



Commercial

INSTALLATION AND OPERATION MANUAL

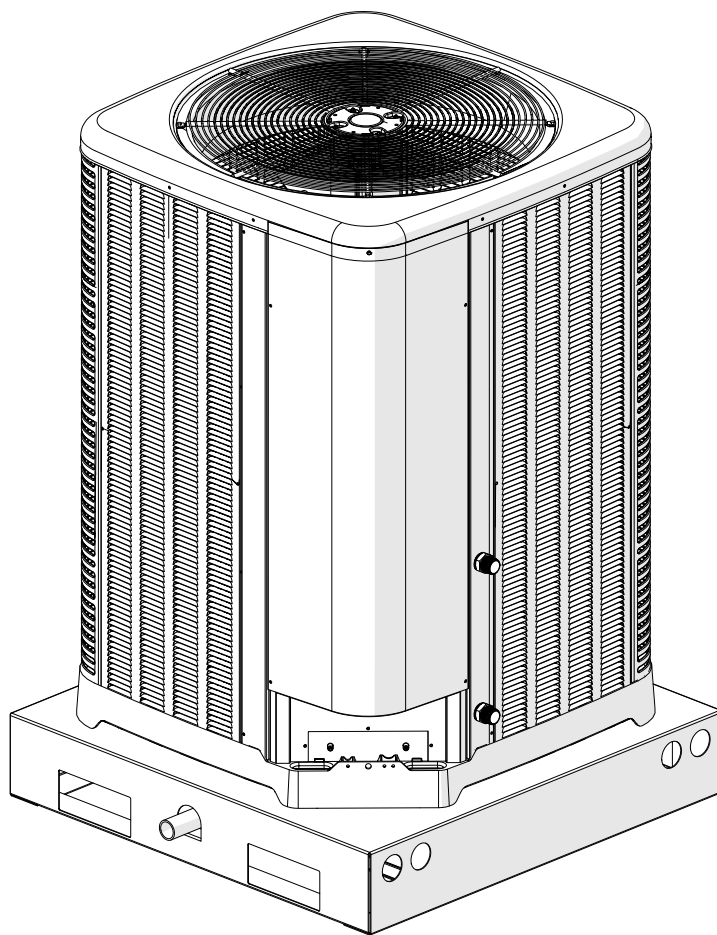
HEAT PUMP WATER HEATER

MONOBLOCK

Model Series

RMHPHDA068

RMHPHDA120



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FOR YOUR SAFETY: Do not store or use gasoline or other flammable vapors and liquids or other combustible materials in the vicinity of this or any other appliance. This may result in an explosion or fire.

NOTE: The instructions in this manual are for the use of qualified individuals specially trained and experienced in the installation and maintenance of this type of equipment and related system components. Installation and service personnel are required to be licensed by some states. Persons not qualified shall not attempt to install, service, or maintain this equipment.

This manual should be maintained in legible condition and kept adjacent to the heat pump heater or in a safe place for future use.





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1.0 SAFETY INFORMATION

⚠️ WARNINGS:

- These instructions are intended as an aid to qualified, licensed service personnel for proper installation, adjustment, and operation of this unit. Read these instructions thoroughly before attempting installation or operation. Failure to follow these instructions may result in improper installation, adjustment, service, or maintenance, possibly resulting in fire, electrical shock, property damage, personal injury, or death.
- The unit must be permanently grounded. Failure to do so can cause electrical shock resulting in severe personal injury or death.
- Turn off electric power at the fuse box or service panel before making any electrical connections.
- Complete the ground connection before making line voltage connections. Failure to do so can result in electrical shock, severe personal injury, or death.
- Disconnect all power to unit before starting maintenance. Failure to do so can cause electrical shock resulting in severe personal injury or death.
- Never assume the unit is properly wired and/or grounded. Always test the unit cabinet with a non-contact voltage detector available at most electrical supply stores or home centers before removing access panels or coming into contact with the unit cabinet.
- Do not use oxygen to purge lines or pressurize system for leak test. Oxygen reacts violently with oil, which can cause an explosion resulting in severe personal injury or death. Nitrogen is recommended for purge or leak check.
- The top of the scroll compressor shell is hot. Touching the compressor top may result in serious personal injury.
- The manufacturer's warranty does not cover any damage or defect to the unit caused by the attachment or use of any components, accessories, or devices (other than those authorized by the manufacturer) into, onto, or in conjunction with the heat pump. You should be aware that the use of unauthorized components, accessories, or devices may adversely affect the operation of the heat pump and may also endanger life and property. The manufacturer disclaims any responsibility for such loss or injury resulting from the use of such unauthorized components, accessories, or devices.

⚠️ CAUTION:

The compressor has an internal overload protector. Under some conditions, it can take up to 2 hours for this overload to reset. Make sure overload has had time to reset before condemning the compressor.

REFRIGERANT WARNINGS:

⚠️ WARNING: Risk of fire or explosion. Dispose of refrigerant properly in accordance with federal or local regulations. Flammable refrigerant used.

⚠️ WARNING: Risk of fire or explosion due to flammable refrigerant used. Follow handling instructions carefully in compliance with national and local regulations.

⚠️ WARNING: Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

⚠️ WARNING: The appliance shall be stored in a room without continuously operating ignition source (for example: open flames, an operating gas appliance or an operating electric heater.)

⚠️ WARNING: Do not pierce or burn.

⚠️ WARNING: Be aware that refrigerants may not contain an odor.

⚠️ WARNING: Appliance shall be installed, operated and stored in a room with a floor area larger than 33.5 to 57.9 m². See section 3.8 for more information about indoor installations.

⚠️ WARNING: Risk of electric shock. Can cause injury or death. Disconnect all remote electric power supplies before servicing.



2.0 GENERAL INFORMATION

2.1 INITIAL REVIEW OF PRODUCT RECEIVED

Using the image on the right of this page please locate and record your model and serial number. Once you have done this, please make sure you also have the following information on hand:

- Name, phone number, and email address of homeowner
- Physical address of where the unit is installed; please include any 'subdivision' or similar information
- Any service challenges present at the house/ neighborhood: gated community, locked access at house, guard dog, etc.
- Date of installation of the new unit
- Name and phone number of the professional and licensed entity that performed the installation for you

This would also be a good time to review both the manual and the warranty so that you are aware of how to correctly operate your new equipment as well as how to keep from voiding any aspects of your warranty. During the life of your unit, please feel free to contact us with any questions you may have about operation, warranty, and/or service.

Thank you for choosing us to satisfy your water heater needs!

**COMMERCIAL HEAT PUMP
WATER HEATER**

CONFORMS TO ANSI-UL 60335-2-40
CERTIFIED TO ASHRAE 118.1


LISTED



Model Number: **RMHPHDA068**

Serial Number: **W122519343**

Voltage: 460V-3-60Hz

Compressor, Amp: 25

Fan Motor, Amp: F.L.A. 2.3 H. P. 1/2

Min. Circuit Ampacity, Amp: 33.5

Maximum Overcurrent Protective Device: 50

Factory Charge R-454B: 4 lbs. / 4 oz

Maximum Allowable Pressure PSI (MPa): 550 (3.8) HIGH / 250 (1.72) LOW

Water flow (Max - Min) 5-20 / 19-75.7 GMP / LPM

Manu. Date: 03/2025

Max supply water temperature: °F (°C) 135

Max supply water pressure: PSIG (Mpa) 65 (0.45)

Short-circuit current: 5 kA rms symmetrical, 460 V maximum

ASSEMBLED IN MEXICO

APPROVED FOR INDOOR AND OUTDOOR USE



Product Serial number and installation/
startup date:



2.2 SAFETY STATEMENTS

WARNINGS — PAY ATTENTION TO THESE TERMS

⚠ DANGER:

Indicates the presence of immediate hazards which will cause severe personal injury, death, or substantial property damage if ignored.

⚠ WARNING:

Indicates the presence of hazards or unsafe practices which could cause severe personal injury, death, or substantial property damage if ignored.

⚠ CAUTION:

Indicates the presence of hazards or unsafe practices which could cause minor personal injury or product or property damage if ignored.

NOTICE:

Indicates special instructions on installation, operation, or maintenance which are important but not related to personal injury hazards.

This manual, as well as the heat pump water heater itself, contains UL-approved product safety signs and labels. Please read these signs and labels as they convey important safety information about hazards that may be potentially present in and around the heat pump water heater.

⚠ CAUTION: Elevated water temperature can be hazardous. The U.S. Consumer Product Safety Commission has these guidelines:

1. Stored water temperatures should not exceed 180°F (82°C). High water temperatures can cause serious burns and scalding. Always install a mixing valve to prevent hot water from entering building directly.
2. This is an appliance that should not be accessible to the general public. Special precautions should be taken, so that only specialized personnel have access to this appliance. Children should not be allowed to play near or with appliance; elderly and any non-qualified personnel should not be near appliance.

TIME / TEMPERATURE RELATIONSHIP IN SCALDS	
Water Temperature	Time to Produce a Serious Burn
120°F (49°C)	More than 5 minutes
125°F (52°C)	1½ to 2 minutes
130°F (54°C)	About 30 seconds
135°F (57°C)	About 10 seconds
140°F (60°C)	Less than 5 seconds
145°F (63°C)	Less than 3 seconds
150°F (66°C)	About 1½ seconds
155°F (68°C)	About 1 second

Table courtesy of Shriners Burn Institute

⚠ WARNING: The heat pump water heaters are charged with R-454B refrigerant. Ensure that all service work is done with gauges and equipment suitable for R-454B.



⚠ WARNING: This unit contains R-454B refrigerant. Follow all safety precautions when accessing the refrigerant system. Service by qualified personnel only.

⚠ DANGER

Water temperature over 125°F (52°C) can cause severe burns instantly or death from scalds.

Children, disabled and elderly are at highest risk of being scalded.

See instruction manual before setting temperature at water heater.

Feel water before bathing or showering.

Temperature limiting valves are available, see manual.



2.3 MODEL NUMBER AND NOMENCLATURE

PHYSICAL DATA

MODEL RMHPHD	068	120
Heating Capacity* Btu [kW] single pass	68000 [20]	120000 [35]
COP* single pass	4.5	4.5
Heating capacity at 5°F ambient** Btu [kW] single pass	68000 [20]	120000 [35]
Heating Capacity* Btu [kW] Multipass (75°F ambient, 70°F inlet water)	78,000 [23]	118000 [34]
COP, Multipass	4.0	3.0
Heating capacity at 5°F ambient** Btu [kW] Multipass	60000 [17.5]	90000 [26]
COP at 5°F ambient	1>	1>
COP at -13°F	1>	1>
Outdoor sound rating dB***	75	75
Condenser	Braze plate exchanger	
Heat exchanger type	Refrigerant to water	
Tube diameter water side	1" NPT	
Number of plates	52	96
Flow rate	5-15 GPM	5-20 GPM
Water Pressure PSI [MPa] :	65 PSI [0.45]	
Evaporator - Fin type		
Evaporator height	32"	48"
Rows / FPI	1/22	
Refrigerant metering device	Electronic expansion valve	
Outdoor Fan - Type	Axial	Axial
No. Blades / Diameter in. [mm]	3 blades / 26"	
CFM	6000	
No. Motors/HP	1 / ½ HP	
Motor RPM	1100	
Refrigerant Charge Oz. [g]	70 [1984.47]	92 [2608.15]
Weights		
Net Weight lbs. [kg]	346.13 [157]	462.97 [210]
Ship Weight lbs. [kg]	359.35 [163]	482.81 [219]
Minimum area for install indoor sqft [m2]	360.7 [33.5]	623.2 [57.9]

*Calculated per ASHRAE DOE 118.1-2012. Water inlet 70°F, ambient 80°F Dry Bulb and 50°F delta increase. Unit operating in single pass mode.

** Calculated at Water inlet 70°F and 50°F delta increase.

*** Measured at 3ft [1m] from unit.

Elevation does not affect the minimum area for install on indoor applications.

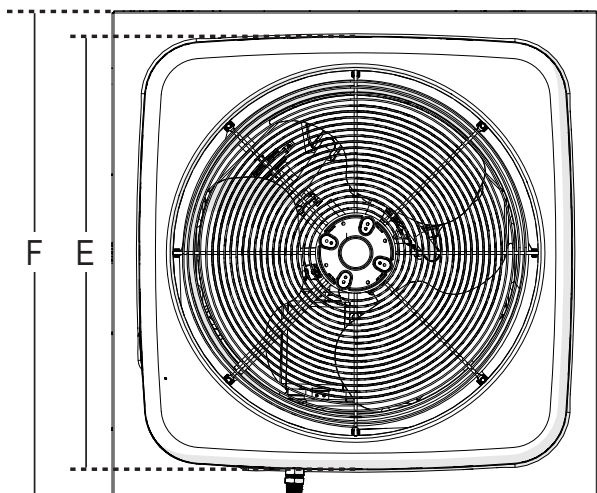
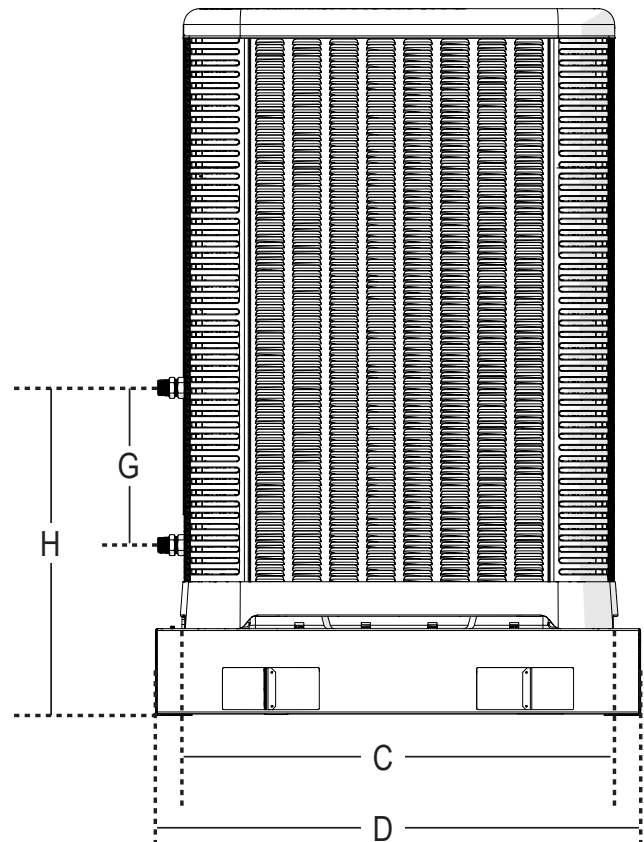
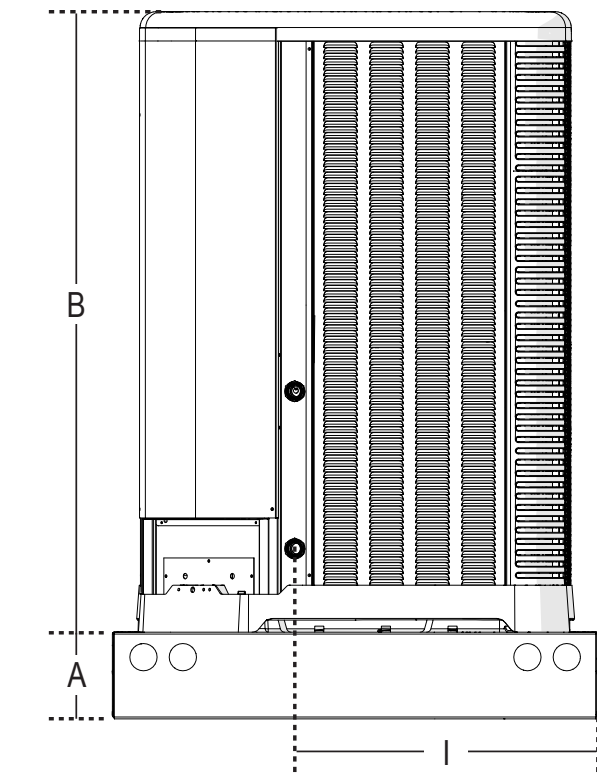


2.4 DIMENSIONS

UNIT DIMENSIONS

MODEL NUMBER	DIMENSIONS								
	A	B	C	D	E	F	G	H	I
RMHPHDA068V000	7"	35"	36"	40"	36"	40"	13"	27"	25"
RMHPHDA120V000	7"	51"	36"	40"	36"	40"	13"	27"	25"

All dimensions shown above are in inches.





3.0 INSTALLATION

3.1 IMPORTANCE OF QUALITY INSTALLATION

⚠ WARNING:

Improper installation, or not made in accordance with these instructions, can result in unsatisfactory operation and/or dangerous conditions and will void warranty.

INTRODUCTION

The information contained in this manual has been prepared to assist in the proper installation, operation, and maintenance of the air conditioning system by a qualified installer.

The images contained within this document may not be an exact representation of every unit, accessory, installation, etc. All dimensions contained in this document are approximations. We reserve the right to change the content of this document at any time.

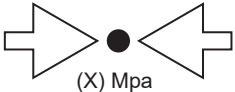
IMPORTANCE OF QUALITY INSTALLATION

The equipment must be stored in a way that prevents mechanical damage from occurring.

A quality installation is critical to assure safety, reliability, comfort, and customer satisfaction. Strict adherence to applicable codes, the information in this installation manual, and the thermostat installation manual are key to a quality installation. Read the entire instruction manuals before starting the installation.

Install the unit in accordance with applicable national, state, and local codes. Latest editions are available from: "National Fire Protection Association, Inc., Batterymarch Park, Quincy, MA 02269." These publications are:

- ANSI/NFPA No. 70-(Latest Edition) National Electrical Code.
- UL 60335-2-40 4th Edition
- CSA C22.2 No. 60335-2-40 4th Edition
- For Canada only: B149.1 Installation code, CSA C22.1 Canadian Electrical Code Part 1 and any local codes.

	Service indicator: read technical manual
	Warning: low burning velocity material
	Pressure
	Operator's manual: operating instructions
	Refrigerant Safety Group A2L, warning; flammable materials



3.1 IMPORTANCE OF QUALITY INSTALLATION

⚠ WARNING:

The heat pump water heater is an electromechanical machine that incorporates a pressurized refrigerant. Installation, service, and maintenance must be performed by trained and qualified personnel familiar with A2L refrigerants and applicable codes.

This manual contains important information on the use, maintenance, and troubleshooting of your new heat pump water heater. This unit must be properly installed, maintained, and operated for optimal performance.

This water heater is designed for the purpose of heating potable water. Its use in an application other than this may shorten its life. It is similar in design and operation to a typical residential air conditioning system. The unit employs a hermetic motor/compressor operating in a refrigeration cycle to extract heat from ambient air and deliver it to the circulating water.

For indirect heating applications, a mixture of water/glycol mixed in similar parts is also accepted by the unit.

This unit is equipped with a refrigerant leak detector for safety. To be effective, the unit must be electrically powered at all times after installation, other than when servicing.

⚠ WARNING: Unit fan motor might come on unexpectedly anytime the unit is powered on. This is due to refrigerant detection system.

As with all heat pump water heaters, compared to other types of heaters such as gas or oil-fired, this heat pump water heater has lower heating capacity on a BTUH/hr basis. As a result, it will be required to operate longer to accomplish the desired results. It may, at certain times, operate as much as 24 hours per day. However, this should not be of concern to the owner, the unit is designed to operate continuously.

NOTE: Hurricane tie down brackets, tie down screws, printed warranty and the I&O manual are located in an accessory bag mounted on the pallet beside the heater. DO NOT throw away without removing all components.

⚠ WARNING:

DO NOT install the unit within 6 ft (1.8 m) of fossil fuel burning heaters. Air intake along the sides of this heat pump water heater could disturb the combustion process of the unit, and could cause damage or personal injury. Mount the unit on a level, sturdy base, preferably a concrete slab.

⚠ CAUTION: The unit's supporting base must be high enough to keep it completely free of standing water or snow build up at all times.

Situate the heat pump water heater carefully to minimize installation costs while providing maximum efficiency of operation, and to allow adequate service access, as follows:

- For unrestricted air intake and service access, position each side of the unit at least 2 ft (60 cm) from walls, pipes, and other obstructions.
- On outdoor installations, the unit must sit on a riser base, that will keep unit above the average snow line.
- This unit features an 'up-flow' discharge. Air is pulled up through the evaporator coil and discharged through the top grill. Allow at least 5 ft (1.5 m) clearance above the unit for unrestricted air discharge. DO NOT install the unit under a porch or deck. Recirculation of cold discharge air back into the evaporator coil will reduce the unit's heating capacity and efficiency.
- To minimize water piping, locate the unit as close as possible to the existing circulator. All pipework installed must be protected from physical damage and insulated.
- Rain water run offs - the unit is designed to operate outdoors and can be exposed to rain. However, rain water run off falling directly onto the unit can cause damage and/or shorten the life of your unit. This may also void your warranty. Install rain gutters or rain diverters on your roof if the unit is installed in a position where contact with rain run off may occur.



3.1.1 WATER SUPPLY QUALITY

Water quality must be test to be as follows:

Please note that the limited warranty provided with the water heater does not cover defects, malfunctions or failures resulting from water conditions that are not in accordance with the specifications of the table below.

DESCRIPTION	QTY.
Sodium [NA]	< 20 mg/L
Chloride [CL]	< 80 mg/L
Magnesium (Mg)	< 10 mg/L
Aluminum [Al]	<0.2 mg/L

- Size of free floating particles in water needs to be less than 1 mm [0.039 in]. A use of mesh filter is recommended to reduce amount of particles.
- pH of water must be tested periodically to ensure is kept between 7-8, maximum allowed pH is 9.
- Water must be free of Ammonium NH_4^+ , use of anodes are recommended to keep water free from this chemical.
- Water hardness must be kept between 20 - 100 mg/L, water softeners are recommended.
- Consider to run a preventive de-scaling cycle at minimum once a year, This will keep your heater running at optimal performance. Any commercially available non corrosive water heater de-scaler is approved for use.
- When de-scaling, your system must be shut off and water pipes disconnected from the tanks.



3.1.2 HEAT PUMP WATER HEATER OVERVIEW

AIR TEMPERATURE

The operating range of the heat pump water heater is -13°F to 115°F (-25°C to 46°C). Depending on your location, you may need additional or back up heating. Installations where average ambient temperature is expected to be at or below 20°F requires additional back up heating.

WATER INLET TEMPERATURE RANGE

The inlet/entering water temperature operating range for the heat pump water heater is 40 to 135°F. The factory setting of your heat pump water heater is 140°F.

This water heater is supplied with safety controllers, temperature, pressure, and other type of sensors. These must not be altered, removed, or otherwise tampered with. Doing so might impair your heater performance, cause malfunction and damage. Damage occurring from sensors removed or modified will not be covered by warranty.

If replacement sensors are needed, consult your local Rheem vendor for factory-approved replacements.

REFRIGERANT

The heat pump water heater has a closed loop refrigerant circuit that is factory-charged with R-454B refrigerant. It should not be necessary to add or remove refrigerant during installation or service. Should it be determined a refrigerate charge adjustment is needed, a qualified installer with proper licensing will be required to charge the unit.

The commercial heat pump water heater is an instantaneous type heater, there are no storage tanks integrated to it, these are sold separately if need. The unit is designed to allow for both indoor (see section 3.8) and outdoor (see section 3.3) installation. The heat pump evaporator extracts heat from ambient air and transfers it to the water. The hot water is moved to the storage tanks via a water circulator (not included). The heat pump operates in the same way as an air conditioner and noise is expected when the unit is working.

Even on cold days, your water heater will still continue to work and heat up the water. Your heater will operate on ambient temperatures ranging from -13°F to 115 °F, please notice that during colder days your unit will run for longer periods of time to achieve the required performance.

OPERATION OF THE UNIT IN FAULT MODE

Your heat pump water heater is sophisticated equipment that has sensors to detect several failure modes. Upon detecting a failure, the water heater will report back to the controller device and provide a code of the failure and description (see section 3.8). The unit will behave differently, depending on the type of failure. Consult the troubleshooting section for more information.



3.2 MATERIAL AND TOOLS NEEDED FOR INSTALLING UNIT

TOOLS AND REFRIGERANT

TOOLS REQUIRED FOR INSTALLING AND SERVICING R-454B MODELS

⚠ CAUTION: Use only tools and equipment rated for A2L refrigerants. Do not use open flames or create sparks near unit.

⚠ DANGER: Risk of fire or explosion. Flammable refrigerant used. Consult repair manual/owner's guide before attempting to service this product. All safety precautions must be followed.

WORKING PERSONNEL

⚠ DANGER: Risk of fire or explosion. Flammable refrigerant used. To be repaired only by trained service personnel. DO NOT puncture refrigerant tubing.

Every installation, maintenance, service, and repair working procedure must be conducted by qualified personnel who have been trained in operating and servicing units that employ flammable refrigerants such as R-454B. Examples of working procedures include but are not limited to:

- Breaking into the refrigeration circuit
- Opening sealed components
- Opening ventilated enclosures
- Replacing electrical components
- Repairing refrigeration circuits

SPECIFICATIONS OF R-454B

Application: R-454B is not a drop-in replacement for R-410A. Equipment designs must accommodate the safety group A2L of R-454B. It cannot be retrofitted into R-410A units.

R-454B has an atmospheric bubble point of -59.6°F and an atmospheric dew point of -58.0°F [-50.0°C]. Its bubble point saturation pressure at 77°F [25°C] is 213 psig [1469 kPa] and dew point saturation pressure at 77°F [25°C] is 205 psig [1415 kPa].

