

Commercial Heat Pump

AHP-47 (78550)
AHP-58 (78551)
AHP-95 (78552)
AHP-120 (78553)
AHP-145 (78554)
AHP-190 (78555)

WARNING

FOR YOUR SAFETY - This product must be installed and serviced by a contractor who is licensed and qualified in pool equipment by the jurisdiction in which the product will be installed where such state or local requirements exist. The maintainer must be a licensed HVAC technician certified in heat pump repair and maintenance by the jurisdiction in which the product will be installed where such state or local requirements exist. The technician must possess and comply with all certifications and regulations regarding the purchasing, handling, transportation and reclamation of R410A refrigerant. In the event no such state or local requirement exists, the installer or maintainer must be a professional with sufficient experience in pool equipment installation and maintenance so that all of the instructions in this manual can be followed exactly. Before installing this product, read and follow all warning notices and instructions that accompany this product. Failure to follow warning notices and instructions may result in property damage, personal injury, or death. Improper installation and/or operation may void the warranty.



Improper installation and/or operation can create unwanted electrical hazard which may cause serious injury, property damage, or death.

ATTENTION INSTALLER – This manual contains important information about the installation, operation and safe use of this product. This information should be given to the owner/operator of this equipment.

WARRANTY REGISTRATION	Record your equipment details here for quick reference: Model No. : _____ Serial No. : _____
	AUSTRALIA WARRANTY: For full warranty terms and conditions and to register your warranty, visit www.astralpool.com.au/warranty and complete your details. ◀ Or scan the QR code to go directly to the registration page.
	NEW ZEALAND WARRANTY: For full warranty terms and conditions and to register your warranty, visit www.astralpool.co.nz/warranty and complete your details. ◀ Or scan the QR code to go directly to the registration page.

EQUIPMENT INFORMATION RECORD	
DATE OF INSTALLATION	_____
INSTALLER INFORMATION	_____
INITIAL PRESSURE GAUGE READING (WITH CLEAN FILTER)	_____
PUMP MODEL _____	HORSEPOWER _____
NOTES	_____

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Section 1. General Information

READ AND FOLLOW ALL INSTRUCTIONS

1.1 Introduction

This manual provides installation and operation instructions for the AstralPool AHP series of heat pumps. Read these installation and operation instructions completely before proceeding with the installation.

This heat pump is specifically designed for heating fresh water swimming pools and spas. Do not use it as a general service heater.

ATTENTION	
Installation and service must be performed by a qualified installer or service agency.	
<p>To the Installer:</p>  <p>After installation, these instructions must be given to the homeowner or left on or near the heat pump.</p>	<p>To the User:</p> <p>This manual contains important information that will help you in operating and maintaining this heat pump. Please retain it for future reference.</p>

1.2 Consumer Information & Safety

The AstralPool AHP series of heat pumps are designed and manufactured to provide many years of safe and reliable service when installed, operated and maintained according to the information in this manual and the installation

codes referred to in later sections. Throughout the manual, safety warnings and cautions are identified by the “⚠” symbol. Be sure to read and comply with all of the warnings and cautions.

1.3 Spa/Hot Tub Safety Rules

⚠ WARNING	
Elevated water temperature can be hazardous. Consult heater operation and installation instructions for water temperature guidelines before setting temperature.	
The following “Safety Rules for Hot Tubs” should be observed when using the spa:	
<ul style="list-style-type: none"> • Spa or hot tub water temperature should never exceed 40°C. Temperature of 38°C is considered safe for a healthy adult. Special caution is recommended for young children. • The drinking of alcoholic beverages before or during spa or hot tub use can cause drowsiness which could lead to unconsciousness, and subsequently result in drowning. • Pregnant women take note! Soaking in water above 38.5°C can cause fetal damage during the first three (3) months of pregnancy (which could result in the birth of a brain-damaged or deformed child). If pregnant women are going to use a spa or hot tub, they should make sure the water temperature is below 38°C. • The water temperature should always be checked with an accurate thermometer before entering a spa or hot tub. Temperature controls may vary by as much as 2°C. • Persons with a medical history of heart disease, diabetes, circulatory or blood pressure problems should consult their physician before using a hot tub or spa. • Persons taking any medication which induces drowsiness (e.g., Tranquilisers, antihistamines, or anticoagulants) should not use spas or hot tubs. 	
⚠ WARNING	
Prolonged immersion in hot water can induce hyperthermia.	
Hyperthermia occurs when the internal body temperature reaches a level several degrees above the normal body temperature of 37°C. Symptoms include dizziness, fainting, drowsiness, lethargy, and an increase in the internal body temperature. The effects of hyperthermia include:	
<ul style="list-style-type: none"> • Lack of awareness of impending hazard • Failure to perceive heat • Failure to Recognise need to leave spa 	<ul style="list-style-type: none"> • Physical inability to leave spa • Fetal damage in pregnant women • Unconsciousness resulting in a danger of drowning

⚠ WARNING

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 they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

⚠ WARNING

PREVENT CHILD DROWNING: Do not let anyone, especially small children, sit, step, lean or climb on any equipment installed as part of your pool's operational system. Locate the components of your operational system at least 1.5 m from the pool so children cannot use the equipment while in the pool and be injured or drown.

1.4 Swimming Pool Energy Saving Tips

It is important to note that a heat pump will not heat a pool as fast as a large gas or electric pool heater. If the pool water is allowed to cool significantly, it may take several days to return to the desired swimming temperature. For weekend use, it is *more economical* to maintain the pool water temperature at or near your desired swimming temperature. If you do *not* plan to use your pool for a prolonged period, then you might choose to turn the heat pump completely off *or* decrease the temperature setting of the control several degrees to minimise energy consumption.

AstralPool offers the following recommendations to help conserve energy and minimise the cost of operating your heat pump without sacrificing comfort.

1. A maximum pool water temperature of 25 °C. Use an accurate pool thermometer. A difference of 2°C will significantly increase energy consumption.
2. Carefully monitor the water temperature of your pool in the summertime. You can reduce heat pump usage due to warmer air temperatures.
3. During the winter or when on vacation for longer than a week, turn off the heat pump.
4. Find the proper setting on the heat pump temperature control and lock the control pad or install a cover on the heat pump controller to discourage further adjustments.

5. Set the pump time clock to start the pump no earlier than 6:00 AM during the pool heating season. This is the time when nightly heat loss balances.
6. Where possible, shelter the pool from prevailing winds with well-trimmed hedges or other landscaping, cabanas, or fencing.
7. The use of an automatic pool cover, if installed, provides a valuable safety feature, reduces heat loss, conserves chemicals, and reduces the load on filtration systems.
8. The use of a solar blanket can reduce the heat loss caused by evaporation on the surface area of the pool.

1.5 Warranty

The AstralPool AHP heat pump is sold with a limited factory warranty.

Make all warranty claims to your AstralPool dealer or directly to AstralPool. Claims must include the heat pump serial number and model (this information can be found on the rating plate), installation date, and name of the installer. Shipping costs are not included in the warranty coverage.

The warranty does not cover damage caused by improper assembly, installation, operation, winterising, field modification, or failure to earth bond and properly ground the unit. Any changes to the heat pump, evaporator, heat exchanger, wiring, or improper installation may void the warranty.

1.6 Specifications

Model	AHP-47 78550	AHP-58 78551	AHP-95 78552	AHP-120 78553	AHP-145 78554	AHP-190 78555
Heating Capacity (kW)*	45.00	55.00	95.00	120.00	145.00	190.00
Heating Power Input (kW)*	9.10	11.60	16.10	21.80	25.50	32.80
COP	4.95	4.74	5.90	5.50	5.69	5.79
Running Current (A)*	15.10	20.70	28.80	39.00	50.00	67.80
Power Supply	415V / 3 phase	415V / 3 phase	415V / 3 phase	415V / 3 phase	415V / 3 phase	415V / 3 phase
Refrigerant	R410A	R410A	R410A	R410A	R410A	R410A
Compressor Type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Fan Quantity	2	2	3	3	2	2
Fan Power Input (W)	228	228	150	150	615	2000
Fan Rotate Speed (RPM)	920	920	750	750	700	920
Noise @ 1M (dBa)	61	61	61	62	71	67
Water Connection (mm)	60.3 (2")	60.3 (2")	110 (4")	110 (4")	110 (4")	110 (4")
Min Water Flow Rate (lpm)	8	10	15	19	24	26
Unit Width (mm)	1490	1490	2170	2180	2175	2180
Unit Length (mm)	735	735	1070	1080	1070	1070
Unit Height (mm)	1130	1130	1920	1930	2030	2060
Shipping Weight (kg)	303	294	712	812	709	964
Net Weight (kg)	262	257	644	789	664	891

* All performance data is based on 24°C air, 26°C water @ 63% relative humidity

**Current rating is per phase

1.7 Codes and Standards

This appliance must be installed in accordance with the installation instructions, the National Wiring Rules and any other relevant statutory authorities.

1.8 Technical Assistance

Consult the AstralPool technical support department or your local AstralPool dealer with any questions or problems. Our AstralPool Customer Service team are available for over-the-phone support on 1300 186 875 Mon-Fri 8.30am - 6.00pm EST, or 0800 807 665 Mon- Fri 08:00 to 16:30 NZST.

