater will be determined by a combination of factors including proximity to the hot water cylinder, proximity to bedrooms and whether there is usable space where the unit is going to be located.

For installation to existing homes, the unit should be installed with a maximum insulated pipe run of 9 metres.

For new homes, the layout should be designed so that the unit can be installed as close to the HWC as practical within the 9 metre maximum pipe run. The HWC can be installed inside or outside but as close to main points of use as possible

Econergy® water heaters must be installed in a well-ventilated space outside the living areas.

The Econergy® HP4000LT water heater emits 52 dbA at 1.5 metres and should not be installed adjacent to bedrooms. Ensure that the unit is located so that noise will not affect the residents. If installing in roof cavities, the cavities must be at least 80m^2. The unit must be seismically restrained and located away from bedrooms to avoid noise breakthrough.

Clearance from Other Heat Pumps and Air Recirculation

The Econergy® water heater must be installed in a well-ventilated position with adequate clearance for airflow and servicing.

Where more than one heat pump is installed in the same area, each unit must be positioned at least **one metre away from any other heat pump**. The unit must also be installed so that it cannot draw in cold discharge air from another heat pump, or recirculate its own discharge air back into the air inlet.

Poor positioning, restricted airflow, or air recirculation can reduce efficiency, increase running time, contribute to corrosion and may cause poor performance or nuisance faults. The installer must ensure that the unit has a clear supply or fresh ambient air and that discharged air is directed away from the inlet of this unit and any nearby heat pumps.

Any installation related issues caused by inadequate clearance, poor ventilation, or air recirculation are not covered under warranty.

Installation Design

Design to Avoid Cavitation

The installation must be designed so that the unit will operate reliably and with no water flow issues due to cavitation.

Cavitation of the circulating pump may occur when there is less than 50kPa pressure at the heat pump inlet. This can lead to a malfunction of the Econergy® water heater and MUST BE AVOIDED by ensuring adequate pressure at the system inlet.

To ensure successful operation of the Econergy® water heater on open vent application where operating pressure is less than 50kPa (or 5m static head), a valve vented system should be used. This has the added benefit of increasing the pressure of supply in the house. The installer should be aware of and avoid adding a relief valve to an old HWC of questionable structural integrity since it could cause the HWC to fail.

Distance from Hot Water Cylinder

The Econergy® water heater should be mounted as close as possible to the HWC to ensure best efficiency. This is because of each leg of supply/return piped water loses its heat during the off-cycle despite being insulated. The cylinder should be located within 9 metres of the Econergy® water heater for retrofit installations and directly adjacent for new installations.

Wetback Systems

The Econergy® system cannot be used with a wetback system where the piping design allows a thermosyphon to develop

Wetback systems involve large bore copper pipes running into the cylinder and back again. Because the heat source is uncontrolled, temperatures can rise to 100°C, generating steam. Plumbing codes dictate that an open vent is used to eliminate the possibility of an explosion occurring due to rapid pressure rise in the system.

Econergy® units can be combined with wetback systems but only with strict constraints as the temperature limit on the Econergy® water heater is 80°C. The Econergy® water heater unit must be mounted level with the hot water cylinder or below, and the piping designed to eliminate a thermosyphon loop to stop the possibility of over temperature hot water circulating from the cylinder to the unit.

Solar Water Heating Systems

The Econergy® system cannot be used with a solar water heating system where the piping design allows a thermosyphon to develop.

Solar water heating systems, like wetback systems, are usually uncontrolled systems. Temperatures can rise to 100°C, boiling the water. As the Econergy® system is super-efficient it would not normally be required to integrate the unit with a solar water heating system, however, if this was specified or required by the customer then the piping design (as per wetback) must be designed to avoid thermosyphoning of high temperature water through the unit while not running.

Ring Main Management (Optional)

A ring main should not be used on an Econergy® cylinder setup without management unless it is operated from a separate cylinder. Ring main management is a software update that can be installed during production. A switch or PIR sensor(s) can be wired to the heat pump and the heat pump will control the ring main circulation pump (ring main pumps are not supplied as part of a typical Econergy® system unless specifically requested). Once the mechanism is triggered, the ring main pump will be activated for 60 seconds to flood the ring main with hot water. A minimal amount of hot water may be reintroduced back to the cylinder as a result. The ring main pump will then be locked out for 30 minutes regardless of additional triggers.

Hot Water Cylinders

The Econergy® water heater requires a well-insulated hot water to function correctly. The tank must be sized to the maximum anticipated draw off in an 8-hour period so that the consumer does not run out of hot water. As a guide, we recommend 300L for a family of four. The water heater unit can be retrofitted to any electric cylinder as long as it has PU or EPS insulation. Econergy® water heaters cannot be installed into gas HWC's as they are generally inefficient and there is no electrical backup.

Econergy Heat Pump Ready HWC—Recommended Storage Size		
Household Size #Adults	**Recommended Size**	**Ordering Code**
2	180L	EC180L
3	250L	EC250L
4–6	300L	EC300L
6+ / High Use	350L+	EC [capacity] L Custom

The Econergy® water heater cannot be retrofitted to gas hot water cylinders, or any storage tank that cannot deliver more than 50kPa pressure to the pump inlet.

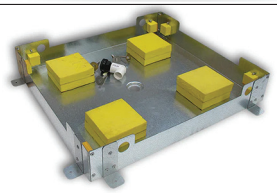
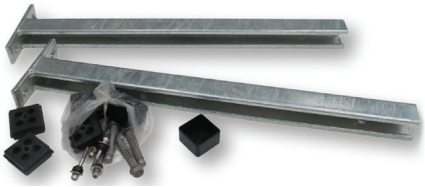
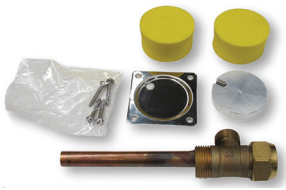
New Construction

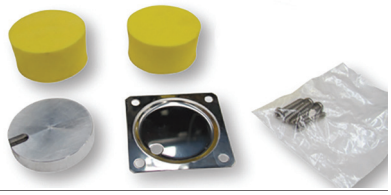
We recommend Econergy® heat pump ready hot water cylinders. Available in mains pressure stainless steel, these contain dual 20mm inlet fittings, dedicated 20mm return fittings and dual sensors integrated into the tank. They are guaranteed from the factory with a 10-year warranty. Use of Econergy® heat pump ready cylinders avoids any potential warranty issues from modification to fit sensor pockets.

Retrofit

Retrofit can be made to any electric hot water cylinder with PU or EPS in good condition by teeing into cold-water line just before the tank isolation valve and by fitting a tank outlet fitting (code HPTP) into the hot water outlet line. It is recommended not to fit a pressure relief valve to an old LP cylinder as this could cause leaks.