Pressure: The pressure of R-454B is similar to that of R-410A. Recovery and recycle equipment, circula-



tors, hoses, and the like must have design pressure ratings appropriate for R-454B. Manifold settings need to range from 800 psig [5,516 kPa] high-side to 250 psig [1,724 kPa] low-side with a 550 psig [3,792 kPa] low-side retard. Hoses need to have a service pressure rating of 800 psig [5,516 kPa]. Recovery cylinders need to have a 400 psig [2,758 kPa] service pressure rating, DOT 4BA400 or DOT BW400.

Flammability: R-454B is classified as safety group A2L, where the 2L flammability class indicates flammability.

R-454B and air should never be mixed in cylinders or supply lines or be allowed to accumulate in storage cylinders. **Leak checking should never be done with a mixture of R-454B and air.**

QUICK-REFERENCE GUIDE FOR R-454B

- Ensure that service equipment is designed to operate with R-454B.
- Refrigerant R-454B operates at pressures similar to R-410A. However, it is classified in safety group A2L. Ensure that servicing equipment is compatible with R-454B.
- Refrigerant cylinders are no longer color-coded.
- R-454B refrigerant cylinders are light green grey in color with a red band on the shoulder or top of the cylinder to indicate flammability.
- R-454B, as with other HFCs, is only compatible with POE oils.
- Vacuum circulators will not remove moisture from POE oil used in R-454B systems.
- R-454B systems are to be charged with liquid refrigerants.
- DO NOT install a suction line filter drier in the liquid line.
- Desiccant (drying agent) must be compatible for POE oils and R-454B refrigerant.

3.3 CLEARANCES FOR INSTALLATION

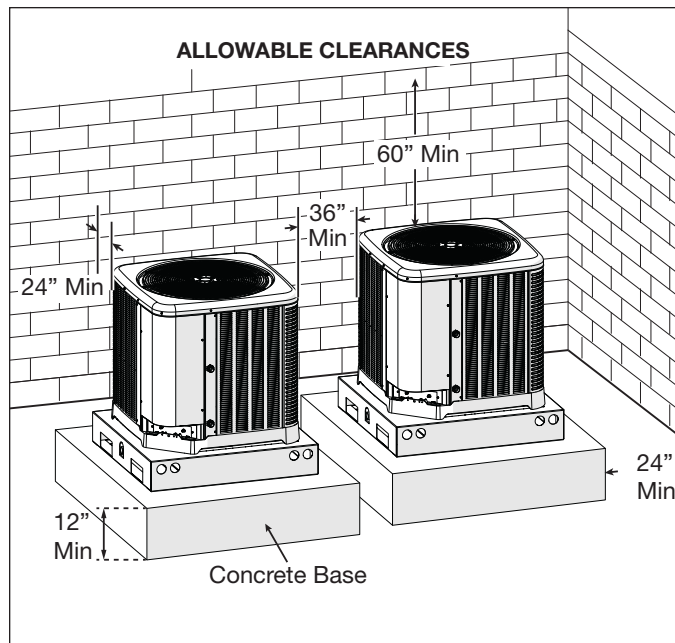
CHOOSING A LOCATION

ALLOWABLE CLEARANCES

- 24" [61.0 cm] to side intake louvers
- 36" [91.4 cm] between multiple units
- 36" [91.4 cm] to service access panels
- 60" [152.4 cm] vertical for fan discharge

IMPORTANT: Consult local and national building codes and ordinances for special installation requirements. Following location information will provide longer life and simplified servicing of the outdoor unit.

NOTICE: Units should be installed outdoors where practically possible. See section 3.8 for indoor installation considerations.



IMPORTANT: Locate the unit in a manner that will not prevent, impair, or compromise the performance of other equipment installed in proximity to the unit. Maintain all required minimum distances to gas and electric meters, dryer vents, and exhaust and inlet openings. In the absence of national codes or manufacturers' recommendations, local code recommendations and requirements will take precedence.

- Locate the unit where water runoff will not create a problem with the equipment.
- Unit may not be enclosed in a shed or similar.
- Consult rating label for minimum area for installation.

Units are weatherized, but can be affected by the following:

- Water pouring into the unit from the junction of roof lines, without protective guttering. Large volumes of water entering the unit while in operation can impact fan blade or motor life.
- Closely follow the clearance recommendations on this page.
- Use a concrete slab at least 12" tall to sit the unit and keep away from water that could puddle around unit. Concrete slab must be a square at least 44" long on each side.

CORROSIVE ENVIRONMENT

The metal parts of this unit may be subject to rust or deterioration if exposed to a corrosive environment. This oxidation could shorten the equipment's useful life.

Corrosive elements include, but are not limited to, salt spray, fog or mist in seacoast areas, sulphur or chlorine from lawn watering systems, and various chemical contaminants from industries such as paper mills and petroleum refineries.

If the unit is to be installed in an area where contaminants are likely to be a problem, special attention should be given to the equipment location and exposure.

- In coastal areas, locate the unit on the side of the building away from the waterfront.

⚠ WARNING: Disconnect all power to unit before starting maintenance. Failure to do so can cause electrical shock resulting in severe personal injury or death.

Regular maintenance will reduce the buildup of contaminants and help to protect the unit's finish.

- Frequent washing of the cabinet, fan blade, and coil with fresh water will remove most of the salt or other contaminants that build up on the unit.
- A good liquid cleaner may be used several times a year to remove matter that will not wash off with water.



3.3 CLEARANCES FOR INSTALLATION

CUSTOMER SATISFACTION ISSUES

The outdoor unit should be located away from areas where noise from the unit would be considered objectionable.

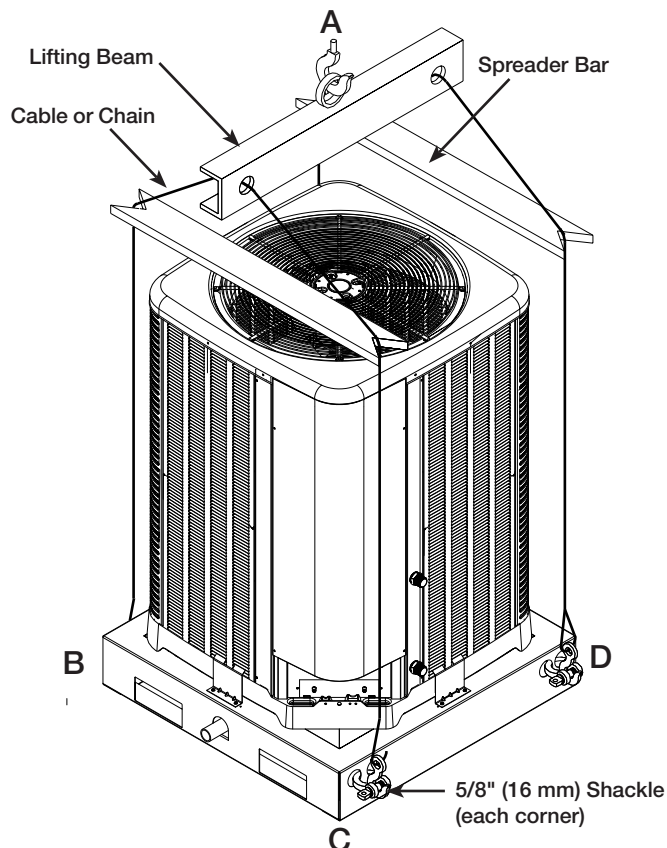
MOUNTING UNIT

CORNER WEIGHTS AND RIGGING

For lifting unit into place, rig it as shown in the illustration on the following page, making certain that the rigging slings are of sufficient length to maintain balance of the unit when it is being lifted. Before placing the unit on the roof, make certain that the roof structure is strong enough to support the weight of the unit. Corner weights are provided in the table below.

MODEL	TOTAL WEIGHT LBS [KG]	CORNER WEIGHT LBS [KG]			
		A	B	C	D
RMHPHDA068	342 [155]	113 [51]	59.5 [27]	93.5 [42]	76 [34]
RMHPHDA120	458 [208]	156 [71]	78 [35]	121 [65]	103 [47]

LIFTING THE UNIT



HIGH WIND AND SEISMIC TIE-DOWN METHODS

The manufacturer-approved/recommended method is a guide to securing equipment for wind and seismic loads. Other methods might provide the same result, but the manufacturer method is the only one endorsed by the manufacturer for securing equipment where wind or earthquake damage can occur. Additional information is available on the manufacturer's website or from the wholesale distributor.

ELEVATING UNIT

⚠ WARNING: Secure an elevated unit and its elevating stand in order to prevent tipping. Failure to do so may result in severe personal injury or death.

If elevating a unit on a flat roof, use 4" x 4" [10.2 cm x 10.2 cm] or equivalent stringers positioned to distribute unit weight evenly and prevent noise and vibration.

NOTICE: Do not block drain openings on bottom of unit.

3.3 CLEARANCES FOR INSTALLATION

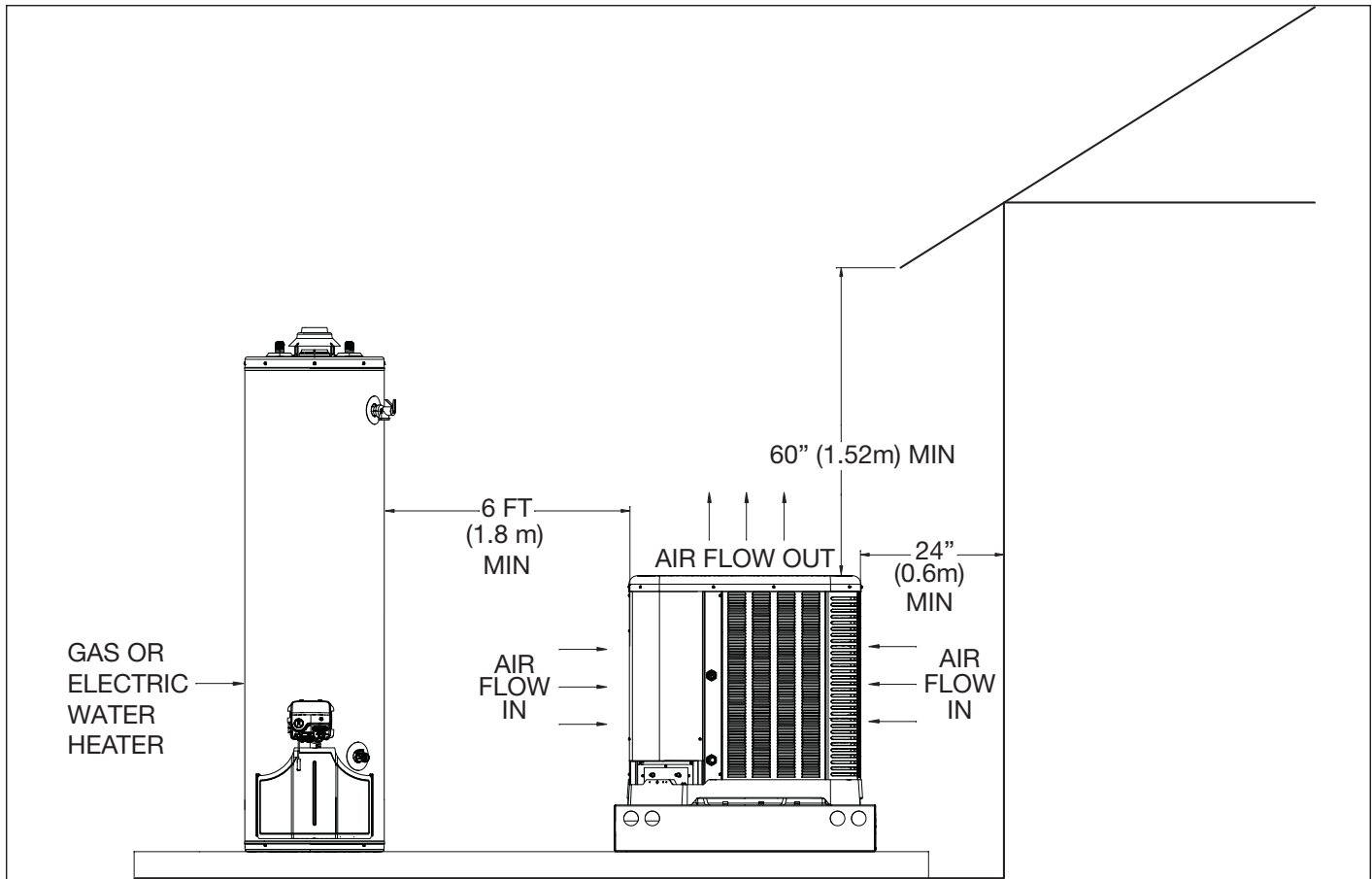


Fig. 1: Installation Clearances

It is important to keep the area next to the heat pump heater clear of shrubs, bushes and chemicals containers. They could prevent air from circulating fully through the heat pump heater, and will affect the operation of the heat pump heater or damage it.

- For high wind or seismic installations requirements please refer to section 3.6.

3.4 ELECTRICAL WIRING DIAGRAM AND FIELD CONNECTIONS

ELECTRICAL DATA

ELECTRICAL DATA			
		RMHPHDA068	RMHPHDA120
Unit Information	Volts / Frequency / Ø	460/60/3	460/60/3
	Rated Load Amps.	25	34
	Minimum Circuit Ampacity	33.5	44.8
	Rated Overcurrent Protection Device Size	40	50
Compressor Motor	No.	1	1
	Volts	460	
	Phase	3	
Fan Motor	Volts	460	
	Phase	3	
	HP	1/2	
	Amps (LRA, each)	2.3	

	Recommended wire length from breaker to heater, ft [m]. 3% voltage drop max		
MODEL No.	10 AWG	8 AWG	6 AWG
RMHPHDA068	100 [30]	190 [58]	300 [91]
RMHPHDA120	75 [23]	142 [43]	225 [69]

Always consult local and national electric standards for recommended wire gauge and lengths.

ELECTRICAL CONNECTIONS

Refer to the unit rating plate in the control panel for precise power requirements, ampacity, and over-current protection requirements for your unit.

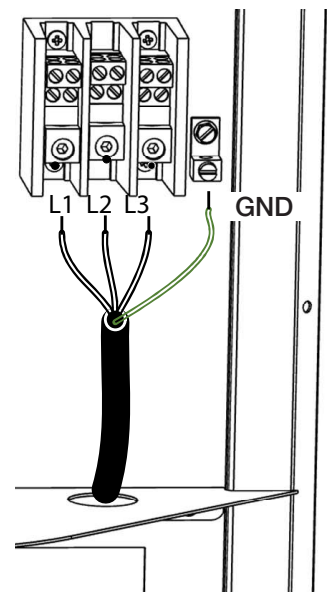
All wiring must be in accordance with the National Electrical Code, NFPA No. 70, latest edition, and all applicable state and local codes. See wiring diagram in this Manual.

⚠ WARNING:

This unit MUST be installed using flexible conduit for supply wiring to the unit. This will allow movement of the conduit whenever the junction box is removed for service - see instructions in this Manual.

- Locate the equipment disconnect means within 3 feet (0.9m) of the heater's electrical enclosure, or as close to the heater as possible. Always satisfy applicable codes and standards.
- In sizing power wiring, be especially aware of up-sizing requirements necessary due to wiring distances. Always satisfy applicable codes and standards.
- Electrical installation should be done by a licensed electrician only.

A secondary earth ground lug is located below the water connections. Use this for physical earth ground.

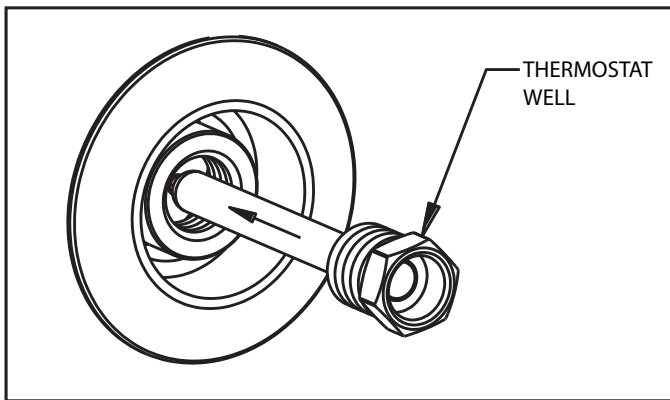




3.4 ELECTRICAL WIRING DIAGRAM AND FIELD CONNECTIONS

TANK SENSOR INSTALLATION

Install (as shown) one of the supplied temperature sensors into the Sky-35 controller, connect in terminals labeled TEMP 1. This sensor is supplied with the Sky-35 controller.



- Insert a Thermostat Well (not supplied) into the tank. Thermostat Well must be sized to match your specific tank connector diameter.
- Insert the sensor all the way into the Thermostat Well and secure it to the storage tank to prevent the sensor dislodging from the well.
- Cable tie the sensor lead, curling up and tying off any excess lead.

CONTROL WIRING

⚠ WARNING: Turn off electric power at the fuse box or service panel before making any electrical connections. Also, the ground connection must be completed before making line voltage connections. Failure to do so can result in electrical shock, severe personal injury, or death.

A 24-volt, 75 VA minimum transformer is needed to power external relays, contactors for any external system circulators, auxiliary heater controllers, 3-Way valve. The heat pump water heater will **ONLY** provide a 24Vac signal to power a relay for the unit circulator. This relay must be a 24Vac coil.

⚠ WARNING: Using the heat pump water heater 24Vac signal to power other devices can damage the unit transformer and will void warranty.

BUILDING RETURN AND SUPPLY TEMPERATURE SENSOR INSTALLATION

- Connect the building return and supply temperature sensors in the terminals labeled "RETURN SUPPLY" respectively.
- Run the sensor out to the building flow pipe.
- Fit a Thermostat Well (not supplied) in the pipe ensuring the end of the sensor is in the flow of water. To prevent the sensor dislodging from the well, secure the sensor to the insulation using a cable tie. Alternatively, clamp the sensor to the outside of the pipe using a pipe clamp prior to the insulation being fitted.

FIELD WIRE SIZE FOR 24-VOLT CIRCUITS:

Runs up to 100 ft. [30.5 m]: 18 AWG

Runs over 100 ft. [30.5 m]: 16 AWG

NOTICE: Do not use control wiring smaller than 18 AWG between the heat pump water heater and any external recommended relays, circulator feedback signals, or others. Temperature sensors can be wired with up to 20 gauge wire.

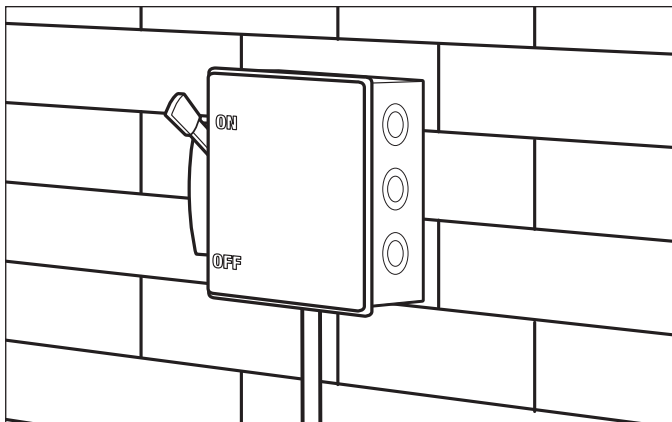


3.4 ELECTRICAL WIRING DIAGRAM AND FIELD CONNECTIONS

POWER WIRING

It is important that proper electrical power from a commercial utility is available at the outdoor unit contactor. Voltage ranges for operation are shown below.

Install a branch circuit disconnect within sight of the unit and of adequate size to handle the minimum circuit capacity.



Power wiring must be run in a rain-tight conduit.

Conduit must be run through the connector panel below the access cover and attached to the bottom of the control box.

Connect power wiring to line-voltage lugs located in the unit electrical box.

Check all electrical connections, including factory wiring within the unit, and make sure all connections are tight.

DO NOT connect aluminum field wire to the contactor terminals.

GROUNDING

⚠ WARNING: The unit must be permanently grounded. Failure to do so can cause electrical shock resulting in severe personal injury or death.

A grounding lug is provided for a terminal wire inside the control box to the right of the main power terminal block.

A secondary grounding point is added outside the unit on the panel where the water connections are. This can be used to secure earth grounding with the base support or the concrete slab where the unit is mounted.

⚠ CAUTION: R-454B is flammable. Failure to exercise care may result in fire or explosion and could result in injury or death.



Units run on a 3-phase 460V. Please consult your local Rheem representative for step up/down transformer options.

It is recommended that each unit is powered up by a dedicated transformer to prevent losing multiple units due to a damaged transformer.

Consult section 2.3 for electrical consumption for each model.



3.4 ELECTRICAL WIRING DIAGRAM AND FIELD CONNECTIONS

ELECTRICAL CONNECTIONS

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. This shall be reported to the owner of the equipment so all parties are advised.

Review section 7.0 for transformer sizing whenever a step up transformer is needed.

Consult your local electrician or NEC section 450.3(b) and your local codes for wire sizing and breaker selection to the main power to the transformer.

The breaker size stated in this manual should be used as protection only between your heat pump water heater and the transformer or your main power supply. Only one unit may be powered by the transformer.

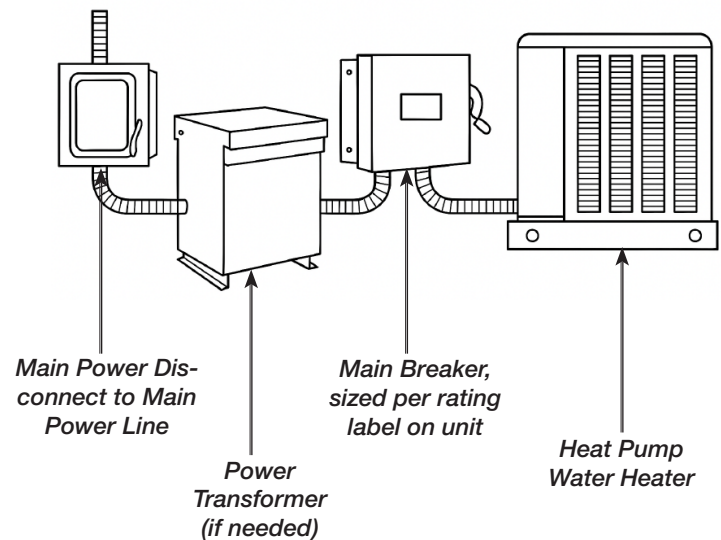
TRANSFORMER USED

If your specific application requires a step up transformer, refer to section 7.0 for the Rheem suggested part. Installation of transformer, wiring and breaker sizing to the main power must be done by a licensed electrician. The unit will require that a suitable means of disconnect or breaker is installed between unit and transformer.

Refer to NEC450.3(B) for sizing of transformer to main power breaker

Initial safety checks shall include:

- That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- That no live electrical components and wiring are exposed while charging, recovering, or purging the system;
- That there is continuity of earth bonding.



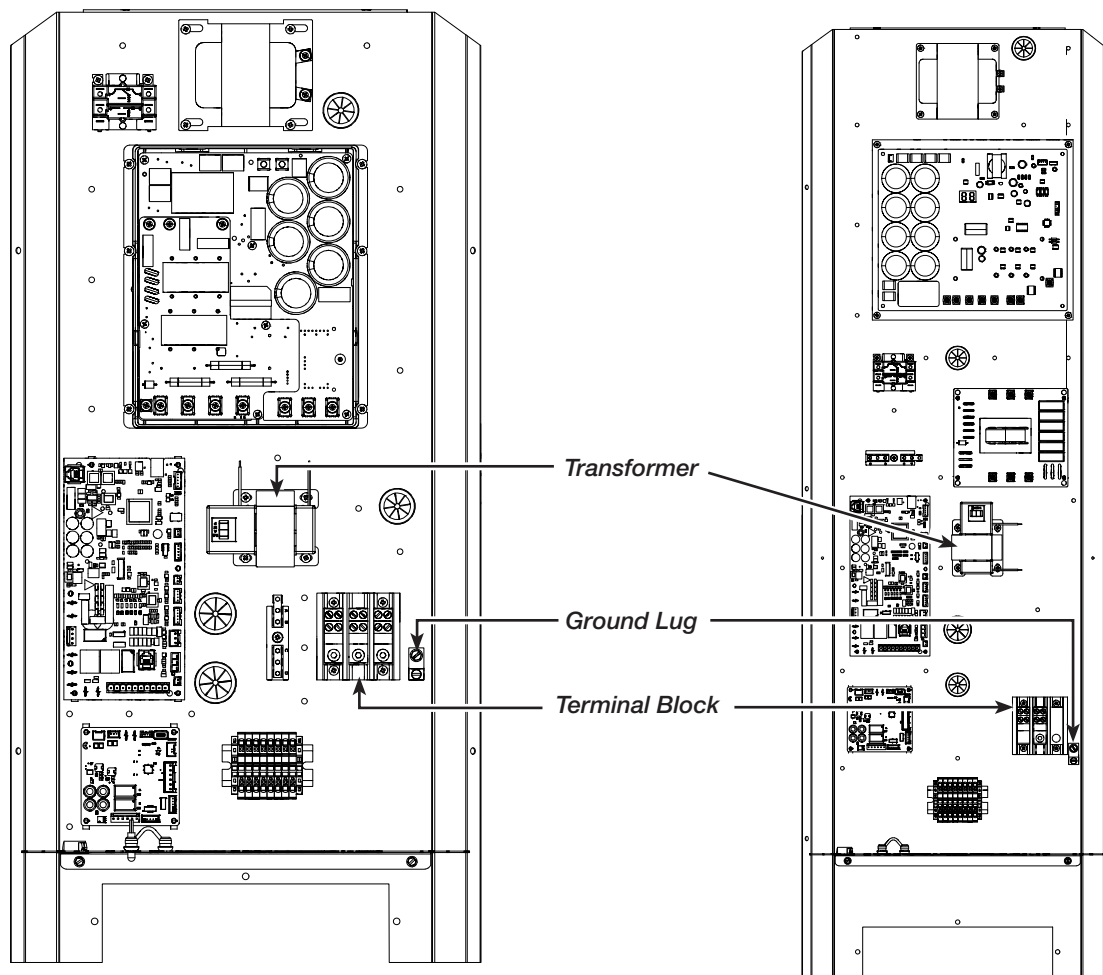
3.4 ELECTRICAL WIRING DIAGRAM AND FIELD CONNECTIONS

TRANSFORMER

A 75 VA transformer is also provided to feed voltage to all control boards in the unit, and external relay for water heater recirculation pump. Transformer is fused however precautions must be taken to avoid short on low-voltage connections.