1.9 Materials Needed For Installation

The following items are needed and are to be supplied by the installer for heat pump installations:

1. Plumbing connections.
2. Level surface for proper drainage.
3. Suitable electrical supply line. See rating plate on unit for electrical specifications. A junction box is not needed at the heat pump; connections are made inside of the heat pump electrical compartment. Conduit may be attached directly to the heat pump jacket.
4. Electric cutout switch that will interrupt all power to the unit. This switch *must* be within line of sight of the heat pump.
5. Watertight conduit to run the electrical supply line.

1.10 Dimensions

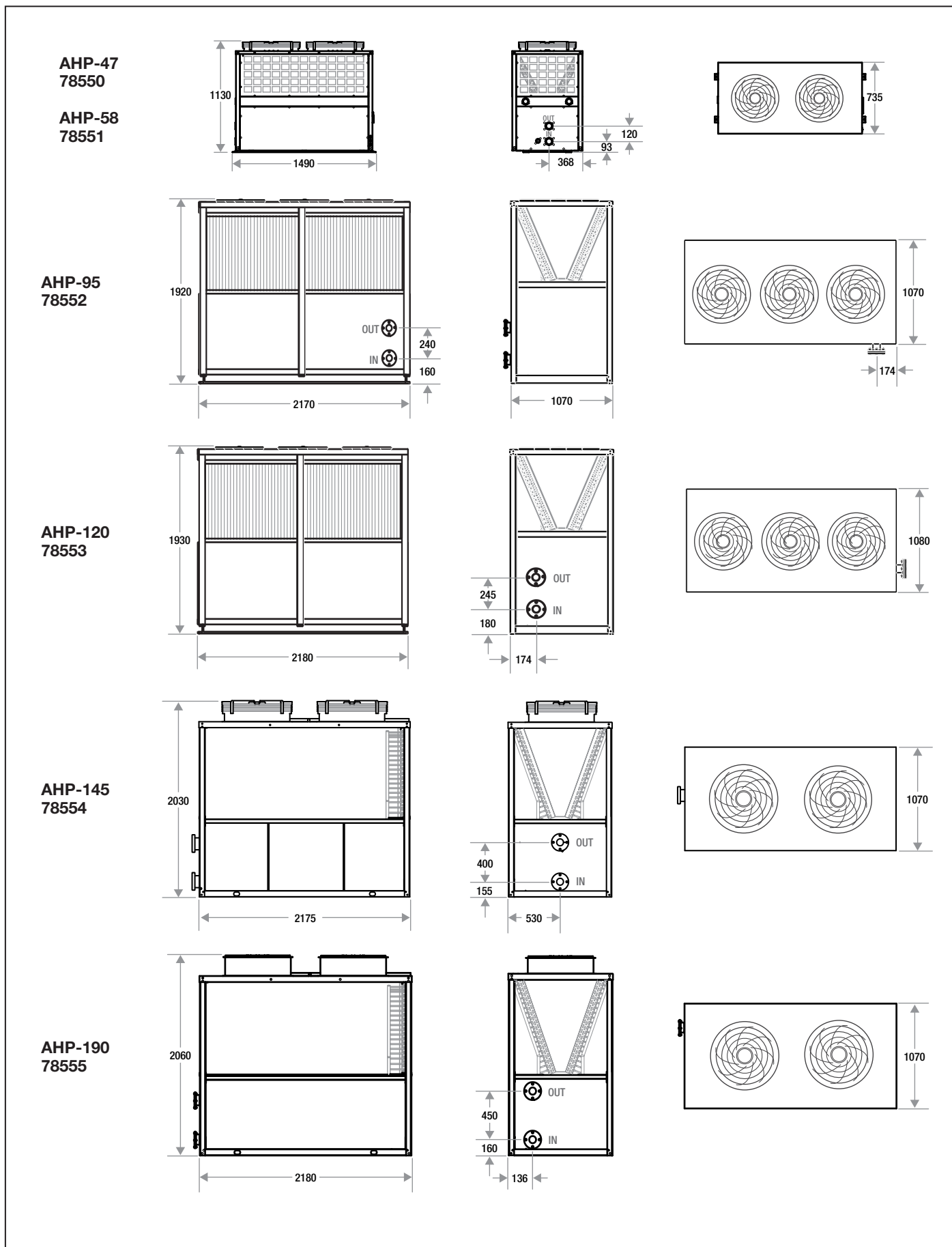


Figure 1. Overall Dimensions & Inlet/Outlet Locations (mm)

Section 2. Installation Instructions

2.1 General Information

The requirements for AstralPool heat pumps include the following:

1. Field assembly (if required).
2. Appropriate site location and clearances.
3. Sufficient air ventilation.
4. Proper electrical wiring.
5. Adequate water flow.

This manual provides the information needed to meet these requirements.

2.2 Location Requirements

NOTE: Heat Pump must be located outdoors with sufficient ventilation.

⚠ CAUTION
Installing heat pumps indoors or without adequate ventilation will result in very poor performance and can cause damage to the unit not covered under warranty.

Clearances

The heat pump must have adequate clearances on all sides for ventilation and serviceability. If the heat pump is under a vertical overhang, the unit must have adequate clearance above.

Heat Pump Exterior Surface	Clearances for Operation (mm)
Ends	800 minimum
Sides	1000 minimum
Top	3500 minimum
Unit to Nearest Pool Water	3500 minimum 7500 maximum
Between Units	1500 minimum

Table 1. Heat Pump Clearances

To reduce heat loss, the heat pump should be installed as close as possible to the inside wall of the pool, but no closer than 3.5m. Install no further than 7.5m from the water's edge to conserve heat. Insulate and bury pipes to reduce power consumption by as much as 500 watts.

Equipment Pad

Place the heat pump on a level surface, such as a concrete or fabricated slab (pad). This allows proper drainage of condensation and rain water from the base of the unit. If possible, the pad should be placed at the same level or slightly higher than the filter system equipment pad.

NOTE: Ensure that the pad is pitched not more than 1cm per metre so condensate is not allowed to pool at one end of the condensate tray.

Condensation and Drainage

Avoid placing the heat pump in locations where it can cause damage by water or condensate leakage. Condensation will drain from the unit while operating and may output several litres per hour, depending upon ambient air temperature and humidity.

⚠ CAUTION
When pool equipment is located below the pool surface, a leak from any component can cause large scale water loss or flooding. AstralPool cannot be responsible for such water loss or flooding or resulting damage.

Sprinklers and Runoff

Keep lawn sprinklers from spraying the heat pump to prevent corrosion and damage. Use a deflector if needed. Make sure the heat pump is not located where water may run-off from a roof into the unit. A gutter may be needed to protect the heat pump.

Noise Abatement

Each installation must be evaluated to consider the impact of noise levels, taking into account the proximity to private dwellings and public areas, the reflective and blocking characteristics of nearby walls and fences, and typical background noise levels at all hours of the day and night. Noise must not unreasonably interfere with the health and welfare of any person.

Section 3. Water Connections

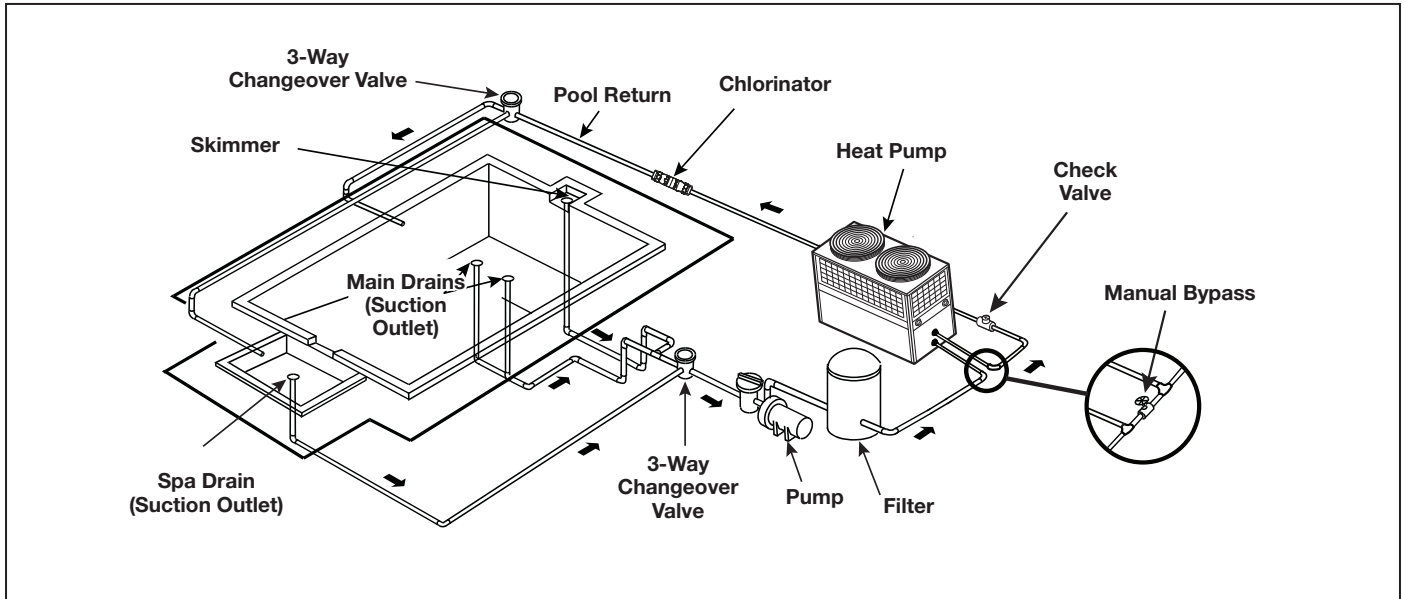


Figure 2. Standard Plumbing Layout

3.1 Plumbing Layout

A standard plumbing layout with a single heat pump unit, the plumbing sequence is as follows:

Pool > Pool Pump > Filter > Heat Pump > Check Valve > Chemical Loop > Chlorinator > Pool

Arrangement of pool system components other than as illustrated can affect the operation of the heat pump's water pressure switch. Location of the heat pump above or below the pool water surface can also affect operation of the switch. Be advised that when pool equipment is located below the pool surface a leak can result in large scale water loss or flooding. AstralPool cannot be responsible for such water loss or flooding or the damage caused by either occurrence.

3.2 Water Connections at Heat Pump

Filtered water is plumbed to the inlet. See Figure 1 on page 7 for Inlet/Outlet positioning. Barrel unions are supplied for units with 2" connections and loose ring flange fittings are supplied for models with 4" connections. Plastic piping (PVC) should be connected to the heat pump.

If the water flow is greater than the maximum water flow rate specified in the Specifications table, then an external bypass must be installed.

⚠ CAUTION
Make sure that flow requirements and pool water turn over rates can be maintained with the installation of additional heat pumps and plumbing restrictions.

3.3 Check Valve Installation

⚠ WARNING
A check valve can interfere with the proper operation of certain Suction Vacuum Release System (SVRS) products. To avoid possible entrapment hazard, serious injury, or death, make sure to review the operation/owners manual of your particular SVRS product before installing the check valve.

The heat pump must be protected from back-siphoning of water. If there is any chance of back-siphoning, provide a check valve between the pool and the filter pump inlet.

When an automatic chemical feeder is installed in the plumbing, it must be installed downstream of the heat pump. A check valve must be installed between the heat pump and the chemical feeder to prevent back-siphoning of chemically saturated water into the heat pump where it will damage the components.

3.4 Condensation Drain

Ensure condensate is plumbed away from the heat pump to a drain using the 32mm female threaded connection. The heat pump may automatically activate a defrost cycle which increases drainage.

3.5 Multiple Unit Installation

Heat Pump and Heater Combination

The AstralPool heat pump may be plumbed with a gas or electric heater or any combination of heat sources including solar. When different types of

heat sources are combined, they must be plumbed in series to work correctly and efficiently.

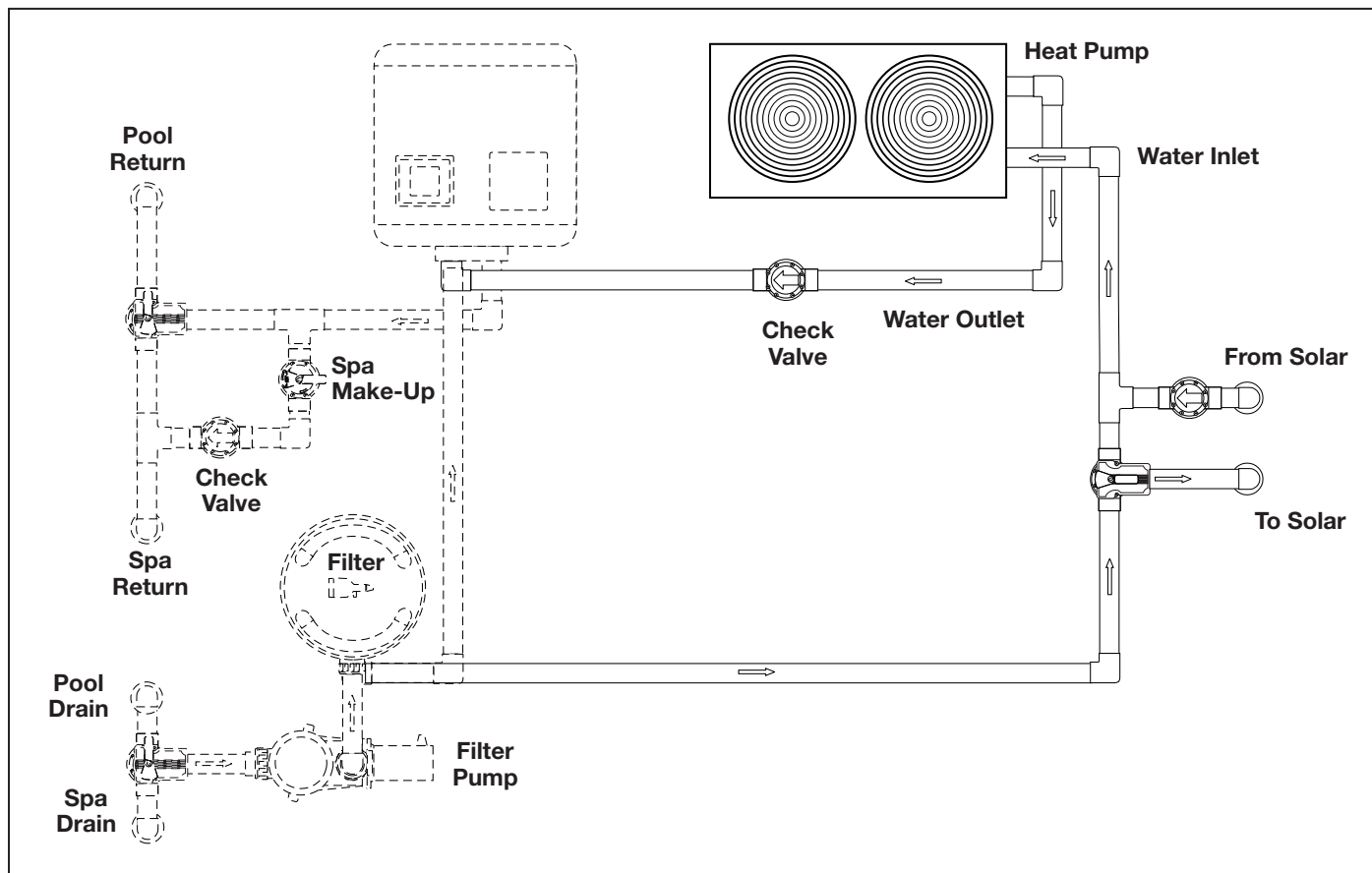


Figure 3. Plumbing For Heating System Combinations

Multiple Heat Pump Connections

All plumbing on multiple heat pump installations must be done in parallel. An equal flow of water

to each heat pump is important for optimum operation.

