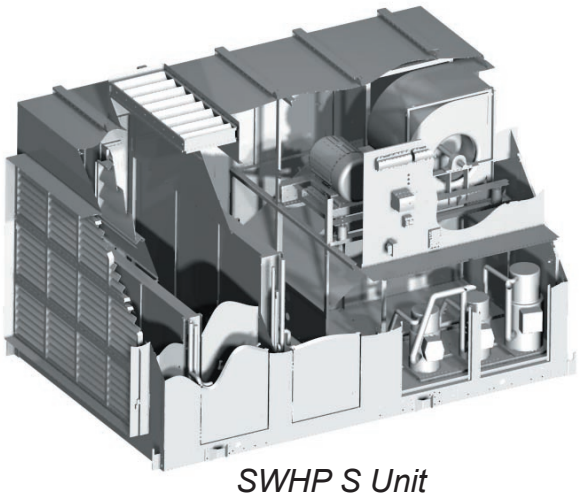
PoolPAK International

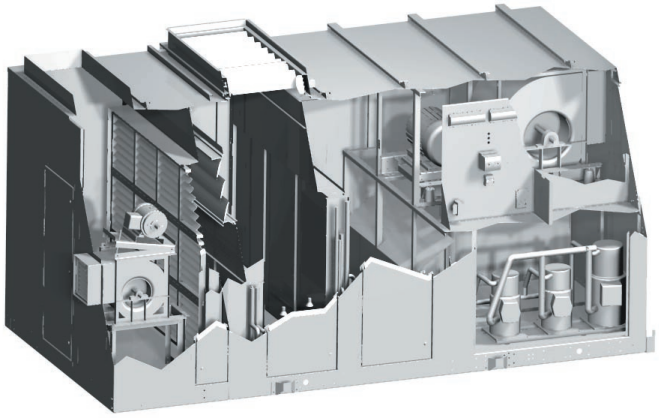
POOLPAK S SERIES MANUAL

- APPLICATION
- SPECIFICATION
- INSTALLATION
- OPERATION
- MAINTENANCE

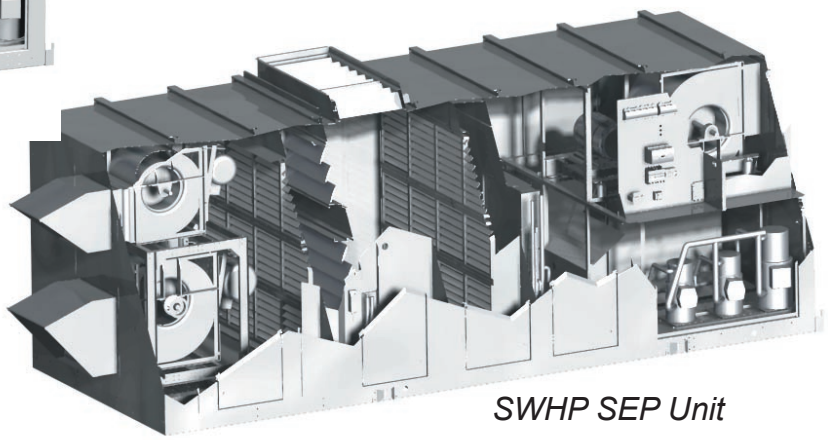
Packaged Natatorium Environment Control and Heat Recovery System



SWHP S Unit
Supercedes SWHP Single Fan



SWHP SE Unit



SWHP SEP Unit

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INTRODUCTION

CREATING AN IDEAL ENVIRONMENT FOR INDOOR POOL FACILITIES

Indoor pool facilities are unlike any other structure in design, construction, and maintenance requirements. Air and water temperatures and humidity are especially difficult to control, and improper control usually results in an uncomfortable environment, excessive operating costs, and possibly serious structural damage. Effectively controlling these special conditions require control hardware and control sequences specially engineered for natatorium applications. The “PoolPak System” utilizes an environmental control package designed to meet all special needs of the indoor pool environment, while reducing energy usage and building maintenance costs.

KEY BENFITS

Automatic Control of Air and Water Temperatures and Humidity

An integral part of the PoolPak System is a proven microprocessor control system which automatically senses and maintains comfort conditions. Sensors detect changes in humidity and air temperature in the indoor pool environment and quickly regulate supply air conditions to meet set point comfort levels, even during periods of unusually heavy pool use. The PoolPak System also continuously monitors pool water temperature and adds heat as necessary. To prevent condensation on walls and windows, The PoolPak System automatically adjusts humidity in response to changes in wall or window surface temperatures. As the seasons and weather conditions change, the PoolPak System changes its own mode of operation. Throughout the year, PoolPak thinks “efficiency”and automatically selects the least expensive energy source for pool air and water heating needs.

