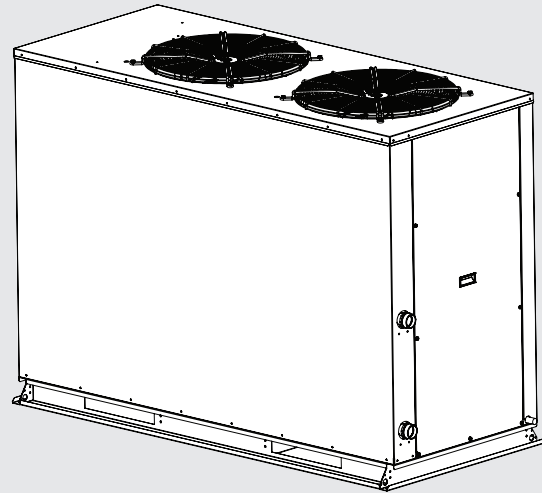
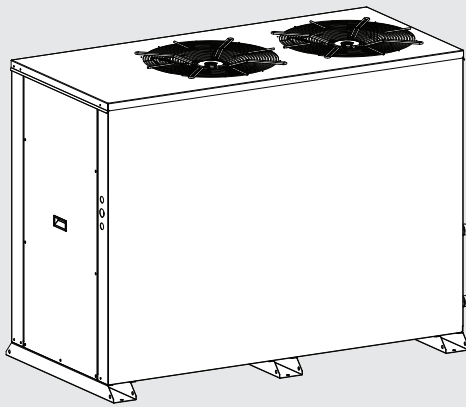


MODELS

CHP025

CHP050



Commercial Air to Water Heat Pump

Operation & Installation Manual

Rinnai



BEFORE USING THIS APPLIANCE

Before proceeding with the operation or installation read this manual thoroughly and gain a full understanding of the appliance, to ensure safe and correct use.

IMPORTANT NOTICE FOR INSTALLERS

Please leave these instructions with the end user after commissioning of the system and alert the end user of the content sections "Warnings and "Periodic Inspection" and "Maintenance".

- This appliance must be installed in accordance with:
- Manufacturer's Installation Instructions
- Current AS/NZS 3500 National Plumbing and Drainage
- AS/NZS 3000 Wiring Rules and AS/NZS Electrical Installations
- AS/NZS 60335.2.40 Electrical Heat Pump Safety
- AS/NZS 5149 Refrigerating System and Heat pump Safety
- Plumbing Code of Australia (PCA)
- Building Codes of Australia (BCA)
- Local Regulations and Municipal Building Codes including local OH&S requirements

These products comply with the lead-free requirements of the National Construction Code – Volume 3.

This system must be installed, commissioned, serviced, maintained and removed **ONLY** by an Authorised Person.

NOT SUITABLE AS A POOL OR SPA HEATER

For continued safety of this appliance it must be installed and maintained in accordance with the manufacturer's instructions.



This Appliance complies
with current AS 3498
LIC. WMKA00169



FLAMMABLE REFRIGERANT R290

This appliance contains R290 propane refrigerant, which is a flammable gas.

The appliance **MUST** be stored, transported, installed, operated and serviced in accordance with AS/NZS 5149 and all applicable local regulations.

The appliance **MUST** be stored and transported in a well-ventilated area without continuously operating ignition sources, such as open flames, operating gas appliances, electric heaters or other potential sources of sparks.

DO NOT pierce, burn, or otherwise damage the appliance or refrigerant circuit.

Be aware that refrigerants may not contain an odour.

Installation and servicing **MUST** only be carried out by suitably qualified personnel trained in handling flammable refrigerants.

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WARNINGS AND IMPORTANT INFORMATION

SAFETY AND REGULATORY INFORMATION



DO NOT operate this system before reading the manufacturers instructions.

This appliance must be installed, commissioned and serviced by an authorised person in accordance with all applicable local rules and regulations.

Access covers of water heating system components will expose 415V wiring and **MUST** only be removed by an authorised person.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless given supervision or instruction concerning use of the appliance by a person responsible for their safety.

For continued safety of this appliance it must be installed, operated and maintained in accordance with the manufacturer's instructions.

Supervision is required at all times to ensure the appliance is not played or interfered with.

The power mains must have a circuit breaker and it must be adequate for unit FLA. If the electrical supply cable is damaged, it **MUST** be isolated immediately and replaced by a qualified electrician. The cable **MUST** be hard-wired and installed in conduit. **DO NOT** touch the power connections or plugs with wet hands.

Avoid contact with any pipework, as surfaces may be hot and could cause burns.

DO NOT place articles on or against this appliance.

DO NOT store chemicals or flammable materials near this appliance.

Caution must be taken when working on the system with covers removed.

DO NOT activate heat pump unless storage tank and cylinder is full of water.

NEVER use flammable spray such as hair spray, paint, etc near this unit as this may cause a fire.



DO NOT install the appliance near any ignition sources, including electrical switches, relays, motors, contactors, air conditioning units, gas appliances, open flames, pilot lights, or any equipment that may produce sparks, heat, or flames.

This appliance uses R290 (propane) refrigerant, which is a flammable gas class 3 according to AS 5149 and **MUST** be handled by a refrigeration mechanic with appropriate Australian refrigerant handling licence. Refer to AS/NZS 60335.2.40 for flammable refrigerant handling requirements.

If the refrigerant is leaked, together with an external ignition source, there is a possibility of ignition and/or explosion.

At end of service life, before disposal, a qualified refrigerant handler must recover the refrigerant. Do not vent to atmosphere. Contact Rinnai Customer Support to arrange an inspection.



MANDATORY INSPECTION PRIOR TO INSTALLATION

Immediately report any damage or discrepancies to the supplier. The appliance was inspected and tested prior to shipment with no known damage. Upon receipt, inspect the exterior for shipping damage and confirm the rating labels match the intended gas, electrical, and other services.

For safety and warranty purposes, appliances that may be damaged or incorrect **MUST NOT** be installed or operated under any circumstances. Installation of damaged or incorrect appliances may contravene local government regulations. Rinnai disclaims any liability or responsibility whatsoever in relation to the installation or operation of damaged or incorrect appliances.

NOTICE TO VICTORIAN CONSUMERS

This appliance must be installed by a person licensed with the Victorian Building Authority.

Only a licensed person will have insurance protecting their workmanship.

So make sure you use a licensed person to install this appliance and ask for your Compliance Certificate.

For further information contact the Victorian Building Authority on 1300 815 127



The illustrations used in this manual are for explanatory purposes only and the shape of your unit may vary slightly from that which is shown in this manual.

TRANSPORT AND STORAGE OF APPLIANCE



The refrigerant used in the heat pump (R290 Propane) is a flammable gas.

The appliance(s) shall be stored and transported in an area without ignition sources (for example: open flames, an operating gas appliance or an operating electric heater)

DO NOT pierce or burn the appliance.

Be aware that refrigerants may not contain an odour.

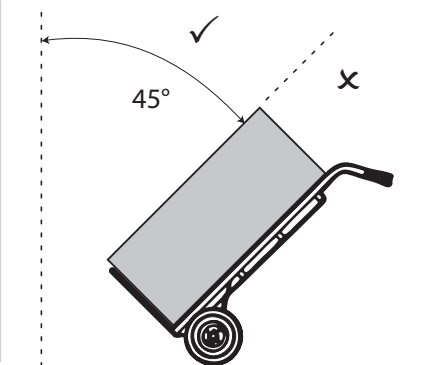
Compliance with AS/NZS 5149 **MUST** be observed while storing the appliance.



National and state regulations exist for storage, handling and transport of hazardous goods including flammable gasses. The maximum number of pieces of equipment or the configuration of the equipment, permitted to be transported or stored together will be determined by the applicable regulations.



DO NOT TILT MORE THAN 45° FROM VERTICAL



Commercial Heat Pump (CHP) must be transported at an angle no greater than 45° from vertical. If the unit is tilted beyond this limit, compressor lubrication oil may flow out of the compressor, resulting in insufficient lubrication of the compressor mechanism and potential premature compressor failure.

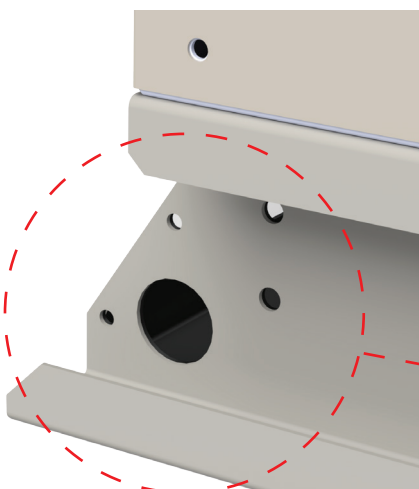
It is recommended to keep the unit in an upright position at all times to minimise risk.

Exceeding a 45° tilt may also place undue stress on the compressor mounting points and associated pipework, increasing the risk of damage.

LIFTING

Unit weights and dimensions are detailed in the section “System Specifications” on page 13.

Use an appropriate tonnage forklift or crane to lift the unit to its installation position. During lifting, the unit **MUST** be kept upright and not dropped to avoid unit damage or human injuries. Slings may be inserted to the lifting points however, spreader bars **MUST** be used over unit to prevent sling or chain damage. Lifting holes are provided on foot corners of the unit as illustrated below .

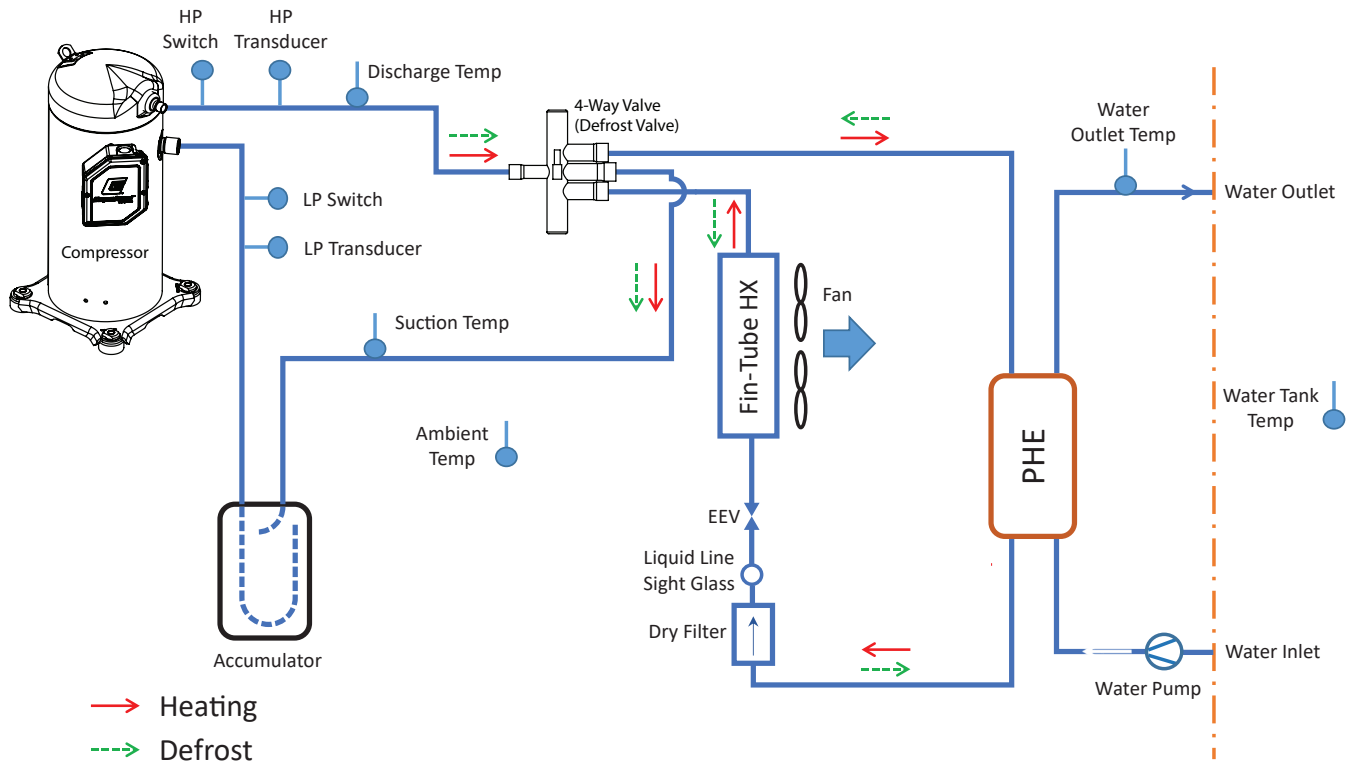


OPERATION PRINCIPLE

An electric heat pump works like a refrigerator in reverse, transferring heat from outside air into the water. Electricity powers the system rather than heating the water directly, so it uses far less energy than an electric element system.

Efficiency is highest in warmer climates. A circulation pump draws water from the bottom of the tank and returns it heated. A tank temperature sensor controls operation.

When ambient conditions are unsuitable, an auxiliary booster (if fitted) maintains hot water supply.



To meet requirements of the National Plumbing Standard the temperature of the stored water has been set to 65°C.

This water heater can deliver water at temperatures which can cause scalding. Check the water temperature before use, such as when entering a shower or filling a bath or basin, to ensure it is suitable for the application and will not cause scald injury.

To reduce the risk of scald injury, we recommend and it may also be required by regulations that an approved temperature limiting device be fitted into the hot water pipework to the outlets when this water heater is installed.

Refer to "Scald Hazards" on page 8 for additional details.

SCALD HAZARDS



HOT WATER CAN CAUSE SCALDS.

CHILDREN, DISABLED, ELDERLY AND THE INFIRM ARE AT THE HIGHEST RISK OF BEING SCALDED.

FEEL WATER TEMPERATURE BEFORE BATHING OR SHOWERING.

SCALDS FROM HOT WATER TAPS CAN RESULT IN SEVERE INJURIES TO YOUNG CHILDREN.

SCALDS OCCUR WHEN CHILDREN ARE EXPOSED DIRECTLY TO HOT WATER WHEN THEY ARE PLACED INTO A BATH WHICH IS TOO HOT.

ALWAYS.....

Test the temperature of the water with your elbow before placing your child in the bath, also carefully feel water before bathing or showering yourself.

Supervise children whenever they are in the bathroom.

Make sure that the hot water tap is turned off tightly.

CONSIDER.....

Installing child proof tap covers or child resistant taps (both approaches will prevent a small hand being able to turn on the tap).

Installing tempering valves or thermostatic mixing valves which reduce the hot water temperature delivered to the taps. Your local plumbing authority may already require that these be fitted. Contact your installer or local plumbing authority if in doubt.

NEVER....

Leave a toddler in the care of another child. They may not understand the need to have the water temperature set at a safe level.

SAFETY DEVICES

The water heating system is supplied with various safety devices including temperature sensors, overheat sensors and switches and a Pressure & Temperature Relief (PTR) valve. These devices must not be tampered with or removed. The water heating system must not be operated unless each of these devices is fitted and is in working order.



DO NOT tamper with or remove safety devices.

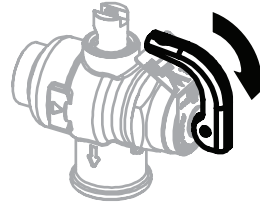
DO NOT operate the water heater unless all safety devices are fitted and in working order.

DO NOT block or seal the PTR Valve and drain pipe.

Pressure & Temperature Relief (PTR) Valve

This valve is located near the top of the water storage tank and is essential for safe operation. It is normal for the valve to release a small quantity of water through the drain line during heating.

However, continuous leakage of water from the valve and its drain line may indicate a problem with the water heater.



Lift lever until water flows from drain line (Lower lever gently!)



NEVER block the outlet of the PTR valve or it's drain line for any reason. The easing gear **MUST** be operated at least every 6 months to remove lime deposits and verify that it is not blocked. Failure to do this may result in the water heater failing.

If the valve does not discharge water when the easing gear lever is opened, or does not seal again when the easing gear is closed, attendance by an authorised person **MUST** be arranged without delay. The PTR valve is not serviceable.