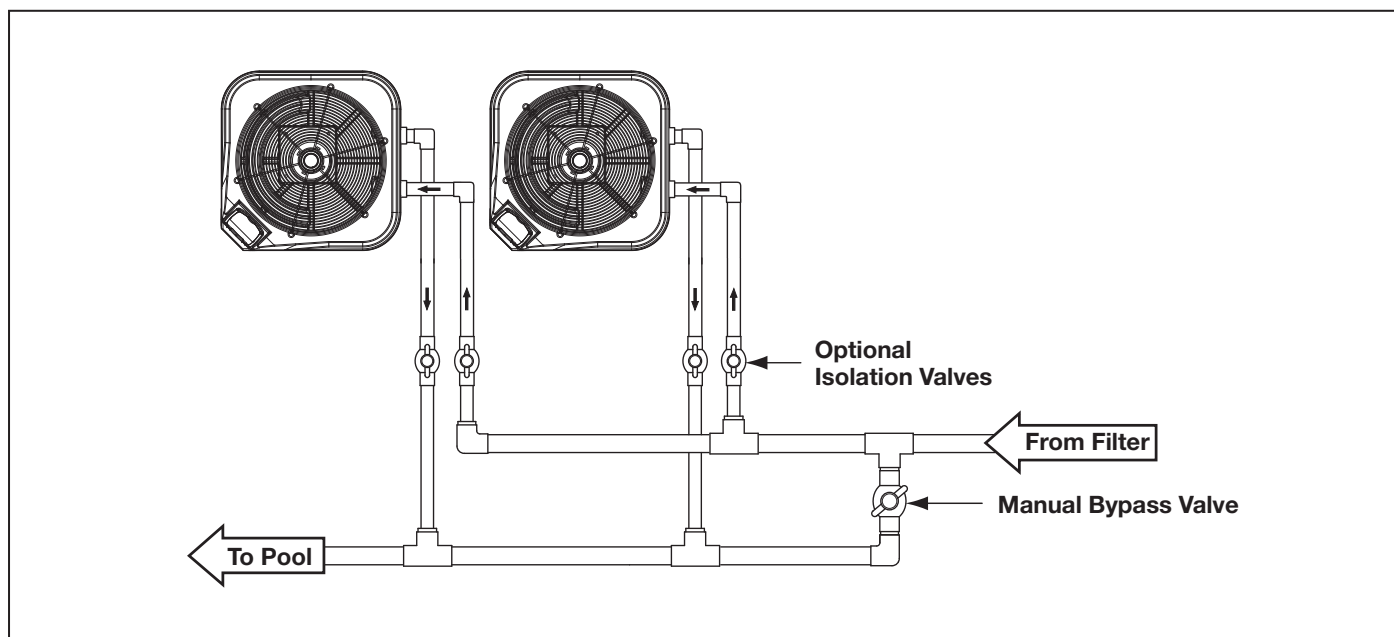


Figure 4. Two (2) Heat Pump Plumbing Layout

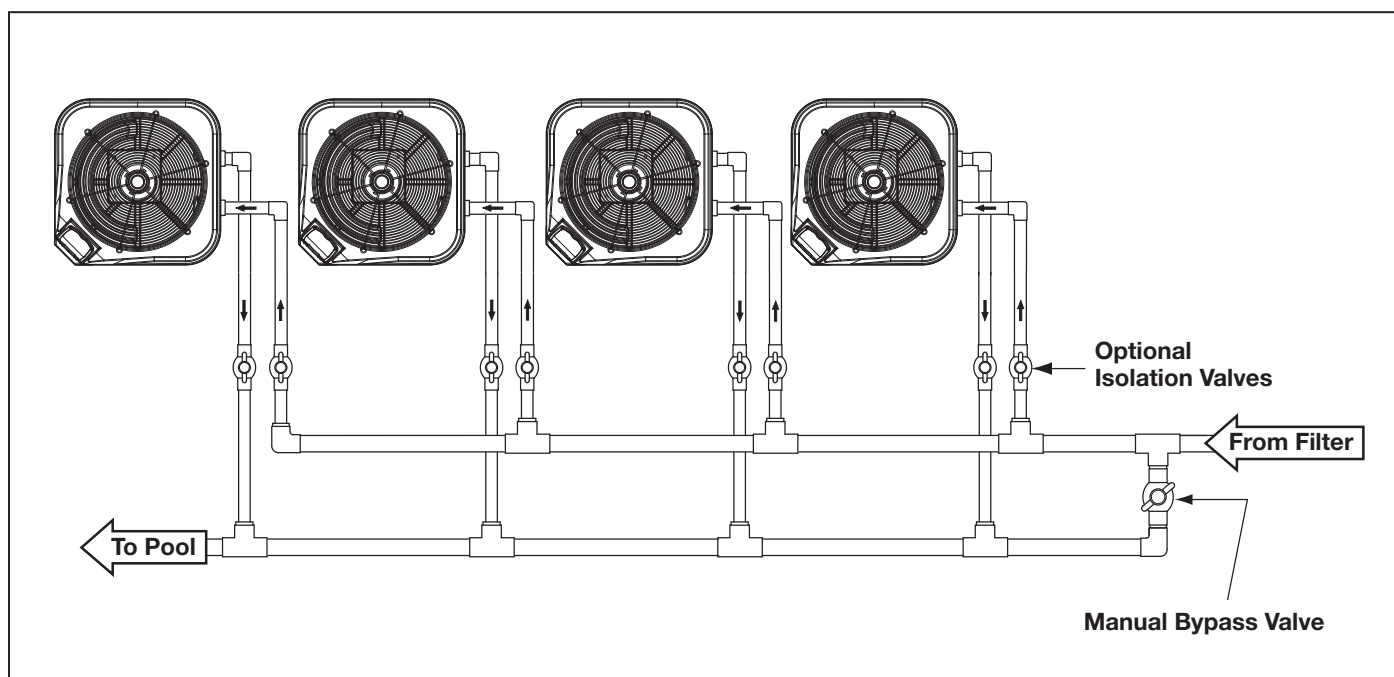


Figure 5. Four (4) Heat Pump Plumbing Layout

Section 4. Electrical Connections

4.1 General Information

Wiring connections must be made exactly as shown in the wiring diagram found on the inside of the heat pump access compartment. The heat pump must include a definite means of grounding and bonding. There is a bonding lug on the heat pump where a bond wire must be attached.

⚠ WARNING

ELECTRICAL SHOCK HAZARD. This heat pump contains wiring that carries high voltage. Contact with these wires may result in severe injury or death. Disconnect power circuit before connecting the heat pump.

⚠ WARNING

Follow all applicable installation codes. Prior to installation or performing any service, turn off all switches and the main breaker in the pool/spa pump electrical circuit. Failure to comply may cause a shock or hazard resulting in severe personal injury or death.

While disconnecting and/or connecting any electrical wiring, be careful not to damage or abrade any of the wiring.

4.2 Main Power

NOTE: The heat exchanger is electrically isolated from the rest of the unit. Grounding the unit is required to protect you against short circuits inside the unit. Bonding is also required.

The unit has a separate moulded-in junction box with a standard electrical conduit nipple already in place. Remove the screws and the front panel, feed your supply lines in through the conduit nipple and wire-nut the electric supply wires to the 4 connections already in the junction box. To complete electrical hookup, connect Heat Pump by electrical conduit, UF cable or other suitable means as specified (as permitted by local electrical authorities) to a dedicated AC power supply branch circuit equipped with the proper circuit breaker, disconnect or time delay fuse protection.

Phase rotation must be checked on 3 phase units. Incorrect rotation will damage the compressor and void any warranties.

4.2.1 Disconnect Means

A disconnect means (circuit breaker, fused or un-fused switch) should be located within sight of and readily accessible from the unit. This is common practice on commercial and residential air conditioners and heat pumps. It prevents remotely energising unattended equipment and permits turning off power at the unit while the unit is being serviced.

4.2.2 Three-phase electrical supply

The correct electrical phase connections are critical for 3-phase heaters. View the indicator lights on the 3-phase monitoring relay to determine if the phases are wired correctly.

- Both lights must be ON to indicate the 3-phase connections are wired correctly.
- If either light is OFF, the heater is NOT wired correctly. The electrical connections need to be rewired to the correct phase rotation before using the heater.

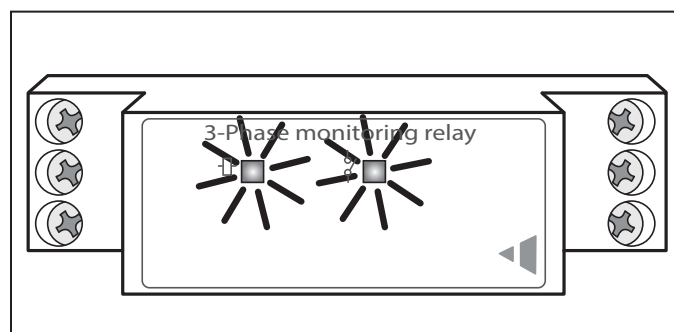


Figure 6. 3-Phase Connection Indicators

Section 5. Operation

⚠ CAUTION

Do not use this heat pump if any part has been under water. Immediately call a qualified service technician to inspect the heater and replace any part of the control system which has been under water.

Keep all objects off the top of the heat pump. Blocking air flow could damage the unit and may void the warranty.

5.1 Initial Start-up Procedure

NOTE: In order for the unit to heat the pool or spa, the filter pump must be running to circulate water through the heat exchanger

After installation, follow these steps:

1. Turn on your filter pump. Check for water leaks and verify flow to and from the pool.
2. Turn on the electrical power supply to the unit, then press the ON/OFF button on the Control Panel. It should start in several seconds.

3. After running a few minutes make sure the air leaving the top of the unit is cooler (Between 5-10°C)
4. With the unit operating turn the filter pump off. The unit should also turn off automatically,
5. Allow the unit and pool pump to run 24 hours per day until desired pool water temperature is reached. When the water inlet temperature reaches the programmed setting, the unit shuts off. The unit will now automatically restart (as long as your pool pump is running) when the pool temperature drops more than 2°C below set temperature.

5.1.1 Time Delay

The unit is equipped with a 3 minute restart delay to protect control circuit components. This time delay will automatically restart the unit approximately 3 minutes after any electrical interruption.

5.2 Control Panel

Use the control panel to adjust heat pump settings and to check System status. The home screen displays general information about the heat pump:

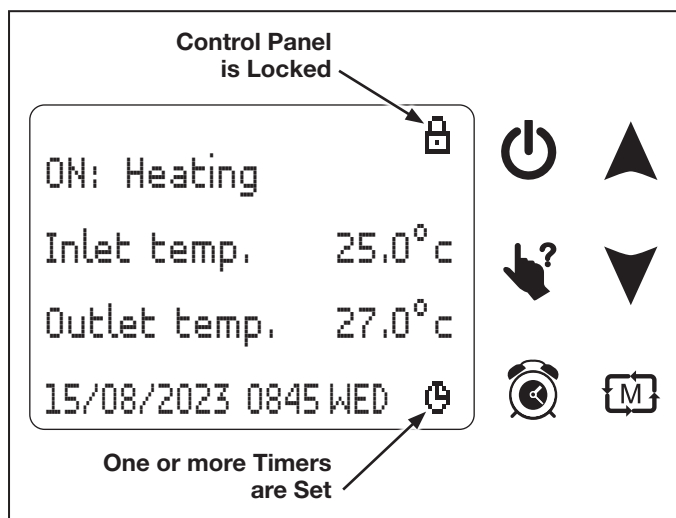











Figure 7. Control Panel & Home Screen

5.2.1 Button Functions

The primary and secondary functions of the 6 control panel buttons are listed below.