Prevention of Building Damage

Effective control of humidity and temperature conditions in the indoor pool environment eliminates condensation on interior surfaces. Laden with pool chemicals, this condensation encourages mold, mildew, paint blistering, paint peeling, and rust. Steel supports, lockers, light fixtures, and hardware along with heating and air conditioning systems can quickly corrode beyond repair. In many cases, reinforcement steel embedded in concrete can be seriously damaged and weakened by the percolating effects of pool chlorine and moisture condensation. The PoolPak System helps to significantly reduces routine maintenance costs while preventing structural damage.

Reduction in Energy Costs

The PoolPak System dramatically reduces energy costs by recycling thermal energy recovered in either the dehumidification and/or air conditioning modes and using that thermal energy to heat the pool water.

The PoolPak System offers significant advantages compared to either conventional heat or ventilation natatorium systems, which waste energy and money by exhausting large volumes of indoor air, or to improperly applied dehumidifiers, which waste dollars and energy, and may provide inadequate control.

Application of Heat Pump Technology

Through the use of heat pump technology, PoolPak automatically performs the following seven functions:

- Dehumidification/Humidity Control
- Natatorium Space Heating
- Pool Water Heating
- Proper Ventilation
- Recovery of Reusable Heat
- Natatorium Space Cooling
- Wall Condensate Prevention

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AREAS OF APPLICATION

PoolPak units have been designed to control humidity for a wide range of applications, specifically small and medium size indoor pools. Some of these applications include:

- Hot Tubs, Spas, and Whirlpools
- Residential Pools
- Hotel and Motel Pools
- School Natatoriums
- YMCA and Club Pools

For humidity control in rooms where pool water heating via heat recovery is not feasible or in commercial or industrial applications, e.g., hospitals, printing areas, confectioneries, therapy pools, community and recreation centers, process control areas, greenhouses, farms, restaurants, warehouses, aquariums, beverage bottling plants, dairy production facilities, breweries, fire stations, basements, locker rooms, museums, libraries, photo labs, fish hatcheries, plastics industries, archives, theaters, laboratories and computer rooms, use High Capacity Dehumidifiers (HCD) by PoolPak International.

EFFECTS OF MOISTURE

Excess humidity in natatorium structures may be readily apparent as condensation on cool surfaces such as windows and outside doors, the growth of mildew or mold, and, when coupled with poor pool chemistry, the accelerated corrosion of metals. In its less obvious forms, moisture may penetrate walls and ceilings and cause rot that becomes noticeable only when large scale structural failure occurs. Humidity levels are also a major factor in the comfort of pool users.

MOISTURE LOADS

An indoor swimming pool produces large quantities of water vapor through evaporation, which accounts for roughly 95% of the pool water heat loss, making the water colder. This excessive humidity will form damaging condensation unless removed from the building. In the past, the method of removing this water vapor was by ventilating an otherwise energy efficient building, exhausting the humid air and the energy it contained. Then, additional energy was used to bring in and heat the make-up air and to heat the pool water. The ideal solution to removing the water vapor from the pool area is to convert the latent (wet) heat contained in the moist air back into sensible (dry) heat, and put that heat back into the pool water and air. This is the principle of the PoolPak units.

PoolPak Dehumidification Systems reduce the energy input required to maintain pool water and air temperatures. By dehumidifying the air and recycling the latent energy back into the pool air and water, the unit will reduce operating costs when compared to conventional heating and ventilating systems. Pool water and enclosure heating are still required but with greatly reduced requirements. PoolPak International recommends that backup heating equipment for both pool water and pool enclosure air be capable of carrying the full system heating requirements. This makes for a well-designed system that will provide the least amount of pool down time if unforeseen system problems occur. Building conductive loads and other losses must be taken into consideration.

A PoolPak unit, when matched correctly to the evaporation rate of the pool water and overall dehumidification requirements, will efficiently maintain the pool air at relative humidity levels between 50 and 60%. It should be noted that a lower evaporation rate occurs when the pool enclosure's air temperature is maintained above the pool water temperature. Evaporation losses, and the energy required to maintain desired room conditions, will dramatically increase if the air temperature is allowed to fall below the pool water temperature. It is recommended that the continuous dry bulb temperature entering the evaporator of the PoolPak units not fall below 75°F.

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ROOM AIR DISTRIBUTION

All PoolPak models provide continuous air recirculation, and with a good air distribution system, will promote uniform space conditions. To remove the required moisture and maintain controlled conditions, it is essential that there be adequate air movement and distribution in the natatorium. The unit must remove the humid air from the pool area and discharge the dehumidified air back into it. The supply air should be distributed over areas subject to condensation (windows, outside walls, support trusses, skylights, etc.).

AIRSIDE DESIGN

The supply air volume and external static pressure capability of the fan is given for each model in the Performance Section. It is recommended that an experienced engineering or mechanical contracting firm do the design, sizing and layout of the duct system.