EXCESSIVE DISCHARGE FROM SAFETY DEVICES

Pressure & Temperature Relief (PTR) Valve

It is normal and desirable that this valve allows a small quantity of water to be discharged during the heating cycle. If it discharges more than a bucket of water during a 24 hour period or discharges continuously there may be another problem.

If the valve dribbles continuously, try easing the valve gear for a few seconds as described above. This may dislodge any foreign matter and alleviate the problem.

A constantly leaking or high-flow discharging Pressure & Temperature Relief (PTR) Valve, particularly at night, may be caused by mains water pressure exceeding the allowable operating or design pressure of the water heater. If this occurs, a Pressure Limiting Valve (PLV) may need to be fitted. Refer to "Specifications" on page 13



NEVER replace the PTR valve with one which has a higher pressure rating than is specified for your water heater.

Expansion Control Valve (ECV) - if required

It is normal that this valve allows a small quantity of water to be discharged during the heating cycle. If it discharges more than a bucket of water during a 24 hour period or discharges continuously there may be another problem.

If the valve leaks continuously, try easing the valve gear for a few seconds. This may dislodge any foreign matter and alleviate the problem. If this does not alleviate the problem contact Rinnai.

Operate the easing gear regularly to remove any lime deposits and to verify that it is not blocked.

HYDROGEN GAS

If the hot water unit is not used for two weeks or more, a quantity of hydrogen gas, which is highly flammable, may accumulate in the water heater. To dissipate this safely, it is recommended that a non electrically operated hot tap be turned on for two minutes at a sink, basin, or bath, but not a dishwasher or other appliance. During this procedure there must be no smoking, open flame or any electrical appliance operating nearby. If hydrogen is discharged through the tap, it will probably make a sound like air escaping.

TURNING OFF THE WATER HEATING SYSTEM

If you plan to be away for only a few nights, we suggest you leave the water heating system switched on. If it is necessary to switch off the water heater, do so as outlined below:



DO NOT turn power off to the heat pump unit if snow or frost conditions are expected as components in the system may be damaged by freezing. If power needs to be turned off or power failure occurs and freezing conditions are expected, the water needs to be drained from the heat pump unit. Follow the procedure described below in the section the section 'Draining' on page 10.

TURNING ON THE WATER HEATING SYSTEM

Turn on the electrical supply to the heat pump unit to initiate normal operation. Once powered, the system will automatically begin the water heating cycle when required based on demand and set temperature. Depending on the starting water temperature and ambient conditions, it may take several hours for the tank to reach full operating temperature and for hot water to become available.

DRAINING PROCEDURE

Arrange for an authorised person to carry out this task.

Procedure: Draining a Commercial CHP (Heat Pump) Hot Water Tank.

Step 1. Isolate electrical supply

Turn OFF and isolate power to the CHP unit. Confirm the system is not operating.

Step 2. Shut off water supply

Close the cold water inlet valve to the storage tank.

Step 3. Relieve system pressure

Open a hot water tap at a downstream outlet to release pressure from the tank.

Step 4. Connect drain hose

Attach a suitable hose to the tank drain valve and direct it to a suitable drainage outlet.

Step 5. Drain the tank

Open the drain valve and allow the tank to empty fully.

Step 6. Maintain airflow if required

If draining slows, open a hot water tap to allow air into the system and maintain flow.

Step 7. Complete and secure

Once empty, close the drain valve, remove the hose, and ensure all isolation valves remain closed until recommissioning.

MAINTENANCE AND REGULAR CARE

Operate the easing gear of the PTR and the ECV if fitted as described in the section 'Safety Devices' on page 9.

The overflow tray (supplied by installer) and drain underneath the storage cylinder (if fitted) should be periodically checked to ensure there are no blockages.

SAVE A SERVICE CALL

Rinnai's servicing network personnel are fully trained and equipped to give the best service on your Rinnai appliance. If your appliance needs service, ring one of the service contact numbers on the back of this booklet.

The pressure and temperature relief valve and expansion control valve (if fitted) must be replaced by an authorised person at intervals not exceeding 5 years or more frequently in areas where the water is classified as scaling water.

If the electrical supply cable is damaged, it must be isolated immediately and replaced by a qualified electrician. The cable is hard-wired and installed in conduit, not a plug-in power cord.

Use the following guide to avoid the need for an unnecessary service call.

INSUFFICIENT OR NO HOT WATER	
Heat Pump Unit Not Powered	Check to ensure the electric isolating switch at the switchboard (usually marked "Hot water" or "Water heater" is turned on. (note that the compressor will not start up for 1 minute after power is turned on).
Power is on but heat pump never gets started	If only one light is lit on Phase Failure Relay (inside switchboard): • Check 3 phase order from isolating switch to heat pump. • Check that the voltage imbalance between phases is less than 15%. • Check 3 phase fail relay if broken. (Applica APP will show 'OFF by remote DI' if only one light is lit) If refrigerant leak indication light is lit (located at front right corner): • Carefully check for any refrigerant leakage. Open front service door and ventilate the area until the refrigerant indication light turns off. • Check refrigerant leak detector connection. Refer to electric diagram located on the back of access door. • Check refrigerant leak detector if broken. (Applica APP will show 'OFF by remote DI' if the indication light is lit)
Pressure & Temperature Relief (PTR) Valve continually discharging water	It is normal and desirable that this valve allows a small quantity of water to be discharged during the heating cycle. If it discharges more than a bucket of water during a 24 hour period or discharges continuously there may be another problem. If the valve dribbles continuously, try easing the valve gear for a few seconds as described in the section 'Excessive Discharge from Safety Devices' on page 9. This may dislodge any foreign matter and alleviate the problem. A constantly leaking Pressure & Temperature Relief (PTR) Valve may be caused by mains water pressure exceeding the allowable operating limit, resulting in continuous discharge from the PTR valve. If this occurs, a Pressure Limiting Valve (PLV) may be required.
Expansion Control Valve (ECV) continually discharging water	It is normal and desirable that this valve allows a small quantity of water to be discharged during the heating cycle. If it discharges more than a bucket of water during a 24 hour period or discharges continuously there may be another problem. If the valve leaks continuously, try easing the valve gear for a few seconds as described in the section 'Excessive Discharge from Safety Devices' on page 9. This may dislodge any foreign matter and alleviate the problem. If this does not alleviate the problem contact your installer.
Ambient conditions too hot	To protect the components of the heat pump unit it may not operate when the ambient temperature is higher than 50°C. The auxiliary booster if installed, will operate if water heating is required, but may take longer to heat the water.
Ambient conditions too cold	To protect the components of the heat pump unit, it may not operate when the ambient temperature is less than -5°C. The auxiliary booster if installed, will operate if water heating is required, but may take longer to heat the water.

NO WATER FROM THE TAP	
Restriction in the hot tap or failure of the cold water supply to the water heater	Check for water flow at the other taps and that the cold water isolation valve is fully open.
HIGH ELECTRICITY BILLS	
Excessive hot water consumption	See entry under the heading 'Insufficient or no hot water'
High Electricity Tariffs	The electricity tariff will determine the running costs of the system. It is important the end user is aware of the applicable tariffs. Contact your electricity supplier to confirm what these tariffs are.
Higher Element Usage	In extremely cold conditions the element may be operating more than normal.
WATER FLOW FLUCTUATIONS	
High demand of hot water at the same time	High demand of hot water in use at the same time may cause a decrease in the hot water flow from the taps. Check total heating capacity of water heaters meets the highest demand of hot water in the building.
WATER HAMMER	
Hot and cold water plumbing in the premises	Have a plumber check clipping of hot and cold water pipe work and install a pressure limiting valve and water hammer arrestor as required.
HEAT PUMP ICES UP	
Defrosting function	The heat pump has a built in reversing defrosting function which may operate and remove any ice.
HEAT PUMP ERROR INDICATOR	
Red alarm code is showing on the Display	This will appear if an error is detected with the heat pump operation, please call Rinnai for assistance if this should occur.

SPECIFICATIONS

SYSTEM SPECIFICATIONS

Model	-	CHP025	CHP050
Voltage/Phase	-	400-415V/3Ph+N/50Hz	
Heating Capacity ^[1]	kW	25	50
Power Input ^[2]	kW	5.7	11.9
COP	-	4.4	4.2
Rated Load Amps per phase ^[3]	A	15.5	32.5
Full Load Amps per phase ^[4]	A	18.5	38.5
Minimum D-curved Circuit Breaker Size	A	20	40
Conductor Cross-sectional Area	-	Refer to AS/NZS 3000 & AS/NZS 3008	
WaterMark Certified	-	Yes	
Operating Range (ambient)	°C	-5 ~ 50	
Refrigerant System	Type	R290	
	No. of Circuits	1	
	Charge (kg)	1.75	3.5
Compressor	Type	Scroll	
	Qty	1	
Fan	Type	Hybrid Axial	
	Speed Control	Variable Speed	
	Qty	2	
Air Heat Exchanger	Type	High Corrosion Resistance Hydrophilic Fin-tube	
	Qty	1	1
Nominal Airflow	L/s	2500	4750
Water/Refrigerant Heat Exchanger	Type	Double Wall Stainless Steel 316L	
	Qty	1	1
Throttle	-	Electronic Expansion Valve	
Defrost	-	Reverse Operating	
Sound Pressure Level @3m	dB(A)	57	60
IP Grade	-	IPX4	
Rated Water Flow Rate	L/m	54	120
Water Pump	Model	CM 3-2	CM 10-1
	Power Supply	1PH 230V~50Hz	
Pressure Drop Inside Unit	kPa	35	45
Available Outer Water Head	m	9	8
Water Connections	-	R 1¼ MBSP	R 2 MBSP
Rated Water Pressure	kPa	1000	
Supply Water Pressure Maximum	kPa	800	
ECV Fitted	Fit PLV if mains pressure exceeds	680 kPa	
	Recommended PLV pressure rating	500 kPa	
ECV Not Fitted	Fit PLV if mains pressure exceeds	800 kPa	
	Recommended PLV pressure rating	500 kPa	
Maximum Return Water Temperature	°C	65	
Maximum Outlet Water Temperature	°C	70	
Dimensions	Height (mm)	1079	1505
	Width (mm)	780	928
	Length (mm)	1550	2052
Nominal Weight ^[5]	kg	237	413

[1] Test condition: 20°C ambient / 60% RH. 39°C water in / 45°C water out

[2] Water pump power is not included

[3] R.L.A - Run Load Amps are based on current drawn at nominal conditions @ 65°C water temp

[4] F.L.A - Full Load Amps are based on overload settings (max current) of all compressor, fan motor(s) and pump(s) @65°C water temp

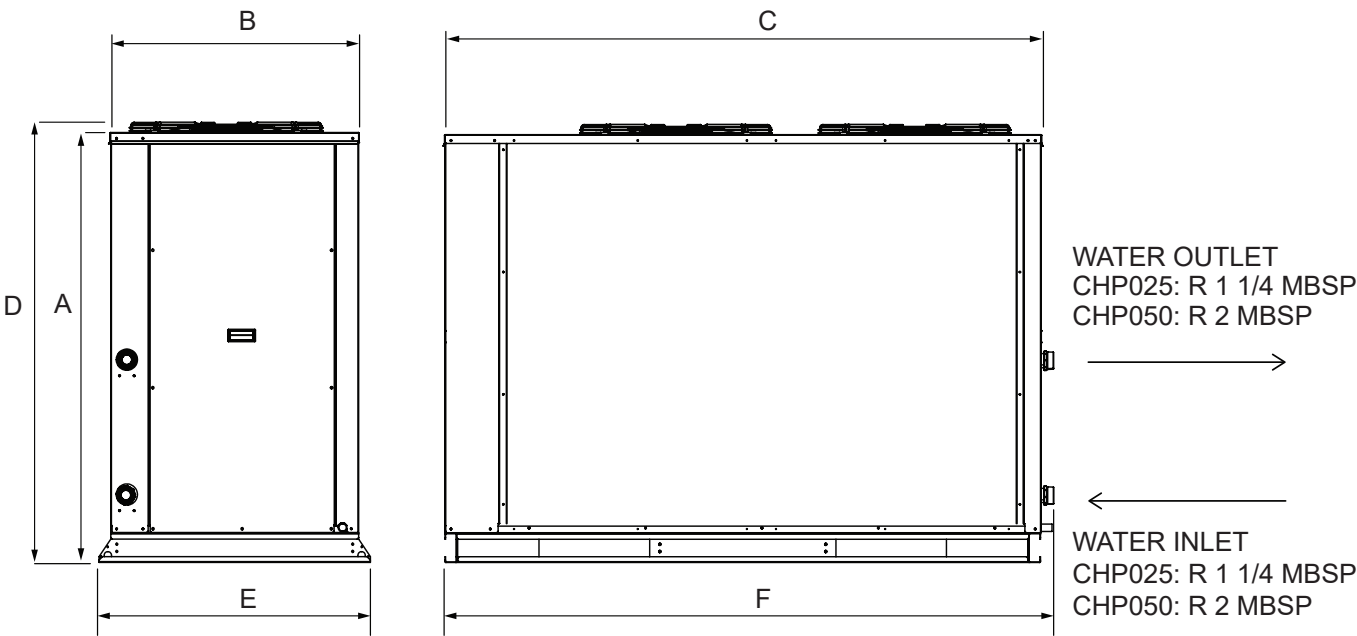
[5] For base model only. Factory options will vary.

SPECIFICATIONS

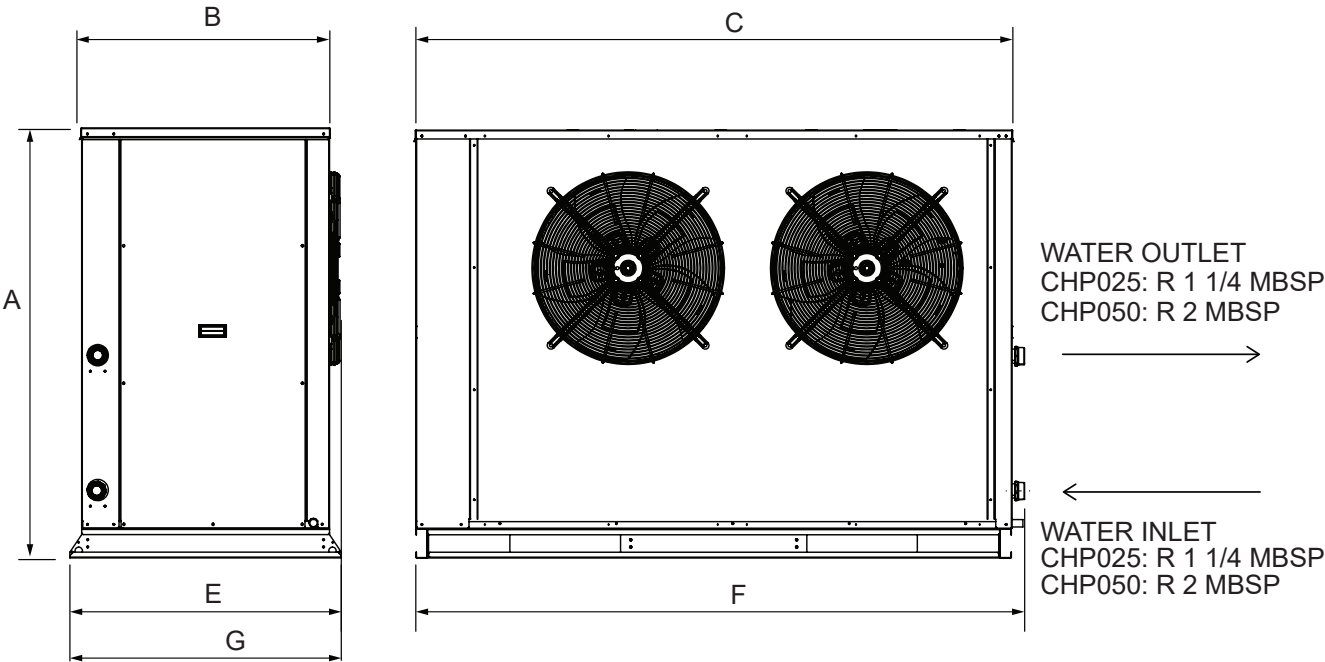
DIMENSIONS

Description		Dimensions (mm)						
Model	Version	A	B	C	D	E	F	G
CHP025	Top Discharge	1073	731	1550	1079	780	1586	-
	Side Discharge	1073	731	1550	-	780	1586	768
CHP050	Top Discharge	1469	852	2052	1505	928	2093	-
	Side Discharge	1469	852	2052	-	928	2093	932