LINE VOLTAGE TERMINAL BLOCK

Terminal block offers connection point for 3 lines (L1,L2,L3) it accepts up to 6-gauge wire. A ground connector is also provided which accepts up to 6 gauge.



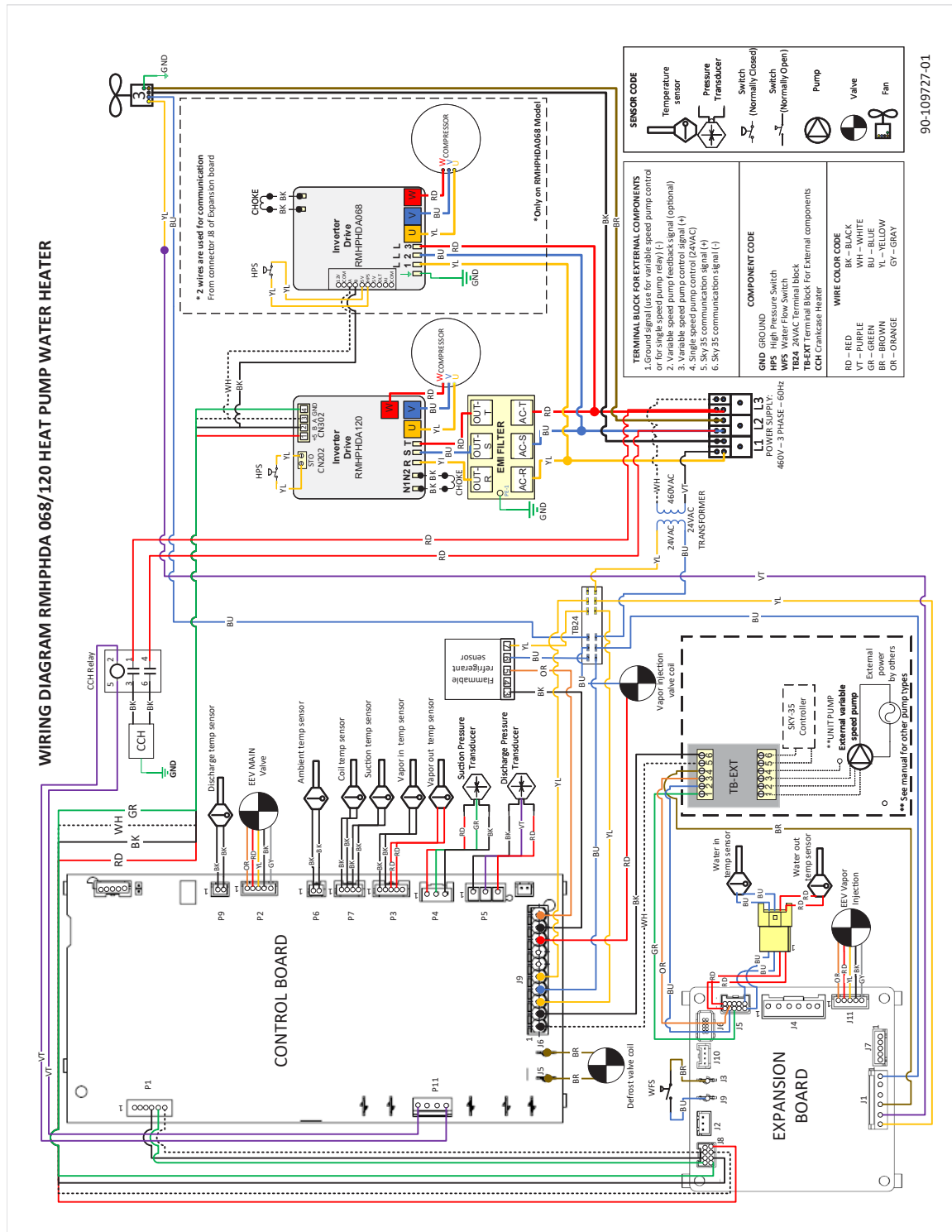
Control box bracket for RMHPHDA068

Control box bracket for RMHPHDA120

3.4 ELECTRICAL WIRING DIAGRAM AND FIELD CONNECTIONS

WIRING DIAGRAM SCHEMATIC

RMHPHDA 068 / 120 HEAT PUMP WATER HEATER





3.5 SKY-35 CONTROLLER FOR MULTIPLE HYDRONIC HEAT SOURCES

Your new heat pump water heater requires a controller device, sold separately, in order to operate to its full potential. This controller will allow you to operate your device with various configurations, auxiliary tanks, and multiple units.

ACCESSORIES INCLUDED

- Supply temperature sensor
- Return temperature sensor
- Outdoor temperature sensor

SKY-35 CONTROLLER SPECIFICATIONS	
Rated Voltage / Frequency / Phase	24V / 60Hz
Total Load (less circulators)	10VA / 0.42 A
Weight	3.2 lb / 1.45 kg
Max Fuse Size	2 A



DIMENSIONS

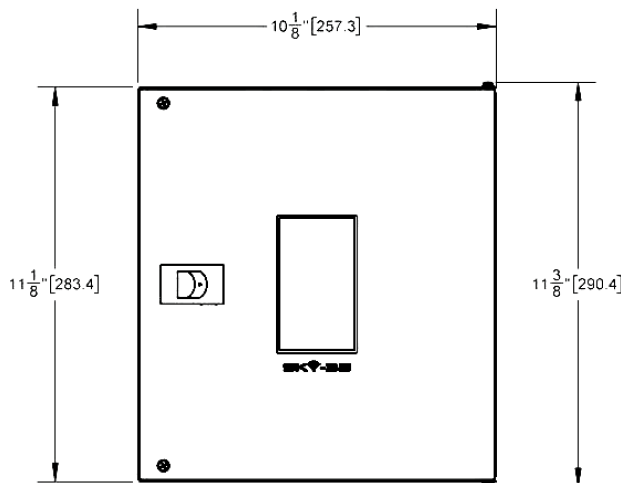


Fig. 2: Front view of Sky-35 Controller

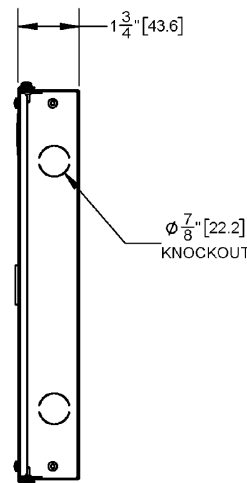


Fig. 3: Side view of Sky-35 Controller

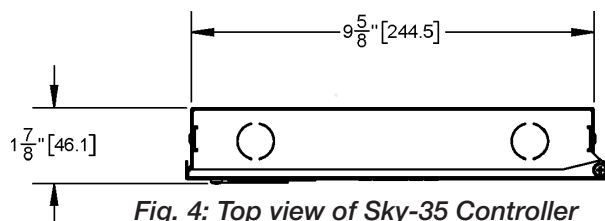


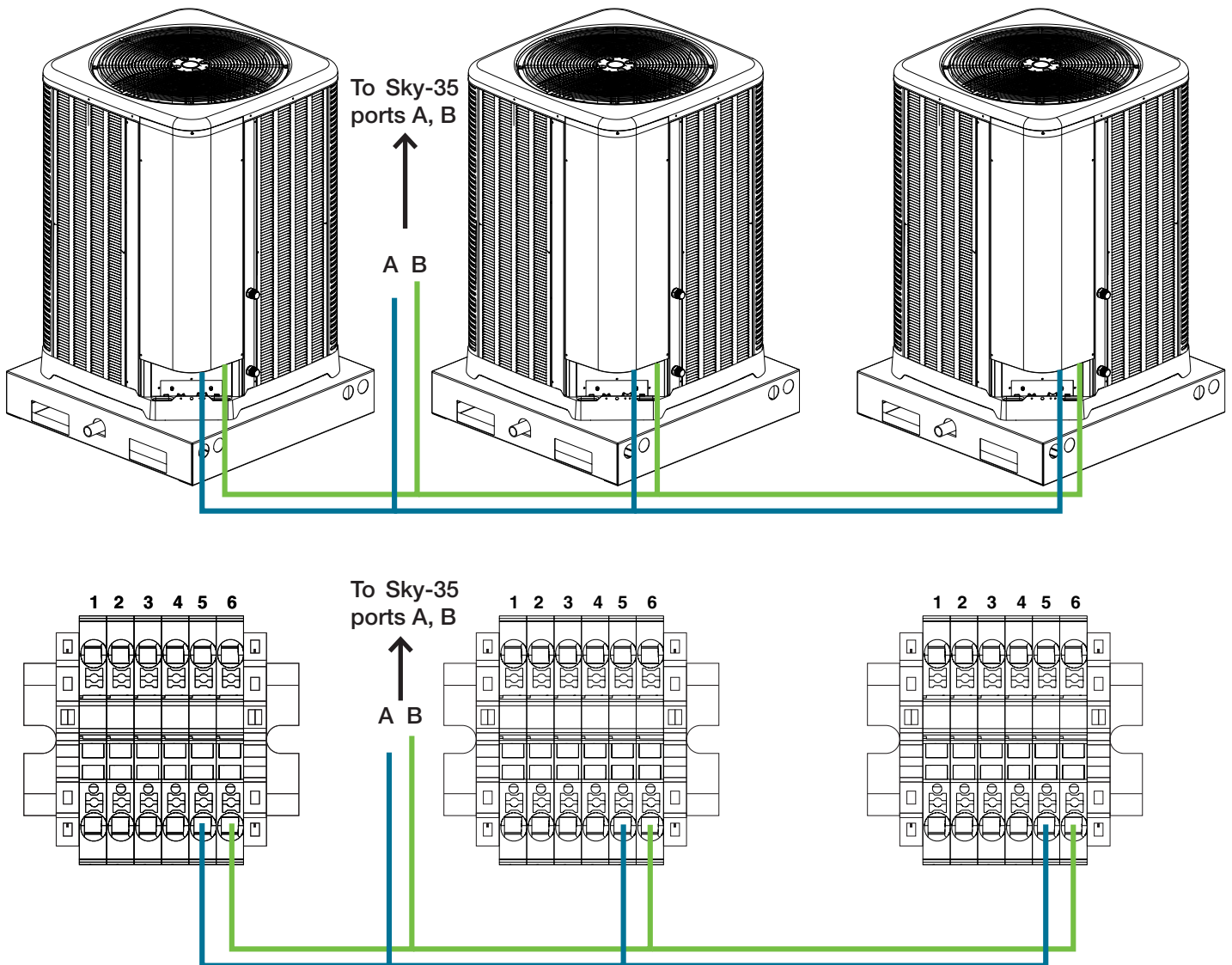
Fig. 4: Top view of Sky-35 Controller

NOTE: An external 24Vac transformer is required to power up the device. Do not power the device using voltage from your heat pump water heater. Doing so can damage your unit and void warranty.

3.5 SKY-35 CONTROLLER FOR MULTIPLE HYDRONIC HEAT SOURCES

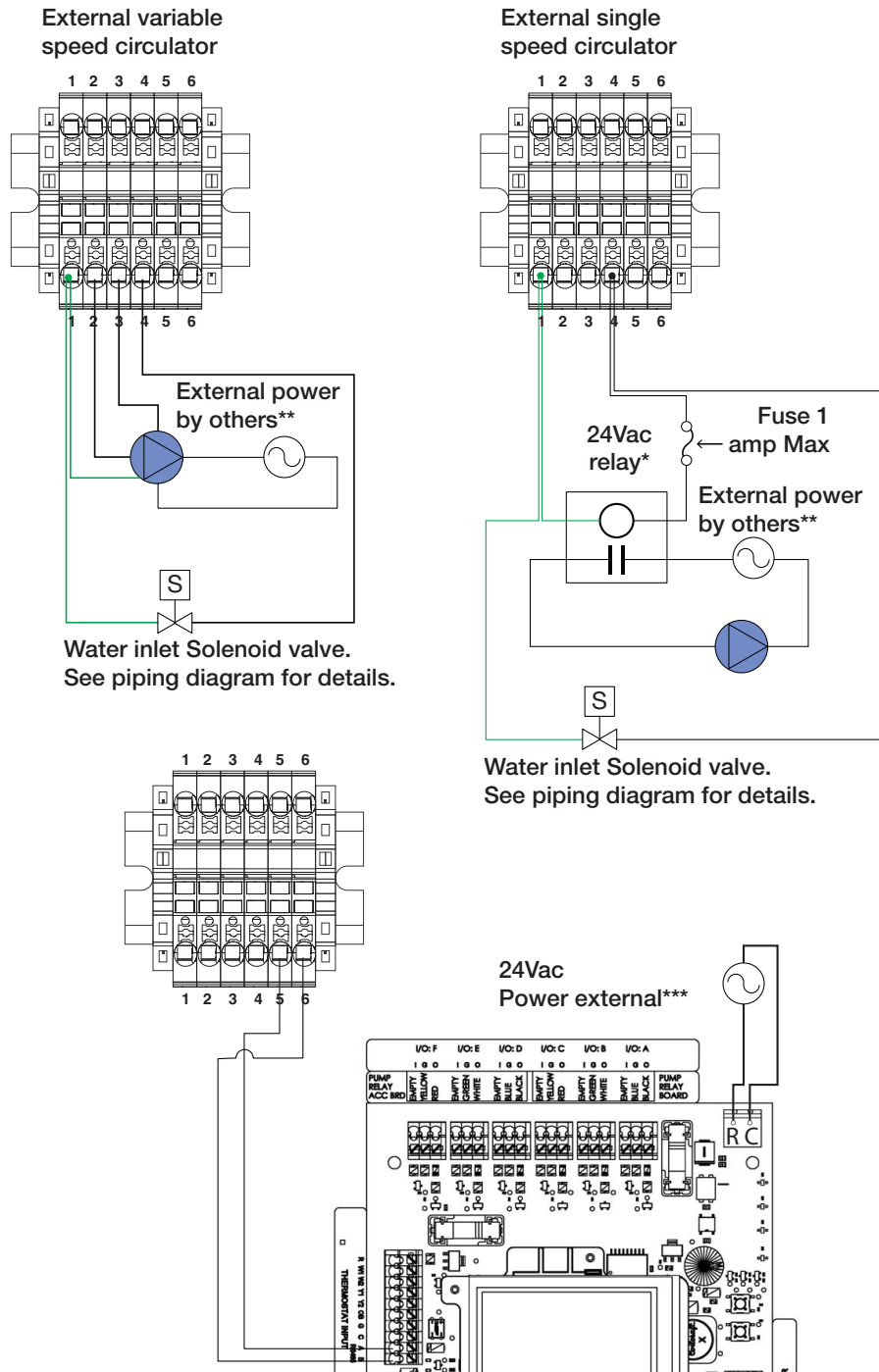
RS-485 CONNECTIONS

Heat pump water heaters are connected to the main controller device (Sky-35) via the RS-485 ports E1 and E2 (7,8) on the heat pump and ports A, B on the Sky-35. Multiple units can be daisy chained, up to 16 units can be connected to the Sky-35 device.



3.5 SKY-35 CONTROLLER FOR MULTIPLE HYDRONIC HEAT SOURCES

EXTERNAL COMPONENTS DIAGRAM



PORT	DESCRIPTION
1	Ground signal (use for variable speed circulator control or for single speed circulator relay) (-)
2	Variable speed circulator feedback signal (optional)
3	Variable speed circulator control signal (+)
4	Single speed circulator control (24Vac)
5	Sky-35 communication signal (+)
6	Sky-35 communication signal (-)

* External relay not provided, relay must be a 24Vac coil, 3/4 watt max.

** External power must match circulator voltage, please consult your circulator user manual for voltage and wiring diagrams.

*** External power supply 24Vac at 75 Watts.

Circulators are available via your local Rheem distributor, consult your Rheem representative.



3.5 SKY-35 CONTROLLER FOR MULTIPLE HYDRONIC HEAT SOURCES

CLEARANCES

When wall-mounting, leave adequate room for door swing, wiring connections, and 6" (15 cm) below for insertion of USB stick.

CIRCULATOR RELAY MODULE CONNECTIONS	
Supply power wiring knock-out (1)	1/2"
Circulator wiring knock-outs (7)	1/2"

SKY-35 CONTROLLER OVERVIEW

The controller provides easy and versatile management of multiple hydronic heat sources. The Sky-35 allows you to set up primary and backup heat sources so that they work together in a priority sequence.

FEATURES OF THE CONTROLLER

- Main loop monitoring and control
- Buffer tank monitoring with summer shutdown
- Always-on status display
- Easy-to-set outdoor reset control option
- Dry contacts for control of third-party heat sources
- Easy heat source setup
- Supply, return, and outdoor temperature sensors included
- Heat pump over-temp protection
- Heat pump freeze protection
- Flexible options for a wide spectrum of hydronic applications

POWER-UP SEQUENCE AND OPERATIONAL STATES/CYCLES

When the Sky-35 is first energized, some settings will already be populated with default values: you will probably wish to change (and Save) certain settings. Generally, saved values take effect with the next heating (or cooling) call.

After a power interruption, the controller automatically resumes operation with all the previously stored values, including any changes you have made. During a power interruption a capacitor maintains the clock operation, but the capacitor charge is not required for retention of saved changes.

Consult the manual provided with the Sky-35 for details on system set up and operation.

LOCATION

Situate the controller in the heating equipment room approximately 5 ft (1.5 m) from the ground, or at a height offering easy access. Before mounting, consider accessibility to heat sources and circulators which are to be wired to the controller. Leave adequate room for door swing, wiring connections, and 4" (10 cm) below for insertion of USB stick.

3.5 SKY-35 CONTROLLER FOR MULTIPLE HYDRONIC HEAT SOURCES

TERMINAL FUNCTIONS AND RATINGS

BLOCK	PIN	TYPE	DESCRIPTION	MAXIMUM RATING
R C		Input	24Vac power to the Sky-35 controller from Circulator Relay Module	24 VAC
I/O: CIRCULATOR A-F	O	Output	EMC / PSC Circulator Control; 12V -PWM control signal relative to G terminal	150 mA; 400 mA total A-F
	I	Input	EMC / PSC Circulator Feedback; 5 to 24 V-PWM relative to G terminal	
	G	Output	With O terminal can connect to Circulator Relay Module for standard PSC circulator control	
Thermostat Input Room thermostat connection	A		RS485 comms interface for intelligent thermostats compatible with IBC	DO NOT APPLY POWER
	B			
Heat Source 1 (HP) Heat Pump demand terminal block	ON_OFF (2)	Dry contacts	To initiate a call for heat pump operation (like TT)	24Vac/DC
	HT_CL (2)	Dry contacts	For heat pump to select heating or cooling mode (like TT)	24Vac/DC
	DEF + (2)	Input, isolated 24V	Defrost signal from heat pump	24Vac/DC
	A		RS 485 comms interface for IBC heat pumps	DO NOT APPLY POWER
	B			
Heat 2 (EB) Electric boiler demand terminal block	A		RS 485 comms interface for IBC electric boilers	DO NOT APPLY POWER
	B			
	T (2)	Dry contacts	To initiate a call for electric boiler operation	24Vac/DC
Heat 3 (GB) Gas Boiler demand terminal block	T (2)	Dry contacts	To initiate a call for a gas boiler operation	24Vac/DC
DEV_1	T (2)	Dry contacts	Terminal block for auxiliary device 1 control [upcoming feature]	24Vac/DC
DEV_2	T(2)	Input	Terminal block for auxiliary device 2 control [upcoming feature]	24Vac/DC
TEMP_1	(2)	Input	Terminal block for auxiliary NTC 10KΩ thermistor as Temperature Sensor 1	DO NOT APPLY POWER
TEMP_2	(2)	Input	Terminal block for auxiliary NTC 10KΩ thermistor as Temperature Sensor 2	DO NOT APPLY POWER



3.5 SKY-35 CONTROLLER FOR MULTIPLE HYDRONIC HEAT SOURCES

TERMINAL FUNCTIONS AND RATINGS

BLOCK	PIN	TYPE	DESCRIPTION	MAXIMUM RATING
TEMP_3	(2)	Input	Terminal block for auxiliary NTC 10K Ω thermistor as Temperature Sensor 3	DO NOT APPLY POWER
TEMP_4	(2)	Input	Terminal block for auxiliary NTC 10K Ω thermistor as Temperature Sensor 4	DO NOT APPLY POWER
RETURN	(2)	Input	Terminal block for supplied NTC 10K Ω thermistor as Return Temperature Sensor	DO NOT APPLY POWER
SUPPLY	(2)	Input	Terminal block for supplied NTC 10K Ω thermistor as Supply Temperature Sensor	DO NOT APPLY POWER
OUTDOOR	(2)	Input	Terminal block for supplied NTC 10K Ω thermistor as Outdoor Temperature Sensor	DO NOT APPLY POWER

**Output Load Control 24 VAC / VDC; 5.0 A; Resistive. 24 VAC @ 24 VA; 1.0 A; 3.6 A Inrush; Pilot.*



3.6 ANCHOR INSTRUCTIONS FOR HIGH WIND LOCATION

1. All existing supporting host concrete shall have $f'c=3,000$ psi min. compressive strength and shall be regular-weight, uncracked concrete, design and integrity by others.
2. "Stand Rail" where used here refers to equipment stand rail members, design and integrity by others, which shall be 0.090" min. thick, 6061-T6 or stronger aluminum OR 12 GA (.098") min. thick, ASTM A653 Gr. 33 min. ($F_y=33$ ksi min, $F_u=45$ ksi min) galv. steel.
3. "Tie-Down Clip" or "Clip" where used herein: Each clip shall be 1" min. wide x 0.068" min. thick, UTS = 45 ksi min. (equivalent to ASTM A653 Gr. 33 or stronger) galv. steel, typ. Ensure clip sits flush on host structure and flush against the unit. Clip-to-unit screws shall be positioned as (1) screw per clip slot, typ. Care must be taken to avoid screw contact with internal piping and components; exercise caution with screw installation.
4. "Sheet Metal Screws" or "SMS" where used herein: screws shall be SAE Gr. 2 min. or SS self-drilling screws with washers, typ.
5. "Thru-Bolt" where herein: bolt shall be a UNC bolt, SAE Gr. 2 min. or SS, with 1" min. OD fender washers and ID sized for the bolt shank diameter at the top and bottom of the connection (under the bolt head and above the locking nut), and SAE Gr. 2 min. or SS locking nut at the underside of the connection, typ. See the thru-bolt diagram on the second-to-last page of this report.
6. A total of 8 tie down brackets and hardware for installation are included with the unit. These are intended for secure of unit at 54 psf. If more brackets and hardware are need, these can be obtained via Rheem replacement parts. Consult your local dealer. These can be ordered with the part number 10-105931-02.

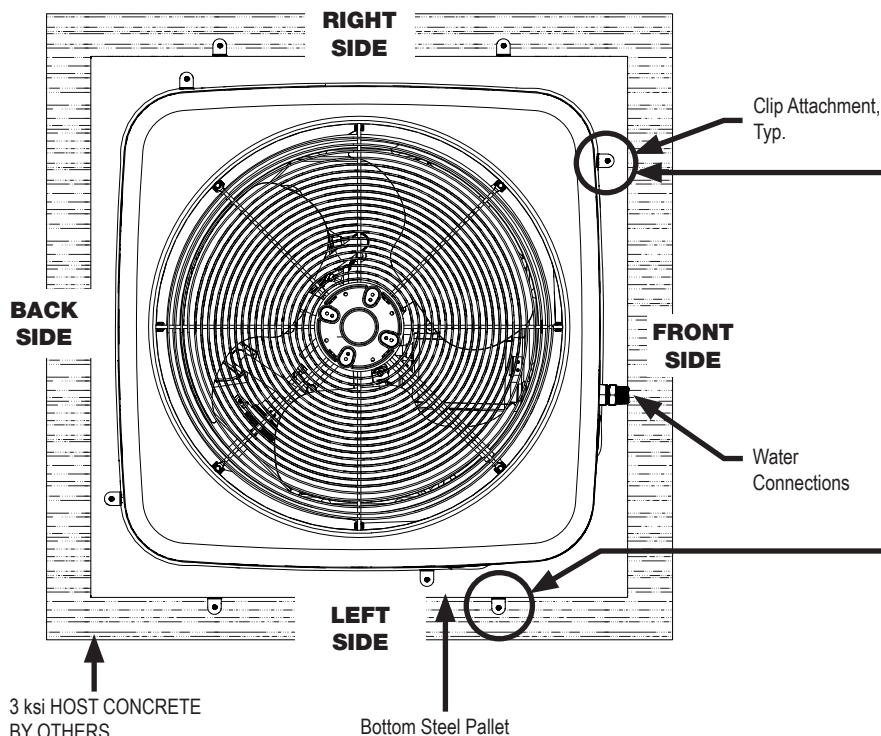
GROUND MOUNT TO CONCRETE

Valid for ASD Wind Pressure up to ± 54 psf Lateral & 0 psf Uplift. Concrete Host by Others. Valid for both models.