Ordering Econergy® Accessories

Part No.	Application	Picture
Outdoor Mounting Kit **HPOMK**	For mounting outdoors and under houses on flat surfaces	
Ceiling Mounting Kit **HPCMK**	For mounting in ventilated/ accessible ceiling cavities	
Roof Mounting Kit **HPRMK**	For mounting on colour steel roofs (specify Standard or Dimondek profiles)	
Wall Mounting Kit **HPWMK**	For mounting on concrete or concrete block walls (not suitable for timber or brick structures)	
Generic Retrofit Kit **HPGRK**	For retrofit to existing hot water cylinders	
Coopers Solar Ready Retrofit Kit **HPCRK**	For retrofit to Coopers Solar Ready Hot Water Cylinders	

Part No.	Application	Picture
Dux/Rinnai Retrofit Kit **HPTSK**	For retrofit to Dux Proflow and Rinnai Hotflow Hot Water Cylinders (aka Tank Sensor)	
Tank Pocket **HPTP**	Tank Pocket for retrofit to Rheem Stainless Solar Ready HWC	
Condensate Fitting **HPCDF**	For outdoor installations requiring a condensate drain (for ceilings use HPCMK instead)	

Installation

Standard Specifications

No.	Installation Component	Approved Specification
Plumbing Installation		
1	Piping systems from Heat Pump Unit to Hot Water Cylinder	15mm nominal bore piping (no more, no less) Dux or Buteline Polybutylene REHAU PE Kembla PEX Fusiotherm Copper AS/NZS compliant
2	Pipe Line Fittings	Dux Secura, REHAU, Fusiotherm, Kembla PEX or AS/NZS Standard DR brass fittings
3	Flexible Hoses	**NOT ALLOWED**
4	Ball Valves	Use only full flow 15mm tee handle valves. Bugatti, PWL, Econergy
5	Pipe Insulation	Min 13mm wall Armaflex or approved equivalent. All piping to be fully lagged along its length
6	Max Pipe Distance	9m flow 9m return
Electrical Installation		
1	Low Voltage Cable	CAT5 UTP, 24AWG and rated to 1 amp max
2	Main Cable	2.5 TPS, 2 x 2.5mm 2 + E compliant to AS/NZS5000.2
3	MCB	To suit electric back element rating. Max permissible 20A

Typical Installation Detail

Installation shall be made to and compliant with, the attached drawings.