Top Discharge Unit



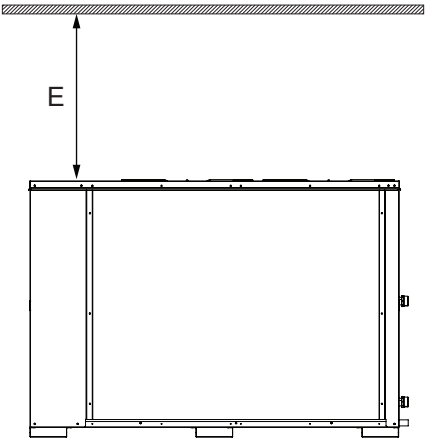
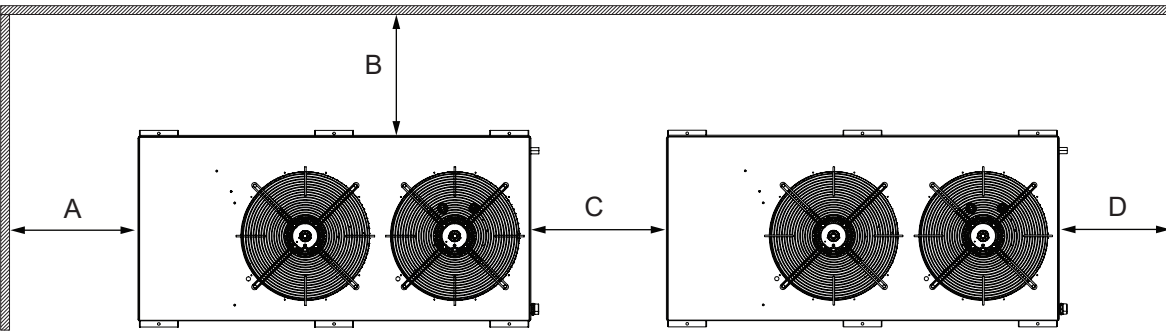
Side Discharge Unit



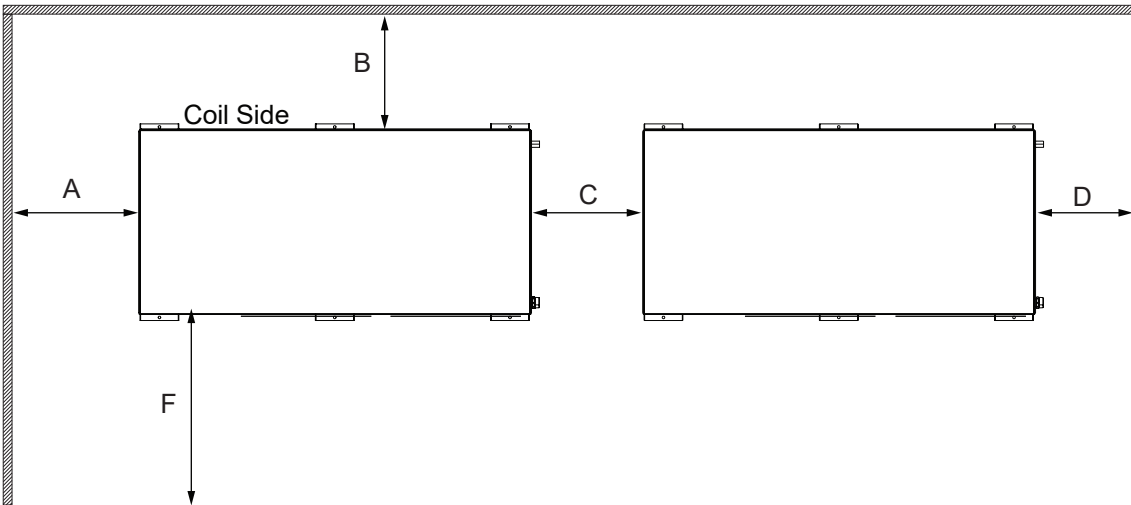
Illustrations are for explanatory purposes only and the shape of your unit may vary slightly from that which is shown

CLEARANCES

Description		Dimensions (mm)					
Model	Version	A	B	C	D	E	F
CHP025	Top Discharge	850	500	1000	500	1500	-
	Side Discharge	850	500	1000	500	-	1500
CHP050	Top Discharge	850	650	1000	600	1800	-
	Side Discharge	850	650	1000	600	-	1800



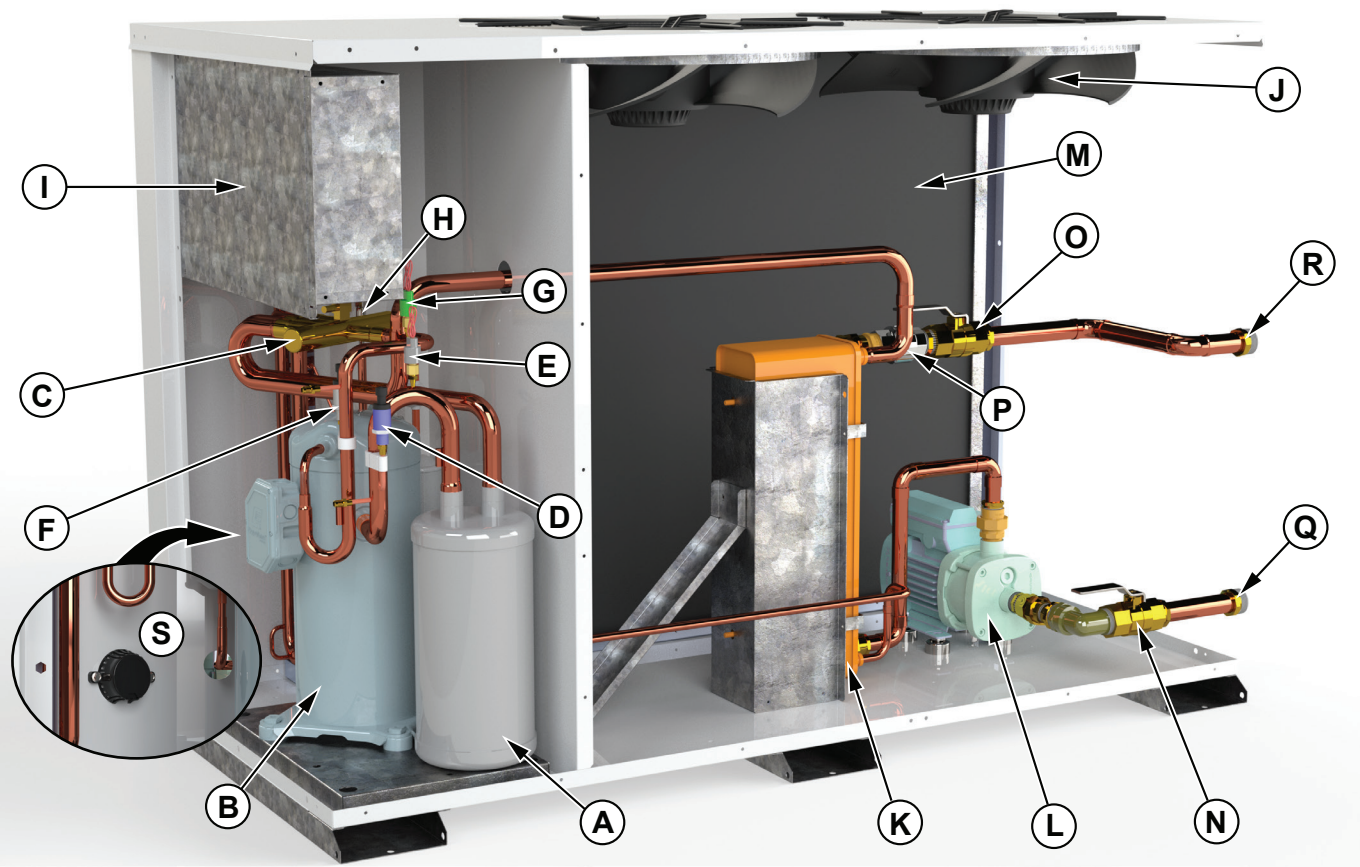
Top Discharge Unit



Side Discharge Unit

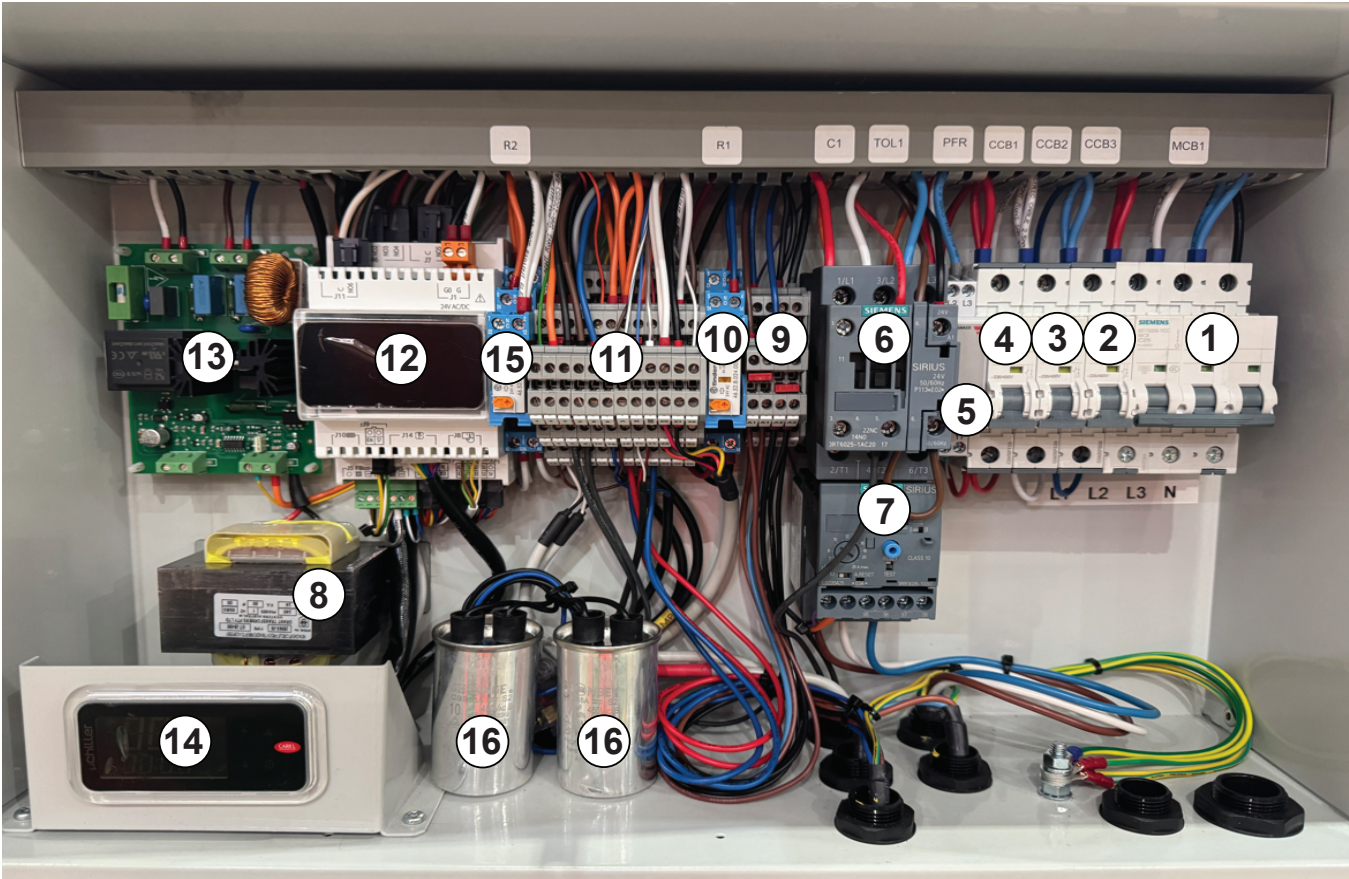
SPECIFICATIONS

UNIT MAIN COMPONENTS OVERVIEW



Item	Description
Ⓐ	Accumulator
Ⓑ	Compressor - Scroll
Ⓒ	Reversing Valve
Ⓓ	Low Pressure Transducer (0-10Bar)
Ⓔ	Low Pressure Switch
Ⓕ	High Pressure Transducer (0-30Bar)
Ⓖ	High Pressure Switch
Ⓗ	Electronic Expansion Valve
Ⓘ	Switchboard
Ⓝ	Fan
Ⓚ	Plate Heat Exchanger
Ⓛ	Water Pump
Ⓜ	Evaporator Coil
Ⓝ	Ball Valve - Water Inlet
Ⓞ	Ball Valve - Water Outlet
Ⓟ	Non-return Valve
Ⓠ	Water Inlet Bush
Ⓡ	Water Outlet Bush
Ⓢ	Refrigerant Gas Leak Detector

MAIN ELECTRIC COMPONENTS IN SWITCHBOARD



Item	Description
①	Main Breaker - Field Wiring
②	Breaker - Water Pump
③	Breaker - Fan
④	Breaker - Controller
⑤	3 - Phase Fail Relay
⑥	Contactor - Compressor
⑦	Electronic Overload
⑧	Transformer
⑨	Terminals - Pump, Fan
⑩	Relay - Water Pump
⑪	Terminals - Tank Sensor
⑫	Main Controller
⑬	Fan Speed Controller
⑭	User Interface
⑮	Relay - Leak Detector
⑯	Capacitor - Fan

INSTALLATION

REGULATIONS AND OCCUPATION HEALTH AND SAFETY (OH&S)



Installation and commissioning **MUST** be performed by authorised persons.

The heat pump **MUST** be installed in accordance with these instructions and all regulatory requirements which exist in your area including those in relation to manual lifting.

Applicable publications and regulations may include:

- AS/NZS 3500 National Plumbing and Drainage
- AS/NZS 3000 Wiring Rules and AS/NZS Electrical Installations
- Plumbing Code of Australia (PCA)
- Building Codes of Australia (BCA)
- Local Occupational Health and Safety (OH&S) regulations

This appliance is not suitable for use as a domestic spa pool or swimming pool heater.

Electric Heat pumps are heavy and bulky items. Australian States and Territories have a Principal Occupational Health and Safety (OH&S) Act which contains requirements relating to the handling of large, bulky or awkward items. Persons installing heat pump systems **MUST** be aware of their responsibilities and be adequately trained and qualified, in accordance with local OH&S requirements.

LOCATION

The heat pump may be installed outdoors or indoors within a machinery room or ventilated enclosure. The heat pump shall only be installed in Location Classification III or IV in accordance with AS/NZS 5149-1. Access to the installation area shall be restricted to authorised personnel only.

The heat pump should be placed as close as practicable to the most frequently used hot water outlet point or points to minimise the delay time for hot water delivery. For installations where the distance between heat pump and outlets is considerable, a flow and return system can be used to minimise the waiting time for hot water delivery.

It is recommended that all components are installed at a ground level Ventilated Plant Room or at roof level. The heat pump **MUST** be installed vertically upright. All components **MUST** be accessible for service and replacement.

The air inlet and outlet of the heat pump module **MUST** be away from areas with strong wind and **MUST** be provided with sufficient clearances as per those shown in the section "Clearances" on page 15

The heat pump **MUST** be connected to an independent AC 415V, 50Hz power supply.

Ensure the pressure and temperature pressure relief (PTR) valve and any access covers have sufficient clearances and are accessible for service and removal. The information on the rating plates **MUST** also be readable.

The heat pump **MUST** be installed free-standing on a level and stable base. Storage tank should be mounted on a stable, solid base that is level, secure, and capable of safely supporting the weight of the unit or storage tank during operation. Where property damage can occur as a result of water leakage, storage tank **MUST** be installed with a safe tray (overflow tray) and drain in accordance with AS 3500.4. Ensure storage tank **DOES NOT** stand on wet surfaces.