GROUND MOUNT TIE-DOWN DIRECTIVE

SCALE: NTS

TOP VIEW



UNIT ATTACHMENT DIRECTIVE:

Center unit on steel pallet, typ.
Attach unit to pallet with (4) clips, (1) per unit corner, typ. clip can be positioned on either side of the unit corner, typ.
Attach clip to unit wall panel with (4) #10 SAE gr. 2 min. or SS SMS, typ. see detail.
Attach clip to pallet with (1) 3/8" $\varnothing$, SAE gr. 5 min. SMS, typ.

PALLET ATTACHMENT DIRECTIVE:

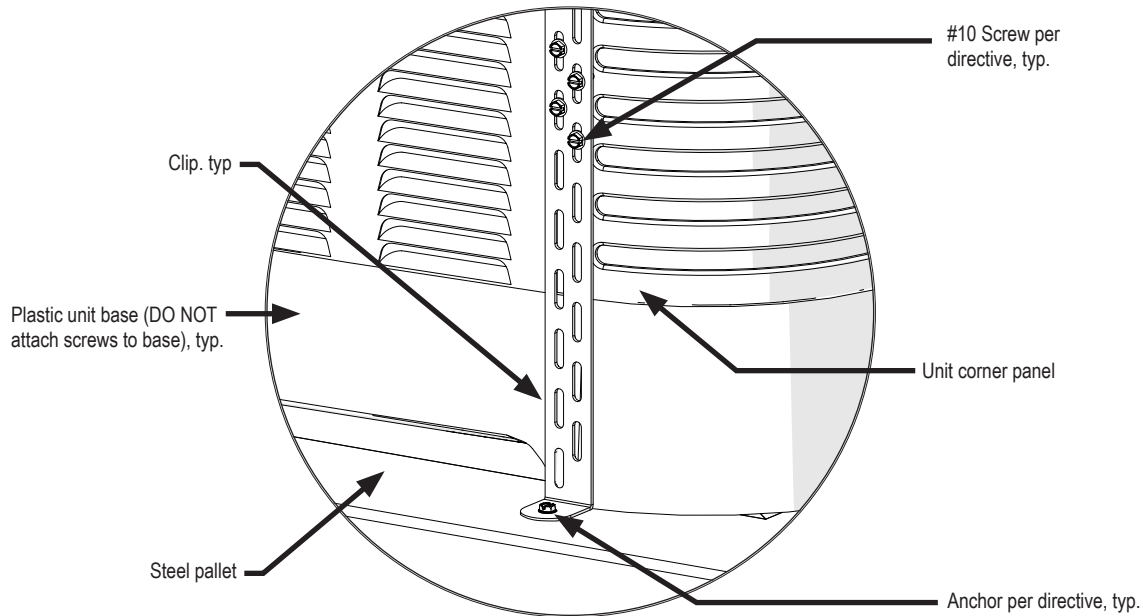
Attach pallet to host concrete by others with (4) clips, (1) per pallet corner, typ. Clip can be positioned on either side of pallet corner, typ.
Attach clip to pallet with (5) #10 SMS, typ. see detail.
Attach clip to concrete with (1) 1/4" $\varnothing$ ITW tapcon or equivalent with 1-3/4" embedment, 3" min. edge distance to any concrete edge, and 4-1/4" min. spacing typ.

3.6 ANCHOR INSTRUCTIONS FOR HIGH WIND LOCATION

UNIT TO PALLET CLIP ATTACHMENT, TYP.

SCALE: NTS

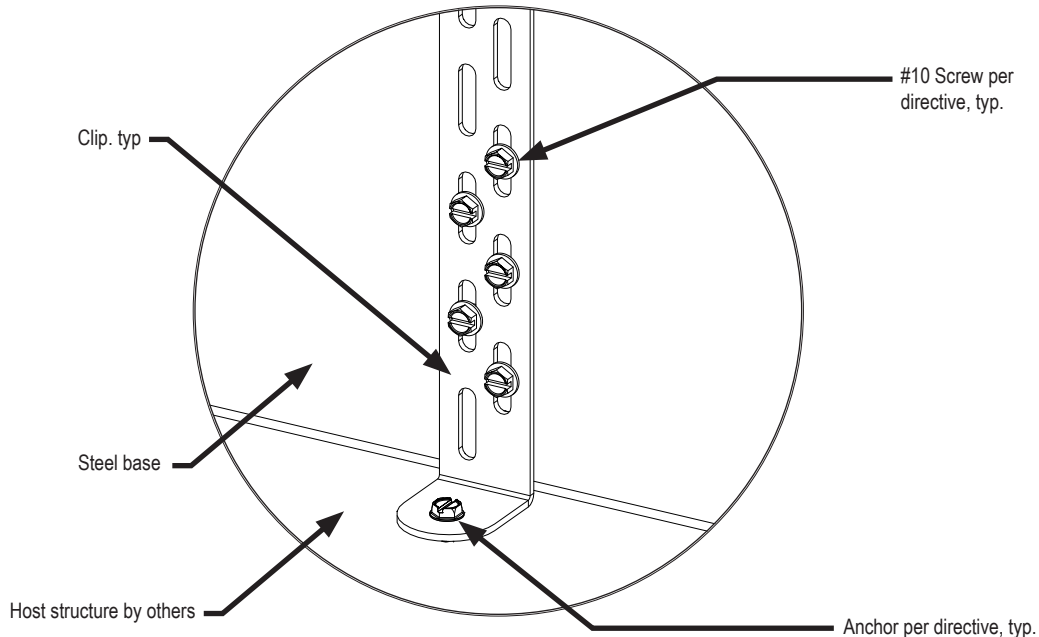
ISOMETRIC VIEW



PALLET TO HOST STRUCTURE CLIP ATTACHMENT, TYP.

SCALE: NTS

ISOMETRIC VIEW



NOTE: Only the screws provided with the unit are approved to use to secure bracket to unit. Screws used to secure bracket to the steel base are per the specs described on the tie down directives. Contact Rheem if more screws are required.



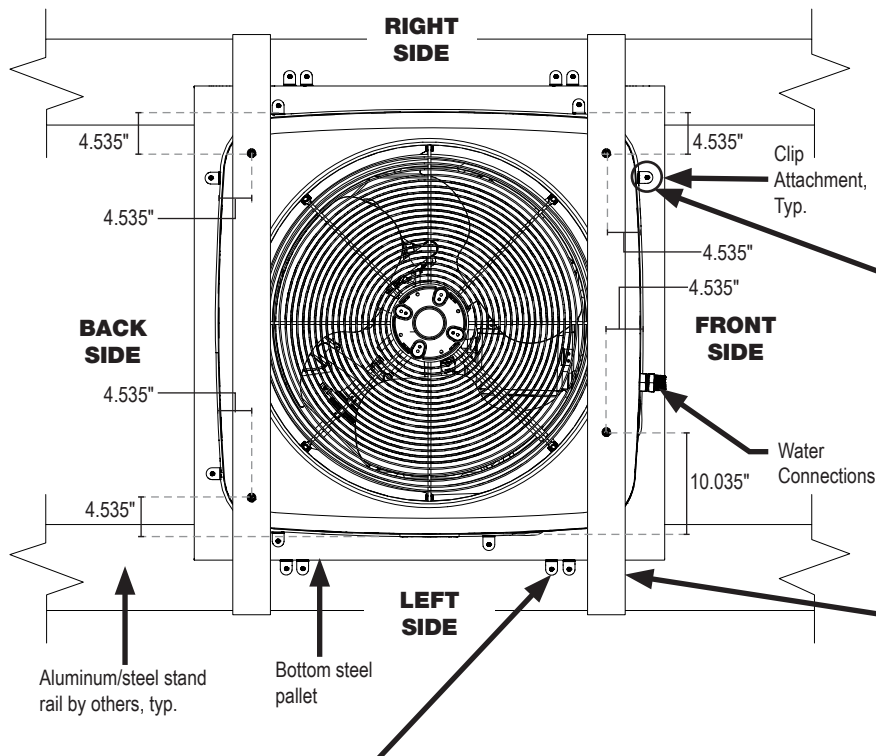
3.6 ANCHOR INSTRUCTIONS FOR HIGH WIND LOCATION

ROOFTOP MOUNT TO ALUMINUM OR STEEL STAND: 35" TALL UNITS

(Valid for ASD Wind Pressure up to ± 140 psf Lateral & 111 psf Uplift).

(Aluminum/Steel Host Stand Rails by Others).

NOTE: Straps are NOT required for ASD wind pressures up to ± 102 psf LATERAL & 81 psf UPLIFT.



PALLET ATTACHMENT DIRECTIVE:

Attach pallet to stand rails by others with (8) clips, (4) per opposite side as shown, positioned towards the pallet corners as much as is feasible. Provide 1" min. spacing between clips.

Attach clip to pallet with (5) #10 SMS, typ. see detail.

Attach clip to stand with (1) 1/4" $\varnothing$ thru-bolt.

UNIT ATTACHMENT DIRECTIVE:

Center unit on steel pallet, typ.

Attach unit to pallet with (7) clips approximately as shown, (2) per unit corner, except for (1) clip at front-left corner, position the (1) clip at left side of unit to allow water connections on front side, typ.

Attach clip to unit wall panel with (4) #10 SAE gr. 2 min. or SS SMS, typ. see detail.

Attach clip to pallet with (1) 3/8" $\varnothing$ thru-bolt, typ.

(IF APPLICABLE): TIE-DOWN STRAP DIRECTIVE:

Provide (2) straps positioned approximately as shown: (2) straps over opposite sides and attaching to the undersides of the stand rails, typ.

Attach each strap end to the underside of the stand rail with (4) #14 SMS with 1/2" min. spacing and 3/8" min. edge distance typ.

To prevent strap slipping, also attach each strap to the unit top panel with (2) #10 (0.190" $\varnothing$) SMS as shown, typ. Screws shall be positioned per the location/dimensions marked to avoid damage to the unit.

NOTE: (2) 1" wide straps, each with half the amount of screws as the 2" wide strap, are also permitted in place of the 2" strap. All other strap requirements shall be met.

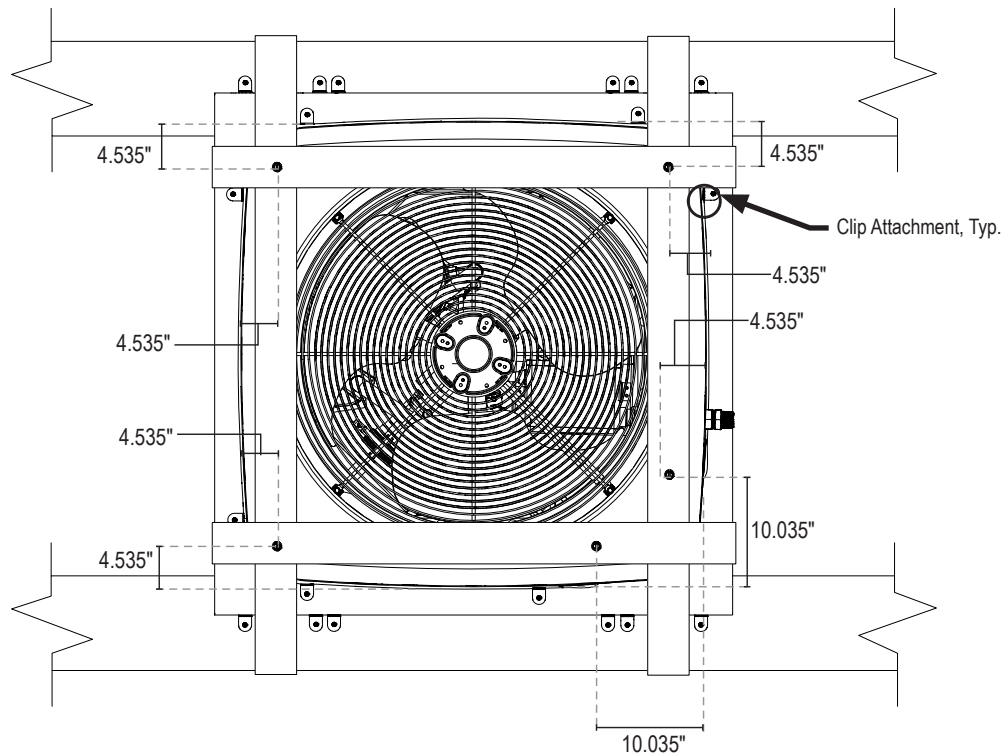


3.6 ANCHOR INSTRUCTIONS FOR HIGH WIND LOCATION

ROOFTOP MOUNT TO ALUMINUM OR STEEL STAND: 51" TALL UNITS (4-STRAP CONFIGURATION)

(Valid for ASD Wind Pressure up to ± 140 psf Lateral & 111 psf Uplift).

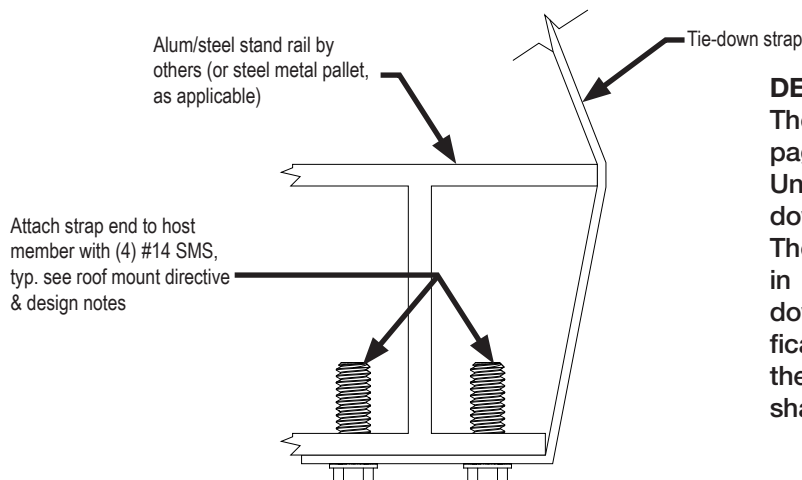
(Aluminum/Steel Host Stand Rails by Others).



TIE-DOWN STRAP ATTACHMENT, TYP.

SCALE: NTS

DETAIL VIEW



DETAILS 8-9 NOTES

The units depicted in the Details on this page are for illustrative purposes only. Units may vary in appearance. The tie-down system may not be depicted in full. The sample tie-down layouts shown herein are for illustrative purposes only. Tie-down locations may vary per the specifications stated herein. Detail 9 considers the stand rail member to be an I-beam shape. Host structure shape may vary.



3.6 ANCHOR INSTRUCTIONS FOR HIGH WIND LOCATION

ROOFTOP MOUNT TO ALUMINUM OR STEEL STAND: 51" TALL UNITS (0- OR 2-STRAP CONFIG.)

(Valid for ASD Wind Pressure up to ± 106 psf Lateral & 84 psf Uplift).

(Aluminum/Steel Host Stand Rails by Others).

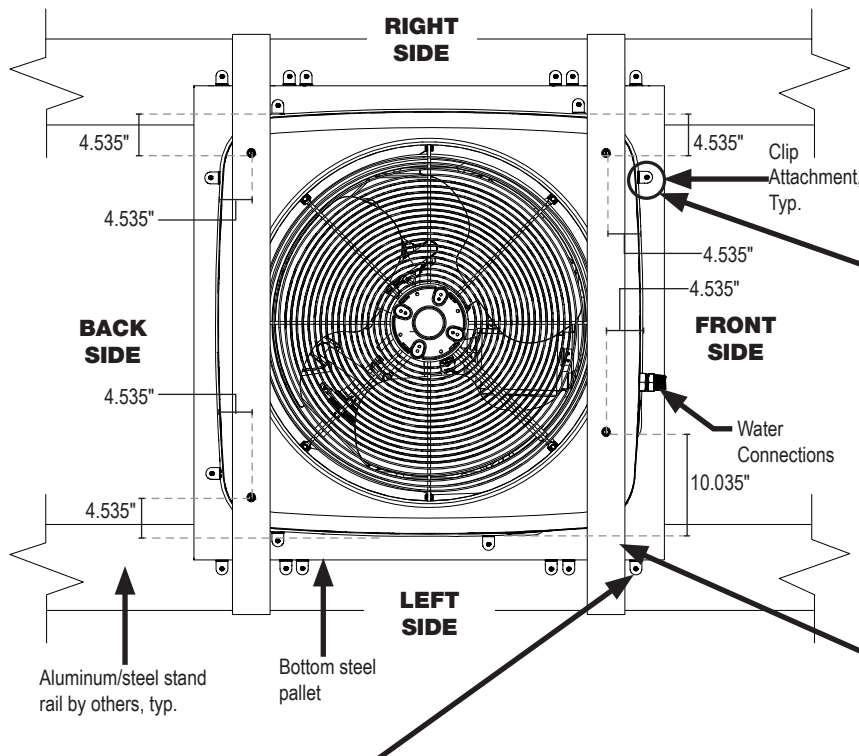
NOTE: STRAPS ARE NOT REQUIRED FOR ASD WIND PRESSURES UP TO ± 66 PSF LATERAL & 53 PSF UPLIFT.

NOTE: PALLET ATTACHMENT DIRECTIVE: FOR ASD WIND PRESSURES UP TO ± 66 PSF LATERAL & 53 PSF UPLIFT, ONLY (8) CLIPS, (4) PER OPPOSITE SIDE ARE REQUIRED INSTEAD OF (12) CLIPS TOTAL. FOLLOW ALL OTHER SPECIFICATIONS AS NOTED BELOW.

ROOFTOP STAND MOUNT TIE-DOWN DIRECTIVE: 51" TALL UNITS, 0- OR 2-STRAP CONFIGURATION FOR LOWER WIND PRESSURES

SCALE: NTS

TOP VIEW



UNIT ATTACHMENT DIRECTIVE:

Center unit on steel pallet, typ.

Attach unit to pallet with (7) clips approximately as shown, (2) per unit corner, except for (1) clip at front-left corner. Position the (1) clip at left side of unit to allow water connections on front side, typ.

Attach clip to unit wall panel with (4) #10 SAE gr. 2 min. or SS SMS, typ. see detail. Attach clip to pallet with (1) 3/8" $\varnothing$ thru-bolt, typ.

(IF APPLICABLE): TIE DOWN STRAP DIRECTIVE:

Provide (2) straps positioned approximately as shown: (2) straps over opposite sides and attaching to the undersides of the stand rails, typ.

Attach each strap end to the underside of the stand rail with (4) #14 SMS with 1/2" min. spacing and 3/8" min. edge distance, typ.

To prevent strap slipping, also attach each strap to the unit top panel with (2) #10 (0.190" $\varnothing$) SMS as shown, typ. screws shall be positioned per the locations/dimensions marked to avoid damage to the unit.

NOTE: (2) 1" wide straps, each with half the amount of screws as the 2" wide strap, are also permitted in place of the 2" strap. All other strap requirements shall be met.

PALLET ATTACHMENT DIRECTIVE:

Attach pallet to stand rail by others with (12) clips, (6) per opposite side as shown, positioned towards the pallet corners as much as is feasible. Provide 1" min. spacing between clips.

Attach clip to pallet with (5) #10 SMS, typ. see detail.

Attach clip to stand with (1) 1/4" $\varnothing$ thru-bolt.

3.6.1 ANCHOR INSTRUCTIONS FOR SEISMIC LOCATION

1. All existing supporting host concrete shall have $f'c = 3,000$ psi min. compressive strength and shall be regular-weight, uncracked concrete, design and integrity by others.
2. "Stand Rail" where used herein refers to equipment stand rail members, design and integrity by others, which shall be 0.090" min. thick, 6061-T6 or stronger aluminum OR 12 GA (0.098") min. thick, ASTM A653 Gr. 33 min. ($F_y = 33$ ksi min. $F_u = 45$ ksi min.) galv. steel.
3. "Tie-Down Clip" or "Clip" where used herein: Each clip shall be 1" min. wide x 0.068" min. thick, UTS=45 ksi min. (equivalent to ASTM A653 Gr. 33 or stronger) galv. steel, typ. Ensure clip sits flush on host structure and flush against the unit. Clip to unit screws shall be positioned as (1) screw per clip slot, typ. Care must be taken to avoid screw contact with internal piping and components; exercise with caution with screw installation.
4. "Sheet Metal Screws" or "SMS" where used herein: screws shall be SAE Gr. 2 min. or SS self-drilling screws with washers, typ.
5. "Thru Bolt" where used herein: bolt shall be a UNC bolt, SAE Gr. 2 min. or SS, with 1" min. OD fender washers and ID sized for the bolt shank diameter at the top and bottom of the connection (under the bolt head and above the locking nut), and SAE Gr. 2 min. or SS locking nut at the underside of the connection, typ. See the thru bolt diameter on the second to last page of this report.
6. A total of 8 tie down brackets and hardware for installation are included with the unit. These are intended for secure of unit at 54 psf. If more brackets and hardware are need, these can be obtained via Rheem replacement parts. Consult your local dealer. These can be ordered with the part number 10-105931-02.

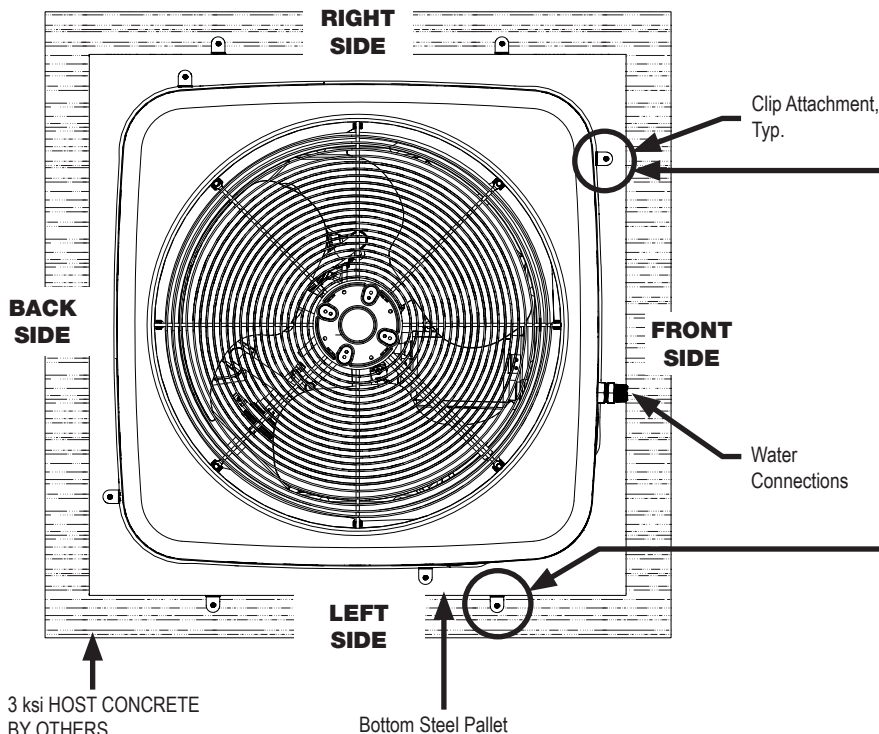
GROUND MOUNT TO CONCRETE

(Concrete Host by Others)

GROUND MOUNT TIE-DOWN DIRECTIVE

SCALE: NTS

TOP VIEW



UNIT ATTACHMENT DIRECTIVE:

Center unit on steel pallet, typ.

Attach unit to pallet with (4) clips, (1) per unit corner, typ. clip can be positioned on either side of the unit corner, typ.

Attach clip to unit wall panel with (4) #10 SAE gr. 2 min. or SS SMS, typ. see detail.

Attach clip to pallet with (1) 3/8" Ø, SAE gr. 5 min. SMS, typ.

PALLET ATTACHMENT DIRECTIVE:

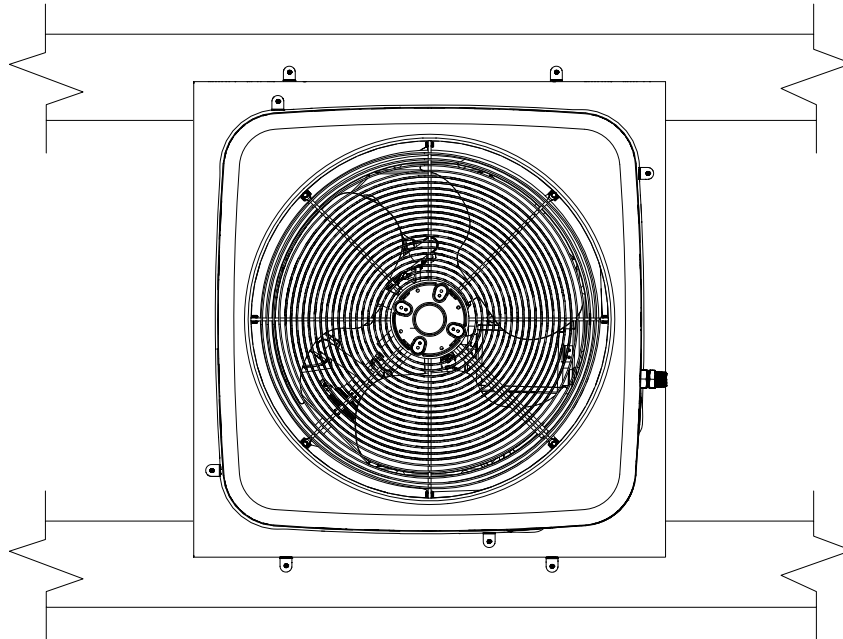
Attach pallet to host concrete by others with (4) clips, (1) per pallet corner, typ. Clip can be positioned on either side of pallet corner, typ.