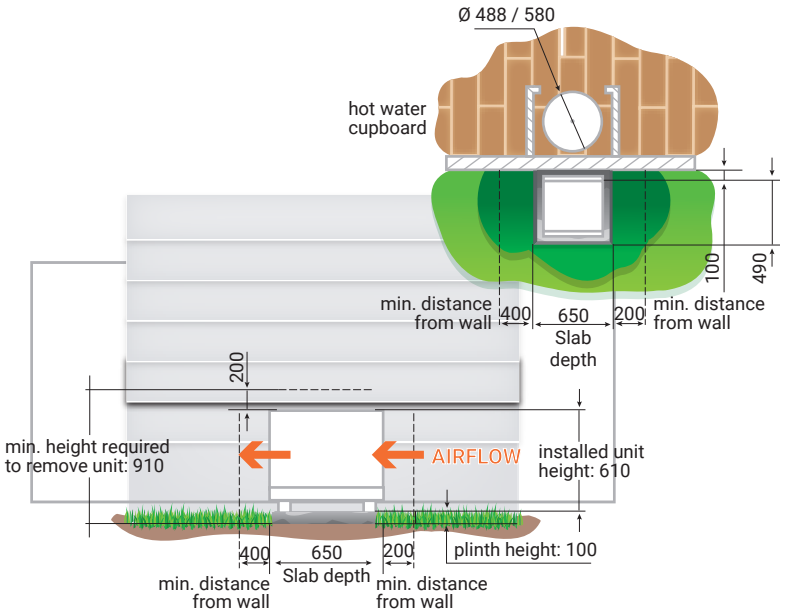


Figure 1: Typical Installation Detail—Indoor HWC/Outdoor Unit

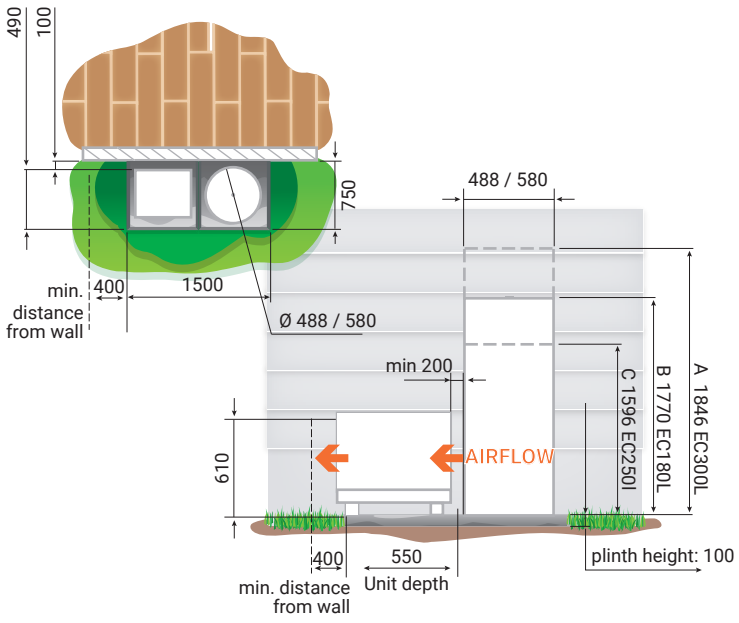


Figure 2: Typical Installation Detail—Outdoor HWC and Unit

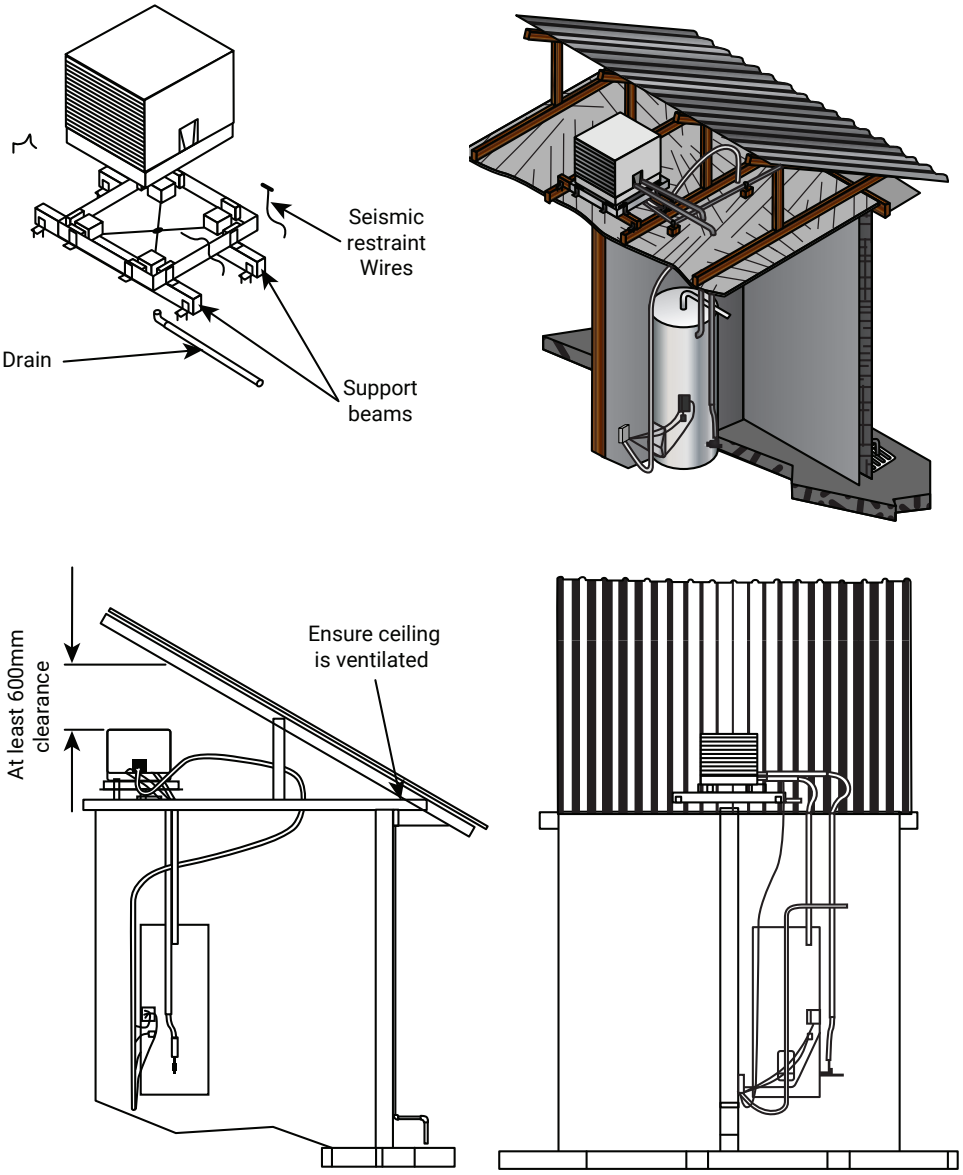


Figure 3: Typical Installation Detail—Roof Cavity

Installation Procedures

Adequate access and space for service must be allowed for all types of installation.

Mounting System

Outdoor Mounting

Use accessory **HPOMK**. Lay the unit on its side using the cardboard packing as protection. Attach the plastic mounting feet to the underside of the unit using the cap screws provided.

Ceiling Installation

Use only accessory **HPCMK**. Mount the ceiling tray in the roof space in a suitable location. The unit should then be placed on the drip tray and secured in place using the seismic restraints, which should be attached to the side of the unit and to the support beams.

***Please note**: Adequate access and room for service must be allowed for the tradesperson's safety and to prevent potential property damage. Any damage caused to private property due to incorrect installation, including damage caused whilst rectifying faults, is not covered under warranty.*

1. Ceiling access must be large enough to allow the heat pump to fit through it ***easily***.
2. A walkway must be installed from the access point to the heat pump to fit through it ***easily***.
3. The heat pump must be located on a platform at least 2m x 2m and a minimum height requirement at heat pump of 1500mm to allow working room around the heat pump.
4. A light of at least 12W LED must be installed above the heat pump.

Wall Mounting

Use Accessor **HPWMK**. Mount wall brackets using level, onto concrete block wall. Place anti-vibration mounts (supplied) onto wall brackets. Screw up into unit using 4 x capscrews (supplied).

Closed Garage Installations

Cold air leaving the unit must be ducted to the outside without loss of air flow. A fresh air supply must also be installed to ensure that the correct air flow through the heat pump is maintained.

1. Windows are insufficient for this purpose.
2. Ensure no objects can be placed within 500mm of the heat pump as this will reduce its efficiency.
3. Allow for drainage of water naturally produced by the cooling coil (evaporator) from within the heat pump.

Open Ended Garage Installations

The heat pump must be installed on brackets as high up to the ceiling as possible with louvres fitted to direct the cold air from the unit to fall to the floor. This allows the cold air to flow along the floor to the outside and the heat pump receives warmer air from under the ceiling which makes the unit considerably more efficient. The height at which the heat pump is installed must also allow the covers to be lifted vertically over the top of the unit for service and electrical installation.

Roof Mounting

Use accessory **HPRMK**. Mount roof brackets onto roof following instructions supplied with kit. Screw 2 x 50x50 AL angles (supplied) into side of unit. Place angles across mounting rails of roof mounting kit. Using M10 SS bolts (supplied), bolt down through anti-vibration mounts into spring nuts in channels.

Do not invert the outdoor unit to attach the mounting feet or at any other time during installation. This may cause damage to internal components and may void the warranty.

Do not wall mount the unit on any timber framed wall (with or without brick veneer).

***Please note**: If the heat pump is installed in a coastal situation, efforts should be made to protect the unit from salt spray to avoid premature corrosion.*

Pre-Wiring and Pre-Plumbing for Renovations and New Builds

This is required if piping and/or cables need to run through walls/floors/roof cavities, etc. Run 1 x Mains cable and 1 x CAT-5 UTP cable allowing an extra 2 metres free play at either end. Run 2 x 15mm pipes, fully insulated along their length.

A pre-made CAT-5/6 cable is required for installation of Econergy heat pumps.