NOTE: After 10 seconds of button inactivity, the control panel will automatically save any settings that were being edited and return to the Home Screen.

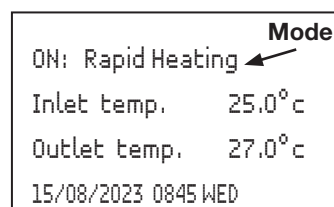
-  **ON/OFF** – Press for 1 second to turn the unit ON or OFF.
 - Cancels editing operations (if pressed within 10 seconds)
 - Exits to the menu level above, one level per press.
 - Locks/Unlocks the Control panel. Press and hold for 5 seconds until  appears (or disappears when unlocking).
-  **HELP** – Press for descriptions of the control panel buttons.
 - Press twice to access System information menus.
-  **CLOCK/TIMERS** – Press to open the date/time and Timer menus.
 - Activates the blinking cursor for editing the first segment of the highlighted date/time or Timer setting.
 - Advances the blinking cursor to the next segment to edit. Exits editing mode after the last segment.

-  **UP ARROW**– Press to raise the temperature setting.
 - Highlights the next item listed above
 - Page up (when  is displayed)
-  **DOWN ARROW** – Press to lower the temperature setting.
 - Highlights the next item listed below
 - Page down (when  is displayed)
-  **MODE** – Press to select the heat pump heating/cooling mode.
 - Confirms temperature setting changes
 - Opens the highlighted system menu

5.3 How to Operate the Controls

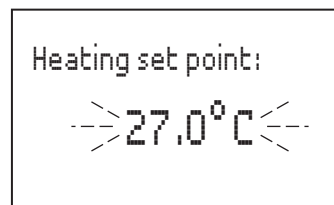
5.3.1 Selecting the Heat Pump Mode


- Press  to select each of the operation modes in the following order: Cooling > Economic Heating > Heating > Rapid Heating.






5.3.2 Changing the Temperature Setting

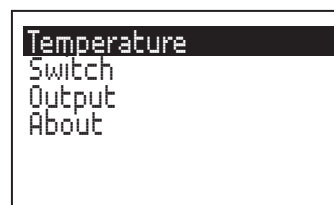
- Press   to adjust the temperature setting.





- Press  -or- wait until the screen stops flashing, to confirm the setting.

5.3.3 Checking Systems Information

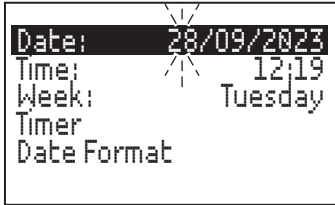
- Press  twice, then use   to highlight a system menu.



- Press  to open the highlighted menu item. Press  to the exit.

5.3.4 Setting Time and Date

1. Press **⏸** to access the time/date/Timer menus.
2. Press **▲▼** to highlight the desired item.
3. Press **⏸** to start editing. The first segment will start blinking.



4. Press **▲▼** to adjust the blinking segment.
5. Press **⏸** to advance to the next segment.
6. Repeat steps 4 and 5 until all segments have been edited, then press **⏸** at the last segment to confirm and exit.

5.3.5 Setting the Timers

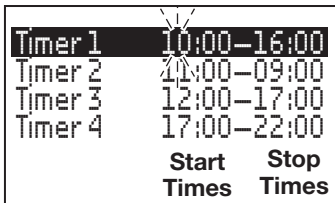
Each of the four timers can be programmed with:

- A start and stop time
- On or off for each day of the week
- Water temperature

NOTE: Timers set to run past midnight will continue to run even if set to OFF for the next day.

Timer Start & Stop Times

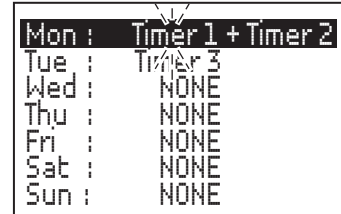
1. Press **⏸** to access the time/date/Timer menus.
2. Press **▼** to highlight "Timer," then press **⏸**.
3. With "Timer Zone" highlighted, press **⏸**.
4. Press **▲▼** to highlight a timer to edit.
5. Press **⏸** to edit the start and stop times for the highlighted timer. The first segment will start blinking.



6. Press **▲▼** to adjust the blinking segment.
7. Press **⏸** to advance to the next segment.
8. Repeat steps 6 and 7 until all segments have been edited, then press **⏸** at the last segment to confirm and exit.
9. Repeat steps 4-8 to edit another timer. Press **⏻** to exit.

Timer Run Days

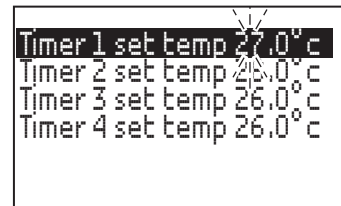
1. Press **⏸** to access the time/date/Timer menus.
2. Press **▼** to highlight "Daily timer," then press **⏸**.
3. Press **▲▼** to select a day of the week, then press **⏸**.
4. Press **⏸** to edit the timer(s) for that day. The first segment will start blinking.



5. Press **▲▼** to select a Timer to run.
6. Press **⏸** to advance to the next segment and add a second Timer, if desired, otherwise, press **⏸** to confirm.
7. Repeat steps 3-6 to select Timers for each day or NONE. Press **⏻** to exit.

Timer Water Temperature

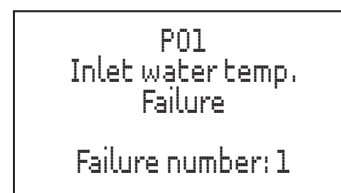
1. Press **⏸** to access the time/date/Timer menus.
2. Press **▼** to highlight "Timer setting temp.," then press **⏸**.
3. Press **▲▼** to highlight a timer, then press **⏸**.
4. Press **⏸** to edit the temperature for that timer. The setting will start blinking.



5. Press **▲▼** to select a temperature, then press **⏸** to confirm.
6. Repeat steps 3-5 to program the temperatures for each timer. Press **⏻** to exit.

5.3.6 Diagnostic Codes

1. If a fault is displayed, refer to the Diagnostics table for solutions.



Section 6. General Maintenance

6.1 Water Chemistry

Proper chemical balances are necessary for sanitary bathing conditions as well as ensuring your heat pump's long life. It is imperative that correct chemical balance be maintained in your pool and spa water, otherwise corrosion of your heater may occur. Corrosion due to chemically imbalanced water or excessive sanitiser is detectable and will void warranty.

NOTE: "Fresh water swimming pools and spas" include systems that utilise saltwater chlorine generator units. Please ensure that the salt content of the pool/spa *does not exceed* 4500 ppm. Always install any type of sanitation device on the outlet of the heater with a check valve between the heater outlet and sanitation device. See *Check Valve Installation* section.

NOTE: For spas, it is also necessary to perform water changes in addition to chemical treatment. It is recommended to change the spa water every 60 days for light usage and every 30 days if usage is heavy.

Test	Recommended Level
Free Chlorine or Bromine	1.0 to 3.0 ppm
pH	7.2 to 7.8 (Ideal ranges being between 7.4 and 7.6)
Total Alkalinity (TA)	80 to 120 ppm
Calcium Hardness (CH)	175 to 400 ppm
Cyanuric Acid	30 to 50 ppm
Total Dissolved Solids (TDS)	1000 to 2000 ppm (Excluding dissolved NaCl from Salt Chlorine Generator)
* Concentration levels taken from "Basic Pool and Spa Technology" published by APSP (Association of Pool and Spa Professionals).	

Table 2. Optimal Water Chemistry Ranges

6.2 Winterising

CAUTION

Failure to winterise could cause damage to the heat pump and may void the warranty.

If the pool won't be used for a month or more, turn the heater off at the main isolating switch. For areas where there is no danger of freezing, water should circulate through your heater all year long even though you are not heating your pool.

Where freezing is possible, it is necessary to drain the water from the heater. This may be done by loosening the inlet or outlet barrel union. If the heater is below water level, isolate it from the pool first by closing shut off valves before and after the heater.

CAUTION

If the heater has been drained for freezing conditions, do not turn on until System is circulating water.

6.3 Spring Start-Up

If your heat pump has been winterised, perform the following steps when starting System in the Spring:

1. Turn on the filter pump to supply water to the heat pump. Circulate water through System long enough to cycle all of the pool water through the filter. Check for leaks in and around the heat pump.
2. Check the pool chemistry and balance as necessary.
3. Turn on the electrical power to the heat pump at the main breaker panel.