Attach clip to pallet with (5) #10 SMS, typ. see detail.

Attach clip to concrete with (1) 1/4" Ø ITW tapcon or equivalent with 1-3/4" embedment, 3" min. edge distance to any concrete edge, and 4-1/4" min. spacing typ.

3.6.1 ANCHOR INSTRUCTIONS FOR SEISMIC LOCATION

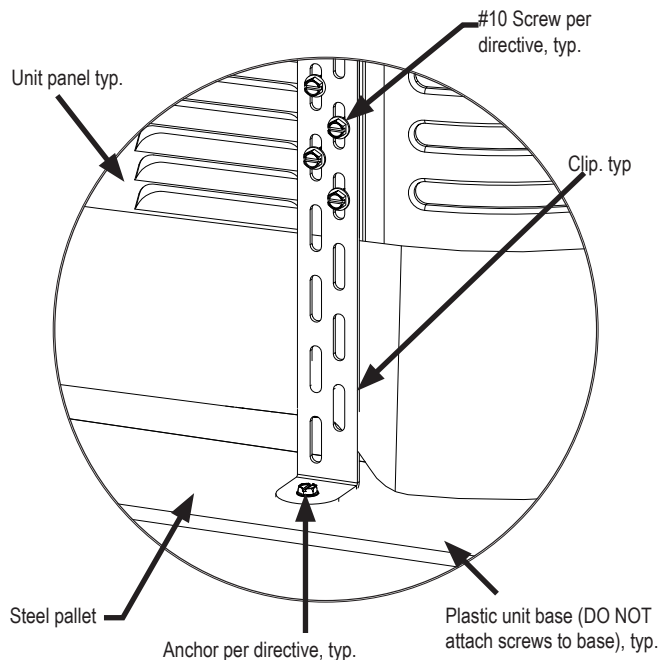
ROOF MOUNT TO ALUMINUM OR STEEL STAND



UNIT TO PALLET CLIP ATTACHMENT, TYP.

SCALE: NTS

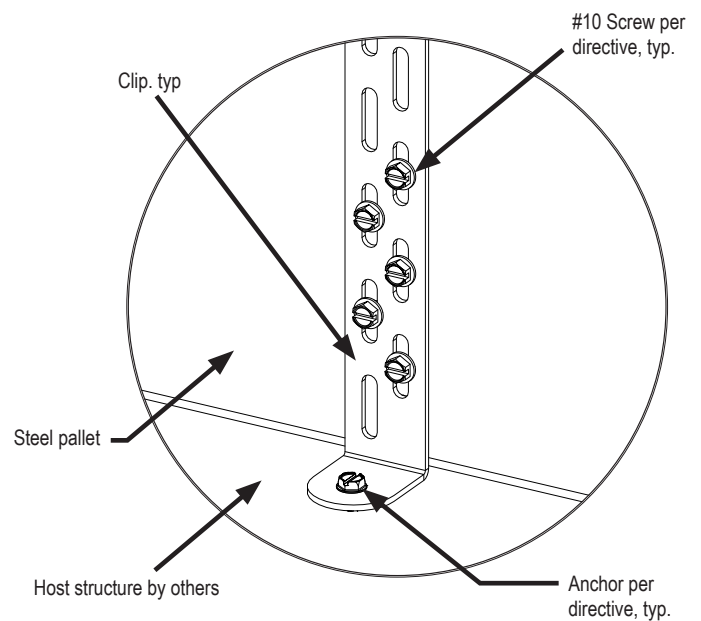
ISOMETRIC VIEW



PALLET TO HOST STRUCTURE CLIP ATTACHMENT, TYP.

SCALE: NTS

ISOMETRIC VIEW





3.7 WATER PIPING CONNECTIONS

WATER CONNECTIONS

⚠ CAUTION:

The heat pump water heater inlet and outlet connections are **NOT** interchangeable. They must be connected as instructed below.

1. Connect the heat pump water heater in the return water line. See the Plumbing Diagrams in this Manual.

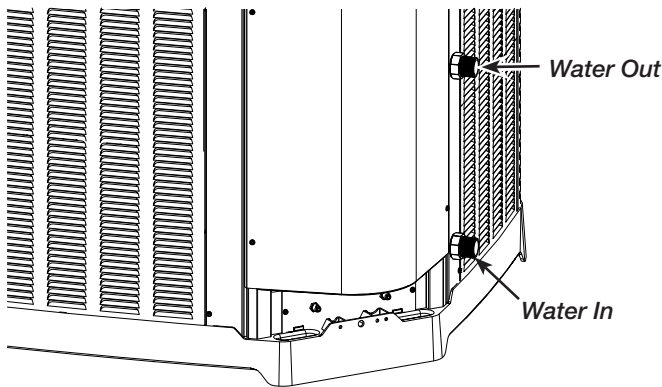
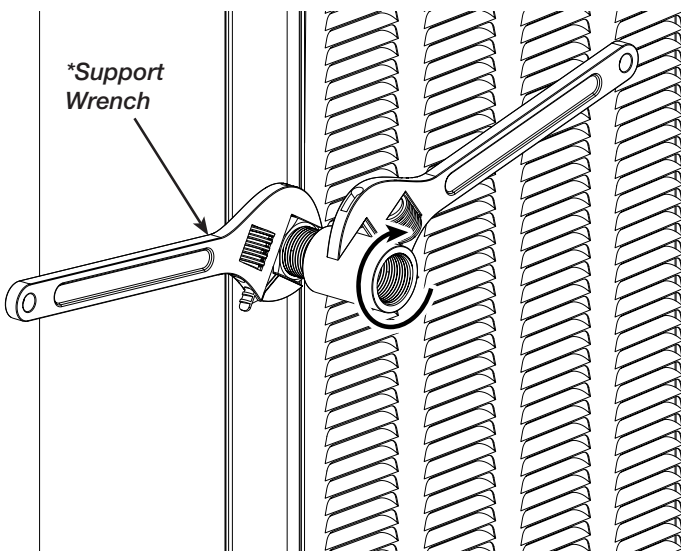


Fig. 5: Water Connections/Drain Plugs

NOTE: Swapping water connections will render unit inoperable.

Water connections to unit are 1" NPT thread male. Please be aware that the use of a support wrench is needed when making water connections. This will prevent the piping inside the unit from twisting and potential damage or water leak from occurring.



*Support Wrench does not move.

FLOW (GPM/ LPM)	PRESSURE DROP psi [ft/d]	
	RMHPHDA068	RMHPHDA120
4	0.9 [2.08]	0.25 [0.58]
8	1.26 [2.92]	0.54 [1.25]
12	2.09 [4.83]	1.01 [2.22]
16	3.18 [7.34]	1.59 [3.67]
20	4.48 [10.34]	2.38 [5.5]

The heat pump water heater is not designed to directly supply hot water to faucets or showers. The unit must be paired up with a separate storage tank or tanks, as shown in the piping diagrams.

STORAGE TANKS

Commercial storage tanks are used to store the hot water generated by the heat pump. The tanks must be manifolded to ensure even distribution of the stored energy. More than one tank can be used. Follow the Manifold Arrangement diagram in this Manual when manifolding the tanks.

Refer to the installation instructions supplied with the storage tanks for specific information relating to the installation of the storage tanks.

INLET TANK DIFFUSER

It is recommended to install a diffuser at the inlet of the tank to avoid sudden water inlet temperature increase. See section 7.0 for part number.

WATER CIRCULATORS

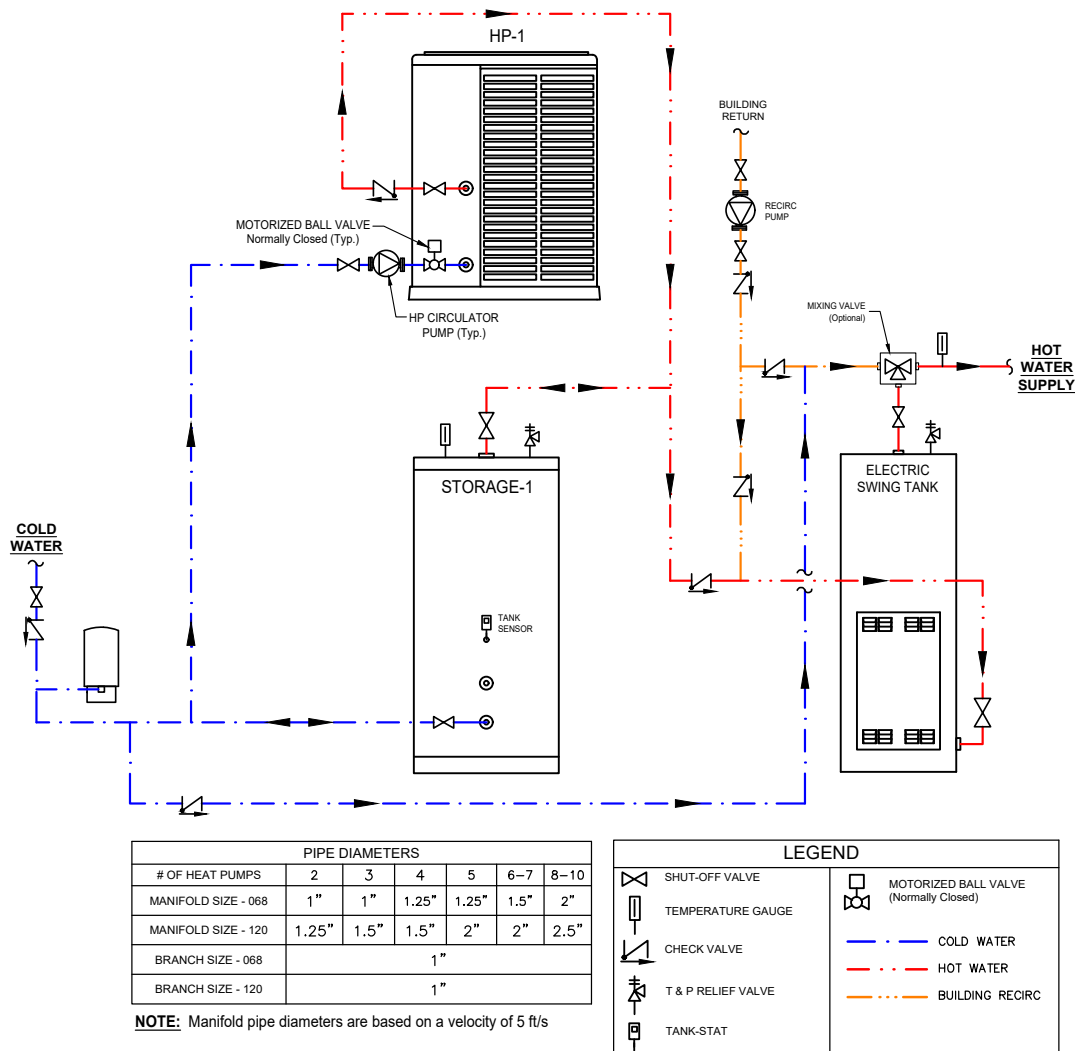
Each heat pump unit must have its own primary water circulator, to ensure proper flow and temperature increase is achieved. If more than one heat pump is installed, the manifold must be sized accordingly to allow the total flow of all the water circulators connected. See section 3.5 for details on how to connect circulator to unit.

Water circulator must be capable to supply flow between 5 and 20 GPM to the unit it is connected to. See section 7.0 for manufacturer recommended water circulator.



3.7.1 PIPING DIAGRAM FOR SINGLE PASS WATER HEATING

SINGLE-PASS PIPING DIAGRAM: SPLIT HP. V-STORAGE TANK, & SWING TANK



NOTE: We recommend use of metallic pipe, Copper or similar pipe with minimum temperature rating of 175°F.

On high outdoor ambient applications, greater than 95°F ambient, maximum stored water temperature shall not be greater than 140°F.

Flow from the tank and the unit must be adjusted properly to ensure that more water flows out the tank(s) than from the unit during a building demand.

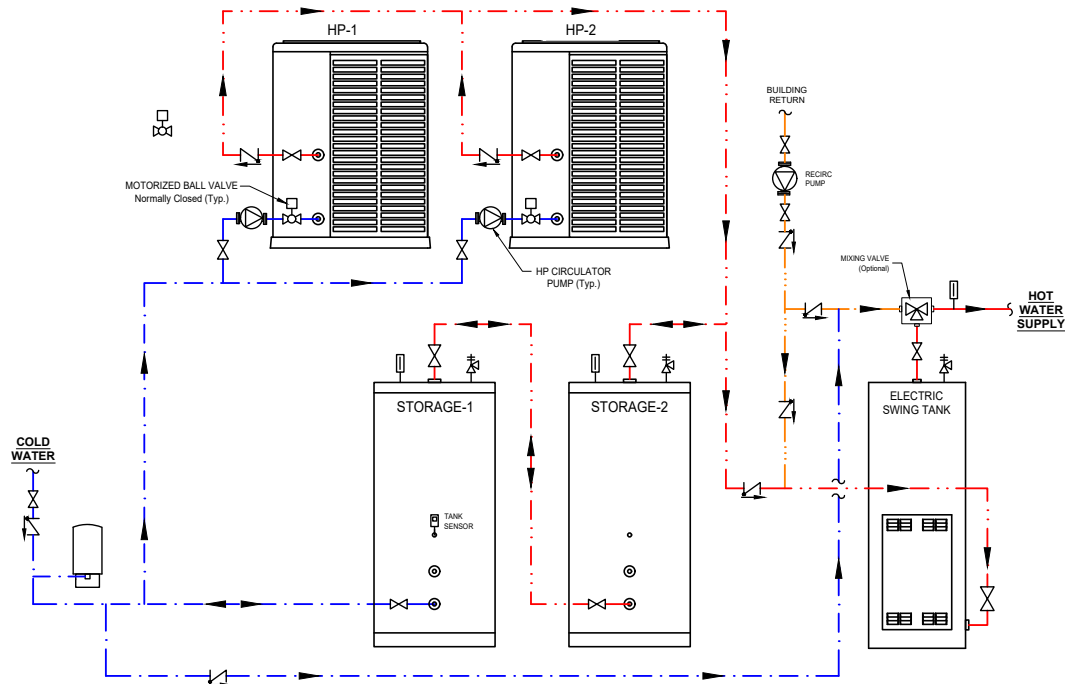
For single pass configuration, the use of a shut off valve on the water inlet pipe is recommended. We recommend 1" NPTF, 24Vac solenoid valve. Consider that for certain applications NSF certification of the valve may be required.

Single pass only allows use of a variable speed circulator.



3.7.1 PIPING DIAGRAM FOR SINGLE PASS WATER HEATING

SINGLE-PASS PIPING DIAGRAM: SPLIT HP. V-STORAGE TANK, & SWING TANK



PIPE DIAMETERS						
# OF HEAT PUMPS	2	3	4	5	6-7	8-10
MANIFOLD SIZE - 068	1"	1"	1.25"	1.25"	1.5"	2"
MANIFOLD SIZE - 120	1.25"	1.5"	1.5"	2"	2"	2.5"
BRANCH SIZE - 068	1"					
BRANCH SIZE - 120	1"					

NOTE: Manifold pipe diameters are based on a velocity of 5 ft/s

LEGEND	
	SHUT-OFF VALVE
	TEMPERATURE GAUGE
	CHECK VALVE
	T & P RELIEF VALVE
	TANK-STAT
	MOTORIZED BALL VALVE (Normally Closed)
	COLD WATER
	HOT WATER
	BUILDING RECIRC

NOTE: We recommend use of metallic pipe, Copper or similar pipe with minimum temperature rating of 175°F.

On high outdoor ambient applications, greater than 95°F ambient, maximum stored water temperature shall not be greater than 140°F.

Flow from the tank and the unit must be adjusted properly to ensure that more water flows out of the tank(s) than from the unit during a building demand.

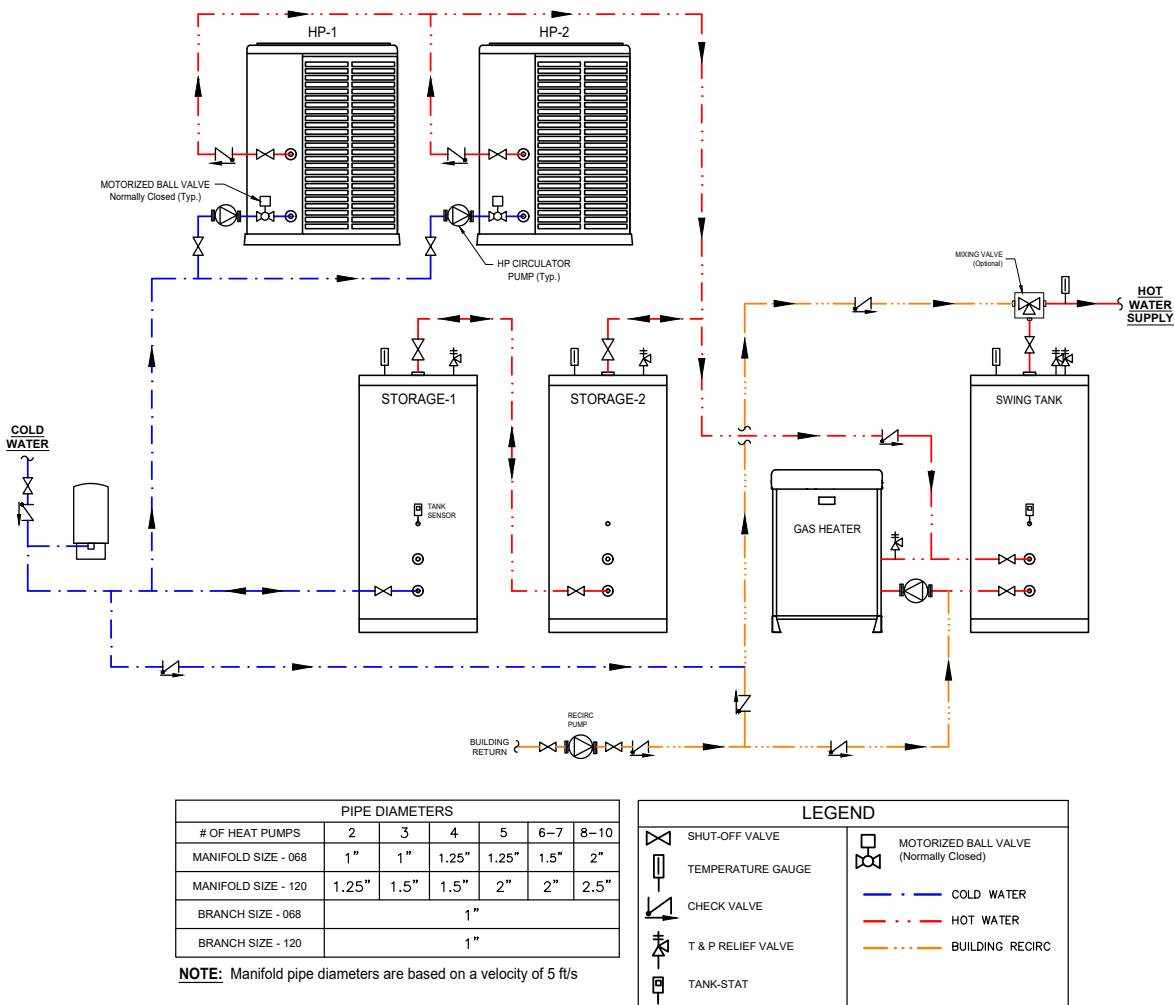
For single pass configuration, the use of a shut off valve on the water inlet pipe is recommended. We recommend 1" NPTF, 24Vac solenoid valve. Consider that for certain applications NSF certification of the valve may be required.

Single pass only allows use of a variable speed circulator.



3.7.1 PIPING DIAGRAM FOR SINGLE PASS WATER HEATING

PIPING DIAGRAM: SPLIT HP. V-STORAGE TANK, SWING & GAS BACKUP



NOTE: We recommend use of metallic pipe, Copper or similar pipe with minimum temperature rating of 175°F.

On high outdoor ambient applications, greater than 95°F ambient, maximum stored water temperature shall not be greater than 140°F.

Flow from the tank and the unit must be adjusted properly to ensure that more water flows out of the tank(s) than from the unit during a building demand.

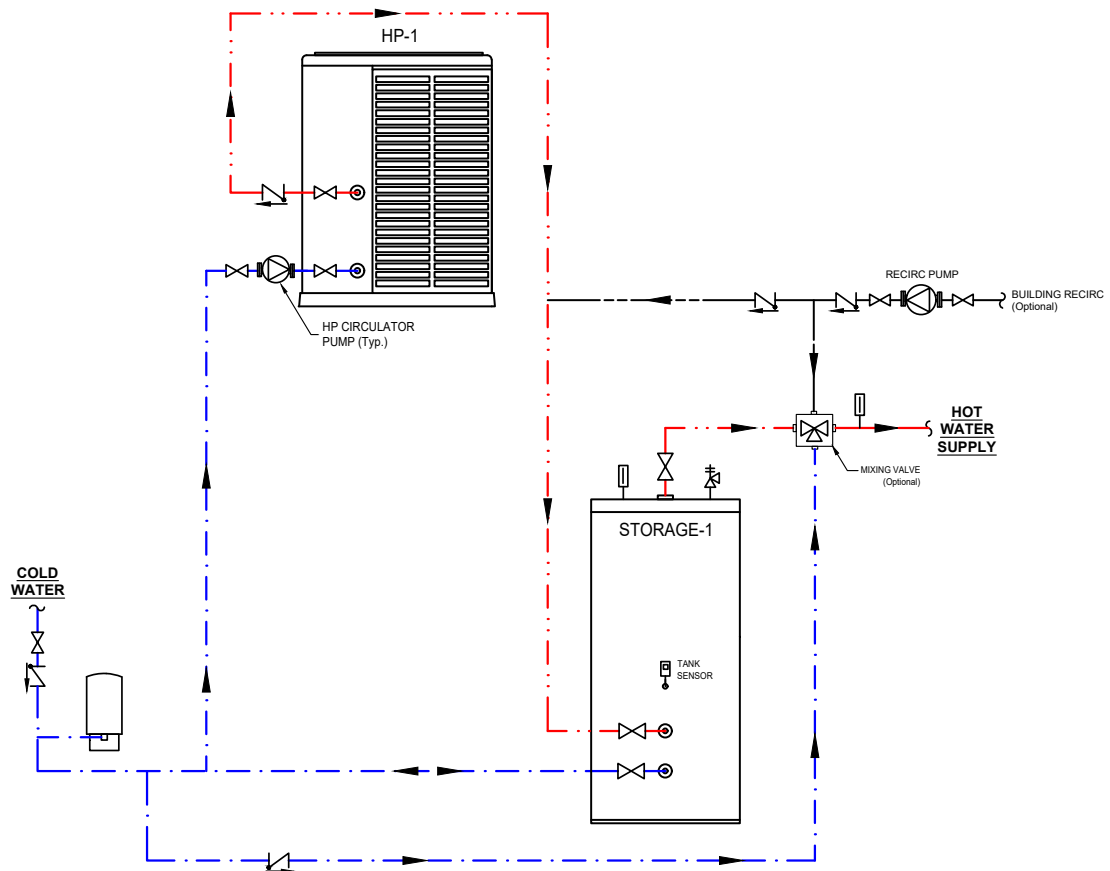
For single pass configuration, the use of a shut off valve on the water inlet pipe is recommended. We recommend 1" NPTF, 24Vac solenoid valve. Consider that for certain applications NSF certification of the valve may be required.

Single pass only allows use of a variable speed circulator.



3.7.2 PIPING DIAGRAM FOR MULTIPASS WATER HEATING

MULTI-PASS PIPING DIAGRAM: SPLIT HP & V-STORAGE TANK



PIPE DIAMETERS							
# OF HEAT PUMPS	2	3	4	5	6	7-8	9-10
MANIFOLD SIZE - 068	1.25"	1.5"	2"	2"	2.5"	2.5"	3"
MANIFOLD SIZE - 120	2"	2.5"	2.5"	3"	3"	4"	4"
BRANCH SIZE - 068	1"						
BRANCH SIZE - 120	1"						

NOTE: Manifold pipe diameters are based on a velocity of 5 ft/s

LEGEND	
	SHUT-OFF VALVE
	TEMPERATURE GAUGE
	CHECK VALVE
	T & P RELIEF VALVE
	TANK-STAT
	COLD WATER
	HOT WATER
	BUILDING RECIRC.