Piping Diagrams

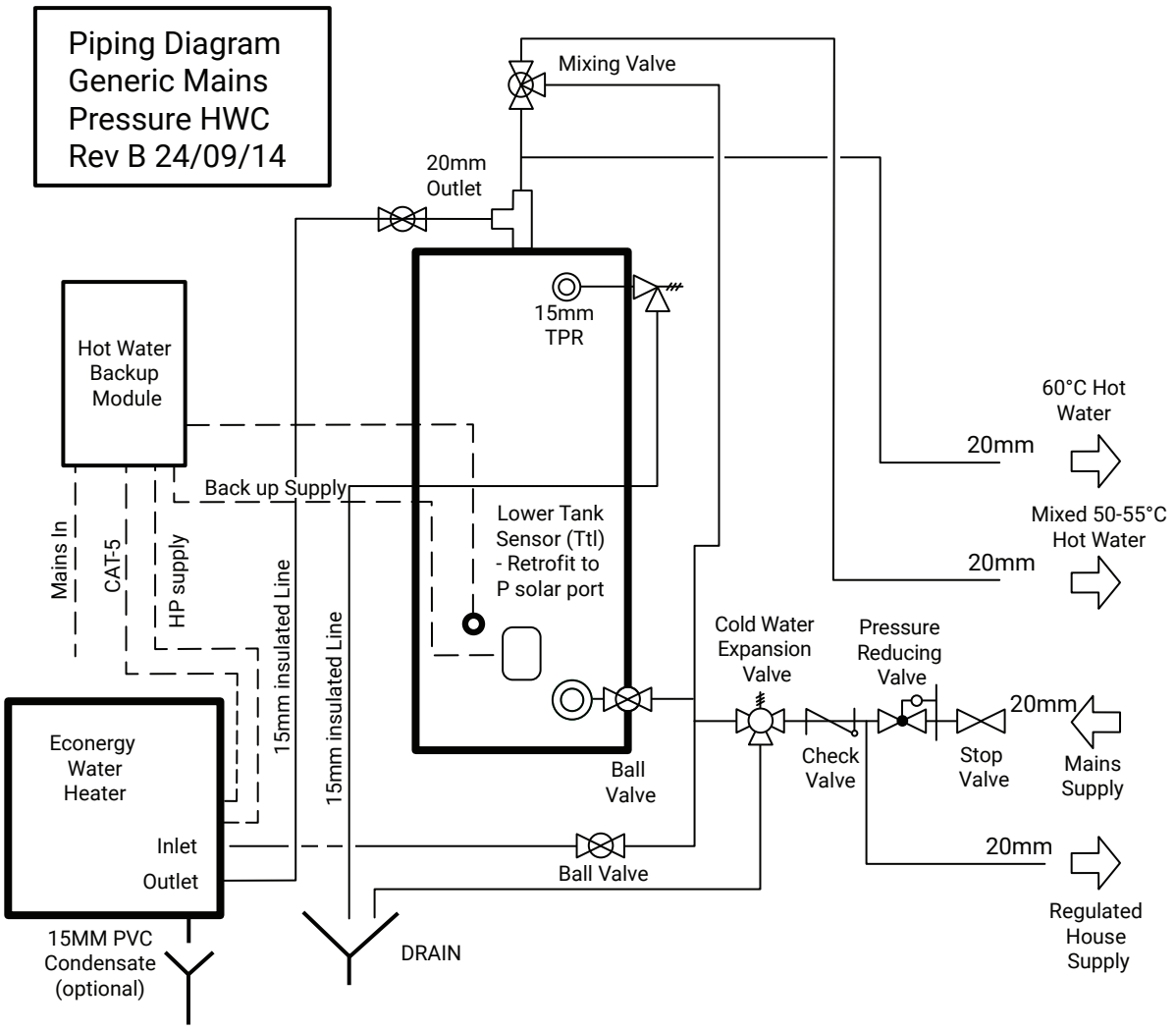


Figure 4: Retrofit to Generic Single Inlet Hot Water Cylinder (e.g. Rheem NZ)

Econergy® Accessories Required			
No	**Part Number**	**Description**	**Purpose**
1	HPGRK	Generic Retrofit Kit (comprises tank fitting and tank sensor kit)	Allows retrofit to any standard hot water cylinder

1. Cylinder must be post 1988 and in good condition.
2. Fitting of Tank Sensor Kit (HPTSK) may void HWC's manufacturer warranty.
3. Ensure minimum pressure of 50kPa met on low pressure installations (may require fitting of relief valve to open vent HWC).

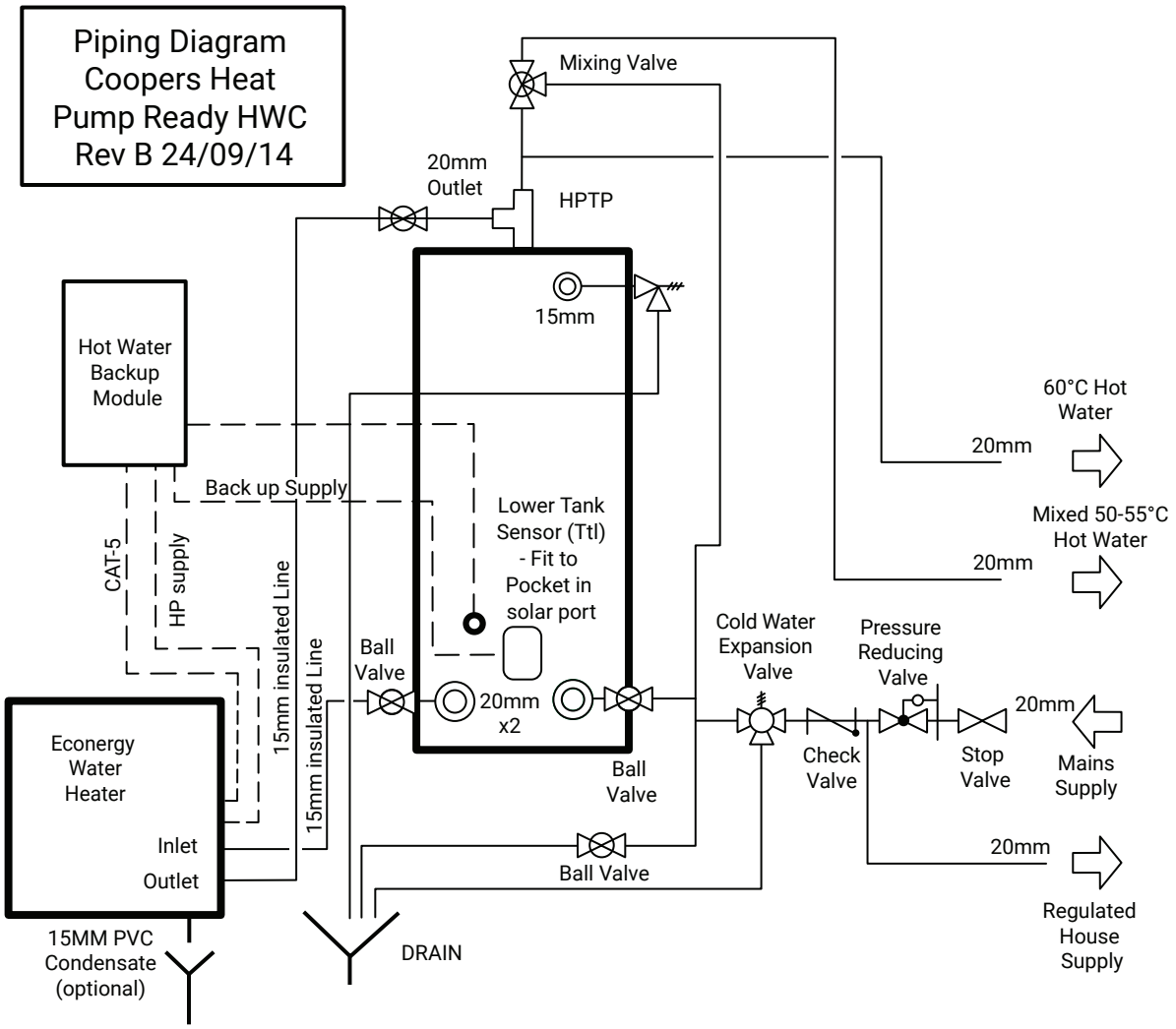


Figure 5: Retrofit to Coopers Ready Mains Pressure Hot Water Cylinder

Econergy® Accessories Required			
No	**Part Number**	**Description**	**Purpose**
1	HPCRK	Coopers (Solar Ready) Retrofit Kit	Comprises HPTF Tank Fitting and TPTP Tank Pocket

1. DO NOT connect return line to heat pump to solar connection!
2. Ensure minimum pressure of 50kPA met on low pressure installations (may require fitting of relief valve to open vent HWC).