Internal Installation

Guidance for indoor installation is provided on the following page. Indoor installations **MUST** comply with the requirements of AS/NZS 60335.2.40 and AS/NZS 5149.

- Indoor installation shall only be carried out in a well-ventilated machinery room/enclosure complying with the standards for flammable refrigerants.
- Appropriate safety alarm systems shall be provided for indoor installations. Refer to the following guidance for details.
- Access to the machinery room/vented enclosure shall be restricted to authorized personnel only.
- In addition to the ventilation requirements for safety, adequate ventilation **MUST** be provided to ensure the heat pump operates correctly and efficiently.

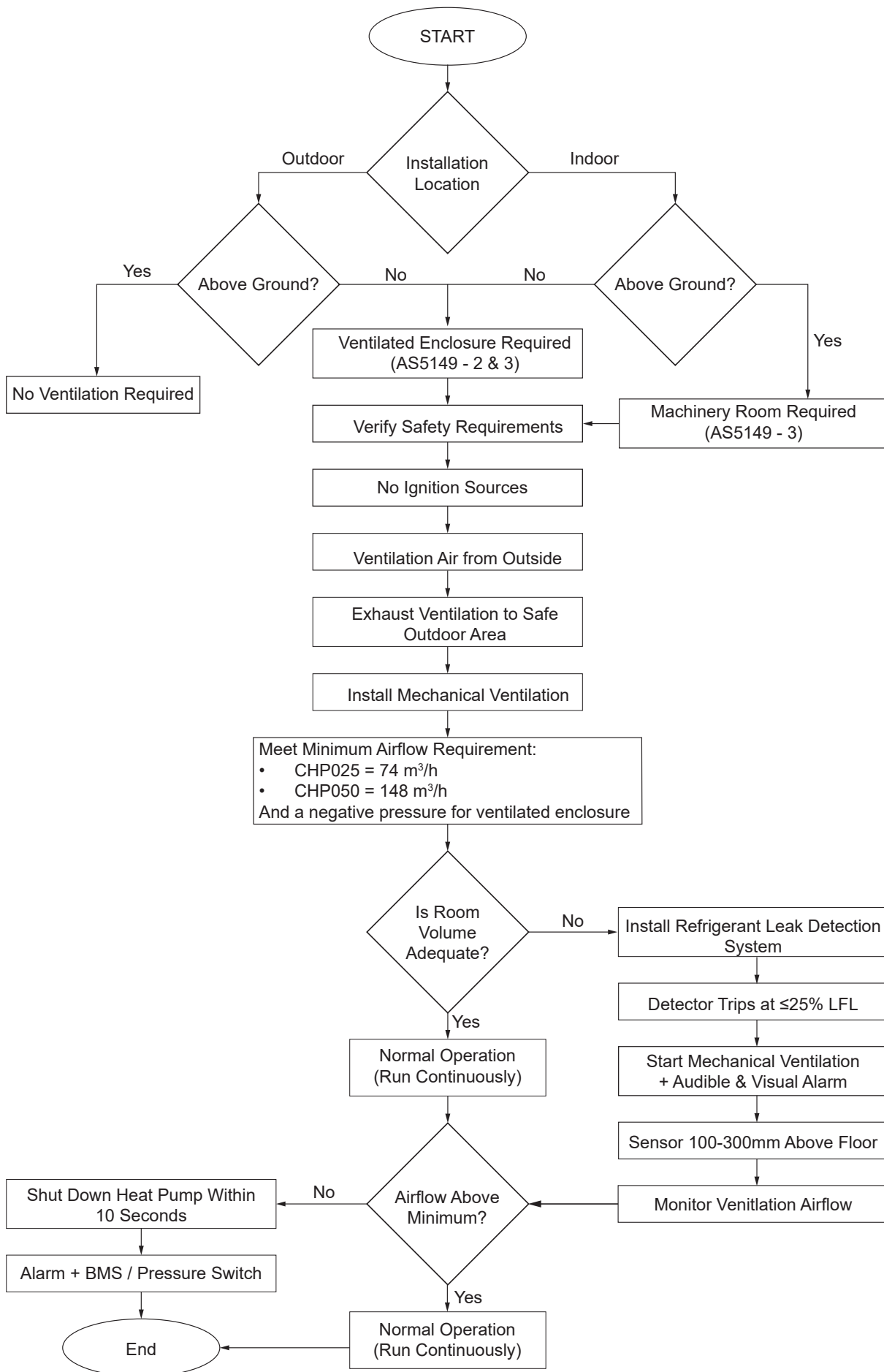
If the heat pump is installed internally, careful consideration should be given to its positioning to minimise noise and reverberation during operation. Please contact Rinnai for advice if you are uncertain.

Ventilation

The 25kW model requires air at a rate of 2500L/s and the 50kW model requires air at a rate of 4750L/s. The Minimum recommended free air inlet ventilation opening for the 25kW model is 1.2m² and 2.3m² for the 50kW model. Note – All designs of grills or louvre must meet this requirement.

Location Class (III, IV)	Room ventilation and safety requirements (Access restricted to authorised personnel only)		
Outdoor	For above-ground outdoor installations: No room ventilation required. Outdoor heat pumps must be positioned to prevent refrigerant leaks from entering the building or endangering people. Discharge air must not be directed toward open flames or ignition sources. If roof-mounted, refrigerant must not be able to flow into ventilation intakes, doorways, trapdoors, or similar openings in the event of a leak. Any shelter must provide natural or forced ventilation. For below-ground outdoor installations: MUST be installed in a ventilated enclosure meeting the requirements of AS/NZS 5149-2 and AS/NZS 5149-3. Refer below-ground indoor installations.		
Indoor	For above-ground indoor installations: MUST be installed in a machinery room fulfilling the requirements of AS/NZS 5149-3. For below-ground indoor installations: MUST be installed in a ventilated enclosure fulfilling the requirements of AS/NZS 5149-2 and AS/NZS 5149-3. Open (naked) flames are not permitted in the machinery room or enclosure. Avoid installing equipment that may present a potential ignition source in the machinery room or enclosure. Where other ignition sources (including combustion equipment) are installed, they MUST accord with requirements of the AS/NZS 60079 series. The combustion air MUST be ducted from outside to prevent any refrigerant leakage from entering the combustion chamber. Mechanical ventilation must be provided to the machinery room or enclosure and operated continuously or automatically initiated by an A3 refrigerant detector. Intake and exhaust openings shall be arranged to evacuate leaked refrigerant outdoors above ground level under all conditions. - Lower edge of air intake: ≤ 0.2 m above floor. - Upper edge of exhaust opening / fan: ≤ 2.2 m above floor. Ventilation exhaust must discharge to a safe outdoor location where refrigerant cannot accumulate or create hazards to occupants, building openings, air intakes, or ignition sources. Airflow is not permitted from machinery room to occupied spaces unless fully ducted and sealed, preventing refrigerant leakage. The required minimum airflow rate for mechanical ventilation: <table border="1"> <tr> <td>CHP025: 74 m³/h per unit</td><td>CHP050: 148 m³/h per unit</td></tr> </table> For Indoor – Below Ground installations: The negative pressure measurement in the interior of the enclosure shall be 20 Pa or more and the flow rate to outdoors MUST meet the above minimum ventilation flow rate. Compliance shall be determined by test. If room effective free volume is less than 230 m³ (CHP025) or 460 m³ (CHP050), a refrigerant leak alarm system must be installed. The leak detector must activate the alarm at a concentration as low as practical, but no greater than 25% of the Lower Flammability Limit (38 g/m³). Activation of the leak detector MUST initiate Mechanical ventilation and Audible and visible alarms. Emergency mechanical ventilation MUST be provided with two independent controls: one located outside the machinery room/enclosure and one inside. The ventilation system MUST operate as follows. - Run continuously with constant airflow monitoring. - Activate automatically via an A3 refrigerant leak detector and be tested periodically. The sensor must be located where leaked refrigerant accumulation is likely (100–300 mm above floor level). If ventilation airflow falls below the minimum required rate, the heat pump(s) must shut down within 10 seconds and activate an audible and/or visual alarm. This may be achieved by either: - A Building Management System (BMS) to monitor airflow and connect with heat pump(s). - A pressure switch connected to both the alarm circuit and the heat pump remote alarm terminals (5 & 6, dry contact input).	CHP025: 74 m ³ /h per unit	CHP050: 148 m ³ /h per unit
CHP025: 74 m ³ /h per unit	CHP050: 148 m ³ /h per unit		

Ventilation Flow Chart



Condensation

As this heat pump is highly efficient, the surrounding air temperature may be reduced by up to 0°C, resulting in condensate formation.

The condensate tray must be installed by the installer and connected to a suitable drain for proper discharge.

Drainage

Where property damage can occur as a result of water leakage, the water heater **MUST** be installed with a safe tray (overflow tray) and drain. Construction, installation and draining of the safe tray **MUST** comply with local regulatory requirements and. AS/NZS 3500.4 also requires the use of a safe tray for particular situations.

WATER SUPPLY

The maximum water pressure is listed on page 13. An approved pressure limiting valve may be required if the maximum rated water supply pressure is exceeded.

Water chemistry and impurity limits are detailed in the separate warranty document. Most metropolitan water supplies fall within these requirements. If you are unsure about water quality, contact your water authority.

A water filter **MUST** be fitted on the inlet to the tank to prevent sludge or foreign matter entering the system.

In a scaling water supply, calcium carbonate and possibly other compounds are deposited out of the water onto any hot metallic surface and form a scale. Scaling water may cause scale deposits to form onto the metallic surfaces of the PTR valve and may prevent it from operating properly. To prevent this, an expansion control valve (ECV) **MUST** be fitted on the cold water line after the non-return valve in areas of scaling water. ECVs' **MUST** be fitted in South Australia and Western Australia to comply with local regulations.

STORAGE TEMPERATURE

To meet regulatory requirements the thermostat control on the heat pump water heater is factory pre-set to heat all the water in the tank to 65°C.

HOT WATER DELIVERY TEMPERATURE

This appliance may deliver water at high temperature. Refer to the Plumbing Code of Australia (PCA), local requirements and installation instructions to determine if additional delivery temperature control is required.

The PCA, local regulations and the requirements of AS/NZS 3500.4 **MUST** be considered regarding the temperature limitations of hot water supplied to areas used primarily for personal hygiene.

The temperature of water to certain areas is limited to different temperatures according to purpose, for e.g. early childhood centres, primary and secondary schools and nursing homes or similar facilities for young, aged, sick or people with disabilities and for all other buildings. To comply with these requirements, a temperature limiting device, such as a thermostatic mixing or tempering valve, will be required on hot water systems.

VALVES AND FITTINGS

The following valves and fittings should be supplied with your heat pump system:

- A combined pressure and temperature (PTR) relief valve. This valve is fitted at the top of the storage tank. The PTR valve is a safety device and it is mandatory that it is fitted by the installer in all installations.

The following valves & fittings are to be supplied by the installer:

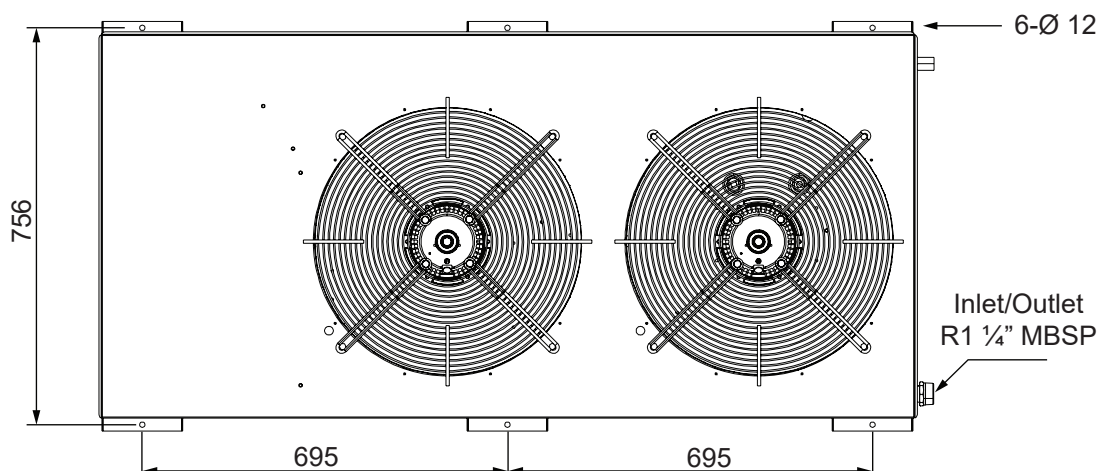
- A cold water expansion control valve (ECV). An ECV **MUST** be fitted in Western Australia and South Australia to the cold water supply to the storage cylinder to comply with local regulations. An ECV is recommended in all other geographical areas where the water supply has a tendency to cause scaling. This will reduce hot water discharge from the pressure and temperature relief (PTR) valve which minimises wear on this valve.
- A stop cock, non return valve and line strainer. Combination valves incorporating two or more of these functions (such as 'Trio' valves) are suitable. These are fitted to the cold water supply to the CHP System by the installer.
- Cold water supply and hot water discharge pipework to and from the storage tank. This pipework **MUST** be insulated as specified in AS/NZS3500.4.
- An approved pressure limiting valve is required if the maximum rated water supply pressure on page 13 is exceeded.
- Tempering valve(s) or thermostatic mixing valve.

POSITIONING THE HEAT PUMP

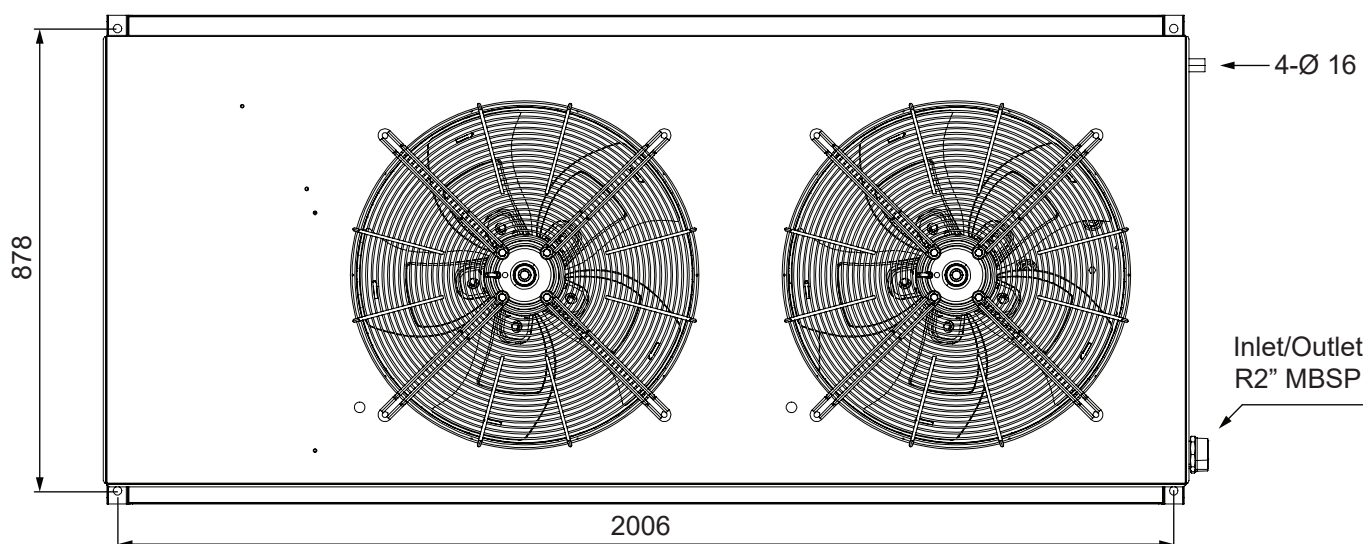
- Arrive at site and conduct a safety audit (Safety audits can also be known as Work Method Statements (WMS) or Job Site Analysis (JSA). Unload all materials safely to a convenient position near the work area.
- The heat pump is designed for outdoor installation or indoor use where sufficient heat energy and good ventilation are available. It performs best with a constant supply of fresh air. Inadequate conditions may reduce performance or cause operational issues.
- As the CHP may operate at any time of the day or night the installation location **MUST** consider potential noise impact on living areas. Avoid positioning the unit near bedrooms, as CHP operational noise may be audible, so suitable placement is essential to minimise disturbance.
- Adequate access **MUST** be available for servicing of the heat pump. Refer to clearance requirements specified in the section 'clearances'. All components **MUST** be accessible for service and replacement.
- The water heater must not be installed in corrosive environments, including chemical storage areas, manufacturing plants with corrosive processes, swimming pools, aerosol propellant zones, or coastal/marine conditions with salt-laden air.
- Position the new unit safely on a level surface in accordance with all plumbing and building regulations. Ensure appropriate anchoring is used to securely fasten the unit in place.
- A properly drained overflow tray **MUST** be used where property damage could occur from water spillage. (See AS/NZS3500.4.2 for further details.)