6.4 Inspection and Service

Periodic inspections are important to keep your heat pump running safely and efficiently through the years.

Owner Inspection

CAUTION

Do not use this heat pump if any part has been under water. Immediately call a qualified service technician to inspect the heater and replace any part of the control system which has been under water.

AstralPool recommends that you inspect your heat pump on a regular basis and especially after abnormal weather conditions. The following basic guidelines are suggested for your inspection:

1. Keep the top and surrounding areas of the heat pump clear of all debris.
2. Keep all plants and shrubs trimmed and away from the heat pump.

The heat pump will produce condensation (water) while in operation. The heat pump base is designed to allow the condensation to exit through the drain port when the unit is running. The condensation will increase as the outdoor air humidity level increases. Check the following at regular intervals to ensure proper condensate drainage:

1. Visually inspect and clear the bottom drain ports of any debris that could clog the ports.
2. Ensure that condensate water does not puddle inside the heat pump.
3. Ensure that condensate run-off is properly directed away from the equipment pad to keep it from undermining the pad.

During normal operation, the heat pump produces several litres of condensate per hour. If condensate drainage is above this range during operation or if water continues to drain from the base when the heat pump is not in operation for more than an hour, a leak in the internal plumbing may have occurred. Call a qualified heat pump technician to investigate the problem.

Keep the top air flow discharge and air flow intake area clear of debris so the air flow through the heat pump is not restricted. The cooler discharge air from the top should not accumulate and be drawn into the side air intake coils. Keep all plants and shrubs trimmed away from the heat pump.

Make sure the front of the unit is accessible for future service.

Keep lawn sprinkler heads from spraying on the heat pump to prevent corrosion and damage. Use a deflector if needed.

If the unit is installed under a very sharp roof pitch or under a roof without a gutter, a gutter or diverter should be fitted to prevent excessive water from pouring down into the unit.

Professional Inspection

Inspections performed at least once a year by a qualified technician are required to maintain your heat pump's safe and efficient operation. The following basic safety checks must be performed.

1. Check for loose or broken wires and terminal connections.
2. Verify the pressure switch or flow switch operation. Turn the heat pump OFF. Disconnect the power to the pump time clock, or turn the pump time clock to an OFF position. Turn the heat pump back ON. The heat pump must not come on.
3. Inspect the electrical controls, specifically the following:
 - High and low limits
 - Pressure switch or flow switch
 - Temperature control
4. Inspect the evaporator coil for blockage and clean as necessary.
5. Check for spider webs or debris in the condensate drain; clean if necessary.
6. Conduct a normal operating cycle and observe that the unit operates properly.

Section 7. Troubleshooting

7.1 Troubleshooting Guide

The following table provides symptoms and solutions for general troubleshooting problems for the heat pump.

Symptom	Corrective Action
Heat pump will not start, no control board display.	Breaker or fuse may be tripped. Reset breaker or check fuse. If heat pump still does not run, call for service. Three-phase models - The phases may be reversed or there may be a loss of phase, call for service. Phase rotation must be checked on 3-phase units. Incorrect rotation will damage the compressor and void all warranties.
Heat pump will not start, control board display working.	Heat pump may be in delay countdown of 3 minutes. Make sure control board thermostat is calling for heater to come on (check setting on thermostat and temperature reading). Make sure heat pump is not in cooling mode.
Heat pump runs but does not heat.	Verify cold air is blowing out the top of the heat pump. If the heat pump has just been installed or if the pool water has been allowed to cool significantly, it is necessary to run the heat pump continually for 24-48 hours. If the heat pump has been in operation for some time, increase the circulating pump time. If heating a spa, verify no air intake stand pipes are open. If heat pump still does not heat, call for service.
Heat pump leaking water.	Possible heat exchanger or plumbing leak. Turn the heat pump off, then turn circulating pump off for at least one hour to see if the water leak stops. If the water leak stops, normal condensation is occurring. If the water leak continues, after the heat pump is shut off for at least one hour, call for service.

Table 3. Heat Pump Troubleshooting Guide

7.2 Diagnostics

In the event a fault condition occurs, the control panel will display the fault until the problem has been resolved. Please refer to the following table for the list of diagnostic conditions.

Code	Display	Cause	Solution
P01	Inlet temp. sensor failure	Sensor failure or short circuit	Check/replace sensor
P02	Outlet temp. sensor failure	Sensor failure or short circuit	Check/replace sensor
P04	Ambient temp. sensor failure	Sensor failure or short circuit	Check/replace sensor
P15	System 1 coil temp. sensor failure	Sensor failure or short circuit	Check/replace sensor
P25	System 2 coil temp. sensor failure	Sensor failure or short circuit	Check/replace sensor
P35	System 3 coil temp. sensor failure	Sensor failure or short circuit	Check/replace sensor
P45	System 4 coil temp. sensor failure	Sensor failure or short circuit	Check/replace sensor
P17	System 1 absorb temp. sensor failure	Sensor failure or short circuit	Check/replace sensor
P27	System 2 absorb temp sensor failure	Sensor failure or short circuit	Check/replace sensor
P37	System 3 absorb temp sensor failure	Sensor failure or short circuit	Check/replace sensor
P47	System 4 absorb temp sensor failure	Sensor failure or short circuit	Check/replace sensor
P19	System 1 anti-freezing temp sensor failure	Sensor failure or short circuit	Check/replace sensor
P29	System 2 anti-freezing temp sensor failure	Sensor failure or short circuit	Check/replace sensor
P39	System 3 anti-freezing temp. sensor failure	Sensor failure or short circuit	Check/replace sensor
P49	System 4 anti-freezing temp. sensor failure	Sensor failure or short circuit	Check/replace sensor
P191	System 1 anti-freeze temp failure	Sensor failure or short circuit	Check/replace sensor
P291	System 2 anti-freeze temp failure	Sensor failure or short circuit	Check/replace sensor
P391	System 3 anti-freeze temp failure	Sensor failure or short circuit	Check/replace sensor
P491	System 4 anti-freeze temp failure	Sensor failure or short circuit	Check/replace sensor
P151	System 1 coil inlet temp failure	Sensor failure or short circuit	Check/replace sensor
P251	System 2 coil inlet temp failure	Sensor failure or short circuit	Check/replace sensor
P351	System 3 coil inlet temp failure	Sensor failure or short circuit	Check/replace sensor
P451	System 4 coil inlet temp failure	Sensor failure or short circuit	Check/replace sensor
E05	System protection	Protection system failure	Check each protection point
E08	Communication Failure	Controller wire disconnected	Check wire to controller
E11	High pressure 1 protection	Switch broken	Check/replace switch circuit
E21	High pressure 2 protection	Switch broken	Check/replace switch circuit
E31	High pressure 3 protection	Switch broken	Check/replace switch circuit
E41	High pressure 4 protection	Switch broken	Check/replace switch circuit
E12	Low pressure 1 protection	Switch broken	Check/replace switch circuit
E22	Low pressure 2 protection	Switch broken	Check/replace switch circuit
E32	Low pressure 3 Protection	Switch broken	Check/replace switch circuit
E42	Low pressure 4 protection	Switch broken	Check/replace switch circuit
E03	Water flow failure	Insufficient pressure/flow	Check flow/remove clog
E04	Electrical-heat over heat failure	Overheating	Check/replace electrical heater
E06	Water-inlet and outlet temp. difference	Insufficient pressure/flow	Check flow/remove clog
E06	System 1/2/3/4 anti-freeze protection	Insufficient pressure/flow	Check flow/remove clog
E171	System 1 anti-freezing protection	Water flow is not enough	Check flow/remove clog
E271	System 2 anti-freezing protection	Water flow is not enough	Check flow/remove clog
E371	System 3 heat side anti-freezing protection	Water flow is not enough	Check flow/remove clog
E471	System 4 heat side anti- freezing protection	Water flow is not enough	Check flow/remove clog
E19	The primary anti-freezing protection	The ambient temp is low	Wait
E29	The secondary anti-freezing protection	The ambient temp is low	Wait

