

INSTALLATION MANUAL

INSTALLATION & OPERATING INSTRUCTIONS FOR RP007 - 060 SERIES WATER SOURCE HEAT PUMPS

RP007 TO 060

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NOTES, CAUTIONS AND WARNINGS

Installer should pay particular attention to the words: *NOTE*, *CAUTION*, and *WARNING*. Notes are intended to clarify or make the installation easier. Cautions are given to prevent equipment damage. Warnings are given to alert installer that personal injury and/or equipment damage may result if installation procedure is not handled properly.

CAUTION: READ ALL SAFETY GUIDES BEFORE YOU
BEGIN TO INSTALL YOUR UNIT.



SAVE THIS MANUAL

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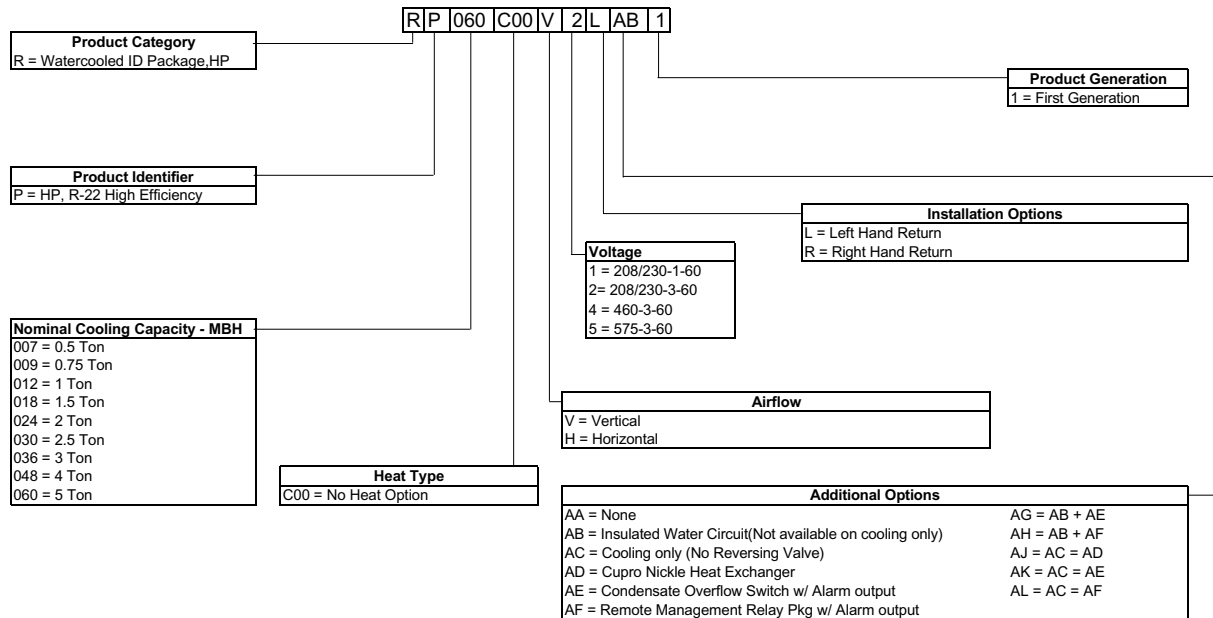
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PRODUCT NOMENCLATURE

Water Cooled Package Heat Pump and AC Model Number Nomenclature



INTRODUCTION

RP units are completely self-contained heating and/or air conditioning units. This equipment employs a water-to-refrigerant heat exchanger to extract (heating cycle) or reject (cooling cycle) heat from/to a circulating water-loop.

All models 1/2 through 5 tons are shipped as factory-charged packages. Horizontal units are designed for suspended ceiling mounting, and are constructed with integral hanger channels. Vertical units are designed for free-standing floor mounting. All units are shipped completely factory wired and pre-piped. Water supply, water outlet, and condensate drain connections are via female threaded pipe fittings.

Each refrigeration circuit includes an adjustable bi-flow expansion valve, liquid line filter drier, and multiple service gauge ports. External high pressure and low pressure protection switches are included in each compressor circuit. Heat Pump models feature a pilot operated, sliding piston type, 4-way reversing valve with a replaceable magnetic solenoid coil.

The coaxial water-to-refrigerant heat exchanger, and all water piping within the unit are rated for water side working pressures up to 400 psig. Automatic water flow regulating valves are available as field installed accessories.

All units are completely factory wired with all necessary operating controls. A 24 volt control circuit, with over-size transformer, is provided for field connection. Units are designed to operate with conventional thermostat control interface. The reversing valve solenoid coil shall be energized in cooling mode only. A manual reset lock-out relay is provided to disable the compressor control circuit in the event of high/low pressure cut-out.

These units are designed for **indoor** installation only. They are not intended or approved for outdoor installation.

PRE-INSTALLATION INSPECTION OF EQUIPMENT

All units are factory tested to ensure safe operation and quality assembly. Units are packaged and sealed on wooden skid runners and shipped in first class condition. Torn and broken packaging, scratched or dented panels should be reported to carrier immediately. Internal inspection of all units should be performed prior to installation. Remove all access doors and check for visual defects that can occur during transport. Any problems found internally should be reported to carrier and manufacturer immediately. Refrigerant circuit should be checked to ensure no leaks have occurred during shipment. Install gauge set to high and low pressure ports to confirm pressure has been maintained and no leaks have occurred during shipment. Repair any damage prior to installation to ensure safe operation.

NOTE: Record any unit damage on the Bill of Lading and report to carrier and factory immediately. Shipping and handling damages are not warranty items.