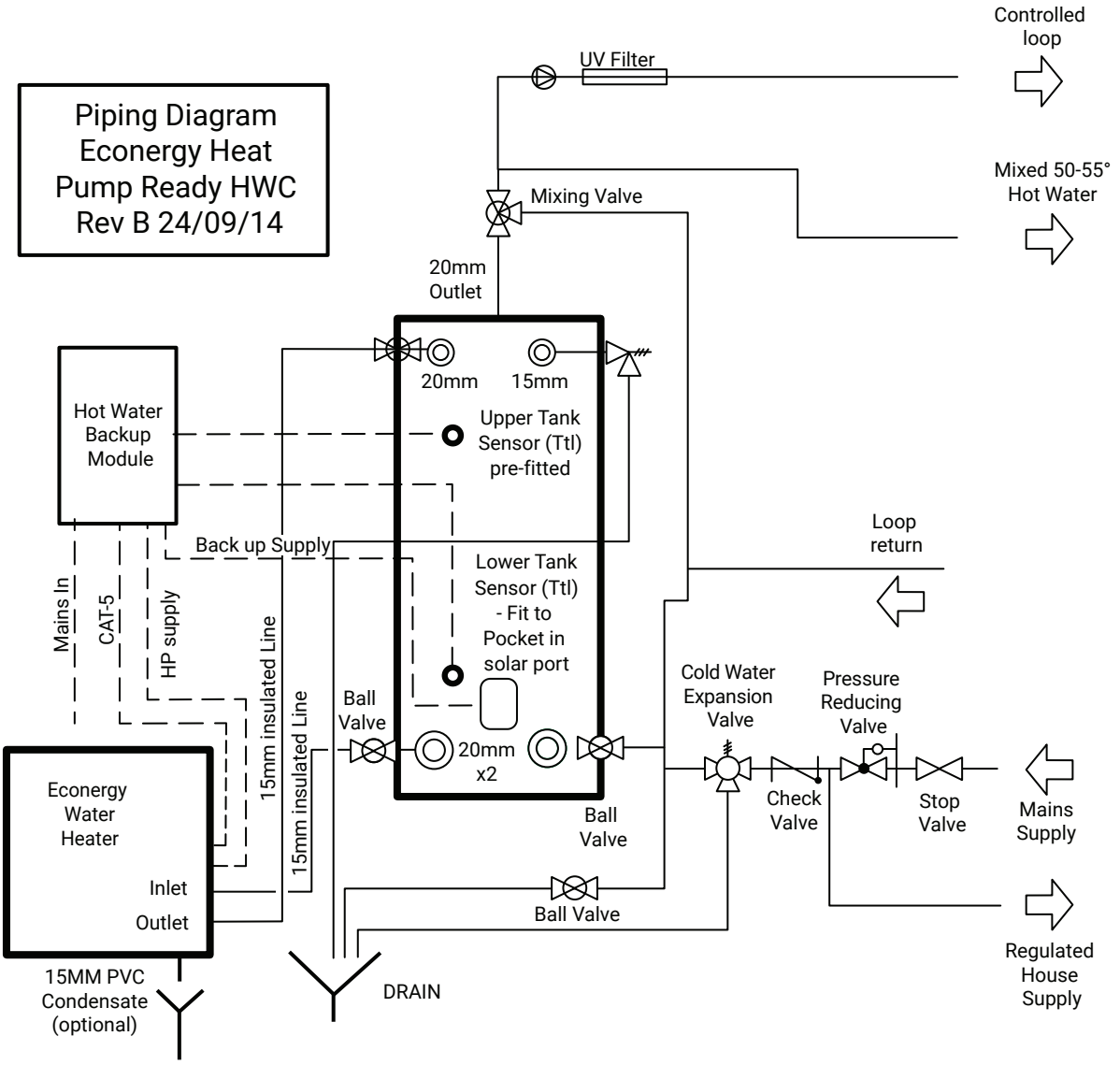


Figure 6: Connection to Econergy® Heat Pump Ready Hot Water Cylinder

No Econergy® Accessories Required

1. TPR valve is provided in element cover

Piping Instructions

Plumb Water Heater to Hot Water Cylinder

Plumb the water heater unit in accordance with the correct piping diagram to match the type of cylinder being connected to. Ensure inlet (blue) of heat pump is connected to bottom of HWC and outlet (red) of water heater is plumbed to top of the HWC. All plumbing to be carried out in accordance with AS.NZS 3500 and NZ BC Section G12.

Mount Hot Water Backup Run Electrical Cables

The hot water backup module (HWB) shall be mounted close to the hot water cylinder in a location that is easily visible to the hot water user. All wiring to be completed according to AS/NZS3000 and Field Wiring Diagram on page 29 of this manual. Fit isolators next to HWC and within 1 metre of the water heater unit in an easily accessible location. Run all cables from heat pump unit through conduit or trunking to the hot water cylinder location.

Tank Sensor Mounting

1. **Econergy® Hot Water Cylinder**. This comes with dual sensors, upper and lower. Insert the lower tank sensor into the pocket about 1/3 of the way up the HWC and secure with adhesive sealant. Take both sensors and plug them in to their respective locations in the hot water backup (HWB) module TTu/Tti.

2. **Coopers or Rheem Solar Ready Hot Water Cylinder**. The plumbing installer needs to thread a tank pocket into the solar port of the hot water cylinder and ensure there are no leaks. Apply thermal paste to the tank sensor and insert the tank sensor into the pocket. Secure the tank sensor with building adhesive or silicone sealant. Plug the tank sensor into the header marked J4 or Ttl on the circuit board of the HWB module.