Table 4. Heat Pump Codes

Section 8. Wiring Diagrams

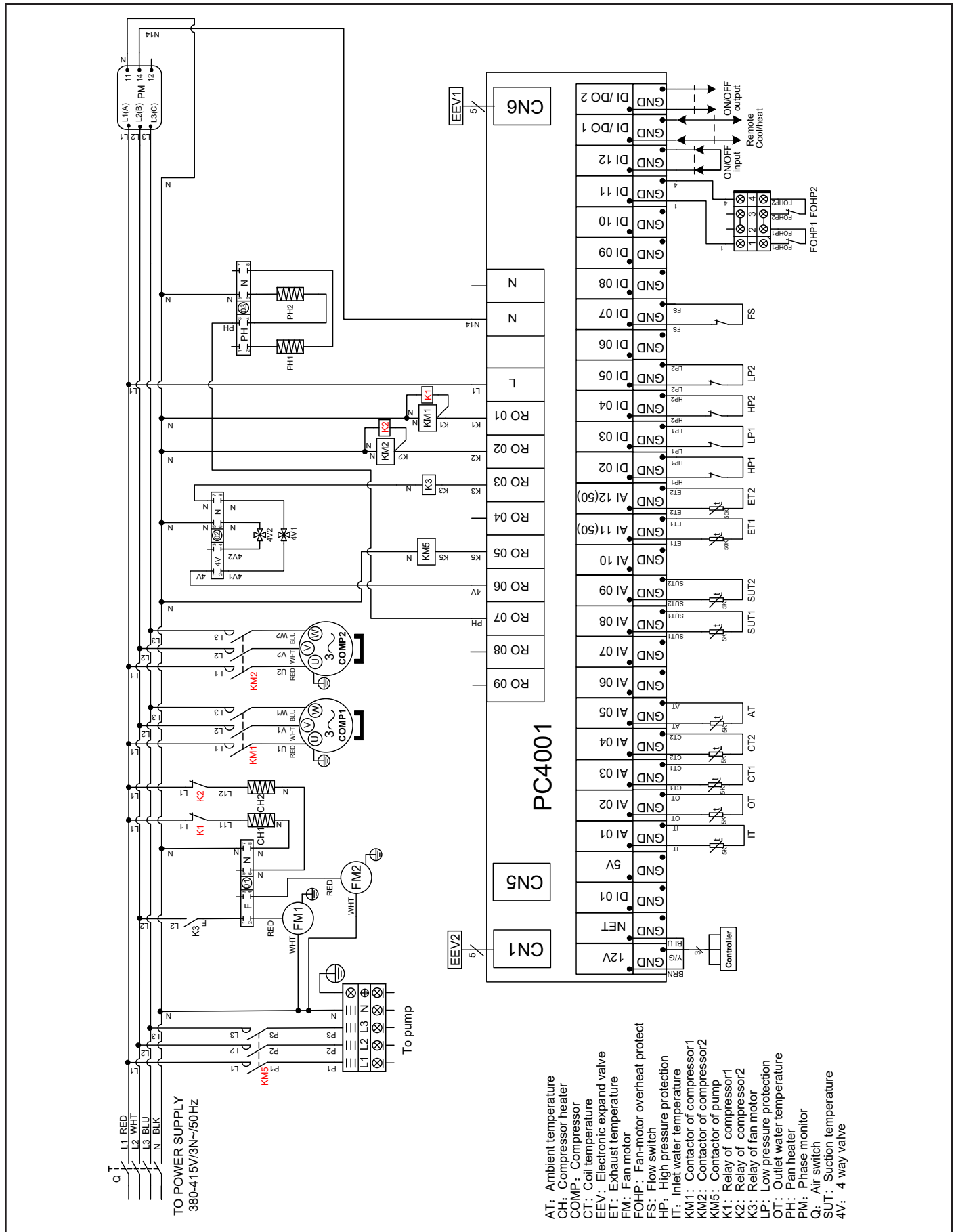


Figure 8. AHP-47 (78550) & AHP-58 (78551)