INSTALLATION DIMENSIONS

CHP025 Installation Dimensions



CHP050 Installation Dimensions



CONNECT THE PTR VALVE

Connect the PTR valve to the uppermost fitting of the storage tank. See the diagram on the tank user manual.

The PTR pressure rating **MUST** be suited for the tank and adequate for the thermal loading applied to the storage tank. Use Teflon thread tape on the valve, never use hemp or other sealing materials. Ensure the tape does not protrude past the end of the thread, which could result in it hanging over the end of the thread and blocking the water passage through the valve.

Connect the supplied PTR valve into the top socket marked 'Relief Valve' and discharge according to plumbing regulations. PTR Valves for the unit are rated at 1000kpa.

The drain line from this valve **MUST** run in a continuously downward direction with the discharge end left permanently open to atmosphere.

PLUMBING CONNECTIONS

The heat pump water heater system comprises three main components: the heat pump water heater, storage tanks and primary circulator. An auxiliary booster and/or circulator may also be employed as part of the system. The water heater must not be operated until all components are assembled.

An approved isolating valve, non return valve, line strainer, and union **MUST** be fitted between the supply main and the tank. All fittings **MUST** be approved by the relevant installation Authority.

An ECV **MUST** be fitted in Western Australia and South Australia to the cold water supply to the storage tank to comply with local regulations.

An ECV is recommended in all other geographical areas where the water supply has a tendency to cause scaling.

This will reduce hot water discharge from the pressure and temperature relief (PTR) valve which minimises wear on this valve.

This water heater is designed for direct connection to water supply pressures of no greater than those specified on page 13. Where the mains pressure can exceed or fluctuate beyond this, a pressure limiting device (complying with AS1357) **MUST** be fitted.

Refer to the following table "Minimum Pipe Sizing" on page 23 for sizing. Header pipe sizing is based on a total length of 40m of primary discharge and return piping and 20 x 90° bends with 1.2m/sec velocity.

Evaluate total pressure drop from discharge to return piping and ensure. It is less than heat pump maximum outer water head stated in section "System Specifications" on page 13. If this specification is exceeded, please consult Rinnai before installation.

Up to ten storage tanks can be manifolded together in water loop. The storage tanks must be of the same model.

Inlet and outlet water isolation valves should be installed at each heat pump to enable each unit to be individually isolated for servicing. It is strongly recommend to install a suitable strainer in the inlet pipe for each heat pump.

Minimum Pipe Sizing

CHP025				
No. of Heat Pumps in Parallel	1	2	3	4
Pump	Grundfos CM 3-2			
Branch Size (mm)	32			
Header Size (mm) (Primary Piping)	40	50	65	80
Note: Header pipe sizing is based on a total length of 40m of primary discharge and return piping and 20 x 90° bends with 1.2m/sec velocity.				

CHP050				
No. of Heat Pumps in Parallel	1	2	3	4
Pump	Grundfos CM 10-1			
Branch Size (mm)	50			
Header Size (mm) (Primary Piping)	50	80	100	100
Note: Header pipe sizing is based on a total length of 40m of primary discharge and return piping and 20 x 90° bends with 1.2m/sec velocity.				

EQUAL FLOW PRINCIPLE

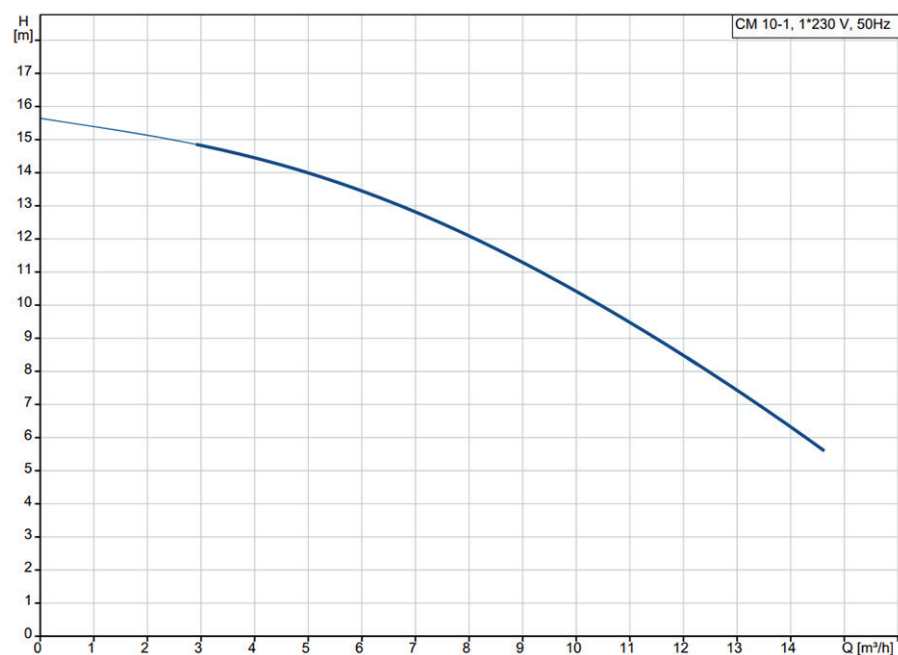
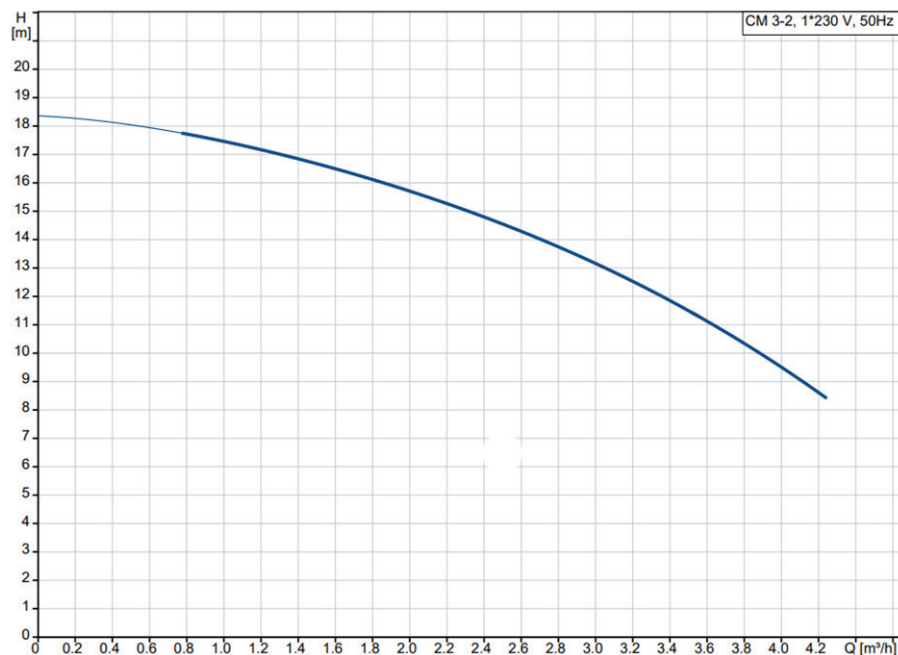
Multiple heat pumps **MUST** be installed using equal flow principle to ensure the demand on each heat pump (or storage tank) is the same as any other. To achieve this, the following is necessary:

- The inlet and outlet manifolds shall be designed to balance the flow to each heat pump (i.e. each branch line must be the same diameter and length).
- The manifolds shall be designed to ensure the flow; the first heat pump in shall be the last heat pump out.

Storage tanks **MUST** be manifolded using equal flow principle to ensure even distribution of the stored energy. To achieve this, the following is necessary:

- The cold water, primary flow and hot water manifolds shall be designed to balance the flow for each storage tank (i.e. each branch line shall be the same diameter and length).
- The manifolds shall be designed to ensure the flow: the first storage tank in shall be the last storage tank out.

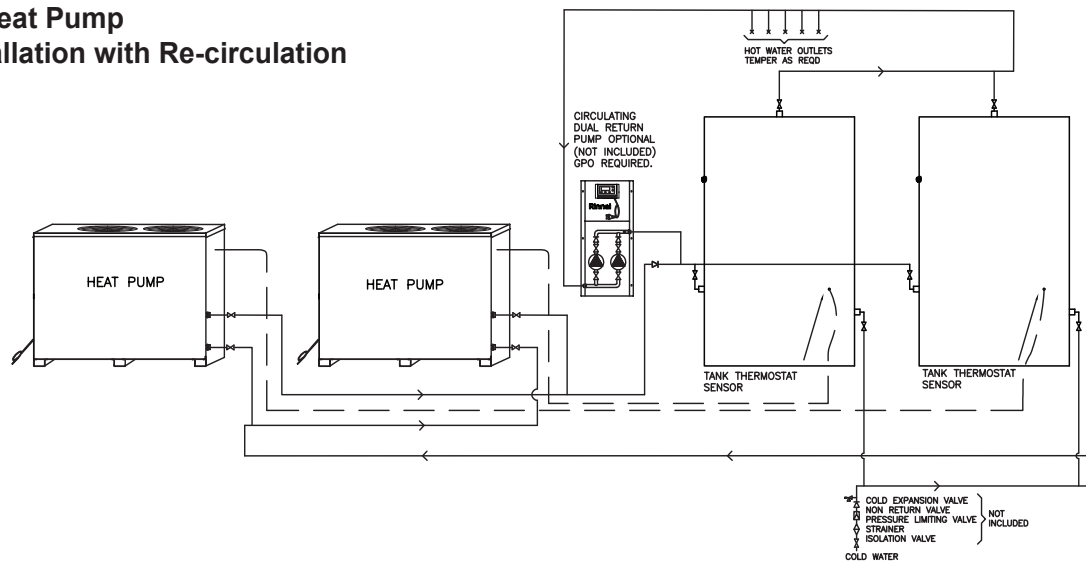
WATER PUMP PERFORMANCE CURVE



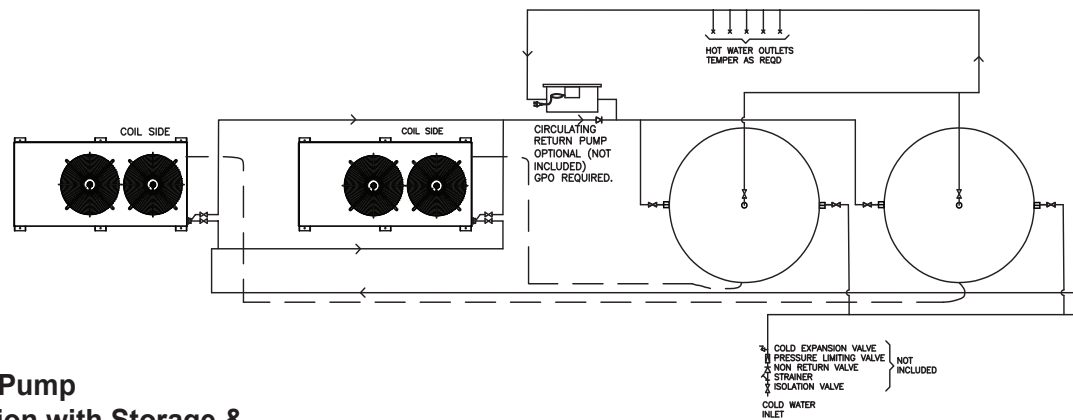
TYPICAL INSTALLATIONS

Commercial Heat Pump Standard Installation with Re-circulation

ELEVATION VIEW

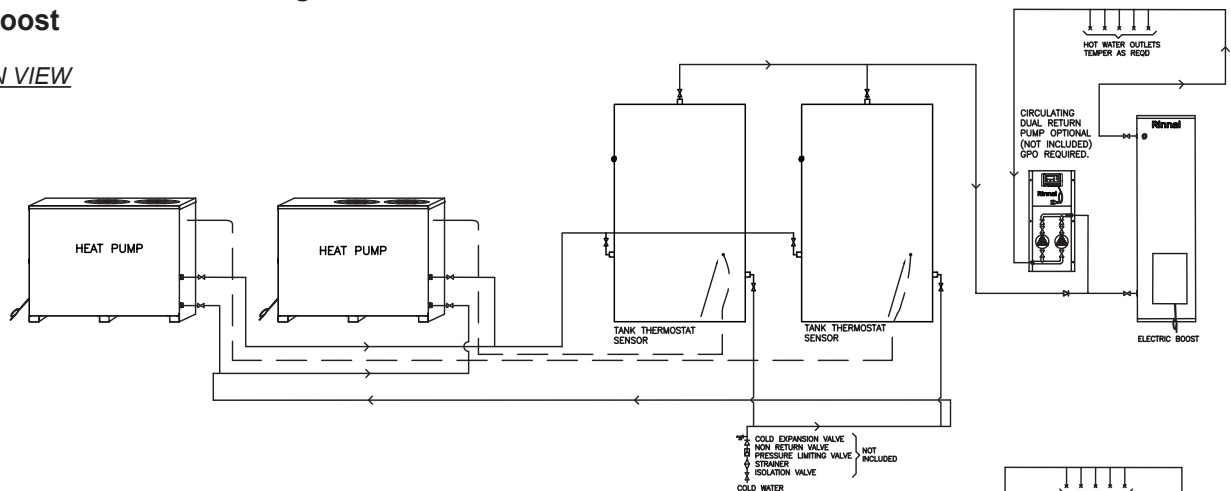


PLAN VIEW

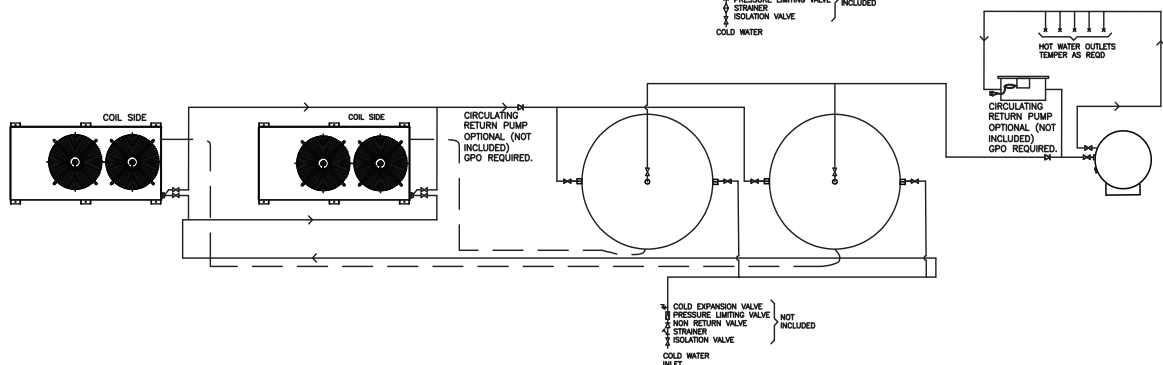


Commercial Heat Pump Standard Installation with Storage & Electric Boost

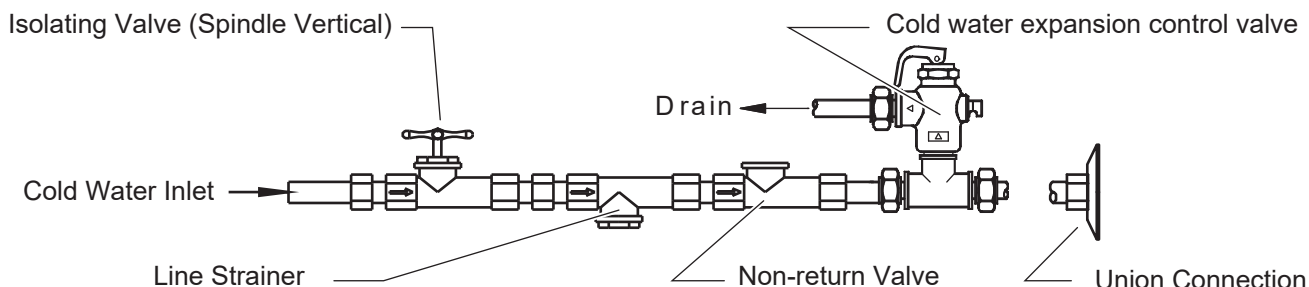
ELEVATION VIEW



PLAN VIEW



CONNECT COLD / HOT WATER SUPPLY



Connect cold water supply, Pressure Limiting Valve (PLV) and or Expansion Control Valve (ECV).