RIGGING

WARNING

Prior to mounting unit, check individual unit weights (page 4) and verify lifting capacity of lifting equipment exceeds weight of units by safe margins. Failure to do so may result in unit damage, personal injury or even death.

INSTALLATION

WARNING

Lock all electrical power supply switches in the off position before installing the unit. Failure to disconnect power supply may result in electrical shock or even death.

CAUTION

Only qualified personnel should perform installation and service of this equipment.

Location - To ensure unit operates at maximum efficiencies, choose a dry indoor area where the temperature is controlled between 40° F and 115° F. Consideration of surrounding areas should be taken when choosing a location to install the unit. Common vibration and sound levels associated with commercial equipment may be objectionable to people or equipment.

CAUTION

Failure to allow adequate space between units may result in poor unit performance and possible unit failure.

Install thermostats, supply air ductwork, and return air ductwork (if applicable) so that each unit will operate only in a single cooling or heating zone. In order to assure proper drainage of condensate, horizontal units can be slightly pitched in the same direction as drain pan outlet.

TABLE 1: GENERAL DATA

Model Series	007	009	012	018	024	030	036	048	060
Nominal Cooling(Ton)	0.5	0.75	1.0	1.5	2.0	2.5	3.0	4.0	5.0
Cooling Performance									
Cooling Capacity (BTUH)	7000	9000	12800	18100	24200	30800	36100	48200	59000
EER	12.4	13.0	12.6	14.4	14.4	13.5	14.2	14.0	12.6
Heating Capacity (BTUH)	8800	10700	14800	20900	27500	35200	41400	56000	72000
COP	4.2	4.4	4.2	4.5	4.6	4.4	4.6	4.6	4.4
Design CFM	200	300	400	600	800	1000	1200	1600	2000
Nominal Water flow (gpm)	1.5	2.25	3.0	4.5	6.0	7.5	9.0	12.0	15.0
Compressor-Type	Rotary	Rotary	Rotary	Rotary	Recip.	Recip.	Recip.	Recip.	Recip.
Number Used	1	1	1	1	1	1	1	1	1
Air Coil-Type	Enhanced Copper Tubes, Enhanced Aluminum Fins								
Face Area (sq ft)	1.00	1.00	1.00	1.51	2.56	2.56	2.88	4.38	5.00
Rows/FPI	2/14	2/14	3/14	3/14	3/14	3/14	3/14	3/14	3/14
Water Coil-Type	Co-axial								
Water Connection Size	1/2" FPT	1/2" FPT	1/2" FPT	3/4" FPT	3/4" FPT	3/4" FPT	3/4" FPT	3/4" FPT	1"FPT
Drain Connection Size					3/4" FPT				
Direct Drive Fan-Type	Centrifugal, Forward Curved								
Number Used	1	1	1	1	1	1	1	1	1
Diameter x Width (in)	9x4	9x4	9x4	9x6	9x7	9x7	9x7	10x9	10x9
Motor HP/Speed	0.10/3	0.10/3	0.17/3	0.25/3	0.25/3	0.33/3	0.50/3	0.75/3	1.0/3
Filters									
HWP - Quantity-Size (in)	1-14x16x1	1-14x16x1	1-14x16x1	1-16x20x1	1-18x25x1	1-18x25x1	1-20x25x1	2-20x20x1	1-20x20x1 1-20x25x1
VWP - Quantity-Size (in)	1-14x16x1	1-14x16x1	1-14x16x1	1-16x20x1	1-18x25x1	1-18x25x1	1-20x25x1	1-16x25x1 1-14x25x1	1-18x25x1 1-16x25x1
Weight									
Operating	130	135	155	180	215	235	260	325	345
Shipping	145	150	170	195	230	255	280	345	365

NOTE:

1. Performance calculated in accordance with ARI/ISO Standard 13256-1 for Water Loop application.
2. Cooling capacities are rated at entering air conditions of 80.6°F db / 66.2° F wb, 86° F entering water temperature.
3. Heating capacities are rated at entering air conditions of 68° F db / 59° F wb, 68° F entering water temperature.

TABLE 2: OPERATING LIMITS - WATER LOOP APPLICATION

	COOLING	HEATING
Min. Entering Water	50°F	40°F ¹
Max. Entering Water	110°F	80°F
Normal Entering Water	60-90°F	50-70°F

1. Heating operation below 55°F requires insulated water circuit.

CLEARANCES REQUIRED

Twenty-four (24) inch clearance is required on all sides of the unit for service access. Service access doors are equipped with lifting handles and are located on all sides of the unit to allow easy servicing of all components.

UNIT MOUNTING

Vertical units should be mounted level on a vibration absorbing pad(s) to minimize vibration transmission

through the floor structure. It is not necessary to anchor the unit to the floor.

Horizontal units are typically suspended above a ceiling by threaded steel rods, securely anchored to the building structure. Units should be supported from the holes in the rail extensions at the four corners, using steel threaded rods having a minimum diameter of 3/8 inch. Four rubber bushings are supplied with the unit to be placed between the unit and the supporting rods to absorb vibration.