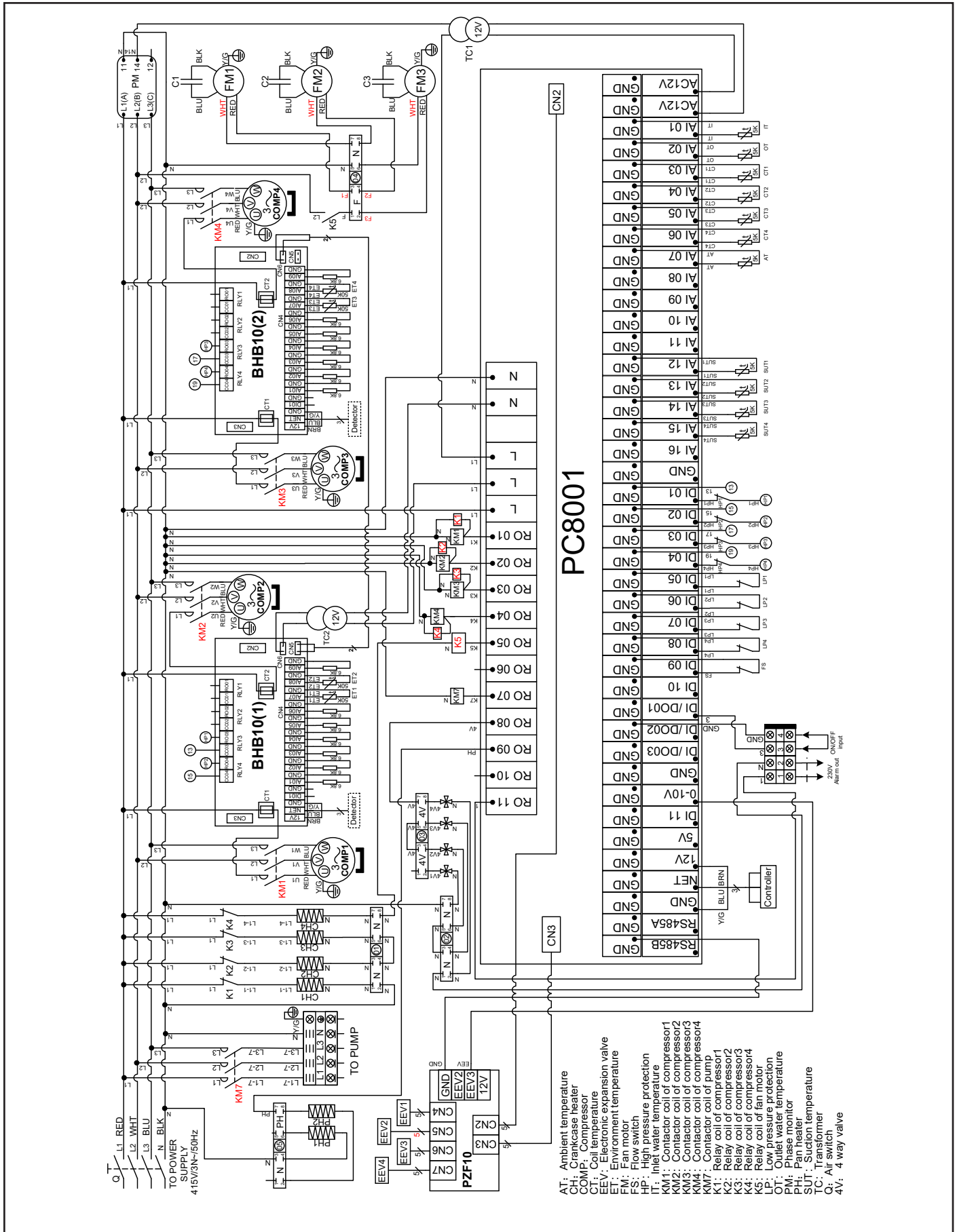


Figure 9. AHP-95 78552

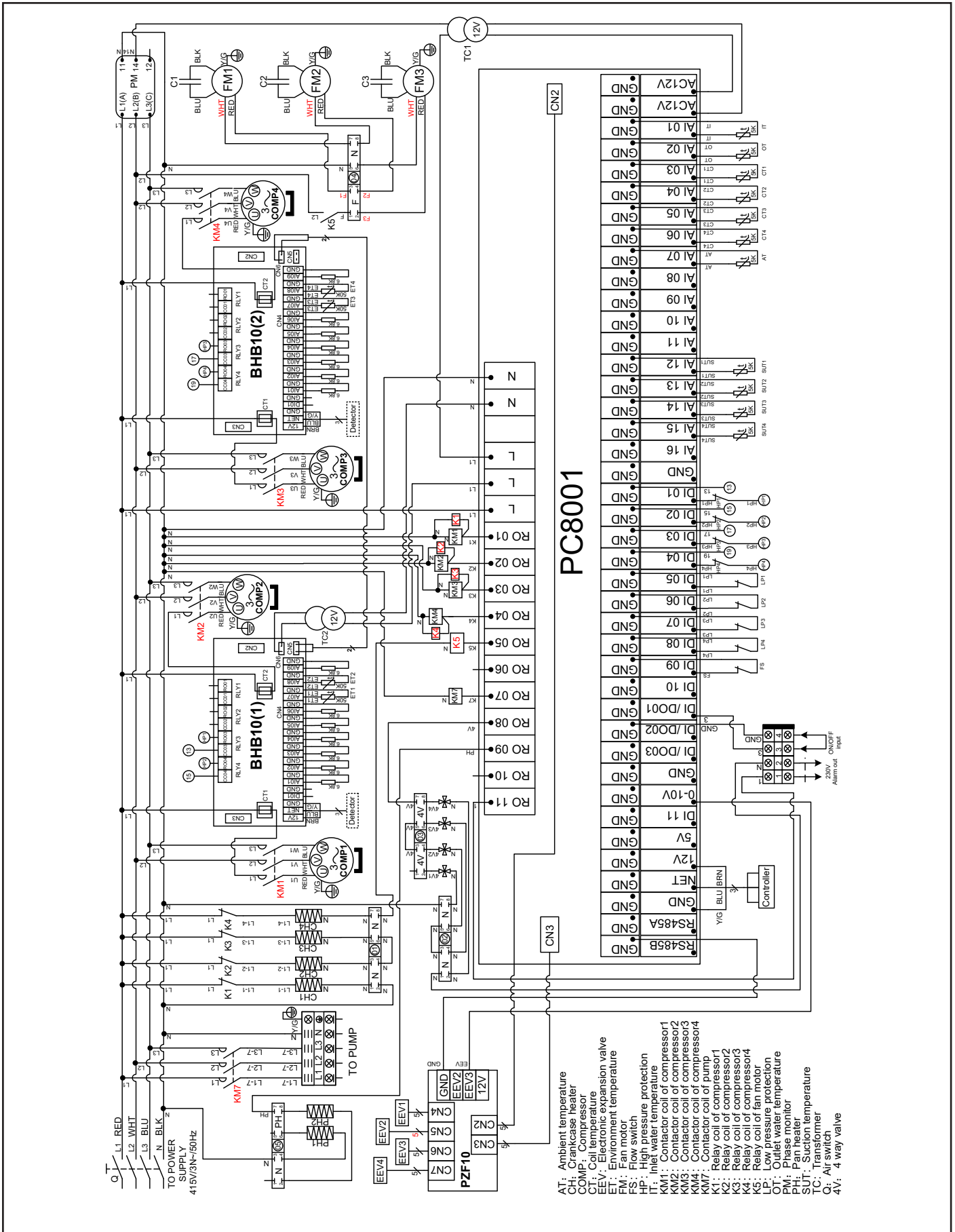


Figure 10. AHP-120 78553

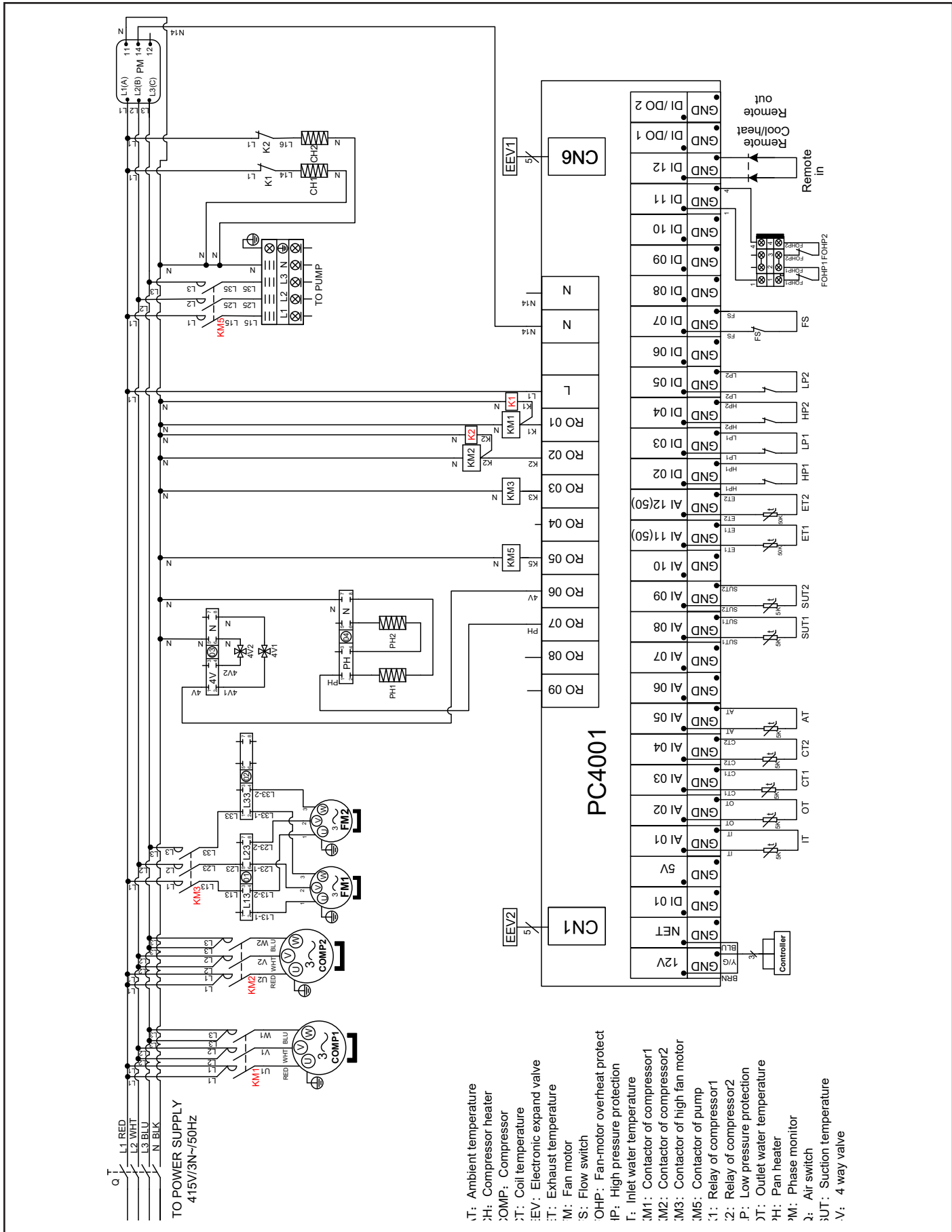


Figure 11. AHP-145 78554

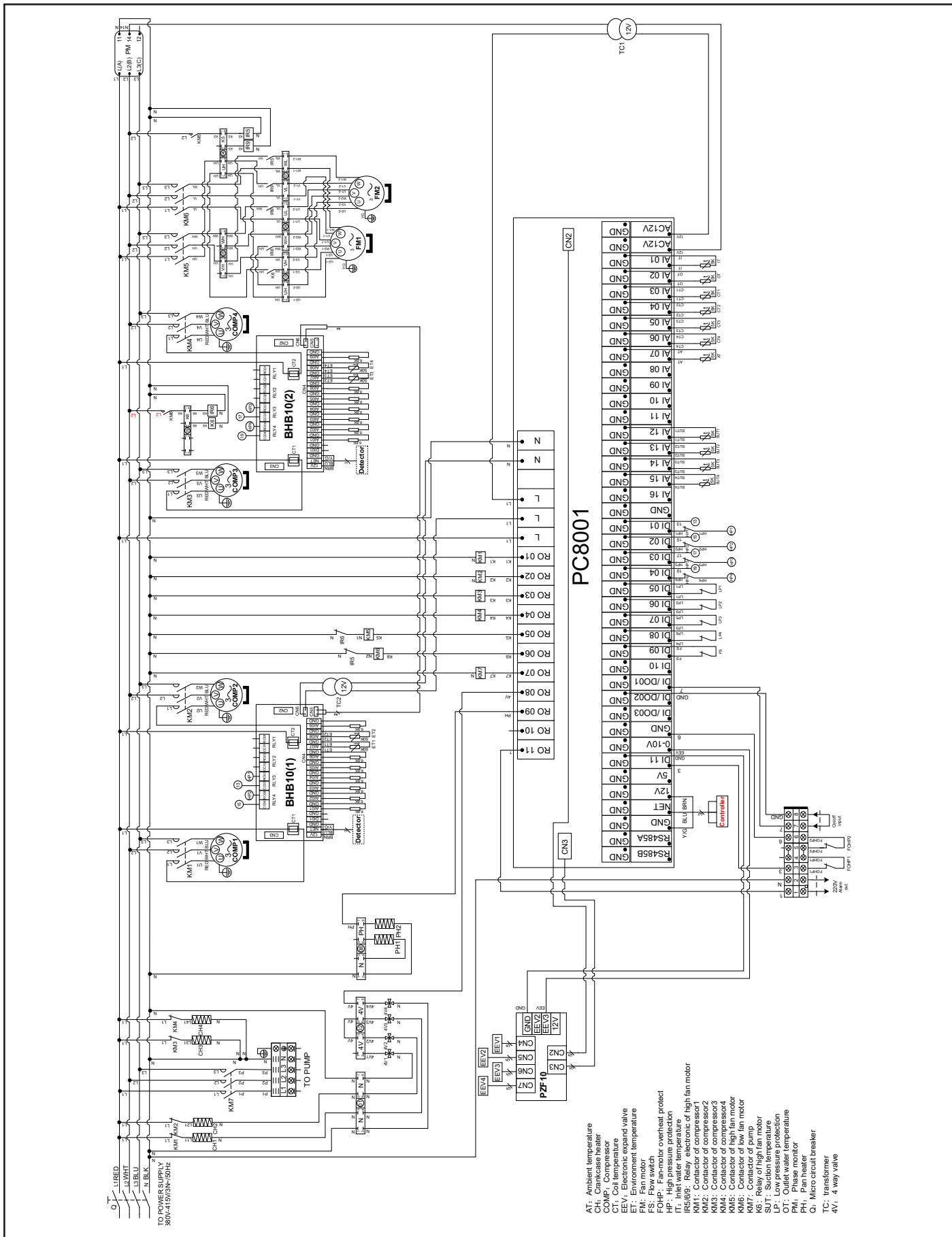


Figure 12. AHP-190 78555

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