Connect cold water supply to the CHP system (refer to Diagram below). A stop cock, non return valve and line strainer **MUST** be fitted.

Connect the pipe work supplying hot water to the premises to the hot water outlet on the tank.

Connect the pipe work between the heat pump and the tank.

A temperature limiting device may be required as detailed in the section 'Hot Water Delivery Temperature'.

It is recommended all hot water lines are insulated with high temperature, UV resistant 13mm closed cell insulation.

ELECTRICAL TESTS

DO NOT turn on the power supply to the appliance until it has been filled with water and a satisfactory insulation (Megger) test has been performed.

Conducting Insulation (Megger) Tests

When conducting an insulation test using a Megger on this appliance, observe the then the following:



This appliance contains electronic components, when performing insulation tests (500 Volts) this **MUST ONLY** be conducted the across active terminal to earth and then across the neutral terminal to earth.

Tests between the active to neutral terminals **MUST NOT** be performed as this **WILL** damage the electronic components.

An insulation test result of above **1 MΩ** should be obtained for this water heater.

ELECTRICAL CONNECTIONS



The power supply to the heat pump module **MUST NOT** be activated until the system is filled.

The premises wiring to the CHP System **MUST** be capable of withstanding the appliance load. Refer to specification table for load details.

All electrical connections and wiring **MUST** be installed, maintained and removed by authorised persons in accordance with AS/NZS 3000, and all other relevant local regulations and municipal building codes including OH&S requirements. Disconnect all power prior to installation and commissioning.

Main Power



The heat pump water heater must be directly connected to a 415 V AC 50 Hz mains power supply. The heat pump must be on its own circuit with an isolating switch installed at the switchboard. A secondary ON/OFF switch must be installed within reach of the CHP System.

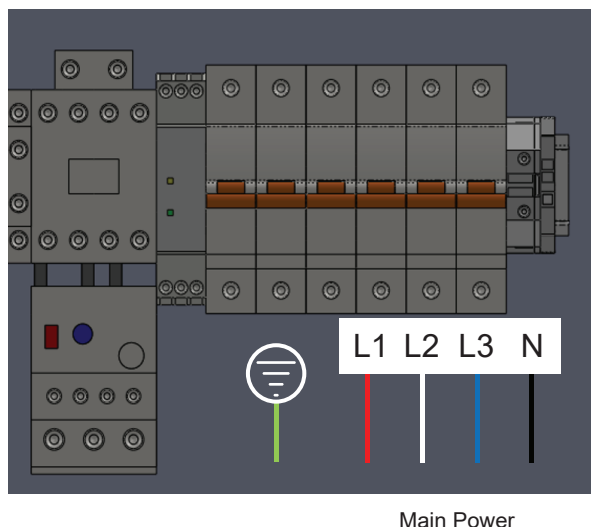
Connect all **ACTIVE** and **NEUTRAL** wires in accordance with the wiring diagram. Ensure the incoming **EARTH** wire is securely fixed to the earth post.

Primary Pump

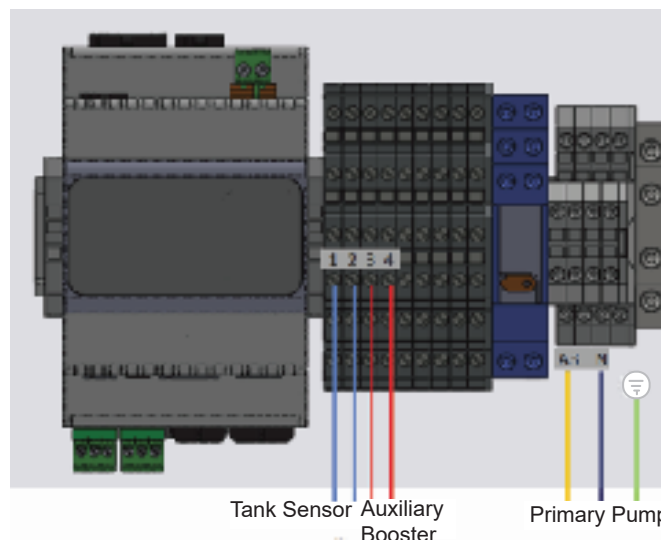
For units without an internal pump, power for the primary pump is supplied from the heat pump. Connect the active, neutral, and earth wires to the pump terminals marked “A3” and “N” inside the electrical enclosure.



For those units integrating pump inside the unit, please skip this step.



Main Power



Tank Sensor Auxiliary
Booster

Primary Pump

Tank Sensor Installation

Connect the supplied temperature sensor to terminals “1” and “2” in the electrical enclosure. Route sensor to the nearest storage tank and insert into the thermostat dry well. Apply heat transfer paste to the well before insertion. Ensure the sensor is securely fitted in the well. Each CHP Heat Pump must have a dedicated sensor — do not wire sensors in series, parallel, or share them between units. If there is no locking nut, secure the sensor with a cable tie.

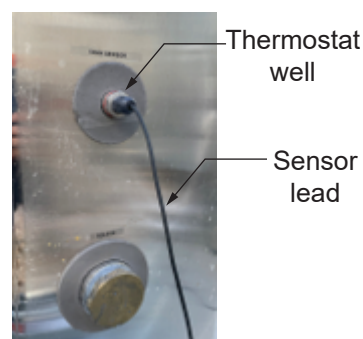
Auxiliary Booster (optional)

If auxiliary booster control box is not provided, please skip this step.

An auxiliary booster control box may be supplied for supplemental heating at low ambient temperatures. Terminals 3 and 4 provide a volt-free signal to control the booster. Connect with min 0.75 mm² two-core cable (installer supply) to the booster control box terminals. See top right diagram for wiring.

The auxiliary booster is interlocked with the heat pump to only operate under low ambient or fault conditions:

- The auxiliary booster activates when ambient air temperature drops below 5°C. It operates until the stored water temperature setpoint is reached or the ambient temperature rises above 7°C, whichever occurs first. Once ambient temperature exceeds 7°C, the booster de-energises regardless of water temperature. If the setpoint has not been reached, the heat pump continues operating alone until it is. Note – the heat pump and auxiliary booster may work simultaneously.
- The heat pump deactivates when ambient air temperature falls below -5°C and will not restart until the temperature rises above -3°C. Under these conditions, only the auxiliary booster operates until the stored water temperature setpoint is reached. The booster remains active until ambient temperature exceeds 7°C, at which point it de-energises regardless of water temperature. If the setpoint has not been reached, only the heat pump will continue operating until it is. Note – heat pump and auxiliary booster may work simultaneously.
- If the heat pump experiences a fault, the auxiliary booster will operate in its place until the stored water reaches the set point temperature and will remain active until the fault is cleared.



Thermostat
well

Sensor
lead

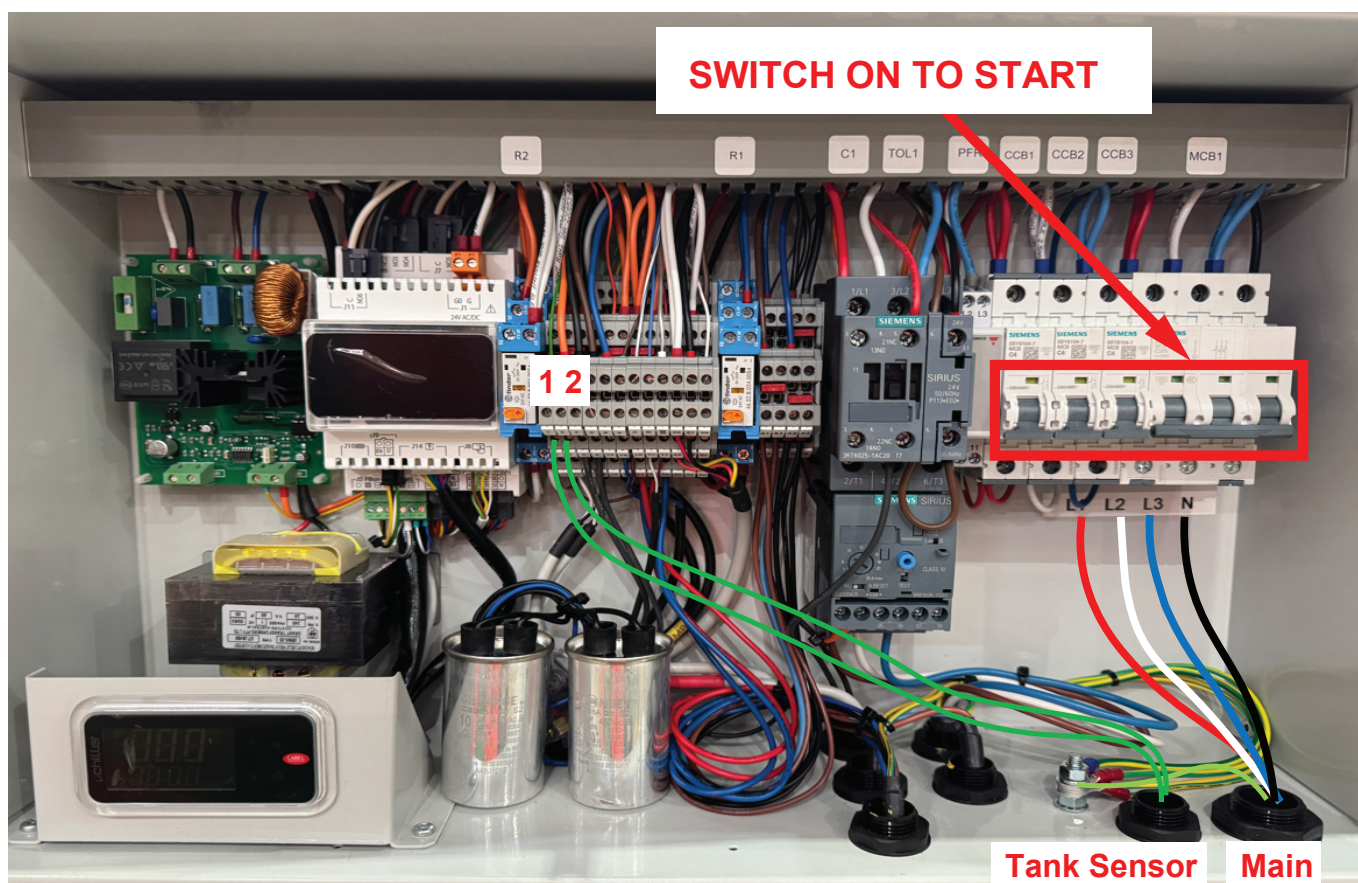
Remote Alarm Input (optional)

Terminals ‘5’ and ‘6’ provide a signal input for connection to a remote alarm. The heat pump is enabled when the contact is open, and disabled when the contact is closed - manual reset. No external voltage shall be applied to the terminals. These terminals are designed for connection to a volt-free (dry) contact only.

Alarm Output Signal (optional)

Terminals ‘27’ and ‘28’ provide a volt-free Normally Open (NO) alarm output for connection to a BMS, alarm panel or other remote monitoring system. The contact closes whenever the heat pump is in an alarm condition.

FILLING THE SYSTEM AND COMMISSIONING



If the heat pump is full of cold water, SWITCH ON the electrical supply at the isolating switch, and SWITCH ON all breakers in the switchboard. The heat pump will automatically heat the tanks, unless the ambient temperature is below the sensor setpoint—in which case the auxiliary booster (if installed) will operate.

When power is turned on, the heat pump controller checks operating parameters of all sensors, pressure switches, transducers, and main voltage. If conditions are within range and sufficient energy is available in the ambient air, the fan, circulating pump, and compressor will start. If not, the auxiliary booster (if installed) will activate.

There is a 30 second delay after main power is switched on before the pump, fan and compressor start operating.

The unit is self regulating so there are no internal adjustments to be made during commissioning. When the unit is operated for the first time, it runs through an initial heat up cycle, allow time for the initial heat up cycle. Depending on the ambient conditions this can take several hours.

Once its first heat up cycle is complete, the tank water temperature will be approximately 65°C. The heat pump will run standby mode and the compressor will activate automatically once the tank temperature falls below threshold (around 60°C). During standby, the water pump operates intermittently to save energy and to circulate the water around the system, which may not continue to initiate the compressor if water temperature is satisfied.

If for any reason the unit does not start, the water is cold and the controller unit is not displaying any LED lights, an electrician should test that power is available to the heat pump. If there is an alarm code displaying, please refer to the section “Alarm Codes & Troubleshooting” on page 33 for troubleshooting.

Allow heat pump operating 1 hour or longer, check if tank temperature is rising and there is no alarm codes displaying, then complete the section “Commissioning Log & Checklist” on page 34.

FINISHING THE INSTALLATION

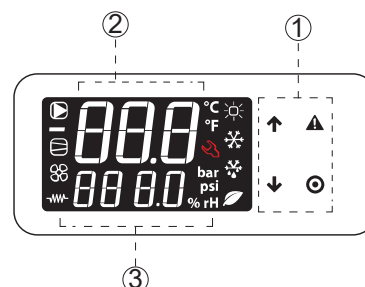
After testing is completed explain to the responsible officer the functions and operation of heat pump water heater components. Explain to the responsible officer the need to drain the heat pump if freezing conditions are likely and power is likely to be shut off.

Also explain to the responsible officer the importance of carrying out maintenance in accordance with this manual. Leave this manual with the responsible officer.

USER TERMINAL

The user terminal includes the display and keypad, comprising four buttons that, when pressed alone or combined with other buttons, access the operations available for the 'User' profiles. The heat pump uses the user terminal to display the alarms, the main variables and to set the unit set points.

Key	
1	Keypad
2	Main Field
3	Device status and operating mode icons



Keypad

Ensure the controller unit is not displaying the ERR indicator once unit has been switched on.

Button	Description	Function
↑	UP	- When scrolling - go to the previous parameter - In programming mode - increase the value
↓	DOWN	- When scrolling - go to the next parameter - In programming mode - decrease the value - Main menu: - press briefly - unit dashboard display - press and hold (3 secs) - access User parameters (set point, unit ON / OFF)
⚠	ALARM	- Pressed briefly - display active alarms and mute buzzer - Pressed and held (3 secs) - reset alarms
🎯	PRG	- When scrolling - access parameter programming mode - In programming mode: - press briefly - confirm value - press and hold (3 secs) - return to the main menu

Icons

Icon	Function	On	Flashing
▶	System pump	Active	In manual operation
⊞	Source device status (pump/fan)	Active	In manual operation
⊞	Compressor status	Active	In manual operation
⚡	Frost protection heater	Active	-
☀	Operating mode	Heating	-
❄		Cooling	High Water Temperature
❄		Defrost	Dripping after Defrosting
🍃		Free cooling	
👉	Service	Service request on exceeding operating hours	Serious alarm, action required by qualified personnel

The standard display shows:

- On the top row: the delivery water temperature;
- On the bottom row, when the unit is on, the tank water temperature; when the unit is off, it shows 'OFF'.