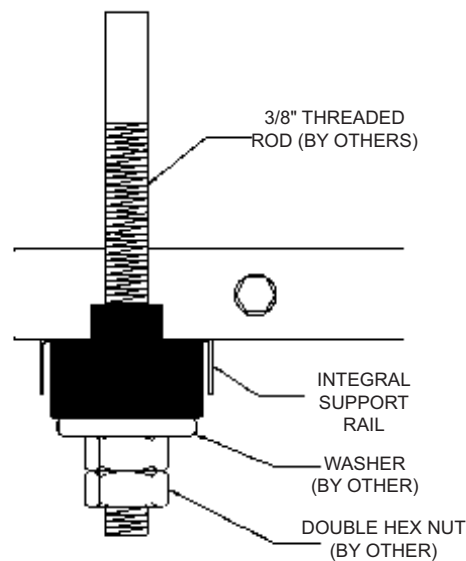


FIGURE 1 : UNIT MOUNTING

DUCT CONNECTIONS

Canvas or other types of flexible collars are recommended for connecting the air ducts to the unit. The supply air duct collar can be connected directly to the blower outlet flange. Allowance must be made in the supply duct for removal of the first duct section adjacent to the unit, for the servicing of the blower and motor assembly. Return air may be ducted to the unit or drawn directly from the ceiling space into the filter.

Supply ducts should be sized for an air velocity of not more than 1000 feet per minute. Return ducts should be sized for a velocity of not more than 700 feet per minute. When the sound level is critical, it is recommended that both the supply and return

ducts be lined with acoustic insulation for the first ten feet closest to the unit. The supply duct should also have at least one elbow or tee upstream of the first outlet connection for good sound attenuation.

ELECTRICAL POWER SUPPLY AND CONNECTIONS

Before installing the unit, make sure that the voltage and number of phases on the unit data plate are the same as the available power supply. All wiring and switchgear installed external to the unit must conform to all applicable local codes. The maximum allowable size of fuses or circuit breaker required is shown on the unit data label. Fuses must be of the time delay type.

The power supply wiring is to be connected directly to the line side of compressor contactor as shown on the connection wiring diagram. A ground wire must be connected to the ground lug marked GND in the electrical control box.

ROOM THERMOSTAT AND CONTROL WIRING

Any single stage 24-volt room thermostat can be used with the "cooling only" models. It is recommended that the thermostat sub-base should include a fan switch,

so that constant fan operation can be selected if desired. Heat Pump models require the installation of a heating and cooling thermostat with a dedicated "O" terminal for activating the reversing valve. Wiring between the thermostat and the unit should be 18 Ga. minimum. Appropriate room thermostats can be ordered as an optional accessory for delivery with the units if desired.

TABLE 3: ELECTRICAL DATA

MODEL SERIES	SUPPLY VOLTAGE	COMPRESSOR			BLOWER		MIN. CCT. AMPACITY	MAX FUSE / CCT. BKR. AMP
		QTY	RLA	LRA	HP	FLA		
007	208-230/1/60	1 @	2.8	17.7	0.10	0.9	4.35	15
009	208-230/1/60	1 @	3.4	23.0	0.10	0.9	5.15	15
012	208-230/1/60	1 @	4.8	26.3	0.17	1.4	7.40	15
018	208-230/1/60	1 @	6.4	38.0	0.25	1.5	9.5	15
024	208-230/1/60	1 @	10.4	49.0	0.25	1.5	14.50	20
030	208-230/1/60	1 @	12.4	61.0	0.33	2.6	18.10	30
	208-230/3/60	1 @	7.7	55.0	0.33	2.6	12.23	15
036	208-230/1/60	1 @	15.3	82.0	0.50	3.2	22.33	35
	208-230/3/60	1 @	10.0	68.0	0.50	3.2	15.70	25
	460/3/60	1 @	4.8	34.0	0.50	1.9	7.90	15
048	208-230/1/60	1 @	19.0	105.0	0.75	4.9	28.65	45
	208-230/3/60	1 @	14.0	91.0	0.75	4.9	22.40	35
	460/3/60	1 @	5.9	42.0	0.75	2.2	9.58	15
	575/3/60	1 @	4.8	34.0	0.75	1.8	7.80	15
060	208-230/1/60	1 @	24.6	132.0	1.00	5.1	35.85	60
	208-230/3/60	1 @	16.0	97.0	1.00	5.1	25.10	40
	460/3/60	1 @	8.2	50.0	1.00	3.2	13.45	20
	575/3/60	1 @	5.0	44.0	1.00	2.6	8.85	15

BLOWER PERFORMANCE

All units employ direct-drive blower motors with multiple speed taps available. The motors have been selected to deliver the nominal air volume against varying external static pressures when necessary. After installation of the unit, it will be necessary to check the air volume and change the motor speed connection accordingly if the air volume is too high or too low. All units are factory-wired with the medium speed winding connected.

A simple method for approximating sufficient air volume is to measure the difference between the supply and return air temperatures. In Heating mode, the air temperature rise should be in the range of 20°F to 30°F. In Cooling mode, the temperature drop should be between 15°F to 25°F. If values are outside the appropriate range, increase or reduce the motor speed as necessary.

TABLE 4: BLOWER PERFORMANCE (CFM)

UNIT	SPEED	EXTERNAL STATIC PRESSURE (in w.g.)								
		0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
007	High	-	-	-	-	270	235	195	150	-
	Med	-	-	260	240	210	175	-	-	-
	Low	225	215	200	180	150	-	-	-	-
009	High	-	-	380	360	330	290	240	-	-
	Med	350	340	325	300	270	235	-	-	-
	Low	285	275	260	240	210	-	-	-	-
012	High	495	475	450	420	385	345	300	-	-
	Med	470	455	430	400	365	325	-	-	-
	Low	385	370	355	330	300	-	-	-	-
018	High	-	-	705	660	610	555	495	430	-
	Med	-	700	660	615	565	510	450	-	-
	Low	690	665	630	585	535	480	-	-	-
024	High	-	-	1005	950	890	820	740	650	-
	Med	925	905	875	840	790	730	660	-	-
	Low	-	-	780	765	725	660	590	-	-
030	High	-	-	1170	1120	1060	985	905	810	-
	Med	1150	1125	1090	1045	990	925	850	765	-
	Low	-	975	970	940	905	855	785	-	-
036	High	-	1390	1330	1270	1210	1140	1055	960	-
	Med	1355	1320	1270	1215	1155	1085	1005	920	-
	Low	1200	1190	1170	1130	1085	1020	950	-	-
048	High	-	-	1990	1915	1835	1750	1660	1550	1415
	Med	1880	1860	1820	1770	1710	1640	1550	1450	1320
	Low	-	1490	1485	1480	1460	1420	1360	1285	1160
060	High	2340	2280	2210	2140	2070	1990	1895	1790	1660
	Med	2040	2030	2005	1970	1925	1860	1785	1700	1590
	Low	-	-	1705	1700	1680	1660	1610	1540	-