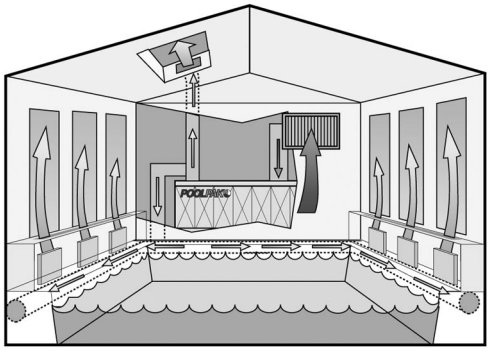
SUPPLY DUCT

After dehumidification, dry air is supplied back to the room. Supply air may be distributed from a duct around the perimeter at floor level or from above, directing the air over outside walls, windows and other surfaces susceptible to condensation or down the center of the room blowing air toward the surfaces prone to have condensation. See figures below for illustration. The recommended volume of supply air should provide three to six air changes an hour. Caution should be taken not to short circuit air between the return and supply as this will cause air stratification and pockets of high humidity.

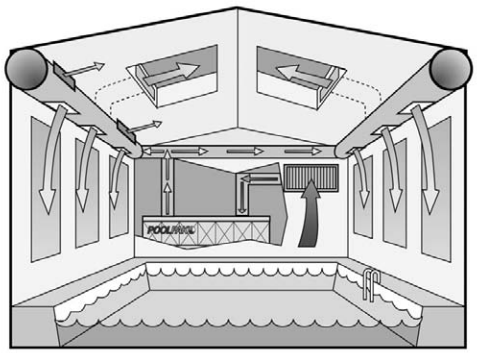
- Supply ducts should be as short and with as few turns as possible. Use turning vanes to minimize air noise and static pressure drop.
- Do not direct the supply air at or across the pool surface as this increases the evaporation rate.
- Recommended maximum supply duct air velocity is 1000 FPM. The recommended velocity from diffusers is 300 to 500 FPM.
- In multiple unit installations, supply air from each unit may go into a common supply duct or into a plenum.
- A supply air duct collar is provided at the fan outlet. The duct should be attached to this with a flexible rubber or canvas connection to minimize vibration transmission.

RETURN DUCT

The unit will operate most efficiently in a natatorium where the supply and return openings are placed diagonally opposite each other. All ducting should be done in accordance with acceptable practices.



Below Grade Air Distribution System



Overhead Air Distribution System

AIR DISTRIBUTION

All supply and return duct work to the unit should be installed such that no condensate occurs in the duct work. Duct turns and transitions must be made carefully to keep friction losses to a minimum. Duct elbows should contain splitters or turning vanes and should avoid short turns.

Duct work that is connected to the fan discharge should run in a straight line (refer to **Table App-2** for minimum length per PoolPak model) and should not be reduced in cross-sectional area. Duct turns should be in the same direction as fan rotation. Never deadhead the fan discharge into the flat side of a plenum.

Duct work attached to the PoolPak unit return air connection must be done in accordance with SMACNA (NAME OF DOCUMENT AND SECTION).

Supply and return duct work should have all seams sealed before applying insulation to the exterior of the duct work. The insulation's seams must be sealed, wrapped, and mastic coated. Use of pre-insulated duct work (interior) is acceptable if it meets local codes; however, all seams must be sealed prior to startup.

The following design criteria give the best results when designing duct work:

- The most even control of space conditions occurs with proper air distribution and an air flow rate equivalent to three to eight air changes per hour. This provides space control without excessive loading and unloading of the dehumidifying equipment

  NOTE
  Ductwork connections over 5 feet long must be supported to avoid damage to unit.

- Supply outlets and return grilles should be carefully placed to avoid short-circuiting in the space. Short-circuiting creates stagnant areas where humidity and temperatures may build up to undesirable levels, reducing the effectiveness of the PoolPak System.

- Supply air should be directed 45 degrees up and down (most of the air will be directed downward) toward exterior walls, windows, skylights, and other areas where stagnant conditions could cause humidity buildup and condensation problems or drafts. The end result of the supply air ducts is to wash the surfaces of the pool room that are prone to condensation with the warm, dry supply air.

- Supply outlets should not discharge directly onto surfaces where drafts may be created that will blow on swimmers walking along the edges of the pool.

- Supply outlets should not discharge directly onto pool surfaces where drafts will cause swimmer discomfort and increase the evaporation rate.

- Diffusers for supply ducts located overhead (as opposed to under the deck) must be sized such that the supply air will be thrown all the way to the deck and wash the entire wall surface from supply duct to the floor.

- Spectators should have supply air directed toward their faces.

- Return grilles should be placed as high in the space as practical without causing short-circuiting of the air.

- Return air ducts in the section just prior to entering the Poolpak unti return air opening, and elbows in both the return and supply air ducts must comply with the guidelines set forth in SMACNA HVAC Duct Construction Standards – Metal and Flexible – Third Edition, Chapter 4.