The user terminal only provides access to the basic configuration parameters, such as set point and switching unit on and off.

Operation

- 'DOWN' for 3 seconds to access the parameters
- 'UP' and 'DOWN' to scroll and set the parameters
- 'PRG' to change the parameter value and save the changes
- 'PRG' (3 seconds) or 'ESC' to return to the standard display

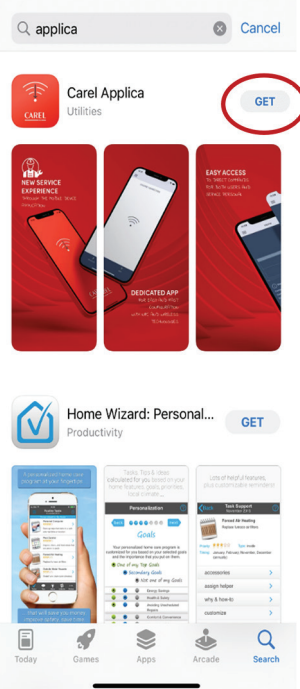
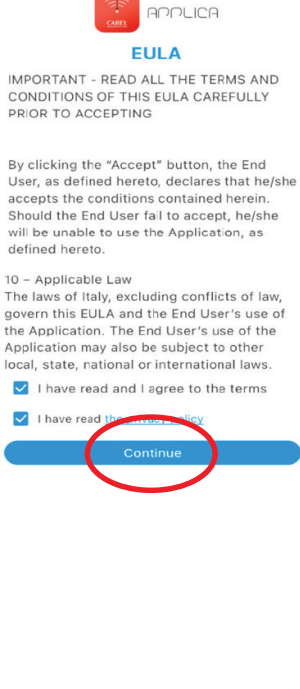
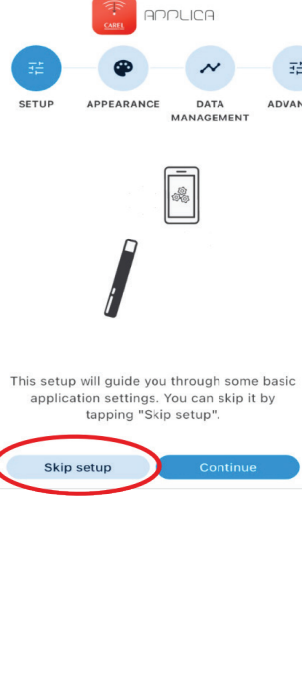
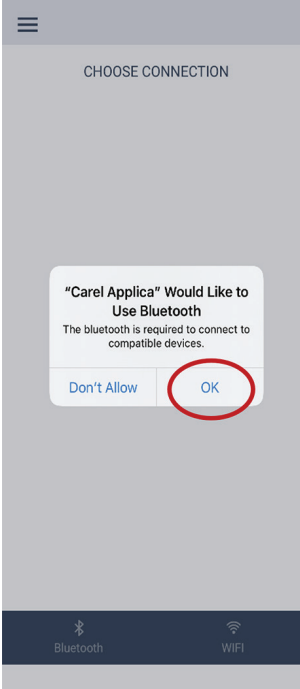
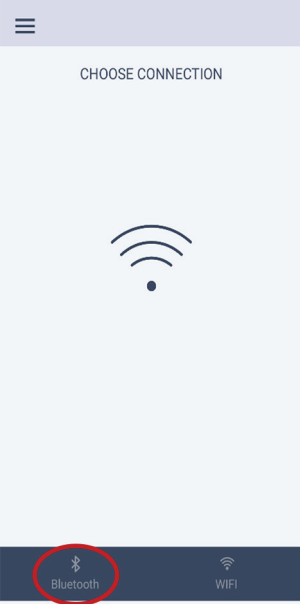
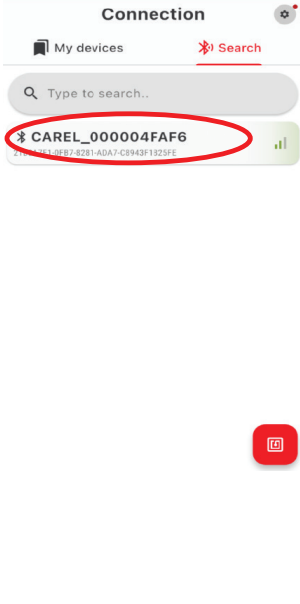
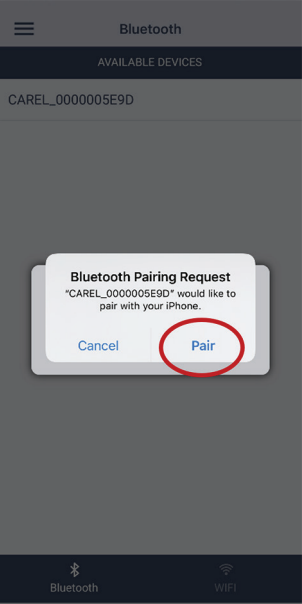
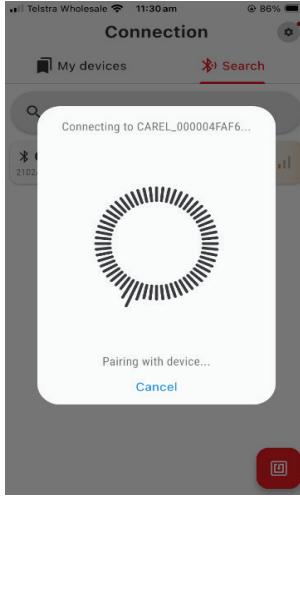
1. Go to the standard display.	2. Press DOWN for 3 secs. The current set point (SEtA) is shown - Read Only.	3. Press DOWN. The cooling set point (SEtC) is shown.	4. Press PRG. The value flashes; press UP/DOWN to change the value. PRG to confirm.
5. Press DOWN. The heating set point (SEtH) is shown - for heat pump units only.	6. Press DOWN. The unit ON/OFF function (UnSt) is shown.	7. Press DOWN. The function for switching from cooling (C) to heating (H) mode (ModE) is shown - for heat pump units only.	8. Press DOWN. The manual defrost function (dFr) is shown. Service level and reverse cycle A/W units only.
9. Press DOWN. The function to delete the alarm log (ClrH) is shown - Service level only.	10. Press DOWN. The unit of measure selection (UoM) is shown.	11. After having completed the settings, to exit either: (a) from the categories press ESC and then PRG; or (b) press PRG for 3 secs.	

APPLICA APP

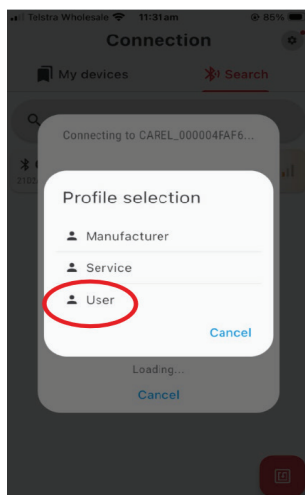
The unit allows interaction with mobile devices through Bluetooth and simplifies commissioning. It is recommended to download the CAREL 'Applica' App to commission the appliance instead of using the above user terminal.

- iOS user – please download from App Store
- Android user – please download from Google Play

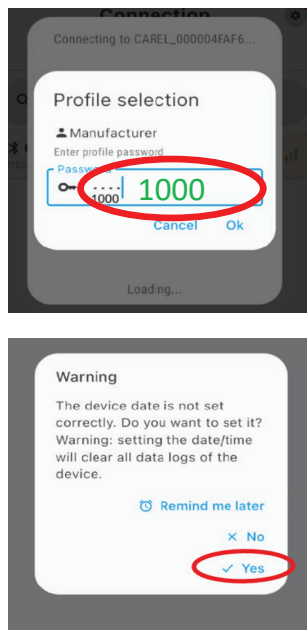
Illustrated below are steps on how to download and use APPLICA from the Apple App Store. Follow similar procedure in Google Play for Android.

Search "Applica" in App Store / Google Play, install the App in device device. 	Open the App and accept conditions and continue 	Skip setup 	Agree to use the devices' Bluetooth. Ensure the devices' Bluetooth and Internet is accessible when using the App. 
Click "Bluetooth" to find your Heat Pump ID. 	Choose the unit you want to connect. Each Heat Pump has its own ID. 	Pair the unit with your phone 	Initial connection may take up to 2 minutes. Keep the device connected to the internet. 

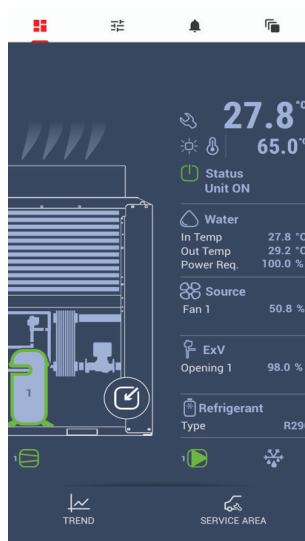
Select User to login



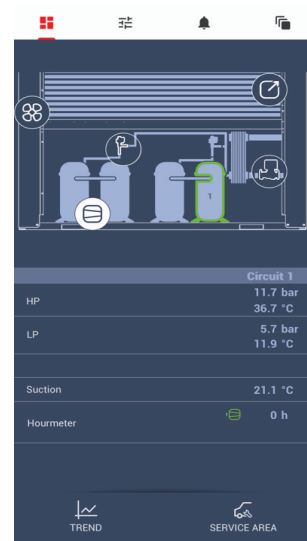
Input user password: 1000



You are now successfully logged onto Applica. View component operation status and refrigeration pressure by clicking the icon.

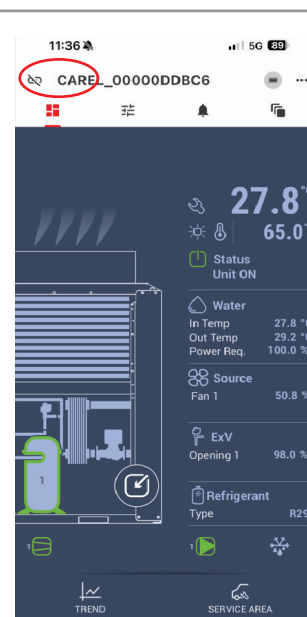
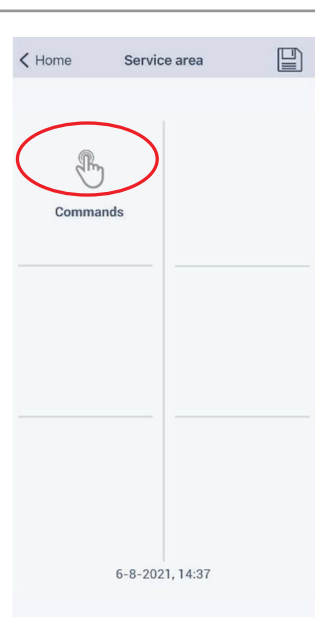
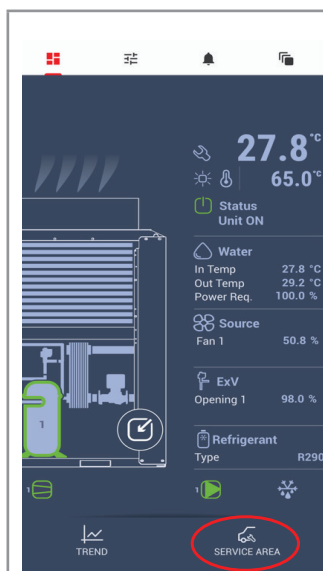


Click this icon to return to main display



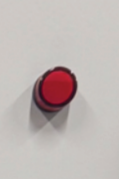
Change set point procedure:

- Access the Service menu by clicking the icon at the bottom right
- Click "Commands"--> Change set point
- After complete changing, go back to the main display, access the menu on the command bar at the top left, select 'Disconnect' to disconnect and save parameters.



TROUBLESHOOTING

ALARM CODES & TROUBLESHOOTING

Code	Description	Troubleshooting
A05	Tank water temperature probe - failure	• Ensure tank sensor connect to terminal "1&2". • Check tank sensor if broken (NTC thermistor: 10KΩ@25°C).
A06	Outlet water temperature probe - failure	• Check outlet water temp sensor connection. See electric diagram on access door. • Check temp sensor if broken (NTC thermistor: 10KΩ@25°C).
A10 A12	Remote alarm shuts down system	• The system is shut down by remote alarm signal on terminal 5&6. • Check external input signal before manually reset the system. • Applica APP will show 'OFF by flow switch'.
A13	User pump maintenance	Check component operation status. Book maintenance. Does not affect operation.
A16	Ambient temperature probe - failure	• Check ambient temp sensor connection. See electric diagram on access door. • Check temp sensor if broken (NTC thermistor: 10KΩ@25°C).
A19	High pressure transducer probe failure	• Check high pressure transducer connection. See electric diagram on access door. (marked as condensing pressure). • Check if pressure transducer is broken.
A21	Low pressure transducer probe - failure	• Check low pressure transducer connection. See electric diagram on access door. (condensing pressure) • Check pressure transducer if broken. • Low pressure transducer exceeds threshold. Check for gas leak.
A23	Discharge temperature probe failure"	• Check discharge temp sensor connection. See electric diagram on access door. • Check temp sensor if broken (NTC thermistor: 50KΩ@25°C)."
A24	Suction temperature probe - failure	• Check suction temp sensor connection. See electric diagram on access door. Check temp sensor if broken (NTC thermistor: 10KΩ@25°C)
A25	High pressure switch open	• Check if stop valves open and hot water loop is filled. Switch off/on the unit to restart. • Check if tank sensor is installed in tank thermostat well. • Check if all breakers have switched on in electric enclosure. • Check high pressure switch connection. See electric diagram on access door. (HP). • Check pressure switch if broken (NC type: normal close).
A26	High pressure transducer exceeds threshold	• Check if stop valves open and hot water loop is filled. Switch off/on the unit to restart. • Check if tank sensor is installed in tank thermostat well. • Check if all breakers have switched on in electric enclosure.
A27	Low pressure transducer exceeds threshold	• Check if fan airflow was blocked due to obstacles or dirty coil. Switch off/on to restart. • Check if all breakers have switched on in electric enclosure. • Check if fan and electronic expansion valve work. • Check if refrigerant escaped and leakage spots.
A28	Anti-freeze protection	• Check if reversing valve is stuck at cooling status. (At normal operation water outlet temp should be warmer than water inlet temp. • Check reversing valve coil connection. See electric diagram on access door. (RV 1).
A29	Low pressure switch open	• Check if fan airflow was blocked due to obstacles or dirty coil. switch off/on to restart. • Check if all breakers have switched on in electric enclosure. • Check if fan and electronic expansion valve work. • Check if refrigerant escaped and leakage spots. • Check low pressure switch connection. See electric diagram on access door. (LP). • Check pressure switch (NC type: normal close when refrigerant exists in the system).
A30	Compressor overload	• Check current setting on compressor overload. See electric diagram on access door. • Check if compressor overload is broken.
A32	Compressor maintenance	Check component operation status. Book maintenance. Does not affect operation.
A34	Fan maintenance	Check component operation status. Book maintenance. Does not affect operation.
A91	High discharge temp protection	• Check electric expansion valve connection. See electric diagram on access door (EEV). • Check for low refrigerant charge. • Check temp sensor if broken (NTC thermistor: 50KΩ@25°C).
-	Only GREEN LED light is illuminated on the phase failure relay with unit in fault condition	• Check 3 phase order from isolating switch to heat pump. • Check that the voltage imbalance between phases is less than 15%. • Check 3 phase fail relay (Applica APP will show 'OFF. remote DI' if only one light is lit)
-	RED refrigerant leak indicator light (front RH corner) illuminated with unit in fault condition.	 • Carefully check for any refrigerant leakage. Open front service door and ventilate the area until the refrigerant indication light turns off. • Check refrigerant leak detector connection. See electric diagram on access door. • Check if refrigerant leak detector is broken. • (Applica APP will show 'OFF by remote DI' if the indication light is lit)

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IMPORTANT

The checklist is ONLY to be completed by an Authorised person.