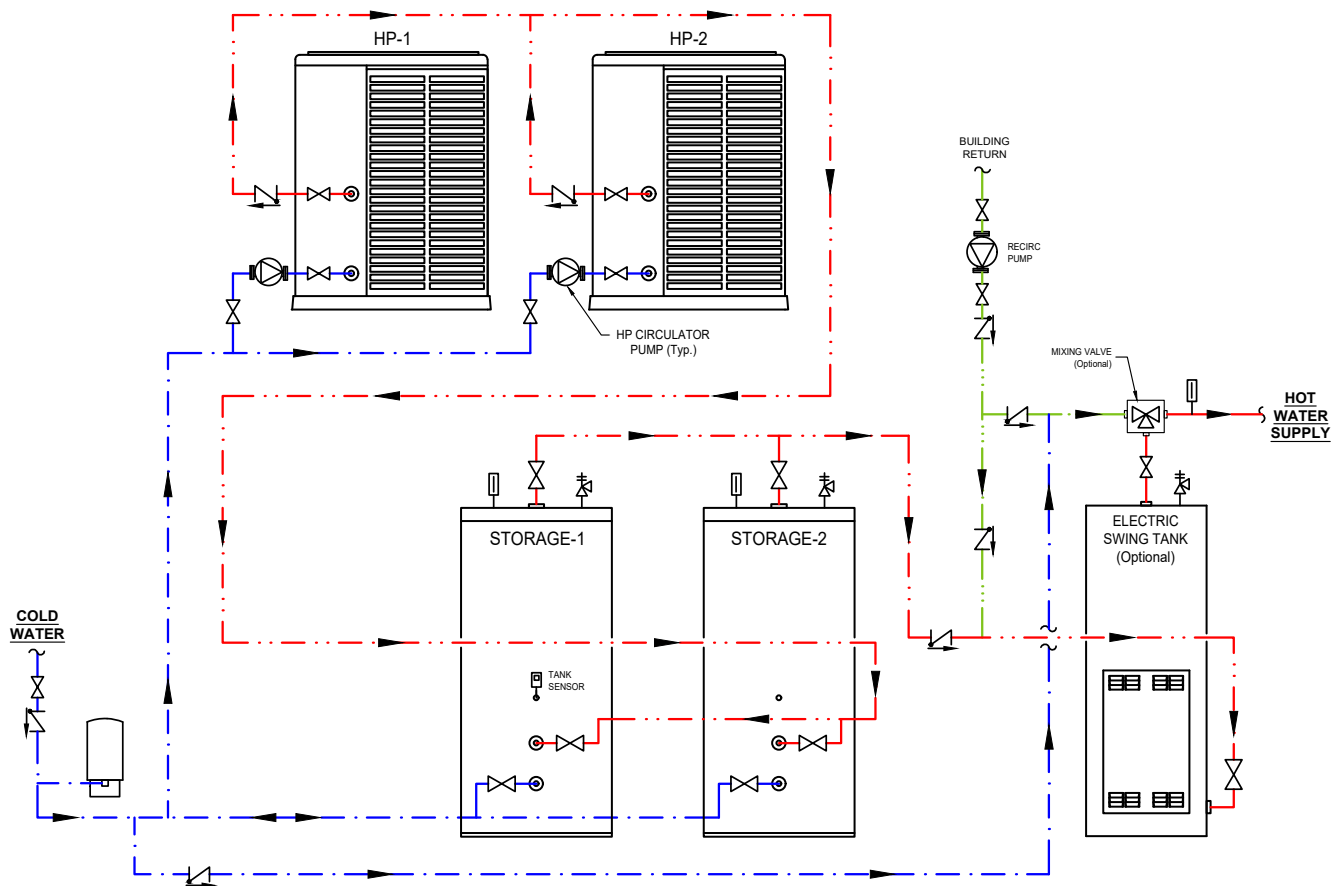
NOTE: We recommend use of metallic pipe, Copper or similar pipe with minimum temperature rating of 175°F.

On high outdoor ambient applications, greater than 95°F ambient, maximum stored water temperature shall not be greater than 140°F.

Flow from the tank and the unit must be adjusted properly to ensure that more water flows out of the tank(s) than from the unit during a building demand.

3.7.2 PIPING DIAGRAM FOR MULTIPASS WATER HEATING

MULTI-PASS PIPING DIAGRAM: SPLIT HP. V-STORAGE TANK & SWING TANK



	PIPE DIAMETERS						
# OF HEAT PUMPS	2	3	4	5	6	7-8	9-10
MANIFOLD SIZE - 068	1.25"	1.5"	2"	2"	2.5"	2.5"	3"
MANIFOLD SIZE - 120	2"	2.5"	2.5"	3"	3"	4"	4"
BRANCH SIZE - 068	1"						
BRANCH SIZE - 120	1"						

NOTE: Manifold pipe diameters are based on a velocity of 5 ft/s

LEGEND	
	SHUT-OFF VALVE
	TEMPERATURE GAUGE
	CHECK VALVE
	T & P RELIEF VALVE
	TANK-STAT
	COLD WATER
	HOT WATER
	BUILDING RECIRC

NOTE: We recommend use of metallic pipe, Copper or similar pipe with minimum temperature rating of 175°F

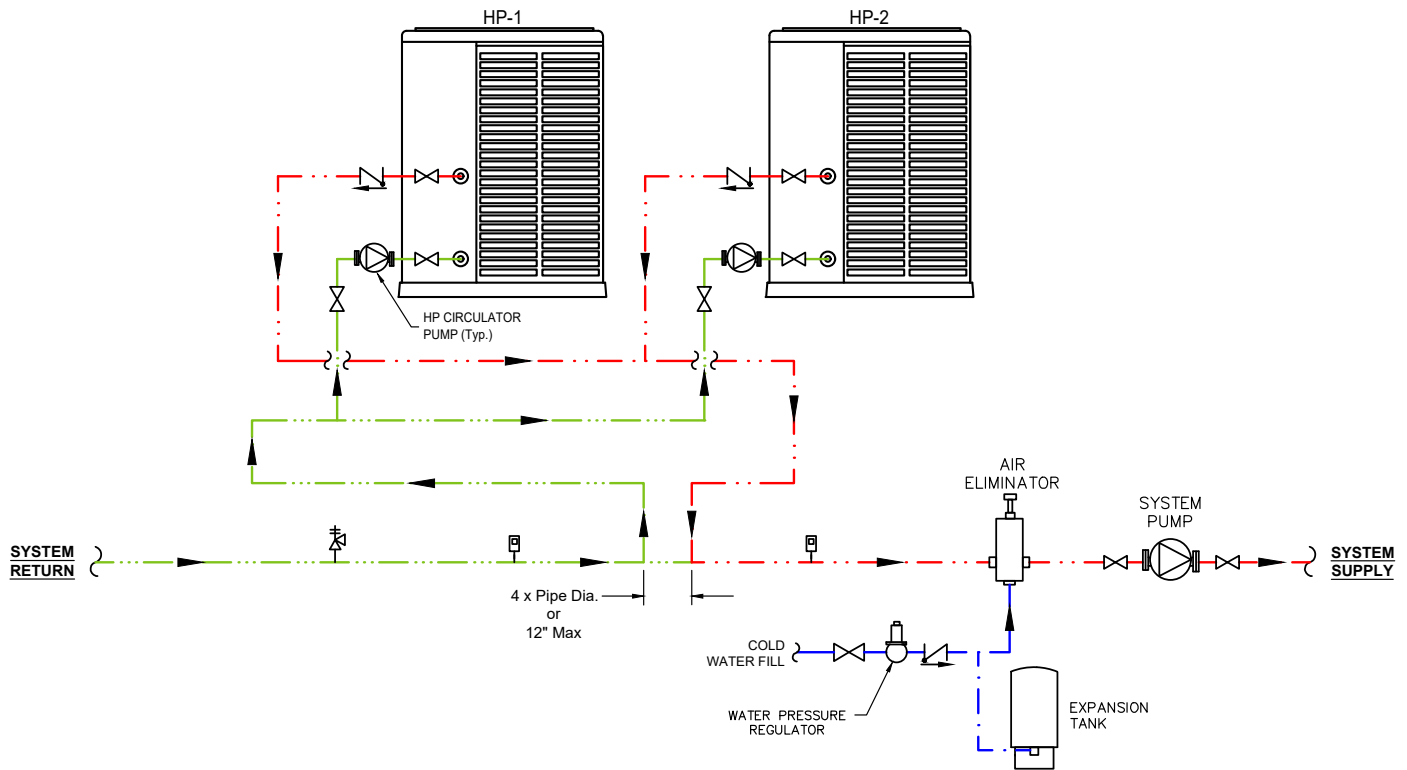
On high outdoor ambient applications, greater than 95°F ambient, maximum stored water temperature shall not be greater than 140°F.

Flow from the tank and the unit must be adjusted properly to ensure that more water flows out of the tank(s) than from the unit during a building demand.



3.7.3 PIPING DIAGRAM FOR SPACE HEATING

HYDRONIC PIPING DIAGRAM: SPLIT HP PRIMARY / SECONDARY



PIPE DIAMETERS						
# OF HEAT PUMPS	2	3	4-5	6-7	8-9	10
MANIFOLD SIZE - 068	1"	1.25"	1.5"	2"	2"	2.5"
MANIFOLD SIZE - 120	1.5"	2"	2"	2.5"	3"	3"
BRANCH SIZE - 068	1"					
BRANCH SIZE - 120	1"					

NOTE: Manifold pipe diameters are based on a velocity of 5 ft/s

LEGEND	
	SHUT-OFF VALVE
	TEMPERATURE SENSOR
	CHECK VALVE
	RELIEF VALVE
	SUPPLY
	RETURN

NOTE: We recommend use of metallic pipe, Copper or similar pipe with minimum temperature rating of 175°F.

On high outdoor ambient applications, greater than 95°F ambient, maximum stored water temperature shall not be greater than 140°F.



3.8 INDOOR INSTALLATION LOCATION CONSIDERATIONS

Disclaimer: this guide is provided as manufacturer recommendation for installation requirement. Final system design and compliance with local codes and standard remain the responsibility of the project design team.

INDOOR INSTALLATION OF THE WATER HEATER

- Indoor installation relies on flammable refrigerant sensor for safe operation. Do not tamper, disable, or otherwise impair the sensor. Doing so will void warranty and can cause unsafe operation. Unit must be powered up at all times.
- Keep flammable liquids and gases away from unit. If gas water heaters are also installed in the indoor vicinity, these must be at least 6ft away from the unit, to prevent flame or pilot extinguish due to air currents.
- Consider that enclosed areas will greatly increase the noise perception of the units. Install the units in areas as far away as feasible from places where sound might be an issue.

MODEL	AIRFLOW
RMHPHDA068	6000 SCFM
RMHPHDA120	6000 SCFM



DUCTING ADVISORY

Ducting this unit will significantly increase its static pressure, which may result in elevated noise levels, reduced performance, and potential motor stress or damage.

For optimal performance and reliability it is recommended that the unit be installed in a non-ducted configuration or that a dedicated fan-assisted system be designed where ducting is unavoidable.

This equipment is designed to operate under low static pressure conditions, with a recommended maximum discharge static pressure of 0.2 in. w.c.

IMPORTANT CONSIDERATIONS

- This unit is not designed to be ducted, the fan is not capable of overcoming significant external static pressure
- Any addition of ductwork, louvers, dampers or external components will increase resistance to airflow.

Exceeding the recommended discharge static pressure may result in loss of system capacity and efficiency, increased system freeze and defrost potentially leading to long term reliability concerns.

These units use A2L refrigerant, minimum room volume for install is as follows.

Non ducted:

RMHPHDA068: 4300 ft³ (121.7 m³)

RMHPHDA120: 7400 ft³ (209.5 m³)

Consult with your local Rheem applications engineer for louver sizing based on your room size.

Louver size listed on the next page is only for purposes of proper refrigerant venting in case of leak.

VENTILATION & LOUVER CONSIDERATIONS

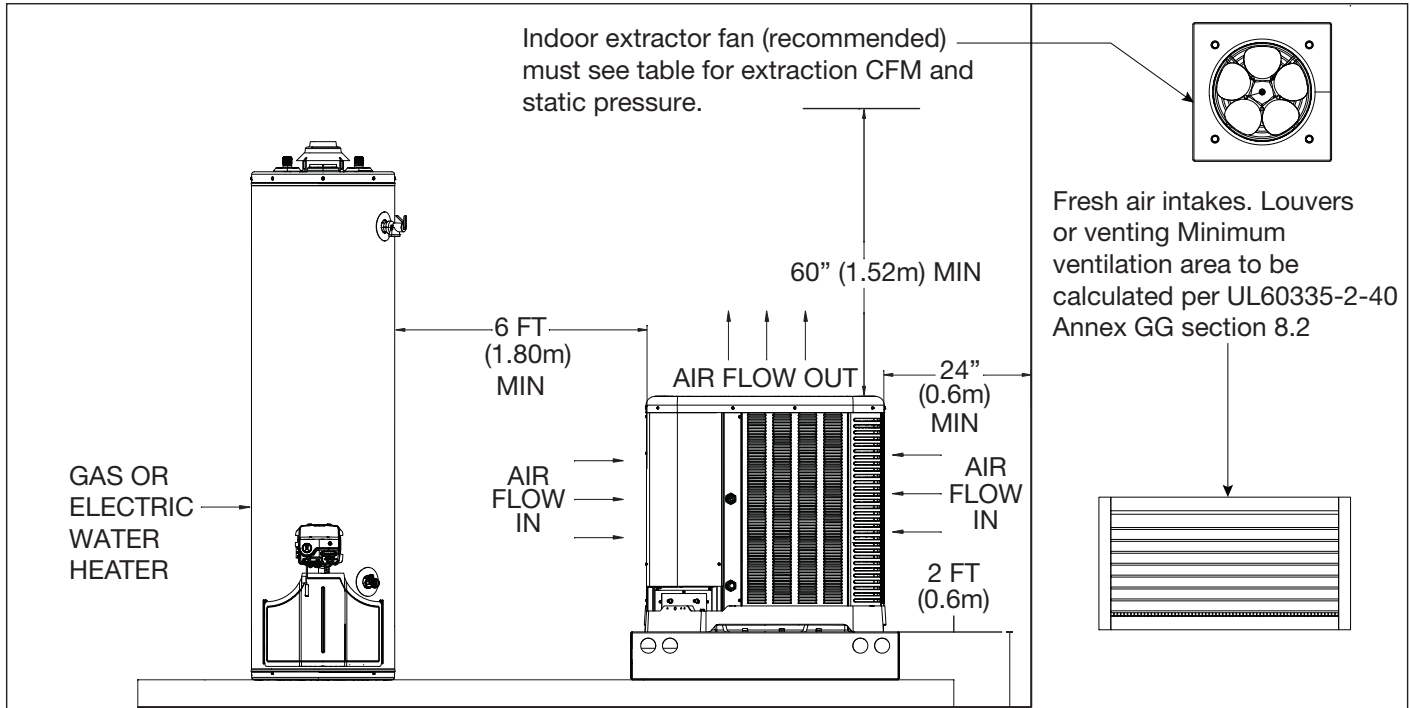
Components such as louvers, dampers and exhaust systems can significantly contribute to static pressure. Careful sizing of such components is required. Note that typical louver assemblies may exceed or be very close to max allowable static pressure limit.

The design and implementation of any ducted configuration, including but not limited to

- * Static pressure calculations
- * Airflow verifications
- * Fan selection (if needed)

Remain the responsibility of the installing contractor and/or project design engineer.

3.8 INDOOR INSTALLATION LOCATION CONSIDERATIONS



Louver size is for single unit, if multiple units are installed indoors, then the louver size and air extraction must match the amount of units.



4.0 START-UP

4.1 HEAT PUMP WATER HEATER PRE-START CHECK LIST

- ☐ 1. Is the heat pump water heater properly located and level?
- ☐ 2. Is air free to travel around all four sides on the heat pump water heater?
- ☐ 3. Is the wiring correct and according to the unit wiring diagram?
- ☐ 4. Are wiring connections tight? (Including those in unit and compressor electrical box.)
- ☐ 5. Is the unit properly grounded?
- ☐ 6. Is unit properly fused?
- ☐ 7. Condensate drain line properly sized, run, tapped and pitched?
- ☐ 8. Are water connections properly installed, tight and leak tested?
- ☐ 9. Is the water circulator properly installed, water flow is the right direction and is sized accordingly?
- ☐ 10. Does the fan turn free without rubbing?
- ☐ 11. Is the fan tight in the fan shaft?
- ☐ 12. Are all covers and access panels in place to prevent air loss?
- ☐ 13. Is water flowing through the water heater?
- ☐ 14. For indirect tank heating, is the glycol to water ratio the appropriate. Consult piping diagram for estimated mix.
- ☐ 15. The actual REFRIGERANT CHARGE is in accordance with the room size within which the refrigerant containing parts are installed.
- ☐ 16. Ventilation machinery and outlets are operating adequately and are not obstructed.
- ☐ 17. If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant.
- ☐ 18. Markings on the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected.
- ☐ 19. Refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

TO TURN ON WATER HEATER

- * Make sure power is applied to the unit.
- * Make sure that water circulator is powered up and all water valves feeding the water loop are in the right position.
- * Make sure water tanks are full and all air has been purged from pipes.
- * Select your desired water outlet set point. After five minutes of initial power up, your unit should start running. Note that the circulation pump between your tank and heaters can start a little earlier than the unit.

TO TURN OFF THE WATER HEATER

- * Disable the heater from the unit controller.
- * Shut off the power to the unit.
- * Shut off the flow of water to the unit.
- * Disconnect power to the circulation pump.



4.2 SYSTEM START UP AND OPERATIONAL CHECK UP

TEMPERATURE CONTROL

The unit begins heating when a command is received from the controller (Sky-35). Heating continues until the water temperature reaches the set point, at this time the heater operation will be terminated.

ADDITIONAL FEATURES

CIRCULATOR CONTROL

The control system supports:

- * Single-speed circulator: 0.75A @ 24Vac max
- * Variable-speed circulator: 10mA @ 0–12VDC

AMBIENT (OUTSIDE) LOCKOUT

- * High Ambient Lockout: > 115°F
- * Low Ambient Lockout: < –13°F

The unit will not operate outside this range. If ambient conditions exceed limits during operation, heating stops and an alarm is triggered. Operation resumes automatically once ambient conditions return to range.

HEAT MODE

- * Heating starts after a five-minute compressor start delay and confirmation of water flow. This five minute delay is a safety feature and is active upon power up or at the end of heat cycle.
- * The fan runs with the compressor and may stop earlier during shutdown or remain on for a few seconds after cycle ends. This is normal behavior.
- * The circulator continues to run for two minutes after heating ends.

FAULT HISTORY

- * Stores the last 25 errors in a FIFO buffer.
- * Errors are time stamped and viewable via the user interface or service tool.

COMPRESSOR DISCHARGE TEMPERATURE

Upon detection of high compressor discharge temperature, the unit will act to reduce compressor speed in order to cool down.

DEFROST OPERATION

- * Initiates when evaporator temperature is lower than 35°F for 34 minutes.
- * Compressor speed is reduced, then increased to optimize defrost.
- * Heating output is reduced during defrost; auxiliary heat is recommended if needed

FREEZE PROTECTION

- * Activates circulator and/or low-speed heating to prevent pipe freezing.
- * Circulator runs for at least 120 seconds.
- * Fan may operate during this cycle—use caution when servicing.

HIGH WATER TEMPERATURE LIMIT

The control software of the heat pump will continuously monitor water outlet temp and will act to reduce compressor power in order to avoid water temperatures greater than 165°F.

It is recommended to review piping for proper water flow through the unit as well as the water inlet temperature.



4.2 SYSTEM START UP AND OPERATIONAL CHECK UP

HIGH PRESSURE TRANSDUCER

High protection pressure will be triggered when liquid line pressure is high. Upon triggering this condition, an alarm will be declared and compressor speed will be gradually reduced.

Fan will be kept on during this time to help reduce the high pressure on the system.

LOW PRESSURE TRANSDUCER

Low pressure alarm will be set when suction pressure is below a safety threshold for two minutes of continuously running the unit. When this fault is declared, compressor speed will be modulated to keep pressure above 20 psi.

WATER FLOW SWITCH

Unit is equipped with a water flow switch. The water flow switch shall provide a signal to the heat pump to allow heating operation. Water flow switch will prove flow through the unit and allow for safe heating. The water flow switch is installed internally on the water piping and is a critical component for a safe system operation.

FLAMMABLE REFRIGERANT SENSOR

The heat pump water heater comes equipped with a flammable refrigerant sensor. This sensor is calibrated to detect leaks of refrigerant and shut off the unit. This sensor is mandated for safe and reliable installations and should not be removed or tampered with in any way.

- Detects refrigerant leaks and shuts down the unit.
- Activates alarm and keeps fan running.
- Must remain installed and powered for safety.
- **Sensor lifespan:** 15 years. Sensor must be tested

and/or replaced according to the manufacturer's recommended time.

CRANKCASE HEATER

The heat pump water heater is equipped with a crankcase heater. This heater is installed around the compressor and it is critical to prevent refrigerant from condensing inside the compressor during off periods. Crankcase heater operation will be carried out when the compressor is shut off and active only when ambient temperature around the unit is lower than 40°F. Heater will turn on once every minute to keep compressor warm. The heater is a 90-watt resistive strip installed around the compressor.

SEASONAL START-UP OR ANNUAL CHECK

NOTE: During initial start up or during extended off periods, heater might need to run for extended and continuous periods. This heater is design to operate for extended time.

1. Remove leaves, pine needles, etc., from the evaporator coil. Clean the coil by gently applying a mild solution of household liquid soap and water.
2. Remove the side louvered panels by removing the single screw at the top of each louvered panel. Lift and pull the bottom out. The panel will easily come away from the cabinet giving access to the coil for cleaning.
3. Gently rinse the coil with water; DO NOT use high pressure.
4. Re-install the side louvered panels and secure each with the single screw at the top center of each panel.
5. Set the valves to ensure proper water flow through the unit.



5.0 SERVICE AND MAINTENANCE

At least once a year, schedule service checks must be made to verify the safety systems in this unit are working as intended. For continuing high performance and to minimize possible equipment failures, it is essential that periodic maintenance be performed. This section provides general guidelines on items to consider for maintenance and frequency.

5.1 MAINTENANCE



⚠ CAUTION: R-454B is classified as safety group A2L per ASHRAE Standard 34. Verify that service equipment and instruments are approved for use with group A2L refrigerants, and in particular with R-454B. Failure to exercise care may result in equipment damage or personal injury.

*** Before servicing disconnect power to the unit, wait at least five minutes before opening electrical panel. This allows any capacitors to discharge and prevent electrical shocks.**

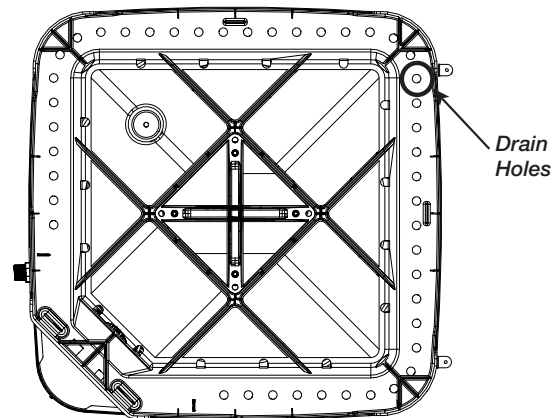
OUTDOOR COIL CLEANING

The outdoor fan draws air across the coil during operation which results in contaminants collecting on and between the aluminum fins. These contaminants restrict the air-flow through the coil resulting in reduced capacity and efficiency and increases the temperature of the components that can reduce their life. Therefore, it is recommended that the outdoor coil be cleaned at least annually by a qualified service technician using a non-corrosive coil cleaner and low pressure water hose sprayer. Care must be taken not to damage or flatten out the fins by spraying the fins from an angle. Washing from the top of the coil down from the inside out is the most effective method of cleaning the coil. The exterior louver panels and unit top are easily removable to facilitate the coil cleaning task.

⚠ WARNING: Disconnect electrical power to the unit before removing the top panel or any electrical panel as the fan motor could start at any time and live electrical connections will be exposed.

CABINET CLEANING AND CARE

Annual cleaning of the exterior cabinet is recommended using a mild detergent, water, and cloth/sponge to remove dust, mold, and potentially corrosive contaminants that have collected on the cabinet. **DO NOT** apply wax to the cabinet since the painted surface is textured which will result in a white wax build-up. Make sure drain holes are free of blockages to allow proper drainage.



Condensate Drain Hole Locations.



5.1.1 WORKING PERSONNEL

⚠ DANGER: Risk of Fire or Explosion. Flammable Refrigerant Used. To Be Repaired Only By Trained Service Personnel. Do Not Puncture Refrigerant Tubing.

Every installation, maintenance, service, and repair working procedure must be conducted by qualified personnel who have been trained in operating and servicing units that employ flammable refrigerants such as R-454B.

Examples of working procedures include but are not limited to:

- Breaking into the refrigeration circuit
- Opening sealed components
- Opening ventilated enclosures



5.2 REFRIGERANT CONNECTIONS SERVICE AND CHECK

REMOVAL AND EVACUATION

Although the heat pump water heater is a sealed system, vacuuming and recharging may be required in some cases. Follow these steps carefully:

1. Refrigerant Recovery

Recover all refrigerant into R-454B-approved recovery cylinders only.

2. System Purging

Purge the system using oxygen-free nitrogen.

Do not use compressed air or oxygen, as this can create a fire or explosion hazard with R-454B.

3. Purging Procedure

- Break the vacuum with oxygen-free nitrogen.
- Pressurize the system to working pressure.
- Vent to atmosphere.
- Pull a vacuum.
- Repeat this cycle until all refrigerant is removed.
- For the final purge, vent the nitrogen to atmospheric pressure before beginning service.