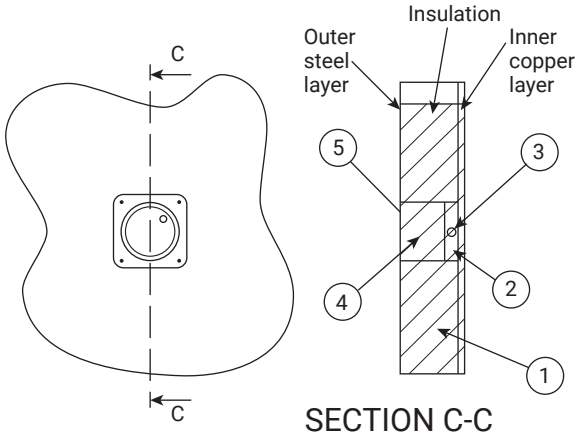
3. **Generic Hot Water Cylinder**. Drill a 51mm (½") diameter hole in the hot water cylinder jacket at a height ¼ (25%) of the way up the cylinder, when measured from the bottom.

Do not wall mount the unit on any timber framed wall (with or without brick veneer).

Apply thermal paste (supplied with Tank Sensor) to the tank sensor. Push tank sensor through the tank sensor cover and lodge it in the tank sensor mount.

Apply 9cc of thermal paste to the back of the tank sensor mount and place it in the drilled hole against the inside layer of the cylinder.

Adjust the foam core supplied, so that when inserted with the pocket into the hole, it protrudes by at least 10mm. Insert the tank sensor foam core and then attach the tank sensor cover using the screws provided. Pilot holes of 3.2mm (1/8” diameter will need to be drilled for these screws. Plus the tank sensor into the header marked J4 or Ttl on the circuit board of the HWB module.



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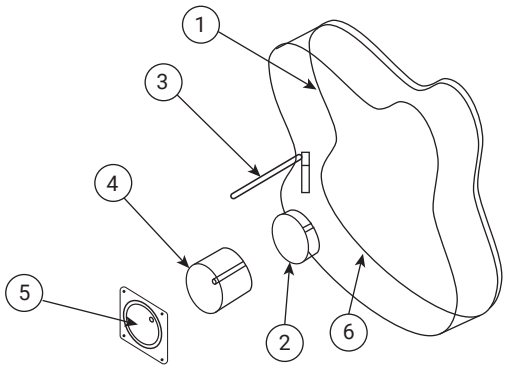


Item No	Description	Part No	Quantity
1	Hot Water Cylinder Wall	HPX-831	1
2	Tank Sensor Pocket	HPX-811	1
3	6m Sensor		1
4	Sylomer Insulating Core	HPX0832	1
5	Tank Sensor Cover	HPX-821	1
6	Thermal Paste		200ml

Electrical Connections

All electrical connections must be made by a licensed tradesman, according to the diagram on page 29. The appliance must be installed in accordance with AS/NZS 3000:2000.
A means for disconnection must be incorporated in the fixed wiring. A Certificate of Compliance must be issued by the installer.

Condensate Drain

Condensate drains must be run in the following cases:

1. Where the unit is discharging on a concrete path or other location where wetness/mould is not desirable; or

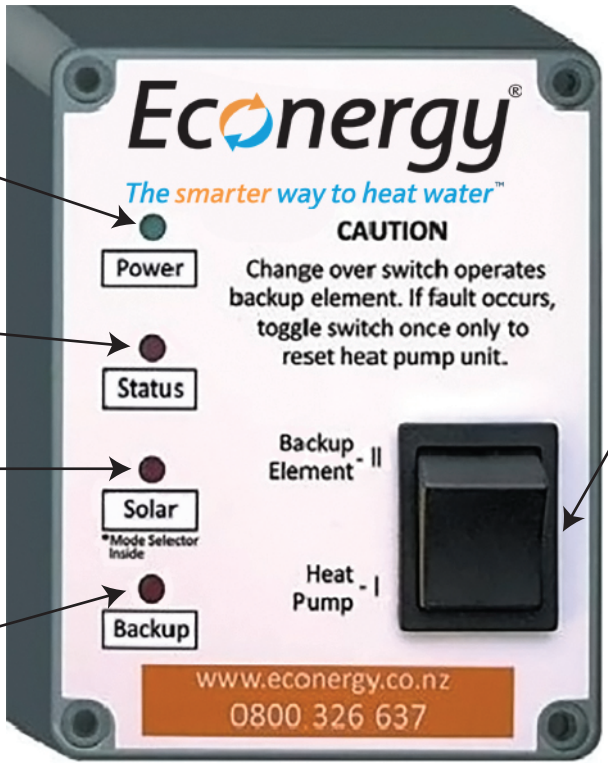
2. Where the unit is located in a ceiling cavity.

For Outdoor Mounting: Use **HPCDF** accessory. Remove the rear grille and mount the HPCDF into the punched hole at the bottom right rear of the water heater unit. Run PVC to the nearest drain location.

For Ceiling Mounting: Use drain fitting assembly supplied with **HPCMK**. Fit drain fitting to the tray. Run PVC pressure pipe from drain (for ceiling installs) down to the HWC drain or across to the soffit and down the wall. Do a leak test with water prior to leaving site.

Only Econergy® factory sensor cables provided with the unit shall be installed. Use of substitute sensor cables or splicing cables may void warranty.

Commissioning



Green light indicates that power is on to Econergy® HPWH

Glows red when heat pump is running, flashes if a fault is encountered

Red light indicates Solar Mode is active

Glows red if backup element has been switched on automatically

Allows user to manually turn element on if required.

Position 1: Power is on to ***Heat Pump***

Position 2: Power is on to ***backup element*** *(Note: manual switch doesn't turn on backup light.)*

- Fill system with water and leak test all connections at system pressure.
- Check all electrical connections and ensure that water heater is securely grounded to the building's earthing point.
- Ensure both the supply (cold water inlet) and return (hot water outlet) isolation valves are fully open during normal operation to prevent flow restrictions.

  Important: When filling the heat pump, always open the ***cold water inlet valve first***, and do so ***slowly***. This allows the unit to fill gradually, helping to prevent water hammer and protect the check valve from damage. Once the system has been completely filled and all air has been purged, ***slowly open the hot water outlet valve***.
- Loosen fitting on inlet water heater to heat pump until water flows from fitting. Close fitting.
- Connect laptop to RS232 extension cable on machine and open Econergy® Configuration Software (if installer has a copy of the software).
- Switch on Main Isolator and Heat Pump Isolator.
- The green power light should be lit on the Hot Water Backup Box located on the hot water cylinder.

Note: If the heat pump is connected to an off-peak power supply or “ripple control”, power may not be available at certain times of the day. We recommend temporarily running a mains supply to the main isolator to allow testing of the heat pump water heater in this case.