- Air velocities in ducts should be kept as low as is reasonable to avoid excessive noise in the ducts.

- The outside air intake and exhaust must have rain hoods if the unit is mounted outdoors.

A sample rain hood design is illustrated in **Figure App-3**. The intake and exhaust should be screened to prevent the entrance of foreign matter. Also, when auxiliary gas heat is selected (in an outside installation), a combustion air louver or rain hood is required.

Short Flexible connections of rubber or canvas can be made between the return duct and the unit to eliminate vibration transmission through the duct.

PoolPak International does not recommend the use of equipment rooms as return air plenums due to the potential of corrosion for components installed inside the mechanical room. The return air duct should always connect the pool enclosure to the return air plenum collar of the PoolPak unit(s).

- PoolPak models include a factory mounted and wired space temperature and humidity sensor at the return air opening of the unit.
- When installing a unit with the economizer option, the space temperature and humidity sensor is shipped loose for field mounting. Refer to the installation section for mounting location. Caution should be exercised.
- When the outside air option is selected, adequate exhaust capacity via a separate fan must be specified to ensure the natatorium remains slightly negative. Failure to specify an adequately sized exhaust system may result in damage to the structure and pool odors may be forced into other areas of the building.

> ***NOTE***
> ***Connection of outside air intake ducts to the return duct ahead of the evaporator coil is not recommended. The following conditions may occur as a result:***

- Loss of control of the space temperature and humidity due to the space temperature and humidity sensor indicating the mixed air temperature is higher or lower than actual space conditions.
- The compressor may cycle on low pressure or defrost fault conditions dependent upon the mixed air temperature.
- Potential moisture damage in the return duct due to condensation from cold outside air mixing with warm, humid return air.

OTHER AIRSIDE CONSIDERATIONS

- A hot water, electric or gas duct heater may be installed in the supply duct to provide auxiliary space heating. Be sure that the additional air pressure drop across the heater is accounted for in the unit fan selection. These heating components must be designed for use in swimming pool environments.
- Outside air may be introduced into the PoolPak unit by attaching a duct to the unit as shown on the Typical PoolPak System Layout (**Figure Inst-1**). When outside air is ducted into the PoolPak unit, an exhaust fan must be installed in the space to remove a slightly greater amount of air from the space.
- Maintain the enclosure at a slightly negative pressure. This will help eliminate moisture and chemical odor migration to other spaces. The exhaust fan should be sized about 10% greater than the amount of outside air being introduced into the space.
- Ducts can be fabric, aluminum, PVC, or galvanized steel. Even though “dry air” is being supplied back to the pool, do not use duct board or similar materials. If the PoolPak unit is installed in an area that is below the natatorium’s dew point temperature, the ducts may require insulation, pitching and drainage.

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FUNCTIONAL DESCRIPTION OF SYSTEM

Primary Function

The primary function of the PoolPak System is to provide environmental control of the space through the use of heat pump technology. Heat from the warm, humid pool air is recovered for reuse while the air is dehumidified and cooled. The recovered heat is then used to heat the supply air and, if necessary, the pool water. See **figure Intr-1** for a schematic overview.

Air Flow

Warm, humid air from the pool enclosure is received in the return air section of the PoolPak unit. The return air is cooled and dehumidified as it passes over the evaporator coil. The sensible (dry) and latent (moist, change of state) heat is extracted from the return air. After the return air passes through the evaporator and enters the mixing plenum where the air is mixed with air from the outside, the air mixture is then drawn over the condenser/reheat coil by the supply fan.

If an optional auxiliary heating system is installed, the air is heated further by the system as required. The supply fan then supplies the warm dry air to the pool enclosure.

Refrigeration Circuit

Heat from the return air is absorbed by refrigerant in the evaporator coil, causing the refrigerant to flash from a liquid to a vapor. Cold refrigerant gas leaving the evaporator coil is supplied to the suction of the compressor. This refrigerant gas is compressed to a higher pressure and temperature. The high pressure hot gas from the compressor can be supplied, as required, to the condenser/reheat coil (for reheating the air), to the pool water condenser (for heating pool water), or to the optional auxiliary condenser (either air or water cooled when air conditioning is needed) by microprocessor-controlled solenoid valves.

Hot gas supplied to the condenser/reheat coil releases the recovered sensible and latent heat along with the added heat from the compressor to the supply air as it passes through the coil, causing the refrigerant to condense into a liquid. This hot liquid refrigerant is then stored in the receiver.

If the gaseous refrigerant is not needed for reheat, it is routed to the pool water condenser, and it gives up recovered heat to the incoming cooler pool water, causing the refrigerant to condense.