4. Ignition Source Precautions

- DO NOT use open flames, smoking materials, or any ignition sources near the unit during service.
- Ensure the area is free of flammable materials before starting work.
- Post "No Smoking" signs clearly around the work area.

5. Removal and Evacuation

This procedure is required during removal and evacuation and must be followed:

- a. When breaking into the refrigeration circuit for any reason, use a refrigeration vacuum circulator capable of evacuation in the 500 micro range.

- b. Connect the vacuum circulator to the service manifold assembly with a pressure gauge that will read 30 inches vacuum.
- c. Connect the service manifold to the suction line Schrader valve port.
- d. Ensure there is no power to the unit.
- e. With an accurate scale, ½ oz., set the refrigerant recovery cylinder in the upright position.
- f. Connect the recovery cylinder to the unit using the service valves.
- g. Evacuate refrigerant from the unit until the vacuum circulator reads a minimum of 500 microns.
- h. Purge the refrigeration circuit with inert gas until there is no refrigerant within the system.
- i. Using the inert gas in the system, pressurize the unit accordingly and check the refrigerant joints for leaks.
 - If leaks are detected, make repairs to the joints and check for leaks again.
 - If no leaks are detected, continue to the next step.
- j. Evacuate the circuit again.
- k. Once all inert gas is removed, pull a vacuum on the unit to check for any leaks in the system. If a leak is suspected, all naked flames shall be removed/extinguished.
- l. If leaks are present, spray a soapy substance over the refrigeration circuit. Bubbles will help locate the leak. Avoid using detergent that contain chlorine. Chlorine may react with refrigerant and corrode copper.
- m. Patch the leak and pull a vacuum again. Continuously flush or purge with inert gas when using flame to open circuit.

5.2 REFRIGERANT CONNECTIONS SERVICE AND CHECK

REMOVAL AND EVACUATION

- n. If leaks are still detected, repeat steps 11 to 14.
- o. If no leaks are present, charge the system as directed in the next section.
- p. Remove the vacuum circulator from suction, discharge, and liquid shut-off.
- q. Electronic leak detectors may be used to detect refrigerant leaks but, in the case of FLAMMABLE REFRIGERANTS, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25% maximum) is confirmed.
- r. If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut-off valves) in a part of the system remote from the leak. Removal of refrigerant shall be done in accordance with local codes and Clause DD.9 from UL60335-2-40.

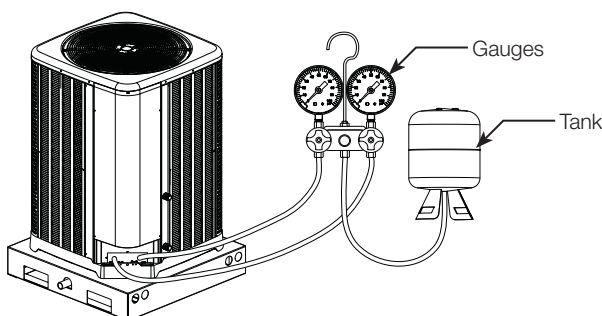
CHARGING PROCEDURE

Prior to recharging the system, complete a leak check and purge the system with inert gas as detailed in Removal and Evacuation of Refrigerant. The charging procedure steps are as follows:

1. Ensure that the unit is properly grounded before beginning charging.
2. Install the R-454B refrigerant cylinder to the unit service valve.
3. Before tightening, purge the cylinder and service valve hose to ensure that the contamination of different refrigerants does not occur when using the charging equipment.
 - Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
4. Place tank following the manufacturer recommended orientation. Make sure tank is not moving or shifting position during the charging procedure.
5. Check unit rating label or consult this manual to get refrigerant charge weight.
6. Replace service port caps and valve stern caps. These caps must be replaced to prevent leaks.

After charging is complete, a leak test must be done. Before leaving the site, an additional leak test must also be done at the end of installation.

Only use recovery machines, gauges, and hoses rated for A2L refrigerants (e.g., R-32, R-454B). Improper tools may cause ignition or equipment damage.



⚠WARNING: In the event of a refrigerant leak, ventilate the area immediately. Do not operate electrical devices or switches that may cause sparks.



6.0 DIAGNOSTICS

6.1 WHAT DO TO IN CASE OF FAILURES

GENERAL TROUBLESHOOTING

⚠WARNING: Disconnect all power to unit before servicing. Failure to shut off power can cause electrical shock resulting in personal injury or death.

SYMPTOM	POSSIBLE CAUSE	REMEDY
Unit will not run	No voltage on unit	1. Confirm correct voltage, phase and frequency are connected to the water heater. If using a step-down or up transformer, confirm the right taps are being used. 2. Confirm that breaker or fuses are not tripped. 3. Check system phases, confirm all phases are supplying voltage.
	No heat demand is being received	1. Review wiring between heat pump and Sky-35. 2. Confirm that both Sky-35 system and units are grounded to the same physical earth.
	No water flow is present through unit	1. Confirm that water flow is present through unit and that unit water circulator is powered up and properly connected. See section 3.5 for circulator control wiring. 2. Confirm water flow is at least 3.3 GPM and is flowing in the right direction. 3. Confirm that flow switch is making when flow is present. Review wiring diagram, flow switch wires can be measured for continuity.
Unit circulator not running	Circulator not wired properly	1. Confirm circulator is connected to proper voltage. 2. Confirm proper activation signal is connected from the heat pump unit. Heat pump supports single speed and variable speed circulator. See section 3.5 for circulator wiring.
	Water valves closed	1. Confirm that all water valves, strainers, check valves and other piping to and from the heat pump water heater are open and in the right flow direction.
	No heat demand is being received	Review wiring between heat pump and Sky-35.
Outdoor fan runs, compressor does not	Bad inverter driver	1. Review error codes on Sky-35 display. 2. Error on inverter driver, contact tech support.
	Bad compressor or wiring	1. Review compressor wiring per the wiring diagram. 2. Disconnect wires from VFD and measure continuity between wires and to ground. Any wire that has continuity with ground means a bad compressor.
	Flammable refrigerant sensor activated	If a leak is present in the system, the flammable refrigerant sensor will be activated. During this time, heating operation is disabled and fan will run continuously until sensor is reset. Please note this is a safety feature and should not be disabled.



6.1 WHAT DO TO IN CASE OF FAILURES

GENERAL TROUBLESHOOTING

⚠WARNING: Disconnect all power to unit before servicing. Failure to shut off power can cause electrical shock resulting in personal injury or death.

SYMPTOM	POSSIBLE CAUSE	REMEDY
Insufficient heating	Water flow is too high	1. Confirm water flow is align with desired water outlet temperature and heating mode. 2. Confirm unit circulator and make sure it is operating on/off mode and not based on temperature differential from external sensors.
	Incorrect heat pump mode setting	1. Confirm that the right mode of operation is selected according to the piping of the water heating system.
	Unit in failure state	1. Confirm that no error codes exist in the system, use the Sky-35 display.
	Poor ventilation around unit	1. Ensure that unit has proper clearances to allow adequate airflow through the system. 2. Verify that no obstructions exist around the evaporator coil, excessive dirt, leaves, or stuck plastic bags causing blockage.
	Unit poorly charged	1. Review system charge by checking superheat during heating cycle, a value between 8 to 16 is normal. Superheat values higher than 30°F can mean low system charge.
	Under size system or storage tank	1. Confirm that storage tank capacity and system flows are sized properly for the capacity of the unit installed.
Compressor short cycle	Oversized system	1. System capacity exceeds the demand, causing the unit to reach set point rapidly. Confirm that system is sized properly
	Incorrect heat pump mode setting	1. Confirm that the right mode of operation is selected according to the piping of the water heating system.
	Water flow issue	1. Review water flow and make sure there are no air bubbles on the system that could cause air gaps. Purge the system. 2. Make sure water circulator is operating properly and that adequate and constant water flow exists.
	Compressor over current	1. Monitor current of the system, it should not exceed 40 amps during the heat cycle. 2. Review system charge by checking superheat during heating cycle, a value between 8 to 16 is normal. Superheat values lower than 2°F can mean excessive system charge. 3. Check system discharge pressure, pressures in excess of 550psi, can mean reduced water flow, high charge of system or possible water pipe partial blockage.



6.1 WHAT DO TO IN CASE OF FAILURES

GENERAL TROUBLESHOOTING

⚠WARNING: Disconnect all power to unit before servicing. Failure to shut off power can cause electrical shock resulting in personal injury or death.

SYMPTOM	POSSIBLE CAUSE	REMEDY
Compressor short cycle	Blockage in refrigeration system	1. Main EEV might be fully closed, causing low pressure to drop and cause freezing. 2. Check that main expansion valve control is properly connected to the board and properly mounted on the electronic expansion valve assembly.
Excessive frost formation on unit	Fan not working	1. Check fan connections to the main control board and to power terminal block. 2. Verify fan motor windings by measuring coil resistance, see wiring diagram for motor winding leads. 3. Confirm fan spinning direction, air should be expelled from the top of the unit.
	Unit charge low	Review system charge by checking superheat during heating cycle, a value between 8 to 16 is normal. Superheat values higher than 30°F can mean system is low on charge.
	Inadequate defrost sensor location	Verify that evaporator and suction temperature thermistors are not loose or have been detached from the pipes.
	Discharge bypass valve not working	1. Bad vapor bypass valve coil. Check wiring diagram and measure resistance of the coil. 2. Confirm that vapor bypass is active, this can be forced from the Sky-35 screen display.
High discharge, normal suction pressure	Water flow	Confirm water flow is at least 5GPM and is flowing in the right direction.
	Unit configuration setting	Confirm the heat pump is configured so that it matches the piping configuration, single or multipass.
	Water outlet temperature sensor	1. Confirm that water outlet temperature sensor is firmly installed against water pipe. 2. Check sensor wiring to control board. Make sure connector is fully inserted and there are no loose wires. 3. Measure sensor resistance, resistance should be 10 k ohm at ambient temp (70°F). As temperature increases on sensor, resistance value should lower.



6.1 WHAT DO TO IN CASE OF FAILURES

GENERAL TROUBLESHOOTING

⚠WARNING: Disconnect all power to unit before servicing. Failure to shut off power can cause electrical shock resulting in personal injury or death.

SYMPTOM	POSSIBLE CAUSE	REMEDY
Low suction pressure, iced indoor coil	Fan not working	1. Check fan connections to the main control board and to power terminal block. 2. Verify fan motor windings by measuring coil resistance, see wiring diagram for motor winding leads. 3. Confirm fan spinning direction, air should be expelled from the top of the unit.
	Unit charge low	Review system charge by checking superheat during heating cycle, a value between 8 to 16 is normal. Superheat values higher than 30°F can mean system is low on charge.
	Partial evaporator blockage	Verify that no obstructions exist around the evaporator coil, excessive dirt, leaves, or stuck plastic bags causing blockage.
	Electronic expansion valve (EEV)	1. Main EEV might be fully closed, causing low pressure to drop to freezing. 2. Check that main expansion valve control is properly connected to the board and properly mounted on the electronic expansion valve assembly.
Fluctuating head and suction pressures	Electronic expansion valve	1. Main EEV might be acting erratically, check that stepper motor is firmly installed on valve stem. 2. Check that main EEV is properly connected to the control board and installed properly mounted on the electronic expansion valve assembly.
	Suction temperature sensor	1. Confirm that suction temperature sensor is firmly installed on copper pipe and that insulation is installed properly. 2. Check sensor wiring to control board. Make sure connector is fully inserted and there are no loose wires. 3. Measure sensor resistance, resistance should be 10 k ohm at ambient temp (70°F). As temperature increases on sensor, resistance value should lower.
	Poor ventilation around unit	1. Ensure that unit has proper clearances to allow adequate airflow through the system. 2. Verify that no obstructions exist around the evaporator coil, excessive dirt, leaves, or stuck plastic bags causing blockage.
	Suction pressure transducer	1. Confirm that pressure transducer is properly installed on the threaded connector. 2. Verify that the connector on the control board is fully inserted and no wires are loose.



6.1 WHAT DO TO IN CASE OF FAILURES

GENERAL TROUBLESHOOTING

⚠WARNING: Disconnect all power to unit before servicing. Failure to shut off power can cause electrical shock resulting in personal injury or death.

SYMPTOM	POSSIBLE CAUSE	REMEDY
Excessive vibration/ noise from unit	Mechanical installation	1. Verify that all straps, brackets are properly installed and securely fastened. 2. Purge water lines until only water comes out. 3. Make sure unit is level and sitting on a flat surface. 4. Confirm fan blade is not damaged and that it is spinning properly and balanced.
	Bubbles in water line	1. Make sure that there are no bubbles in water line. 2. Purge water lines until only water comes out of the lines.
Faulty Compressor	Electrical installation	1. Confirm correct voltage, phase and frequency are connected to the water heater. If using a step-down or up transformer, confirm output voltage matches unit nameplate. 2. Overvoltage might damage the compressor. 3. Contact manufacturer for further information.
	Unit charge low	1. Review system charge by checking superheat during heating cycle, a value between 8 to 16 is normal. Superheat values higher than 30°F can mean system is low on charge. 2. Contact manufacturer for further information.



6.2 ERROR CODES

ALERT / ALARM CODE	DESCRIPTION	POSSIBLE CAUSE	ACTION
A001_W Model Data Configuration Error	Error on model data file	Data corruption	Shutdown - contact your Rheem authorized dealer
A002_V Vapor Inlet Temperature Sensor Fault	Vapor inlet temperature sensor failed.	Sensor disconnected or shorted.	Shutdown - check sensor wires measure resistance between 1K and 729 kOhms
A003_V Vapor Outlet Temperature Sensor Fault	Vapor Outlet temperature sensor failed	Sensor disconnected or shorted.	Shutdown - check sensor wires measure resistance between 1K and 729 kOhms
A004_W Outlet Temperature Over Limit	Outlet temperature exceeds 175F	Bad water outlet sensor or loose from pipe. Water flow through unit is not optimal.	Check water sensor placement and that no obstruction exist on water pipe.
A007_W Hydra Control Communication Fault	Communication error	Wiring issue between main control and expansion board.	Shutdown - Review wiring between main control board and expansion board.
A008_W Sky-35 Communication Fault	Lost communication with SKY-35 main controller device	Communication with SKY-35 restore	Unit will shut down If enabled, unit will enter a limp mode, 12 minutes standby, then start heating. Unit will use last known setpoint.
A009_W Maximum Delta Temperature Exceeded	Delta between water outlet and inlet is too high	• Little or not flow through unit. • Water temp sensor failed.	Shutdown - check water flow, pump and water temperatures sensors.
T010_S Clean Unit Reminder	Service reminder	Perform system service and cleaning.	Send to SKY-35
T012_S Clean Drain Tap	Condensate drain trap cleaning	Clean up system drain.	Send to SKY-35
A019_W Low Ambient Temperature Notice	Ambient temperature too high <-15°F	Ambient temperature too low	Locked out - unit will not operate
A020_W High Ambient Temperature Notice	Ambient temperature too high >115°F	Ambient temperature too high	Locked out - unit will not operate
T021_W Low Suction Temperature	Suction temperature is abnormally low	• Incorrect or no water flow • Fan not running • Ambient temperature too low • Suction temperature sensor damaged.	Shutdown
A022_W Low Superheat alarm	Unit superheat is abnormally low.	• Incorrect or no water flow • Fan not running • Ambient temperature too low • Suction temperature sensor damaged. • System is overcharged.	Shutdown - 3 strikes lockout
A031_W Water Inlet Temperature Sensor Fault	Water inlet temperature sensor failed	Sensor disconnected or shorted.	Shutdown - check sensor wires measure resistance between 1K and 729 k Ohms

6.2 ERROR CODES

ALERT / ALARM CODE	DESCRIPTION	POSSIBLE CAUSE	ACTION
A032_W Water Outlet Temperature Sensor Fault	Water outlet temperature sensor failed	Sensor disconnected or shorted.	Shutdown - check sensor wires measure resistance between 1K and 729 k Ohms
A033_W Evaporator Temperature Sensor Fault	Evaporator temperature sensor failed	Sensor disconnected or shorted.	Shutdown - check sensor wires measure resistance between 1K and 729 k Ohms
A036_W Suction Pressure Transducer Fault	Pressure detected at then suction side is 0	Sensor is disconnected or there's voltage drop across the wires	Shutdown - check wires harness for wire damage and proper insertion on pressures transducer.
A037_W Liquid Pressure Transducer Fault	Pressure detected at the discharge side is 0	Sensor is disconnected or there's voltage drop across the wires	Shutdown - check wires harness for wire damage and proper insertion on pressures transducer.
A038_W Water Flow Sensor Fault	Water flow is not detected by the unit after a heat demand is started.	- No flow of water - Sensor disconnected or loose - Obstruction on the piping	Shutdown - check for correct connection between unit and circulator. Check circulator voltage, check no obstructions on piping. Check wiring.
A039_W Suction Temperature Sensor Fault	Suction temperature sensor failed	Sensor disconnected or shorted.	Shutdown - check sensor wires measure resistance between 1K and 729 kOhms
A041_W Discharge Sensor Fault	Discharge temperature sensor failed	Sensor disconnected or shorted.	Shutdown - check sensor wires measure resistance between 1K and 729 kOhms
A042_W Ambient Sensor Fault	Ambient temperature sensor failed	Sensor disconnected or shorted.	Shutdown - check sensor wires measure resistance between 1K and 729 kOhms
A050_W Refrigerant Pressure Ratio Fault	Compression ratio for unit is lower than required.	- Incorrect system charge - Incorrect temperature /pressure readings.	Shutdown - 3 strikes lockout
A051_W Low Discharge Superheat Fault	Discharge superheat is lower than required for extended period of time.	- Incorrect system charge - Incorrect temperature / pressure readings. - Vapor injection circuit failure.	Shutdown - Check proper sensor installation discharge thermistor and liquid pressure transducer. Review system proper charge.
A093_W Model Data Restore Failure	Model Data is corrupt or not present	Data corruption	Shutdown - contact your Rheem authorized dealer
T101_W Inverter Fault - Compressor Overcurrent	Over current sensed by inverter	- Compressor is drawing too much current. - Water flow is not optimal for unit, usually too low. - Water returning to unit is too hot.	Shutdown - unit will permanently lock after experiencing this alarm 3 times.
A102_W Inverter Fault - IPM Temp Sensor Fault	Over temperature alarm	- Failure on fan motor - Inverter failure	Shutdown - check proper fan operation, check inverter LED codes.



6.2 ERROR CODES

ALERT / ALARM CODE	DESCRIPTION	POSSIBLE CAUSE	ACTION
A104_W Inverter Fault - PFC Temp Sensor Fault	Over temperature alarm	- Failure on fan motor - Inverter failure	Shutdown - check proper fan operation, check inverter LED codes.
A106_W Inverter Fault - DC Bus Voltage High	DC output voltage to compressor is too high	Check proper voltage delivery from power supply	Shutdown - unit will permanently lock after experiencing this alarm 3 times.
A107_W Inverter Fault - DC Bus Voltage Low	DC output voltage to compressor is too low	Check proper voltage delivery from power supply	Shutdown - unit will permanently lock after experiencing this alarm 3 times.
A109_W Inverter Fault - Comm. Lost W/Contoller	Communication error	Wiring issue between inverter driver and main control board	Shutdown - Review wiring between main control board and inverter board.
A110_W Inverter Fault - AC Under Voltage	AC input voltage too low	Check proper voltage delivery from power supply	Shutdown
A111_W Inverter Fault - AC Over Voltage	AC input voltage too high	Check proper voltage delivery from power supply	Shutdown
A112_W Inverter Fault - AC Current High	High current demanded from Inverter	Damaged compressor, incorrect water flow, high water inlet temperature.	Shutdown - 3 strikes for lockout.
A114_W Inverter Fault - Current Detection Fault	Inverter fault	Contact Rheem dealer	Shutdown
A116_W Inverter Fault - IPM Over Temperature	Over temperature alarm	- Failure on fan motor - Inverter failure	Shutdown - check proper fan operation, check inverter LED codes.
A117_W Inverter Fault - IPM Over Current	Over current alarm	- Failure on fan motor - Inverter failure	Shutdown - check proper fan operation, check inverter LED codes.
A119_W Inverter Fault - Compressor Failed Start	Compressor fault	Contact Rheem dealer	Locked out - unit will not operate
A120_W Inverter Fault - AC Input Phase Fault	Loss or incorrect phase	Review power wiring for correct phase and power supply for dropped out phase.	Shutdown
A122_W Inverter Fault - Compressor Phase Lost	Loss of phase at the compressor connections	Review compressor wiring	Shutdown - contact your Rheem authorized dealer
A123_W Inverter Fault - PFC Over Temperature	Inverter fault	Contact Rheem dealer	Shutdown - 3 strikes for lockout - Fan runs continously.
A124_W Inverter Fault - DC Hardware Protection	Inverter fault	Contact Rheem dealer	Shutdown



6.2 ERROR CODES

ALERT / ALARM CODE	DESCRIPTION	POSSIBLE CAUSE	ACTION
A125_W Inverter Fault - AD Offset Fault	Inverter fault	Contact Rheem dealer	Shutdown
A126_W Inverter Fault - Speed Misalignment	Compressor fault	Contact Rheem dealer	Shutdown - 3 strikes for lockout
A128_W Inverter Fault - Compressor Sync Failure	Compressor or inverter fault	Contact Rheem dealer	Shutdown
A129_W Inverter Fault - Compressor Model Error	Compressor or inverter fault	Contact Rheem dealer	Shutdown
A311_S Refrigerant Detected Sensor 1	Refrigerant has been detected within the unit vicinity.	- Leak on the system. - Possible leak from a nearby refrigerant storage tank. "	Shutdown - unit will keep fan turned of to dissipate refrigerant gas.
A812_W Inverter Fault - Drive Failure	Inverter fault	Contact Rheem dealer	Shutdown
A928_W Locked Out - See History Faults	Any active 3 strikes lockout alarm	Clear the alarms or cycle power	Permanent Lockout
A929_W Inverter Communication Fault	Inverter fault	Contact Rheem dealer	Shutdown - Check the connection between main control board and inverter. Also check transformer power wires (YL and BU wires)
T957_W Low Refrigerant Pressure	Suction pressure is low.	- Fan failure - Incorrect system charge - Bad compressor or inverter	Shutdown - 3 strikes for lockout
T958_W High Refrigerant Pressure	Refrigerant discharge pressure is abnormally high	- Incorrect or no water flow - Fan not running - Water inlet too hot - Discharge temperature sensor damage	Shutdown - 3 strikes for lockout
T959_W High Suction Pressure	Suction pressure is too high	- Incorrect system charge - Incorrect temperature / pressure readings - Ambient too hot	Shutdown - 3 strikes for lockout
A972_W Compressor Discharge Temp High	Refrigerant discharge temperature too high	- Incorrect or no water flow - Fan not running - Water inlet too hot - Discharge temperature sensor damage - Refrigerant charge may be low	Shutdown - 3 strikes for lockout. Check water pump for proper operation. Confirm water inlet is not excessively high. Check for leaks in the system.
T986_W High Refrigerant Pressure Envelope	Liquid pressure is high	- Incorrect or no water flow - Fan not running - Water inlet too hot	Shutdown - 3 strikes for lockout. Check water pump for proper operation. Confirm water inlet is not excessively high.



7.0 REPLACEMENT PARTS

Any replacement part used to replace parts originally supplied on equipment must be the same as or an approved alternate to the original part supplied. The manufacturer will not be responsible for replacement parts not designed to physically fit or operate within the design parameters the original parts were selected for.

⚠WARNING: Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.

⚠WARNING: all maintenance staff and other workers in the vicinity where the unit is being repaired, need to be instructed of the nature of the work being done. Work in confined spaces shall be avoided.

⚠WARNING: The area of work shall be continuously monitored with an appropriate refrigerant detector prior to and during the work, to ensure technician is safe and aware of potential toxic or flammable refrigerants. Make sure that leak detection device is suitable for use with R-454B. Make sure there's enough ventilation around the area where work is performed.

⚠WARNING: Always have a dry powder CO₂ fire extinguisher adjacent to the work area, when brazing into refrigerant system.

⚠WARNING: Do not smoke or use other sources of ignition, other than the brazing torch, when making repairs to the system.

⚠WARNING: When recharging the system, do not charge with more refrigerant than what it is listed on the rating plate.

⚠WARNING: DO NOT use an open flame (torch, or other naked flame) to detect refrigerant leaks.

⚠WARNING: All components must be replaced by a qualified technician. All electrical components are not serviceable and should be replaced as soon as failure occurs.