- After an 8-minute delay unit will start. The status light will glow solid red.
- The unit will preheat the water to 60°C which takes 3-5 minutes, then the hot water outlet connection will be hot to the touch.
- (If available.) Check that the unit has reached 60°C on the Econergy® installation software and the flow has stabilized.
- The unit will now heat the whole tank from the top down until the return temperature is 50°C.
- Tidy up installation.
- If there is time then check that the whole tank has heated successfully otherwise check back later and use the Econergy® Configuration Software to download the events log to ensure that the unit is operating as expected.

Legionella Control

The Econergy® HP4000LT is compliant with G12 3.5.1 C. There is a sanitation cycle, once a week for two hours. This engages the element which should be measured by a probe in the bottom 20% of the water tank (by volume) and no more than 150mm from the bottom of the water tank.

Troubleshooting

If the Econergy® water heating system is not working correctly as per the commissioning instructions, please refer to the following troubleshooting information.

Symptom	Possible Cause	Things to Check
Unit is not heating.	Isolation valves are closed.	Check valves in supply and return lines from water heater to HWC and open if closed.
	Airlock in system.	Close isolation valve going from water heater unit into top of HWC. Slacken fitting on outlet of water heater and purge for a minute or so. Close fitting, open valve and restart unit.
	Heat pump has lost refrigerant charge in transit.	Check 8mm pipe coming out of the top of compressor. After 5 minutes running it should be hot to touch. If not, the unit may have lost refrigerant. Call 0800 33 66 33 for service support.
No hot water, status indicator has lights off.	No power to hot water cylinder.	Check all switches are on, there is power to house and circuit breaker marked “hot water” is ON.
	Ripple control activated.	Either (a) temporary bridge out relay in board, OR (b) run temporary feed to heat pump to allow commissioning to occur.
Water temperature too low.	Temperature valve set incorrectly or malfunctioning.	Remove cap from top of tempering valve and screw in to increase water temperature.
	Partial loss of refrigerant or other sealed system malfunction.	Call 0800 33 66 33 for service support.

Symptom	Possible Cause	Things to Check
Unit stops running after less than 30 seconds of operation.	Indicates fault with thermistors of thermistor input on PCB or damaged CAT-5 cable.	Remove HWB panel and cover on main electrical box. Check that all sensors are plugged into their correct locations and the CAT-5 cable is securely plugged in and undamaged. If unit still stops use Configuration Software to determine which thermistor is out of spec and rectify accordingly.
Unit stops running after 10-15 minutes operation.	Likely indicates unit has cut out on high condenser temp event.	Check that ball valves are open. Close isolation valve going from water heater unit into top of HWC. Slacken fitting on outlet of water heater and purge for a minute or so. Close fitting, open valve and restart unit. If this fails, use Configuration Software to determine what is causing the unit to stop. Call 0800 33 66 33
Unit faults after heating entire tank.	Likely tank sensor mounting issue.	Ensure tank sensor is securely mounted in place. Rectify if required and retest.
Water is dripping from rear of unit (behind finned evaporator).	This is normal as the unit will remove moisture in the air above 70% RH.	No action required.

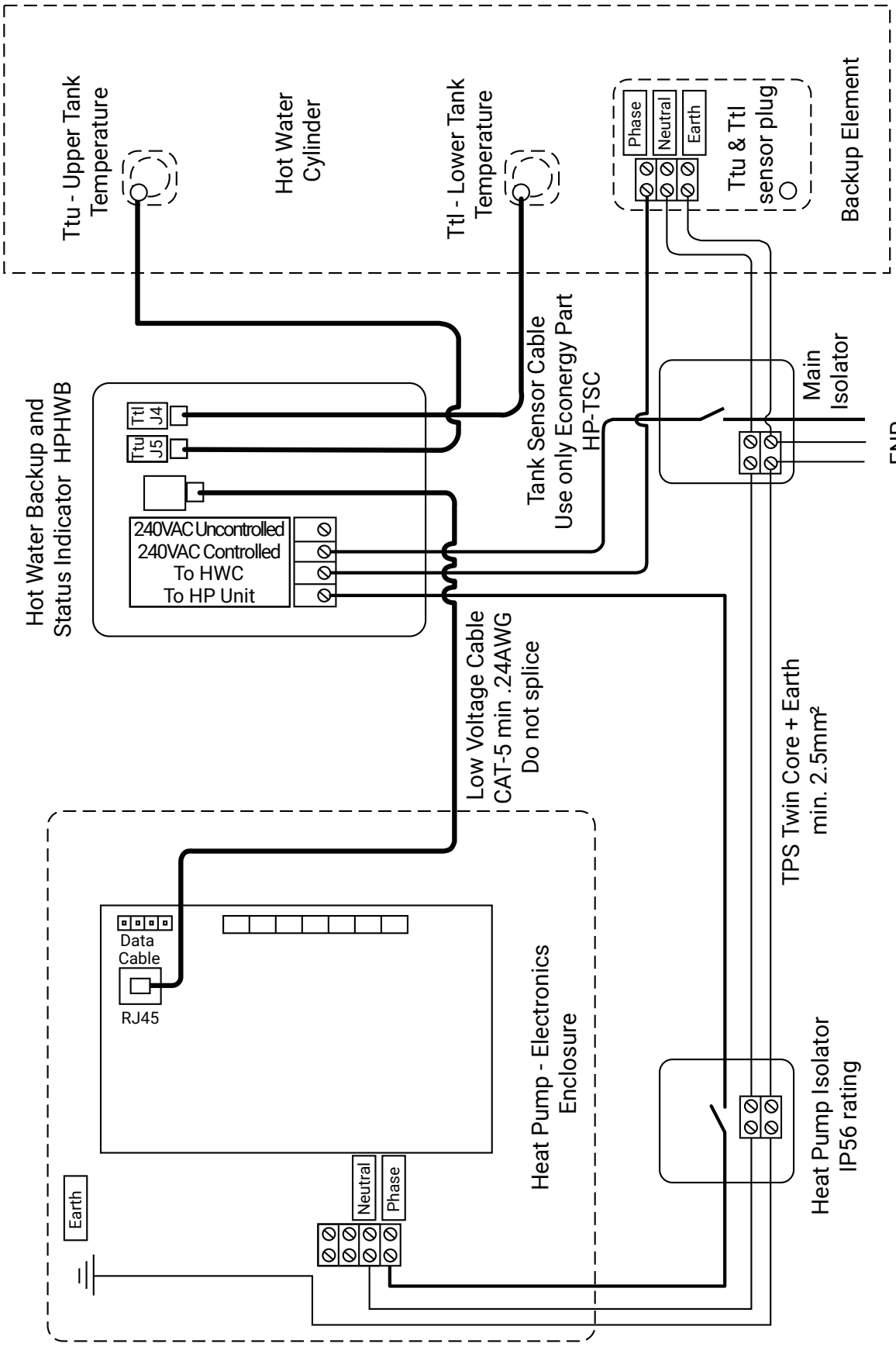
If you suspect a serious fault or if the issue persist, please contact Hot Water Heat Pumps Ltd at 0800 33 66 33 for servicing.