Optionally, when the hot gas is not needed for reheat or pool water heating, it is supplied to an auxiliary, external A/C condenser, which removes the heat from the refrigerant gas. The hot liquid refrigerant is then stored in the receiver. Liquid refrigerant stored in the receiver passes through an expansion valve(s), where the refrigerant is expanded to the operating evaporator pressure and temperature. The cycle then repeats itself.

Auxiliary pool water heating

An auxiliary pool water heater (supplied by others) is installed in the pool water return line. The auxiliary pool water heater is automatically cycled by the PoolPak System microprocessor control system and is turned on only when the heat available from the PoolPak unit is insufficient to heat the pool water.

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APPLICATION

PIPING INTERFACES

POOL WATER PIPING

PoolPak Pool Water Circulation Loop

The PoolPak unit pool water condenser **(full or partial)** must be connected to a secondary circulation loop with its own circulation pump (field-supplied) to obtain the required design water flows, which are outlined in **Table App-1**. A typical piping configuration is shown in **Figure App-1**.

The secondary pool water loop supply must come from the main pool water distribution line downstream of the main pool water pump. The take of to the auziliary pool water heater and the pool filter. The discharge from this secondary loop goes back into the primary distribution line downstream of the secondary loop supply and upstream of the auxiliary pool water heater. This location is required so that the PoolPak unit will sense the actual pool water temperature.

The secondary circulation loop should be located near the mail pool water distritbution line on the supply line of the secondary loop feeding the PoolPak unit. The pump should be self-priming and vented. The pump should be located at the lowest point possible in this secondary circulation loop. For example, if the PoolPak unit is located on a mezzanine and the main pump filter are located in the basement below the mezzanine, the seond pump should be located in the basement with the filter, not on the mezzanine with the PoolPak unit . Particular attention must be given to venting when the PoolPak unit is installed above the level of the main pool water system. When designing a system that has over 20 to 30 feet of vertical rise, the system should be considered to be open (size pump accordingly, assuming no gravitational assistance).

Pool Water Heater

The auxiliary pool water heater **(field-supplied)** must be installed downstream of the PoolPak unit's secondary loop discharge. It is normally installed in its own secondary loop as shown in **Figure App-1**. The auxiliary pool water heater is controlled by the PoolPak System. It is only turned on either when the heat available from the PoolPak is insufficient for pool water heating and pool water temperature drops to 1.5°F below set point or when the pool water flow to the PoolPak unit is below the minimum required water flow.

The normally-closed auxiliary pool water heater contacts (terminals T9-7 and T9-8) open when the pool water temperature, as sensed by the PoolPak System water temperature sensor, rises above the setpoint. This prevents the auxiliary pool water heater from energizing. The contacts close when the pool water temperature falls below the set point or when there is a shutdown of the PoolPak control system. This provides fail-safe heating of the pool water via the auxiliary pool water heater. These contacts must be used to interrupt the signal from the auxiliary pool water heater thermostat. The auxiliary pool water heater thermostat should be set approximately 2°F above the PoolPak System pool water temperature set point. If the pool water flow switch shows a lack of flow to the PoolPak unit water condenser and temperature sensor, the correct water temperature cannot be determined by the PoolPak controls, and the PoolPak control will maintain the auxiliary pool water heater contacts in the closed position, returning control to the auxiliary pool water heater thermostat.

Main Pool Water Pump and Auxiliary Pool Water Loop Pump Interlocks

The main pool water distribution pump and the auxiliary pool water loop pump must each have its own start/stop switch. Check the main pool water pump starter for a set of auxiliary contacts. If the starter does not have a set of auxiliary contacts, install an auxiliary contact kit, available for most starters in use today.

Wire the main pool water pump's auxiliary contacts in accordance with the manufacturer's specifications, and run the wires to the PoolPak unit auxiliary pool water loop pump starter. Wire the auxiliary pump so that it operates only when the main pool water pump operates. This interlocking is necessary to prevent overheating and possible damage to the pool water piping and auxiliary pool water loop pump.

Hand Valves

Hand stop valves and pressure gauge stopcocks are factory-installed in the pool water supply line and return line inside the PoolPak unit for servicing. A third hand valve (field-supplied) should be installed upstream of the auxiliary pool water pump so that the pump can be isolated for service. A fourth hand valve (field-supplied), installed in the main pool water line between the secondary loop supply and return, is normally required to balance the flow in the PoolPak unit secondary loop. **Figure App-1** shows the locations of the hand valves.

Flow Switch

A pool water loop flow switch is factory-installed in the PoolPak unit. The flow switch is factory-calibrated and should not be adjusted. If the flow switch contacts are not closed when water is flowing through the PoolPak unit, this is an indication of insufficient water flow. The PoolPak unit can be operated with inadequate water flow; however, the PoolPak System will not go into a water-heating mode until the water flow switch contacts are closed by sufficient water flow.