Note: Units are shipped pre-wired for Medium speed.

All airflow ratings are at lowest voltage rating of dual rating (i.e., 208 volt)

Airflow ratings include resistance of wet coil and clean air filters.

LOOP WATER SUPPLY AND PIPING CONNECTIONS

The recommended circulating water supply for *heat pump* systems is a closed-water loop, utilizing a cooling tower and boiler to maintain the loop temperature within acceptable temperature limits. Typically, the closed loop temperature is maintained above 60° F and below 90° F. All units function independently, either adding heat to the loop (cooling mode) or removing heat from the loop (heating mode).

When utilizing an open cooling tower (evaporative type), chemical treatment is mandatory to ensure that the loop water is free of corrosive minerals. A secondary heat exchanger between the open cooling tower and the closed water loop may also be used. It is imperative that all air is purged from the closed loop side to prevent condenser fouling.

Dual acting water regulating valves should be used when there is potential for low fluid flow and/or low fluid temperature or high fluid temperature conditions to exist. These water regulating valve assemblies consist of a direct acting valve parallel coupled to a reverse acting valve. The direct acting valve opens in response to an increase in discharge pressure during cooling mode. The reverse acting valve opens in response to a decrease in suction pressure during heating mode.

The heat rejection water source for *cooling-only* units may be from a municipal supply main, a cooling tower, or a chilled water system. An automatic water flow regulating valve is normally required, except if the inlet water temperature is constant and the flow rate can be pre-set and turned on and off by some other means, such as a dedicated pump circuit or solenoid valve.

Automatic water flow regulating valves, for both heat pump and cooling-only applications, are available as field installed accessories. The valves are installed on the water outlet connection from the unit. Schrader type refrigerant pressure access fittings are included as standard in all units.

SUPPLY/RETURN PIPING

Supply and return piping should be as large as the unit connection sizes (larger on long pipe runs). Never use flexible hoses of a smaller inside diameter than that of the nominal water pipe size. Both supply and return water lines will sweat if subjected to low water temperatures. Insulate these lines as necessary to prevent condensation damage.

Flexible hoses should be used between the unit and rigidly mounted piping to avoid vibration transmission. Teflon tape thread sealant is recommended. Do not overtighten threaded connections. Ball valves should be installed in the supply and return lines for unit isolation and water flow balancing. Before final connection to the unit, the supply and return hoses should be connected together and the piping system flushed to remove any dirt or foreign material.

Pressure and temperature ports are recommended in both the supply and return lines for system flow balancing. The water flow can be accurately set by measuring the water-side pressure drop through the unit. See the flow versus pressure drop specification table for application information. **Do not exceed the recommended water flow rates. Damage due to erosion of the water-to-refrigerant heat exchanger could occur.**

TABLE 5: UNIT WATER PRESSURE DROP

UNIT MODEL																		
EWT °F	007		009		012		018		024		030		036		048		060	
	GPM	WPD (psi)	GPM	WPD (psi)	GPM	WPD (psi)	GPM	WPD (psi)	GPM	WPD (psi)	GPM	WPD (psi)	GPM	WPD (psi)	GPM	WPD (psi)	GPM	WPD (psi)
50	1.0	0.8	1.35	1.4	1.8	2.1	2.75	2.3	3.5	3.3	4.5	3.6	5.5	2.9	7.5	3.9	9.0	3.6
	1.5	2.0	2.25	3.5	3.0	5.3	4.50	5.7	6.0	8.0	7.5	9.0	9.0	7.0	12.0	9.6	15.0	8.8
60	1.0	0.7	1.35	1.4	1.8	2.0	2.75	2.2	3.5	3.2	4.5	3.5	5.5	2.8	7.5	3.7	9.0	3.5
	1.5	1.9	2.25	3.4	3.0	5.1	4.50	5.5	6.0	7.7	7.5	8.7	9.0	6.8	12.0	9.2	15.0	8.5
70	1.0	0.7	1.35	1.3	1.8	1.9	2.75	2.1	3.5	3.0	4.5	3.3	5.5	2.6	7.5	3.5	9.0	3.3
	1.5	1.8	2.25	3.2	3.0	4.8	4.50	5.2	6.0	7.3	7.5	8.2	9.0	6.4	12.0	8.7	15.0	8
85	1.0	0.7	1.35	1.2	1.8	1.8	2.75	2.0	3.5	2.9	4.5	3.1	5.5	2.5	7.5	3.3	9.0	3.1
	1.5	1.7	2.25	3.0	3.0	4.6	4.50	4.9	6.0	6.9	7.5	7.8	9.0	6.1	12.0	8.3	15.0	7.6
100	1.0	0.6	1.35	1.2	1.8	1.7	2.75	1.9	3.5	2.7	4.5	3.0	5.5	2.4	7.5	3.2	9.0	3.0
	1.5	1.6	2.25	2.9	3.0	4.4	4.50	4.7	6.0	6.6	7.5	7.5	9.0	5.8	12.0	7.9	15.0	7.3

CONDENSATE DRAIN PIPING

Horizontal Units - The 3/4 FPT drain connection on the unit is NOT internally trapped. The cooling coil compartment and drain pan are under negative pressure when the blower is running, therefore a P trap MUST be used in the drain line.