REPLACEMENT PARTS						
ITEM	DESCRIPTION	PART NUMBER	RMHPHDA068	RMHPHDA120	QTY.	NOTES
1	Main expansion valve 35 kW	61-109611-01		X	1	
2	Vapor injection valve 35 kW / 20 kW	61-110099-01		X	1	
3	Main expansion valve 20 kW	61-109610-01	X		1	
4	Main EEV valve coil	61-109663-01		X	1	
5	Vapor injection EEV coil	61-109664-02		X	1	
6	Main EEV coil 20 kW	61-109664-01	X		1	
7	Compressor 35 kW	55-109605-01		X	1	
8	Compressor 20 kW	55-109606-01	X		1	
9	High pressure switch	47-110094-01		X	1	
10	Liquid pressure sensor harness	45-104130-05		X	1	
11	Liquid pressure sensor	47-103454-01		X	1	Order item 10 If wire harness is need
12	Discharge temperature sensor	47-110097-01		X	1	
13	Suction pressure sensor harness	45-104130-03		X	1	
14	Suction pressure sensor	47-103454-05		X	1	Order item 13 If wire harness is need
15	Suction and evaporator sensor	47-108211-06		X	1	
16	Defrost valve coil	61-103961-02		X	1	
17	Defrost valve	61-103961-16		X	1	
18	Economizer condenser	65-109785-01		X	1	When ordering this part, please also order items 19 and 20
19	Economizer insulation part A	68-109720-01		X	1	
20	Economizer insulation part B	68-109765-01		X	1	
21	Liquid line filter drier	83-104826-08		X	1	

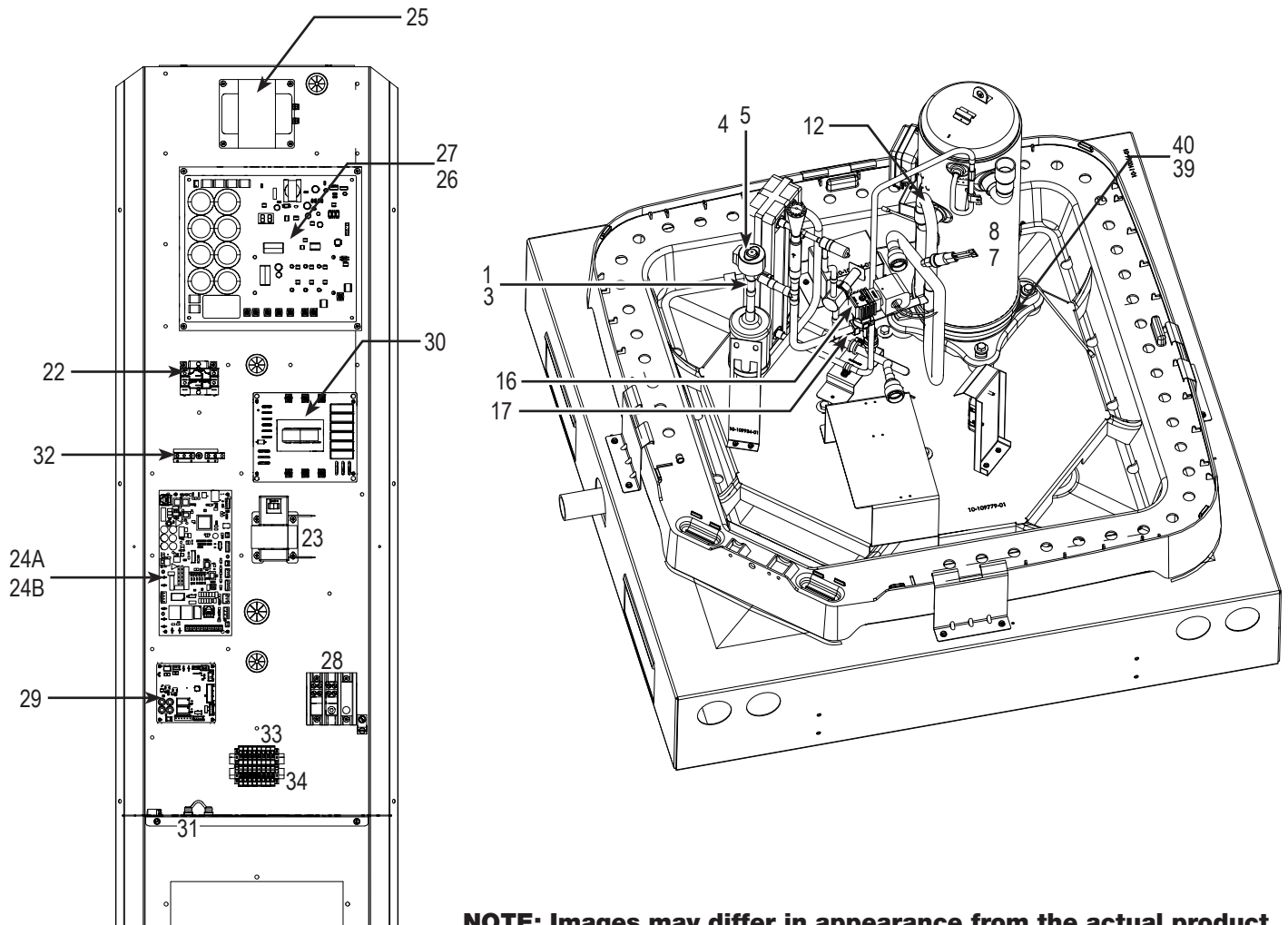


7.0 REPLACEMENT PARTS

REPLACEMENT PARTS						
ITEM	DESCRIPTION	PART NUMBER	RMHPHDA068	RMHPHDA120	QTY.	NOTES
22	Control relay SPDT	42-19737-01	X		1	
23	Transformer 75 VA	46-110061-01	X		1	
24A	Universal control board	47-109780-01A	X		1	
24B	Universal control board	47-109780-01B		X	1	
25	VFD power Choke	46-109786-01		X	1	
26	Variable frequency driver (inverter) - 35 kW	47-109788-01		X	1	
27	Variable frequency driver (inverter) - 20 kW	47-109787-01	X		1	
28	Main power terminal block	45-21134-04	X		1	
29	Hydronic control board	47-109923-01	X		1	
30	Filter board (EMI)	47-109723-01		X	1	
31	Ambient air sensor	47-102709-10	X		1	
32	24 VAC power terminal block	45-106539-01	X		1	
33	External connection terminals	100-10000884	X		6	When ordering this part, also order part 34
34	Terminals terminator blocks	100-10000885	X		2	
35	Regal fan motor	51-100998-56	X		1	
36	Motor wire conduit	68-100930-11	X		1	
37	Fan blade 26"	70-101323-29	X		1	
38	Wire grille	95-110082-01	X		1	
39	Cranckase heater 35 kW	44-109748-01		X	1	
40	Cranckase heater 20kW	44-109748-02	X		1	
41	Condenser 35 kW	65-109784-01		X	1	When ordering this part, please also order items 42 and 43
42	Condenser insulation part A	68-109762-01		X	1	
43	Condenser insulation part B	68-109745-01		X	1	
44	Condenser 20 kW	65-109617-01	X		1	When ordering this part, please also order items 45 and 46
45	Condenser insulation part A	68-109761-01	X		1	
46	Condenser insulation part B	68-109744-01	X		1	
47	Water Flow switch	47-110067-01	X		1	
48	Water pipe fitting	82-110086-01	X		1	
49	Water pipe press fitting	82-110078-01	X		1	
50	A2L sensor	47-109642-01	X		1	Order item 51 if harness is required.
51	A2L sensor harness	45-110064-01	X		1	
52	Cranckase heater relay	45-109900-01	X		1	
53	Cranckase heater main power (460V)	45-109901-01	X		1	
54	Defrost valve power harness	45-109902-01	X		1	
55	Power 460V to VFD	45-109904-01	X		1	
56	Solenoid valve coil	61-103961-13	X		1	
57	Communication harness 20 kW	45-109906-01	X		1	
58	24 Vac power supply wires 20 kW	45-109907-01	X		1	
59	24 Vac power supply wires 35 kW	45-109908-01		X	1	
60	Water in/out, variable speed fan and pump harness	45-109910-01	X		1	
61	Hydra Power and single speed pump harness	45-109912-01	X		1	
62	Communication harness 35 kW	45-109916-01		X	1	

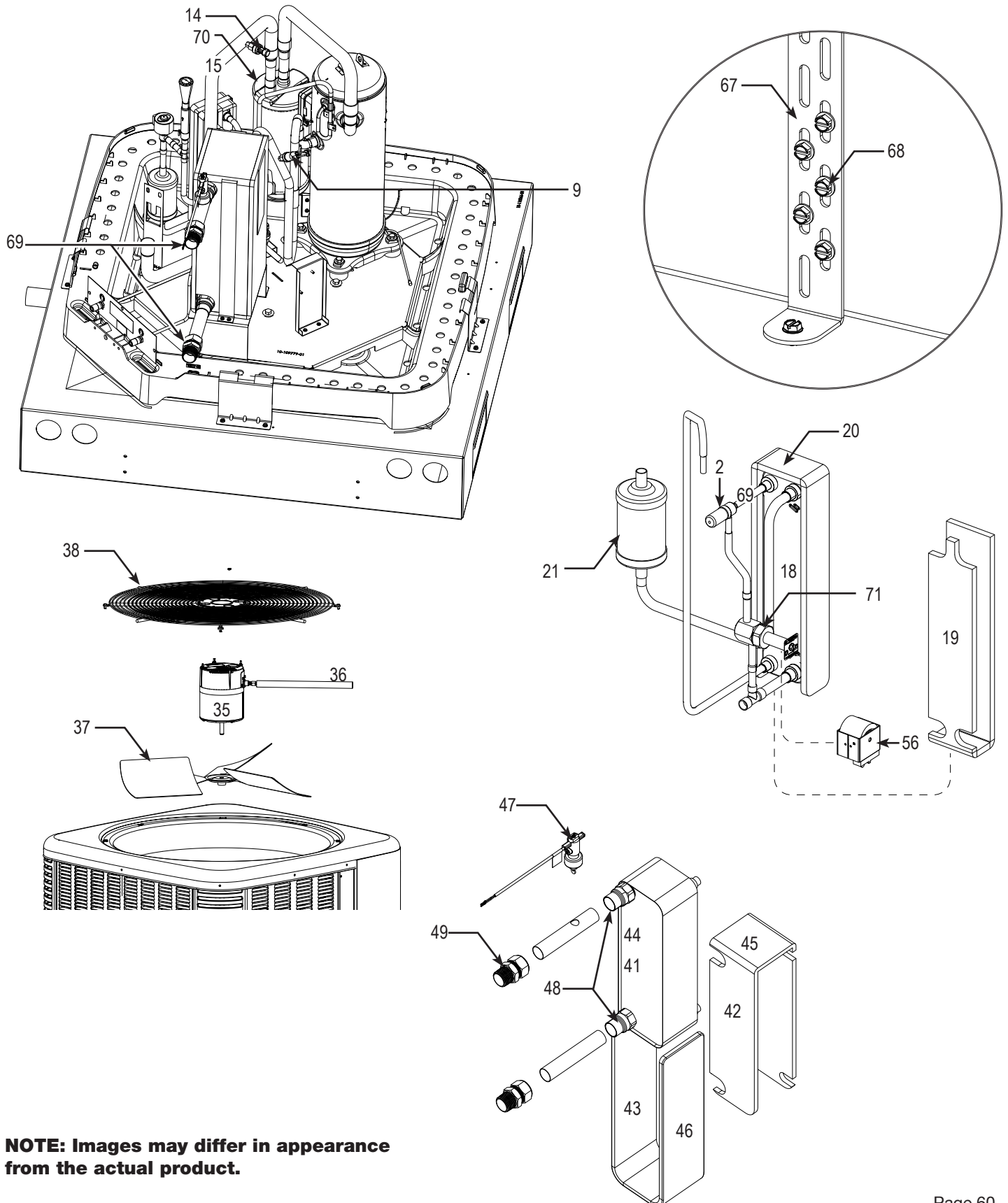
7.0 REPLACEMENT PARTS

REPLACEMENT PARTS						
ITEM	DESCRIPTION	PART NUMBER	RMHPHDA068	RMHPHDA120	QTY.	NOTES
63	VFD to choke harness 35 kW	45-109918-01		X	1	
64	Fan relay harness 20 kW	45-109920-01	X		1	
65	Main 460V power to EMI filter 35 kW	45-109949-01		X	1	
66	Power to VFD 35 kW	45-110060-01		X	1	
67	Brackets for hurricane or seismic tie down	10-105931-02	X		6	When ordering this part, please order items on line 68
68	Tie down screws	63-105938-01	X		30	
69	Water temperature sensors	47-109941-01	X		1	
70	Charge accumulator	83-108723-02		X	1	
71	Bypass solenoid valve	61-103961-10	X		1	
72	Tank well thermistor	011932	X		1	Order depending on your needs
73	System water circulator	VM3450-DD1-RS2W00	X		1	Suggested sytem circulator
74	Power transformer 30 KVA	T3030K0013B	X		1	Suggested step up transformer*
75	Power transformer 45 kVA	T3045K0013B		X	1	Suggested step up transformer*
76	Nipple with indexed diffuser 2"	AP18971	X		1	
77	Solenoid valve water inlet	USS-MSV00009	X		1	Suggested shut off valve, 1 per unit.



NOTE: Images may differ in appearance from the actual product.

7.0 REPLACEMENT PARTS



NOTE: Images may differ in appearance from the actual product.



7.1 BEFORE BEGINNING DECOMMISSIONING

Before carrying out decommissioning, the technician performing decommissioning must be familiar with the equipment and its safety procedures, and ensure electrical power is available to the unit. See Section Working Personnel on page 65.

Always use new refrigerant if ever recharging system. **DO NOT** use reclaimed refrigerant to re-charge.

Before beginning any work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. See section 5.2.

Before beginning any work on the system or conducting any hot work, ensure that the area is in the open or that it is adequately ventilated. Ventilation must continue while the unit is being worked on. Ventilation is required to safely disperse any released refrigerant into the atmosphere.

Work shall be undertaken under a controlled procedure so as to minimize the risk of flammable gas or vapor being present while work is being performed. See section Importance of a Quality Installation on page 6.

The area shall be checked with an appropriate refrigerant detector before and during work to ensure the technician is aware of potentially toxic or flammable atmospheres.

Make sure the correct amount of recovery cylinders are on hand, to hold the total volume of the unit. Make sure cylinders are labeled as containing reclaimed refrigerant.

Make sure all pressure relief valves on cylinders are in good condition.

Consult your local guidelines for the disposal of used refrigerant. **DO NOT MIX REFRIGERANTS.**

If compressor oil must be removed, ensure system has been fully evacuated first.

7.2 DECOMMISSIONING PROCEDURE

Follow the decommissioning procedure outlined below:

READ ALL STEPS BEFORE BEGINNING.

1. Become familiar with the equipment, its operation, and its safety procedures.
2. Isolate the system electrically.
3. Ensure that mechanical handling equipment for the refrigerant cylinders is at hand, if required.
4. Ensure personal, protective equipment is being used correctly.
5. A competent supervisor must be present during the refrigerant recovery process. Ensure such a person is available on site.
6. Confirm that the recovery equipment and cylinders are correct for the equipment and its refrigerant.
7. If possible, circulate down the refrigerant system.
8. If a vacuum is not possible, make a manifold so that the refrigerant can be removed from various parts of the system.
9. Make sure that the recovery cylinder is situated on the scale before recovery begins.

10. Start the recovery machine and operate it in accordance with its instructions.
11. Do not overflow the cylinders. No more than 80% volume liquid charge is allowed.
12. Do not exceed the maximum working pressure of the cylinder, even temporarily.
13. When the cylinders have been filled correctly and the process is complete, make sure that the cylinders and the recovery equipment are removed from the site promptly.
14. Recovered refrigerant shall not be charged into another unit.
15. Once refrigerant is recovered, label system as De-Commissioned. The label shall be dated and signed. Ensure that there are labels on the systems that state flammable refrigerant.

When performing any maintenance or troubleshooting on the refrigerating equipment or associated parts, a dry powder or CO₂ fire extinguisher shall be nearby for emergency use. Equipment must be labeled stating that it has been decommissioned and emptied of refrigerant. The label must be dated and signed. Ensure that there are label(s) on the unit stating that this equipment contains flammable refrigerant.



8.0 CERTIFICATE OF LIMITED WARRANTY

COMMERCIAL AIR TO WATER HEAT PUMP WATER HEATER

For the Rheem, Ruud, Richmond, or Raypak Models listed in this Manual.

GENERAL

This Limited Warranty is only available to the original owner of this water heater. It is not transferable.

Rheem Manufacturing Company (Rheem®) warrants this Rheem/Ruud/Richmond/Raypak water heater, and its component parts, to be free from defects in materials and workmanship, under normal use and service, for the Applicable Warranty Period. At its option, Rheem will repair or replace the defective water heater, or defective component part(s), in accordance with the terms of this Limited Warranty, if it fails in normal use and service during the Applicable Warranty Period. The replacement component part(s) must be Rheem authorized component part(s). The replacement unit will be warranted only for the unexpired portion of the original unit's Applicable Warranty Period.

EFFECTIVE DATE

The Effective Date of warranty coverage (or the beginning of the Applicable Warranty Periods) is the date of installation of the water heater, if properly documented. Otherwise, it is the date of manufacture of the water heater plus ninety (90) days.

APPLICABLE WARRANTY PERIODS

The Applicable Warranty Periods are one (1) year from the Effective Date for the tank and the component parts. One year parts only warranty.

WARRANTY EXCLUSIONS

This Limited Warranty will not cover:

- a) Service trips to your facility to teach you how to install, use, or maintain this water heater or to bring the water heater installation into compliance with local building codes and regulations.
- b) Damages, malfunctions or failures resulting from failure to install the water heater in accordance with applicable building codes/ordinances or good plumbing and electrical trade practices.

- c) Damages, malfunctions, or failures resulting from improper installation or failure to operate and maintain the water heater in accordance with the manufacturer's instructions provided.
- d) Performance problems caused by improper sizing of the water heater or (pertaining to electric models) electric service voltage, wiring, or fusing.
- e) Damages, malfunctions, or failures caused by abuse, accident, fire, flood, freeze, lightning, acts of God, and the like.
- f) Coil failures (leaks) caused by operating the water heater in a corrosive or contaminated atmosphere.
- g) Damages, malfunctions, or failures caused by operating the water circulator without any supply of water.
- h) Damages, malfunctions, or failures caused by operating the unit at water temperatures exceeding the maximum setting of the operating, or high limit, control.
- i) Coil failures caused by operating the water heater when it is not supplied with potable water, free to circulate at all times.
- j) Damages, malfunctions or failures caused by subjecting the heater to pressures, or electrical characteristics, greater than those shown on the rating label.
- k) Damages, malfunctions or failures resulting from the use of any attachment, including any energy saving device, not authorized by Rheem.
- l) Units installed outside the fifty states (and the District of Columbia) of the United States of America.
- m) Units removed from the original installation location.
- n) Units that have had their rating labels removed. A water heater should not be operated if the rating label is removed
- o) Parts installed with or used in connection with normal maintenance, such as cleaning or replacing refrigerant, or refrigerant drier.



CERTIFICATE OF LIMITED WARRANTY

LABOR, SHIPPING, AND PROCESSING COSTS (After 1 Year)

This Limited Warranty does not cover any labor expenses for service, repairs, reinstallation, permits, or removal and disposal of the failed water heater, or defective component part(s). All such expenses are your responsibility.

Rheem will pay the transportation costs for an “in-warranty” replacement water heater, or “in-warranty” replacement component part(s), to a convenient delivery point (selected by Rheem) near the place the original water heater, or original component part(s), is located: such as a local Rheem/Ruud/Raypak/Richmond water heater distributor. You must pay any local freight charges, including the cost of returning the failed water heater, or defective component part(s) to a convenient shipping location (selected by Rheem): such as a local Rheem/Ruud/Raypak/Richmond water heater distributor.

Rheem does not authorize, recommend, or receive any benefit from any claims processing or similar fees charged by others to process warranty claims for any Rheem water heater or component part(s). Rheem will not reimburse any party for these, or any other, fees not specifically covered in this Limited Warranty document.

HOW TO OBTAIN WARRANTY CLAIM ASSISTANCE

Any claim for warranty assistance must be made promptly. First, determine if your water heater is “in-warranty” (that is, within the Applicable Warranty Period). You can determine your unit’s warranty status by obtaining the complete model number, the complete serial number, and the date of installation of your water heater and then accessing the “Warranty Verification” information on the web site (www.raypak.com) or contacting Rheem Commercial Water Phone (877) 541-7575 or Raypak Technical Support/Warranty (805) 278-5300 during normal business hours to determine if the Applicable Warranty Period has expired.

If your water heater is “in-warranty”, contact the plumber, or mechanical contractor, that installed it for assistance with the warranty repairs, or replacement, required. You may also select a plumber, or mechanical contractor, from your local Yellow Pages to assist you. Technical Service personnel are available to assist you on the web site (www.raypak.com) or contacting Rheem Commercial Water Phone (877) 541-7575 or Raypak Technical Support/Warranty (805) 278-5300 – in obtaining “in-warranty” service or to answer your questions about the operation or repair of your water heater during normal business hours. Be prepared to provide the plumber, mechanical contractor, or Technical Service person you contact with the complete model number, the complete serial number, and the date of installation of your water heater in addition to an explanation of your water heater problem.

If an exact replacement is not available, Rheem will provide you with the current model of your water heater, or component part(s), or a replacement unit with comparable operating features. If government regulations or industry certification or similar standards require the replacement water heater, or replacement component part(s), to have features not found in the defective water heater, or the defective component part(s), you will be charged for the difference in price represented by those required features. If you pay the price difference for those required features and/or to upgrade the size and/or other features available on a replacement new water heater, you will also receive a complete new Limited Warranty (with the full Applicable Warranty Period) for the replacement new water heater.

Rheem reserves the right to inspect, or require the return of, the failed water heater or the defective component part(s). Each “in-warranty” failure water heater must be made available to Rheem (with the rating label and all the component parts intact) in exchange for the replacement water heater. Each defective “in-warranty” component part to be replaced must be returned to Rheem in exchange for the replacement component part.

Warranty compensation is subject to validation of “in-warranty” coverage by Rheem Claims Department personnel.

- To obtain warranty compensation for an “in-warranty” water heater failure, you must provide Rheem with: (at Rheem’s option) either the failed water heater (with the rating label and all the component parts intact) or the complete original rating label (photocopies are not acceptable) removed from the failed water heater; the complete model number and the complete serial number of the Rheem/Ruud/Richmond/Raypak water heater that replaced the failed unit; and the date the original water heater failed. You may also be required to provide documentary proof of the failed water heater’s date of installation to establish its “in-warranty” status.
- To receive warranty compensation for an “in-warranty” defective component part, you must provide Rheem with: the defective component part; the complete model number and the complete serial number of the Rheem/Ruud/Richmond/Raypak water heater from which the defective component part was removed; and the date the defective component part failed. You may also be required to provide documentary proof of the date of installation of the Rheem/Ruud/Richmond/Raypak water heater from which the defective part was removed – or the date of purchase of the part (if it was purchased separately) – to establish the “in-warranty” status of the defective component part.



CERTIFICATE OF LIMITED WARRANTY

EXCLUSIVE WARRANTY - LIMITATION OF LIABILITY

This Limited Warranty is the only Warranty for this unit given by the Water Heater Division of Rheem Manufacturing Company. No one is authorized to make any other warranties on behalf of Rheem. ANY IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE, SHALL NOT EXTEND BEYOND THE APPLICABLE WARRANTY PERIODS SPECIFIED PREVIOUSLY. RHEEM'S SOLE LIABILITY, WITH RESPECT TO ANY DEFECT, SHALL BE AS SET FORTH IN THIS LIMITED WARRANTY, AND ANY CLAIMS FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING DAMAGE FROM WATER LEAKAGE) ARE EXCLUDED. Some states do not allow limitations on how long an implied warranty lasts, or for the exclusion of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

This Limited Warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

We suggest you immediately complete the information below and retain this Certificate of Limited Warranty in the event warranty service is needed. Reasonable proof of the date of installation of your water heater may be required to establish its "in-warranty" status. Otherwise, the Effective Date of this Limited Warranty will be the date of manufacture of the water heater plus ninety (90) days.

DO NOT RETURN THIS DOCUMENT TO RHEEM.

KEEP IT WITH YOUR WATER HEATER OR BUSINESS RECORDS.

Name of Owner:

Owner's Address:

Name of Plumber / Mechanical Contractor - Installer:

Address of Plumber / Mechanical Contractor - Installer:

Telephone Number of Plumber / Mechanical Contractor - Installer:

Date of Water Heater Installation:

Model Number of Your Water Heater:

Serial Number of Your Water Heater:



TECHNICAL SUPPORT LINE

Rheem Commercial Water Phone
Phone: (877) 541-7575

Raypak Technical Support/Warranty
805-278-5300



IF YOU NEED SERVICE

1. Should you have any questions about your new water heater, or if it requires adjustment, repair, or routine maintenance, it is suggested that you first contact your installer, plumbing contractor or previously agreed upon service agency. In the event that the firm has moved, or is unavailable, refer to the telephone directory commercial listings or local utility for qualified service assistance.
2. Should your problem not be solved to your complete satisfaction, you should then contact the Manufacturer's National Service Department at one of the following addresses:

In The U.S.A.:
Raypak, Inc.
2151 Eastman Avenue,
Oxnard, CA 93030
Phone: 805-278-5300

In CANADA:
Rheem Canada, Ltd. / Ltée
125 Edgeware Road, Unit 1
Brampton, ON L6Y 0P5
Phone: 1-800-268-6966.

When contacting the manufacturer, the following information should be made available:

- a. Model and serial numbers of the water heater as shown on the rating plate attached to the jacket of the heater.
 - b. Address where the water heater is located and can be seen.
 - c. Name and address of the installer and any service agency who performed service on the water heater.
 - d. Date of installation invoice or start up documents, indicating start up date and any prior service work.
 - e. Details of the problem as you can best describe them.
 - f. List of people, with dates, who have been contacted regarding your problem.
3. Should you have any issue or need assistance with the WiFi Module/EcoNet App then contact the EcoNet Customer Service:
Phone: 1-800-255-2388
Website: www.Rheem.com/EcoNet