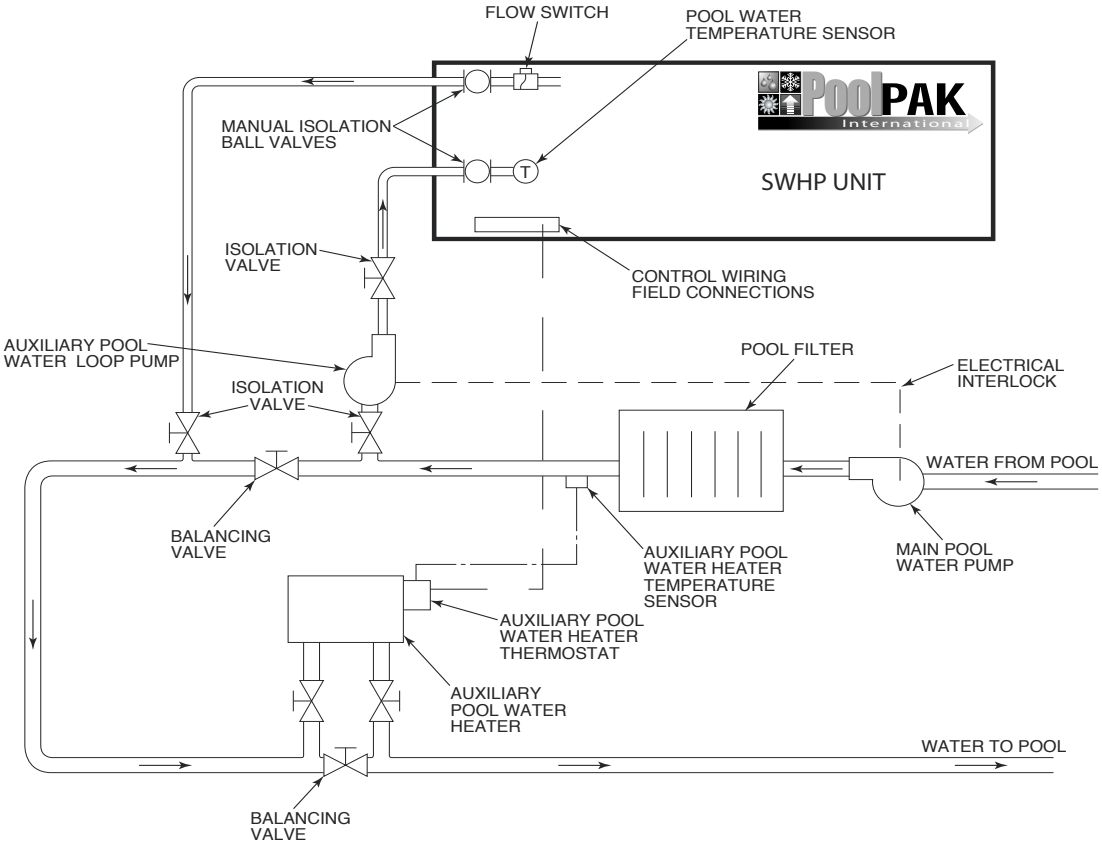

Figure App-1 Pool Water Piping Schematic

Pool Water Piping Composition

Pipe must be a suitable material such as CPVC Schedule 80 plastic pipe. **PVC, copper, iron or steel pipe is NOT suitable**. It must be kept free of all foreign matter.

Freeze Protection

Any pool water piping (field-supplied) exposed to outdoor ambient air temperatures must be protected against freezing. Wrap pipes with electric heat tape (follow manufacturer's instructions) controlled by an automatic thermostat and set at a minimum of 35°F. Insulate all piping. Insulation must be sealed at all seams. Power for the field-installed heat tape must be supplied external to the PoolPak unit.

Condensate Piping

The drain pans are connected to a common drain system that directs condensate out both sides of the base frame or through the base for curb-mounted PoolPak units. The condensate drain trap and piping can be installed at either side of the unit. The trap and piping must be supplied and installed by the customer. The drain connections not trapped must be permanently sealed with a suitable PVC plug. Provisions MUST be made for disposal of condensate as directed by local plumbing code.

▲CAUTION
If condensate is returned to a closed filter system that does not have a surge tank, care must be taken to ensure free flow of condensate back to the closed filter.

Condensate from the dehumidifier coil will have nearly the same properties as the pool water itself. It is recommended that building materials subjected to condensate and that systems used for condensate disposal be checked for compatibility. For drain piping, use PVC minimum Schedule 40 plastic pipe. The drain line must be trapped and sloped to provide proper drainage. The trap depth must be a minimum of 2 inches (see **Figure App-2**).