It is recommended that a 3/4 inch drain line be sloped (1/4 inch/foot) all the way to an open drain. Each unit must be installed with its own individual trap, and have the means to flush out the condensate line if necessary. If it is not possible to reach an open drain by gravity flow, a pump kit, which is available as an accessory, can be mounted close to the unit.

Vertical Units - Each unit utilizes a flexible hose inside the cabinet as a trapping loop. An external P-trap is not necessary.

WATER REGULATING VALVE – INSTALLATION

The water regulating valve is to be installed in the water outlet line, as close as possible to the unit cabinet (maximum 18 inches distance). The capillary tube from the sensing bellows on the valve(s) must be connected to the 1/4 inch male flare connection, which is on the refrigerant liquid line in the condenser compartment. Connect the capillary tube flare nut directly to the unit male flare fitting. When one is making this connection, it is normal for some refrigerant to escape as the schrader valve core is being opened and the nut is being tightened. Complete the tightening of the nut as soon as possible to minimize the loss of refrigerant. Do not over-tighten.

START-UP AND OPERATION

NOTE: The services of a qualified Refrigeration Service Mechanic should be employed in the start-up and commissioning of these systems.

WARNING

Lock all electrical power supply switches in the off position before installing the unit. Failure to disconnect power supply may result in electrical shock or even death.

After completing the installation, and before energizing the power supply to the unit, the following checks should be made -

- Verify that the electrical supply to the unit is of the correct voltage, and rated for sufficient amperage in accordance with the nameplate values.
- Verify that the low voltage wiring between the unit and the thermostat is correct.
- Confirm that the water piping is complete and free of leaks.
- Check that the water flow rate is correct, and adjust as necessary.
- Confirm that the blower wheel rotates freely.
- All service access panels are in place and properly secured.

A room thermostat should be used to cycle the unit on and off automatically as required to maintain the room temperature at the set point of the thermostat. The air

circulating fan will cycle on and off with the compressor. If desired, the air circulating fan can be run continuously.

The units have a lock out relay that will prevent the unit from cycling on the low pressure cut out or the high pressure cut out. If either of these safety devices open, the compressor will not restart when the safety device resets. To restart the compressor after a safety lock out, it will be necessary to interrupt the power to the control circuit. This can be done at the thermostat or at the disconnect switch.

START-UP

1. Set the thermostat to the highest setting.
2. Set the fan switch to the 'AUTO' position, and the thermostat system switch to 'COOL'.
3. Reduce the thermostat setting to approximately 5 degrees below room temperature.
4. The compressor, and the supply air blower, will start. Simultaneously the reversing valve will be energized.
5. After five minutes, verify cooling mode operation by checking for cool air discharge at the supply air outlet.
6. Set the thermostat system switch to the 'OFF' position. The unit will stop running, and the reversing valve will de-energize.
7. Allow approximately five minutes to allow for system pressures to equalize.
8. Set the thermostat to its lowest temperature setting.
9. Move the thermostat system switch to 'HEAT'.
10. Increase the thermostat setting approximately 5 degrees above room temperature.
11. After five minutes, verify heating mode operation by checking for warm air discharge at the supply air outlet.
12. Adjust the thermostat to maintain the desired space temperature.
13. Check the unit for unusual vibrations, noises, leaks, etc.

WATER REGULATING VALVE - ADJUSTMENT

The water regulating valve needs to be adjusted to maintain a condensing pressure of 170 to 220 PSIG. The valve is adjusted by turning the ¼ inch square shaft on top of the spring housing. Turning the adjusting screw counter clockwise will raise the opening pressure and raise the condensing pressure being maintained. Turning the adjusting screw clockwise will lower the opening point and lower the condensing pressure being maintained. If mains water is being used, make sure the valve closes soon after the compressor stops. If the flow does not stop after a few minutes, raise the opening pressure by turning the adjusting shaft counter clockwise until the flow stops.

If the unit is running on mains water, we recommend adjusting the water regulating valve to give 100°F leaving water temperature or 220 PSIG condensing temperature. This will give the best compromise between low water flow and high operating efficiency. If the condenser water is being re-circulated through a cooling tower or a chilled water system, it is recommended that the water regulating valve be set for a lower condensing temperature. This will provide higher efficiency, lower operating cost and a lower sound level. The minimum condensing pressure required for satisfactory expansion valve operation is 170 PSIG.

MAINTENANCE

The air circulating fan motor has bearings that are factory lubricated and sealed for long life. No further lubrication is required. The compressor is part of a sealed refrigeration system that does not require any additional lubrication.

Filter changes are required at regular intervals. It is suggested that the filter be checked at 60-day intervals for the first year of operation, until field experience is acquired. If light cannot be seen through the filter, it should be changed. Always replace the filter with the same size of 1-inch thick disposable type of fiberglass filter. (See General Data for listing of required filter sizes.)

The condensate drain pan should be checked annually, and cleaned and flushed as required.

Recording of reference operating parameters is recommended (volts, amp draw, water temperature differences, etc.). A comparison of logged data with start-up and annual data is useful as an indicator of general equipment condition.

Periodic lockouts are almost always caused by air or water problems. The lockout of the compressor is a normal protective result of insufficient heat transfer. Check for dirt in the water system, insufficient water

flow rates, excessive water temperatures, air flow rates (dirty filters), and air temperatures.