To complete this section you will need to log onto the Applica App. Please refer to the section “Applica App” on page 31 for instructions.

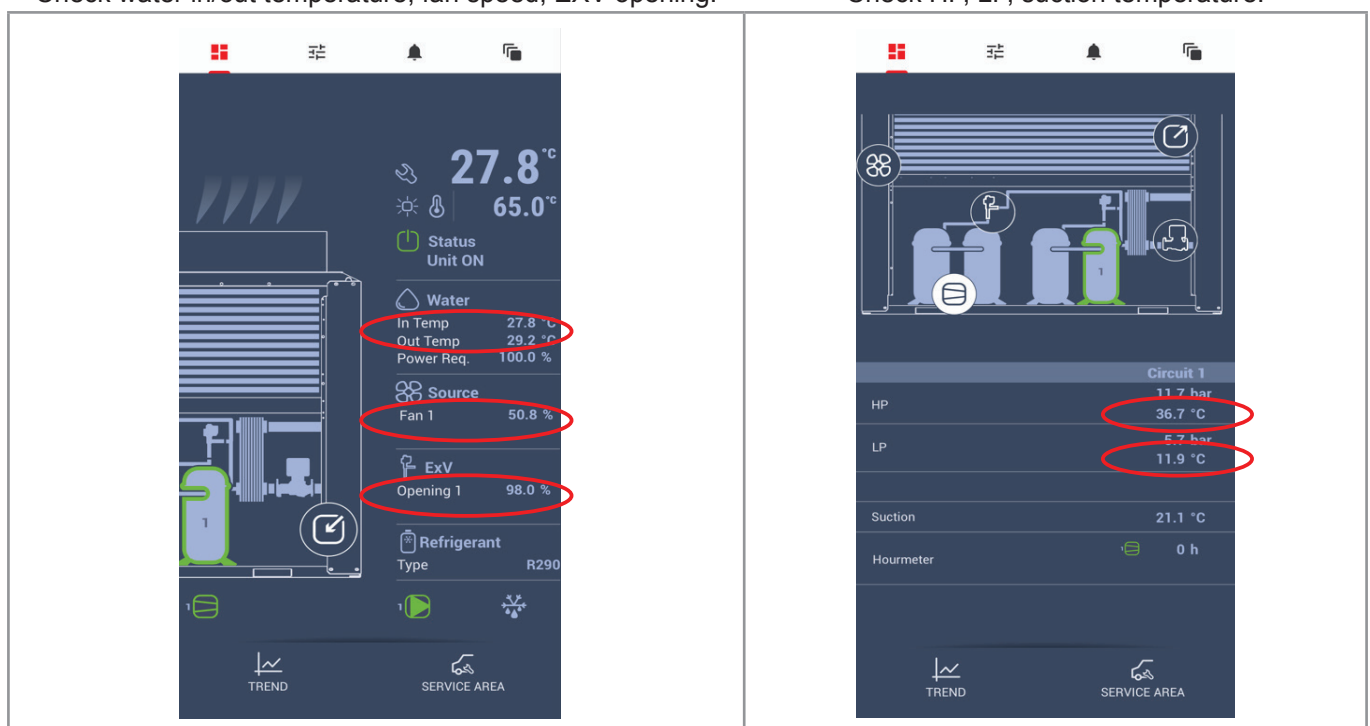
Date of Commissioning: / / Installed By: _____ Unit Serial No: _____

Check Item	✓	What can happen if not checked
Is the unit installed securely?		Falling, vibration, noise
Has the Tank Sensor been securely fitted to the tank dry well?		Heat pump damage
Has an inspection been made to check for hot water loop leakage?		Water leakage
Has all thermal insulation been completed for water pipes?		Heat loss, water freezing
Are the electric wires installed securely?		Operation failure, no hot water
Is the wiring in accordance with the specifications?		Operation failure, electrical fire
Are the stop valves open in hot water loop?		No hot water
Does the tank water become warmer when heat pump operates?		No hot water
In temperature	°C	Check after compressor operating 1 hour
Out temperature	°C	Check after compressor operating 1 hour
Fan speed	%	Check after compressor operating 1 hour
EXV opening	%	Check after compressor operating 1 hour
HP saturated temperature	°C	Check after compressor operating 1 hour
LP saturated temperature	°C	Check after compressor operating 1 hour
Suction temperature	°C	Check after compressor operating 1 hour
Is the end user fully aware of the operating procedure?		Incorrect operation

If you have answered NO to any of the above, you must check and correct before appliance hand-over to customer.

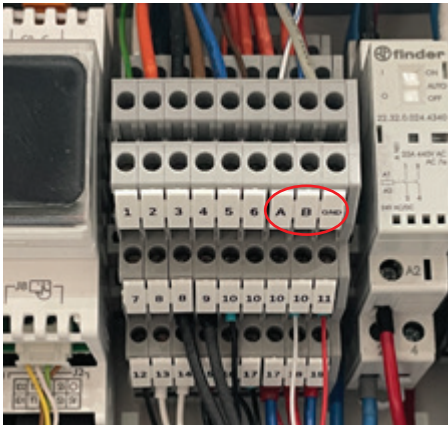
Check water in/out temperature, fan speed, EXV opening.

Check HP, LP, suction temperature.



BMS SETTING

The heat pump controller provides a database of supervisor variables via Modbus RTU protocol over RS485. Use a specific cable for RS485 (AWG20- 22 with 1½ twisted pair plus shield) to connect to the terminals marked “A”(“+”), “B” (“-”) and “GND” in the electrical enclosure shown below.



When using Modbus RTU protocol you need to set BMS port as following:

Code	Description	Default
Hd00	BMS serial address; You need set different address for each unit	1
Hd01	BMS baud rate: 3=9600; 4=19200; 5=38400; 6=57600; 7=115200	7
Hd02	BMS settings: 0= 8-NONE-1; 1= 8-NONE-2; 2= 8-EVEN-1; 3= 8-EVEN-2; 4= 8-ODD-1; 5= 8-ODD-2	1
Hd07	BMS: supervisor database 0= 32bit; 1= 16bit	0

Change above parameters through the user terminal. Please refer to the section “User Terminal” on page 29“ for user terminal introduction.

MENU STEPS

1. Go to the standard display.

2. Press PRG (⊙): the password prompt (PSd) is shown
User service password: **2000**

3. Press PRG: the first digit of the password will flash; set value, press PRG. The second digit will flash; continue process to complete password.

4. Press PRG: if password is correct, the first parameter category is shown: PLt

5. Press the up arrow. ESC will show.

6. Press PRG to escape back to the standard display

7. Press down arrow till Hd00 displays. Press PRG: the value flashes; press UP/DOWN to change. Press PRG to confirm
Hd00 – BMS: Serial Address

8. Press down arrow till Hd01 displays. Press PRG: the value flashes; press UP/DOWN to change. Press PRG to confirm
Hd01 – BMS: Baud rate

9. Press DOWN arrow until Hd02 displays. Press PRG (value flashes). Use UP/DOWN to adjust. Press PRG to confirm. Hold PRG for 3 seconds to return to main display.
Hd02 – BMS: Settings

REGISTRY INFORMATION

Registry information is required when setting up the control monitoring interface to select data to monitor.



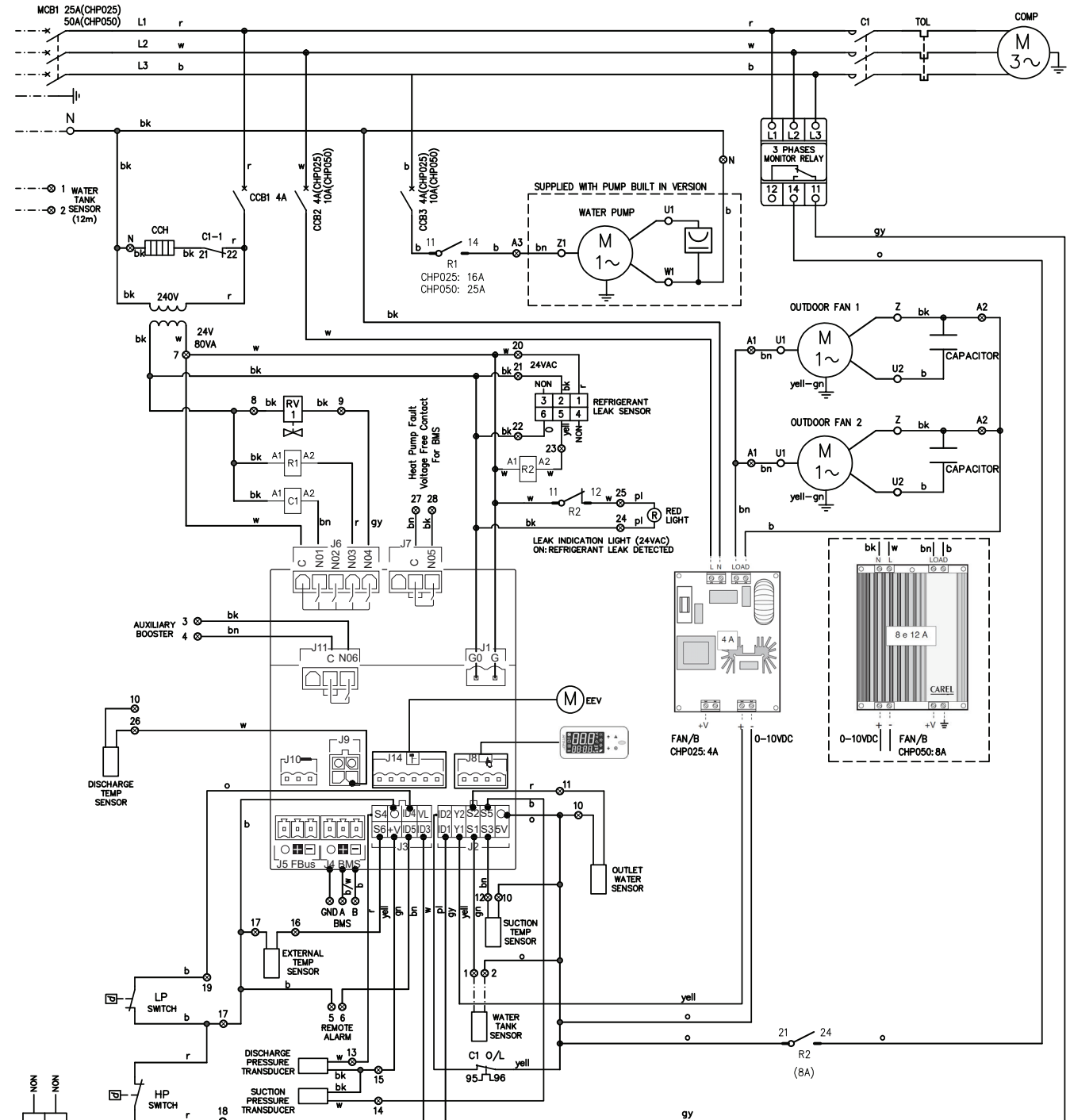
All parameters are READ-ONLY.

Refer to the tables below for registers and data points.

Input Register Information				
Register Address	Description	Bit	Type	Unit
0	User pump working hours	32	INT	h
4	Compressor working hours	32	INT	h
14	Suction temp	32	REAL	°C
20	Discharge pressure probe	32	REAL	bar
22	Suction pressure probe	32	REAL	bar
24	Cond. temp. probe (or press. probe converted value)	32	REAL	°C
26	Evap. temp. probe (or press. probe converted value)	32	REAL	°C
40	Source fan working hours	32	INT	h
50	EEV position	16	REAL	%
54	Tank water temp	32	REAL	°C
56	Outlet water temp	32	REAL	°C
65	Source fan - Inverter request	32	REAL	%
71	Unit status (1=OFF by keyboard, 5=OFF by alarm, 6=Unit in defrosting, 7=Unit ON)	16	INT	-
92	Power request (compressor will be running at 100%)	32	REAL	%

Input Status Information				
Register Address	Description	Bit	Type	Unit
4	Alarm 05: Tank water temperature probe - failure	16	BOOL	-
5	Alarm 06: Outlet water temperature probe - failure	16	BOOL	-
12	Alarm 13: User pump maintenance	16	BOOL	-
15	Alarm 16: Ambient temperature probe - failure	16	BOOL	-
23	Alarm 24: Suction temperature probe - failure	16	BOOL	-
24	Alarm 25: High pressure switch open	16	BOOL	-
25	Alarm 26: High pressure transducer exceeds threshold or failure	16	BOOL	-
26	Alarm 27: Low pressure transducer - failure	16	BOOL	-
27	Alarm 29: Low pressure switch open	16	BOOL	-
29	Alarm 30: Reversed phase of power supply or compressor overload	16	BOOL	-
31	Alarm 32: Compressor maintenance	16	BOOL	-
33	Alarm 34: Fan maintenance	16	BOOL	-

WIRING DIAGRAM



IMPORTANT NOTE:
THE SCROLL COMPRESSOR IS ROTATIONALLY SENSITIVE, IF NOISY OR NOT PUMPING, CHANGE ANY OF TWO PHASES.

WARNING: THE SOFTWARE OF uCHILLER CONTROLLER IS NOT DESIGNED TO FUNCTION AS A PRIMARY PERSONAL SAFETY DEVICE, AS CONNECTED EQUIPMENT CAN START AUTOMATICALLY WITHOUT WARNING. THE ELECTRONIC CONTROLLER HAS A BUILT IN AUTOMATIC RESET FAULT LOCKOUT FUNCTION AND MAY RESTART THE SYSTEM AUTOMATICALLY WITHOUT WARNING. OUTDOOR FAN MOTORS HAVE INTERNAL OVERLOADS AND MAY RESTART AUTOMATICALLY.

- NOTES:
1. ALL FIELD WIRING IS THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR AND MUST COMPLY WITH AS/NZS 3000 AND LOCAL RULES.
 2. ISOLATOR FOR ELECTRICAL PROTECTION TO BE SUPPLIED BY THE INSTALLER.
 3. USER PASSWORD 1000 FOR BLUETOOTH CONNECTION WITH CAREL Applic App.

NOTE: THIS WIRING DIAGRAM APPLIES TO SWITCHBOARD:
EWS10201-A (CHP025)
EWS10301-A (CHP050)

NO	MODEL	COMPRESSOR			OD FAN		WATER PUMP	
		kW	FLA	O/L	kW	FLA	kW	FLA
1	CHP025	8.8	14.5	16.0	0.27	1.3	0.43	2.4
2	CHP050	19.0	32.5	34.0	0.62	3.0	0.90	4.4

LEGEND		LEGEND		COLOUR CODE	
COMP	COMPRESSOR	---	FIELD WIRING	r	RED
C1	CONTACTOR	---	MAINS/CONTROL WIRING	w	WHITE
O/L	OVERLOAD	---	OPTION WIRING	b	BLUE
TOL	THERMAL OVERLOAD	---	SWITCHBOARD TERMINAL	bk	BLACK
CCH	CRANK CASE HEATER	---		bn	BROWN
RV1	REVERSING VALVE	---		o	ORANGE
HP	HIGH PRESSURE SWITCH	---		p	PINK
LP	LOW PRESSURE SWITCH	---		pl	PURPLE
MCB	MINIATURE CIRCUIT BREAKER	---		gy	GREY
CCB	CONTROL CIRCUIT BREAKER	---		yell	YELLOW
FAN/B	FAN CONTROL BOARD	---		gn	GREEN

NOTES



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Tel: 1300 555 545*

Monday to Friday, 8.00 am to 5.00 pm EST.

After Hours Hot Water Service Line

Tel: 1800 000 340*

**Cost of a local call may be higher from a mobile phone.
(National calls from public phones in Australia are free.)*

For further information visit **www.rinnai.com.au**
or email **enquiry@rinnai.com.au**

Rinnai has a Service and Spare Parts network with personnel who are fully trained and equipped to give the best service on your Rinnai appliance. If your appliance requires service, please call Customer Support. Rinnai recommends that this appliance be serviced every year.

With our policy of continuous improvement, we reserve the right to change, or discontinue at any time, specifications or designs without notice.