Drain line exposed to outdoor ambient temperatures must be protected against freezing. Wrap lines with electric heat tape (follow manufacturer's instructions) controlled by an automatic thermostat set at a minimum of 35°F to protect against freezing. Insulate all piping. Insulation must be sealed at all seams. Power for heat tape must be supplied external to the PoolPak uni

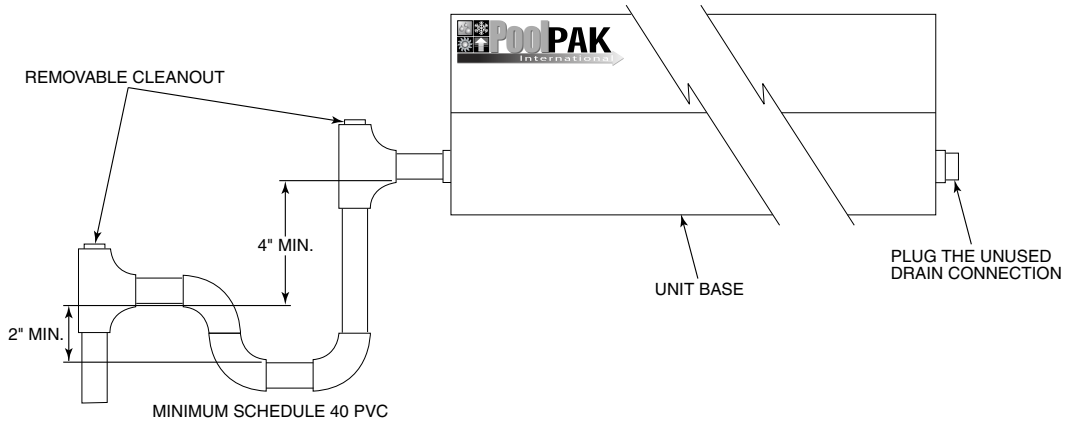

Figure App-2 Condensate Drain Trap

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UNIT CONTROLS AND SEQUENCE OF OPERATION

ELECTRONIC CONTROL CENTER III

The PoolPak System is controlled by the Electronic Control Center III (ECC III). The ECC III controller (**Figure Intr-3**) is a microprocessor-based system that incorporates all of the functions necessary to maintain correct natatorium space temperature and humidity, to introduce outside air and exhaust stale building air, to control pool water temperature, and to maintain occupied/unoccupied schedules. All programming resides in the ECC III controller.

System parameters and/or system status readouts are provided on the unit-mounted or remote-mounted display/ keypad panel, also known as the Remote Interface Unit (RIU) (**Figure Intr-3**).

The memory of the ECC III controller has a fault code history log. This log will record the last 50 faults in the order of their occurrence. Each code will be recorded along with the date and time it occurred and the values of the critical system parameters. This fault code history log is accessible at the control panel via the ECC III controller and at the remote display /keypad panel (Remote Interface Unit, RIU). The fault code history log is also accessible with the optional Remote Access Package (RAP) server via a modem (telephone line) or an Internet (10 BaseT ethernet) connection. This Remote Access Package is available only with a LonWorks® based Building Automation System (BAS).

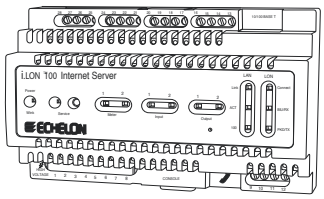
The PoolPak ECC III also has the option to be directly connected to several different Building Automation Systems (BAS). The ECC III can be connected to either a LonWorks® based BAS or a Modbus® RTU based BAS.

All PoolPak System operating and logic controls are factory mounted and wired. The control sequences are designed specifically to control swimming pool environmental conditions.

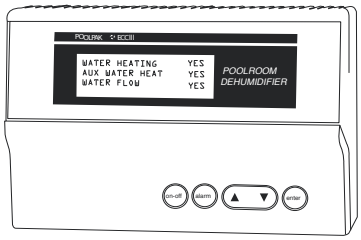
As a minimum, the PoolPak control system provides full modulation of the heat recovery/heating system by proportional control of dry bulb temperature, relative humidity, interior building-skin-temperature-based humidity reset.

The PoolPak unit's controls automatically operate the heating, dehumidification, and heat recovery system in response to the greatest requirements while adjusting unit outputs to maintain building conditions. The PoolPak unit controls are capable of providing full heating capacity to either air or water and of providing proportional control of heating and dehumidification by loading stages of compressor capacity as necessary. As building requirements are satisfied, the compressor unloads and shuts off.

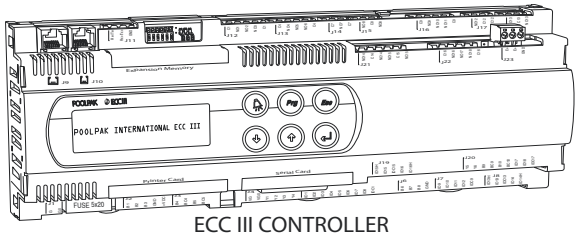
Additional PoolPak unit functions are discussed in the following paragraphs.