TABLE 6: R-22 REFRIGERANT CHARGE

UNIT SIZE	CAPACITY TONS	HORIZONTAL	VERTICAL
060	5.0	5 lbs. – 8 oz.	5 lbs. – 13 oz.
048	4.0	4 lbs. – 6 oz.	4 lbs. – 9 oz.
036	3.0	3 lbs. – 5 oz.	3 lbs. – 7 oz.
030	2.5	2 lbs. – 12 oz.	2 lbs. – 14 oz.
024	2.0	2 lbs. – 4 oz.	2 lbs. – 6 oz.
018	1.5	1 lbs. – 12 oz.	1 lbs. – 14 oz.
012	1.0	1 lbs. – 6 oz.	1 lbs. – 7 oz.
009	0.75	1 lbs. – 1 oz.	1 lbs. – 1 oz.
007	0.50	10 oz.	10 oz.

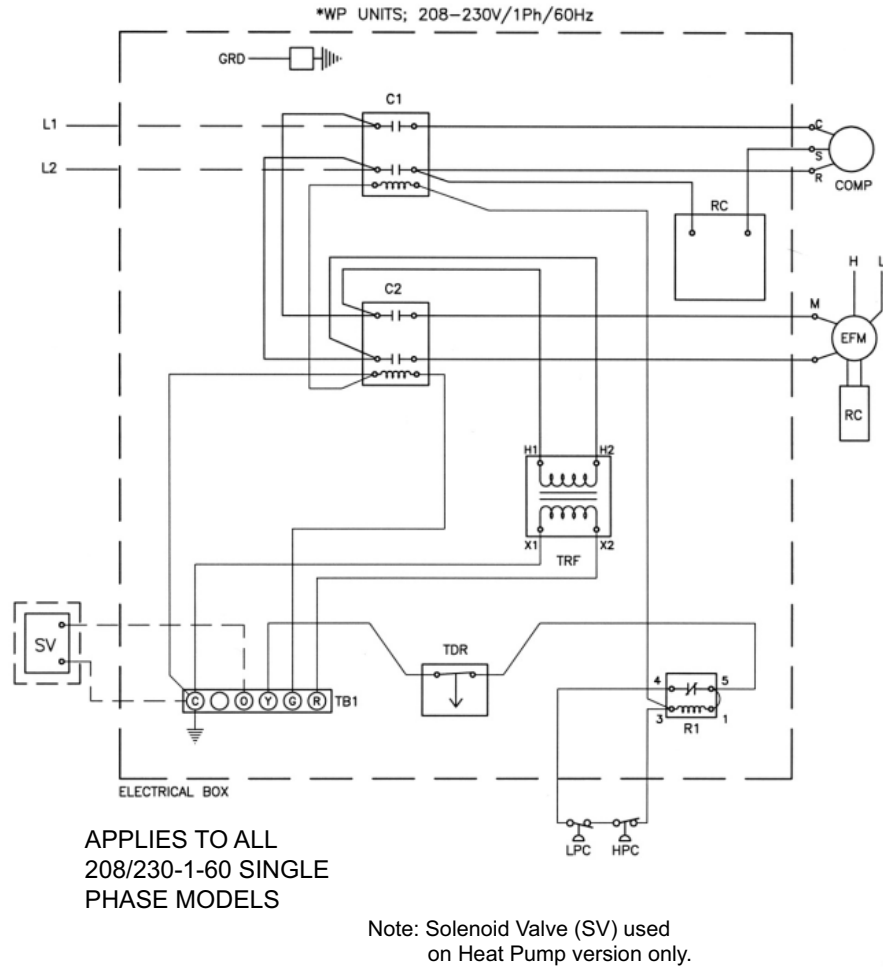


FIGURE 2 : TYPICAL SINGLE PHASE WIRING DIAGRAM

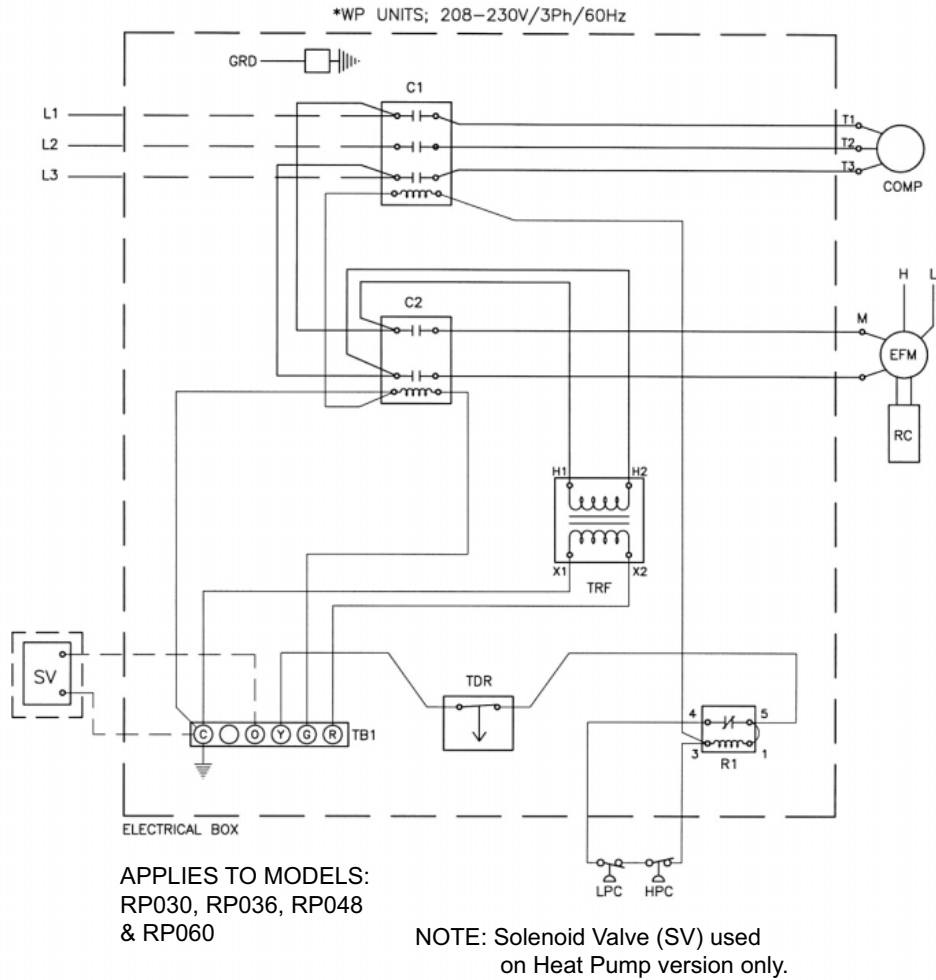


FIGURE 3 : TYPICAL THREE PHASE WIRING DIAGRAM

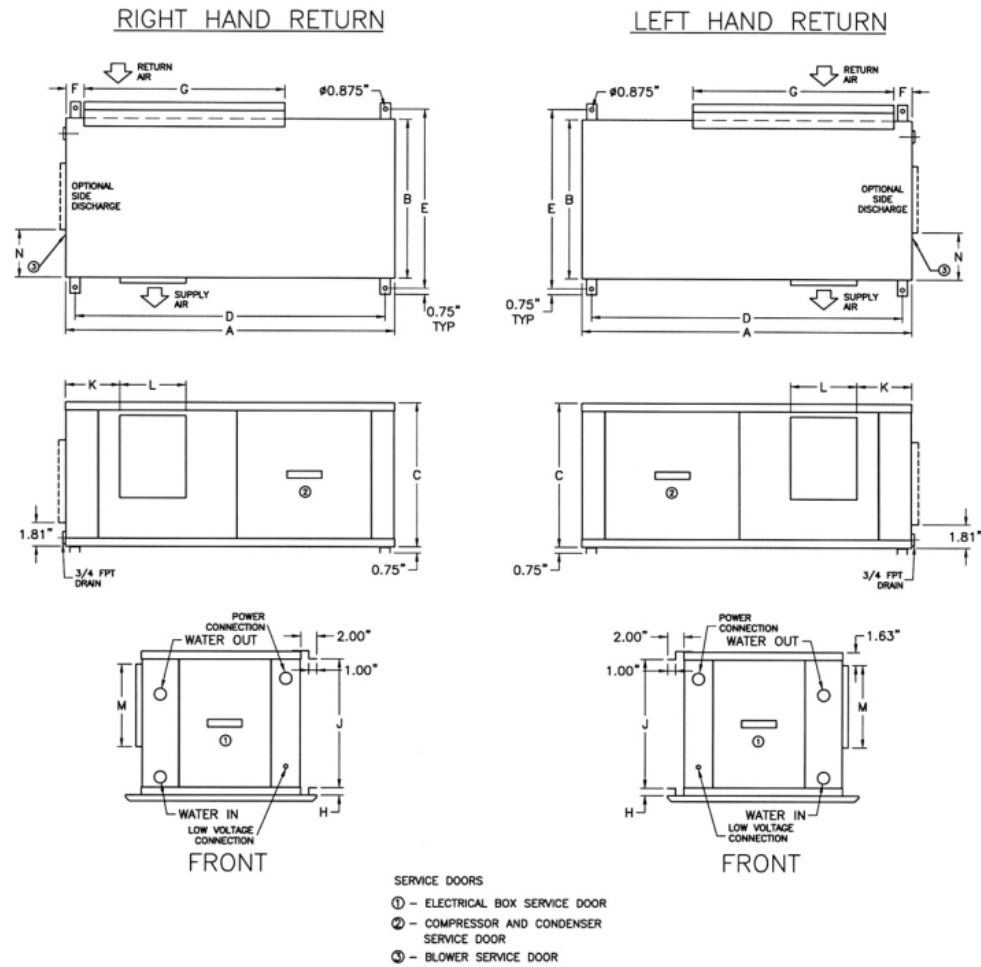


FIGURE 4 : HORIZONTAL MODELS - DIMENSIONS

TABLE 7: HORIZONTAL MODELS - DIMENSIONS