Important Information

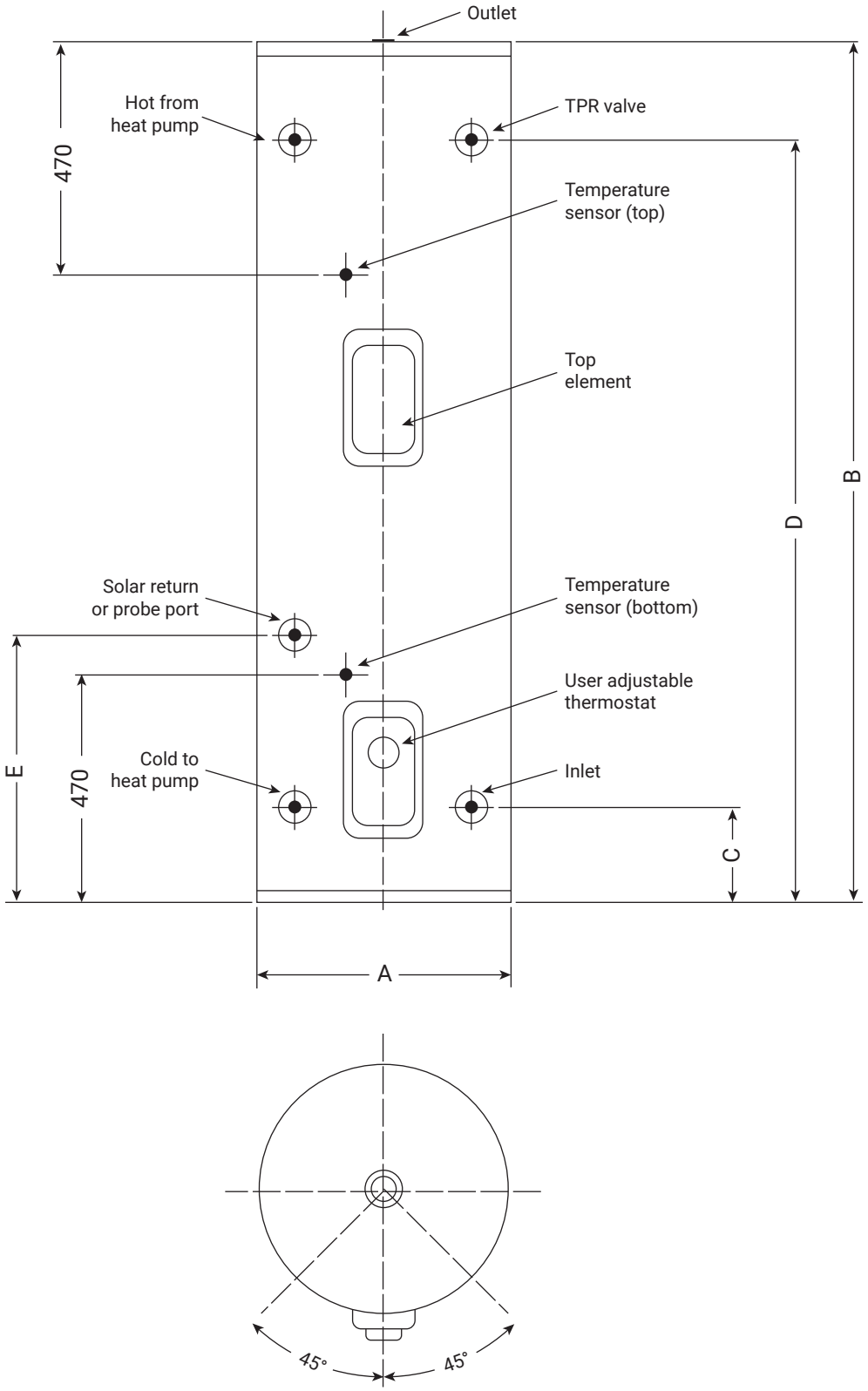
- This product has a classification of 6.101 for appliances not accessible to the general public.
- The appliance is not intended for use by young children or infirm persons without supervision.
- Young children shall be supervised to ensure they do not play with the appliance.
- If the supply cord is damaged, it must be replaced by the manufacturer or its service agent.
- The fuse on the electronic controller is 6A/250V. This should only be replaced by a qualified electrical service technician or electrician.

Hot Water Backup Box (HWB) is not IP rated. If installed outside it MUST be put in an IP rated enclosure.

Field Wiring Diagram



Typical Heat Pump Ready Water Cylinder Product Specifications



Technical Data Table Direct Cylinders — Econergy®				
Model Number		EC180L	EC250L	EC300L
Total storage capacity		181L	252L	295.5L
Storage Capacity above Top Element		85L	136L	160L
Storage Capacity at 470mm from Cylinder Jacket Top (Temperature Sensor)		43L	60L	60L
Storage Capacity at 470mm from Cylinder Jacket Bottom (Temperature Sensor)		44L	59L	59L
Weight Empty		37.5kg	51.5kg	61kg
Inlet/Outlet Connections		RP ¾"/20		
Solar/HP Feed Connection		RP ¾"/20		
Solar/HP Return Connection		RP ¾"/20		
T&PR Valve Connection		RP ½"/15		
T&PR Vavle Setting		1000KPa	1000KPa	1000KPa
Dimensions	A	488mm	580mm	580mm
	B	1770mm	1596mm	1846mm
	C	200mm	165mm	165mm
	D	1575mm	1418mm	1668mm
	E	550mm	565mm	565mm
Element Rating (Factory Fitted)		3.0kW	3.0kW	3.0kW
Top Element Rating (Kitset)		2.0kW	3.0kW	3.0kW

Econergy® HP Series Water Heater Specifications

General	HP4000LT
Height	520mm
Width	490mm
Depth	550mm
Weight	50kg
Noise rating @ 1.5m	52 dBA
Circuit Breaker	16 amps
Rated Current RLA	4 amps
Refrigerant	R134A
Refrigerant Quantity	580gm
Ambient Air Temperature	-5°C – 40°C

Performance Specifications*	HP4000LT
Heat output	3600W
Rated input	1000W
Recovery rate	67L/hr
Efficiency (COP)	3.8W/W

Water/Connections	HP4000LT
Min Supply Pressure	50kPa
Max Supply Pressure	800kPa
Min/Max Inlet Water Temperature	5°C – 50°C

Water/Connections	HP4000LT
Flow/Return Connections	RP½”/15mm
Condensate Drain	15mm
Max Total Dissolved Solids	250mg/L
Max Saturation Index	+0.80

*Rated at Conditions (25°C/15°C/60°C/70°C) (Cold Water/Ambient Air/Hot Water/70%RH).

Company Information

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