	A	B	C	D	E	F	RETURN AIR			K	SUPPLY AIR		N
							G	H	J		L	M	
007	34.50	19.00	15.00	32.25	21.50	2.56	15.00	2.00	12.00	5.75	6.81	10.31	3.75
009	34.50	19.00	15.00	32.25	21.50	2.56	15.00	2.00	12.00	5.75	6.81	10.31	3.75
012	34.50	19.00	15.00	32.25	21.50	2.56	15.00	2.00	12.00	5.75	6.81	10.31	3.75
018	40.00	21.00	16.00	37.75	23.50	2.56	18.00	1.00	14.00	6.50	8.25	10.31	3.75
024	45.00	21.00	18.00	42.75	23.50	2.25	25.00	1.00	16.00	6.50	9.19	10.31	4.81
030	45.00	21.00	18.00	42.75	23.50	2.25	25.00	1.00	16.00	6.50	9.19	10.31	4.81
036	48.00	23.00	20.00	45.75	25.50	2.25	25.00	1.00	18.00	6.50	9.19	10.31	5.88
048	58.00	25.00	20.00	55.75	27.50	2.25	38.99	1.00	18.00	6.00	12.25	11.38	5.13
060	63.00	25.00	20.00	60.75	27.50	2.25	42.00	1.00	18.00	6.00	12.25	11.38	5.13

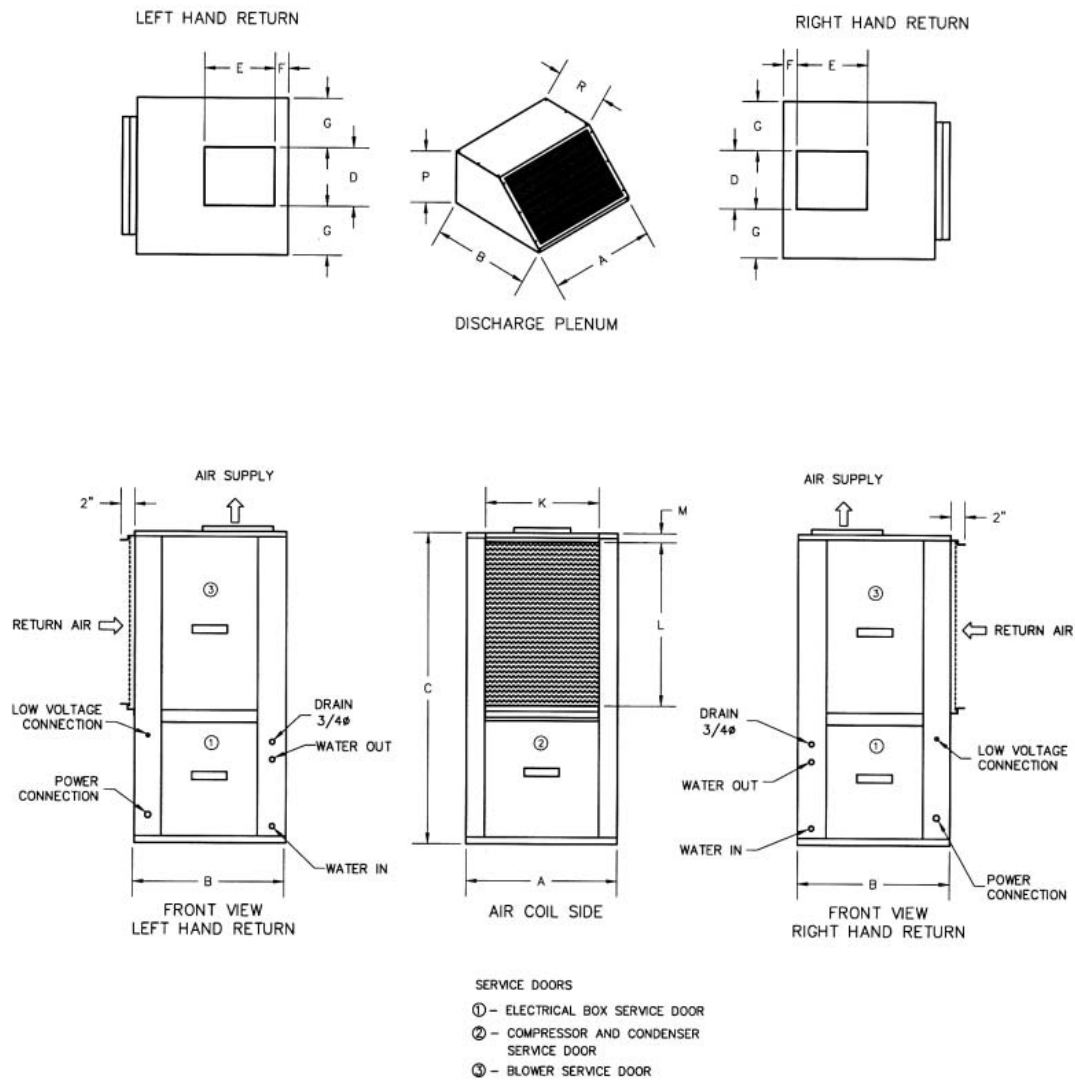


FIGURE 5 : VERTICAL MODELS - DIMENSIONS

TABLE 8: VERTICAL MODELS - DIMENSIONS

	A	B	C	AIR SUPPLY		F	G	RETURN AIR			OPTIONAL PLENUM	
				D	E			K	L	M	P	R
007	22.50	22.50	33.00	6.81	10.31	2.00	7.81	14.88	12.50	1.25	N/A	N/A
009	22.50	22.50	33.00	6.81	10.31	2.00	7.81	14.88	12.50	1.25	N/A	N/A
012	22.50	22.50	33.00	6.81	10.31	2.00	7.81	14.88	12.50	1.25	11.50	12.00
018	22.50	22.50	35.00	8.25	10.31	2.00	7.13	16.88	14.50	1.25	11.50	12.00
024	22.50	22.50	45.00	9.19	10.31	2.00	7.13	16.88	23.50	1.25	11.50	12.00
030	22.50	22.50	45.00	9.19	10.31	2.00	6.63	16.88	23.50	1.25	11.50	12.00
036	24.50	24.00	45.00	9.19	10.31	3.00	7.63	18.88	23.50	1.25	12.50	12.50
048	29.50	27.50	52.00	12.25	11.38	3.00	8.63	23.00	28.50	0.75	14.19	14.31
060	29.50	27.50	56.00	12.25	11.38	3.00	8.81	23.00	32.50	0.75	14.19	14.31

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Supersedes: Nothing

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