ECC III REMOTE ACCESS PACKAGE (RAP) (LonWorks® only)



ECC III REMOTE DISPLAY/KEYPAD PANEL (REMOTE INTERFACE UNIT, RIU)



ECC III CONTROLLER (LonWorks® or Modbus® Interface)

Figure Intr-3 PoolPak ECC III

SET POINTS

The space temperature, space relative humidity, pool water temperature, time of day, day of week, maximum damper opening, minimum damper opening, and occupied/unoccupied schedules are entered from the keypad on the Control/Display module. All set point and schedule information is maintained in a nonvolatile memory so that the information is not lost in case of a power failure.

When a change in set point is made, depending on the magnitude of the change, it may take an hour or longer for the space and/or water conditions to come to equilibrium. Do not expect the water temperature to change rapidly.

Space Temperature

The recommended setting for the space temperature is between 80°F and 88°F. The space tempertaure should normally be set about 2°F higher than the desired pool water temperature, but should rarely exceed 88°F

Space Relative Humidity

The recommended setting for the space relative humidity is 60%. To obtain lower relative humidity settings, a significantly larger tonnage refrigeration system will be required and the longer the compressor will be required to run, resulting in higher the operating cost and first cost.

Pool Water Temperature

Refer to **Table Intr-2** for the recommended pool water temperature settings.

Application	Recommended Temperature Settings
Competitive Swimming	77°F to 80°F
Diving Pools	82°F to 86°F
Recreational Pools	80°F to 85°F
Therapy Pools	86°F to 92°F
Whirlpools	99°F to 104°F

Table Intr-2. Pool Water Temperatures

Time/Date

The time of day and the day of the week are maintained by the ECC III, which has a replaceable battery backup. The battery will maintain the correct settings for a period of several weeks without external power. Time and day settings can be made from the keypad.

Occupied/Unoccupied Schedules

Occupied and unoccupied times may be entered on a weekly basis. During unoccupied periods, the outside air damper automatically closes and the evaporator bypass damper opens. During occupied periods, the outside air damper opens and the evaporator coil bypass damper closes.

CONTROL FUNCTIONS

Ventilation

The PoolPak System provides outside air ventilation to satisfy minimum air ventilation requirements per ASHRAE 62-2004 Ventilation Standard.

Space Heating

Space heating via heat recovery uses full proportional control of the space dry bulb temperature by staging compressor loading of unit capacity with humidity override. Heat is recovered automatically from the pool room return air. The PoolPak System automatically controls the output of the optional factory-installed auxiliary air-heating coil which can be hot water, steam, electric, or gas.

Humidity Control

The PoolPak System provides full proportional control of relative humidity by staging unit compressors. The humidity controller energizes the compressor. The moist air from the pool room is drawn over the evaporator coil, where the air is cooled below its dew point. In this cooling process, the moisture in the return air is condensed onto the evaporator coil. The heat recovered in the refrigerant from the dehumidification process is directed to the air reheat condenser if the space needs heating or to the pool water condenser if pool water temperature is below the set point.

Pool Water Heating

If the space temperature is at or above the set point and the pool water temperature is below the set point, hot gas is directed to the pool water condenser when the compressor is running. During times when the pool water requires more heat than is available from the pool water condenser, the PoolPak activates the auxiliary pool water heater.

NOTE
Contact factory for pool water temperatures greater than 87° F.

Cold Surface Temperature Sensor/Humidity Reset Control

Every pool room has one surface that sweats before the other surfaces. PoolPak System helps to prevents moisture from condensing on this troublesome surface by monitoring its temperature with the PoolPak System Cold Surface Temperature sensor.

When the temperature of the cold surface at the sensor drops to within 5°F of the dew point temperature of the space air, the PoolPak automatically resets the relative humidity set point downward. This condition causes the dehumidifier system to activate humidity control, lowering the space dew point and preventing condensation on the cold surfaces.

Typical locations for this condensate prevention surface temperature sensor are north facing exterior walls, windows, window/door frames, and skylights.

Occupied/Unoccupied Control Mode

The PoolPak System time clock allows 7-day, 24-hour scheduling of operational control for both occupied and unoccupied times during the year. During unoccupied times, the outside air damper is kept in the closed position to minimize the air-heating load. During occupied times, the outside air damper is open to its programmed position.

ELECTRICAL INTERFACES

Electrical Information

Compressor Starting Equipment and Power Supply

Compressor motor starters, thermal overloads, and relevant controls are included and wired within the control center of the PoolPak unit and do not require additional wiring by the installing contractor.

The starting contactors are factory-wired to terminal blocks inside the control center for field connection.

Fan Starting Equipment and Control Panel Power Supply

Fan motor starters, thermal overloads, and relevant controls are included and wired within the control center. Control panel power is factory-wired from the supply side of the fan motor starters.

The starting contactors are factory-wired to terminal blocks inside the control center for field connection on the supply side.

General Electrical Supplies

All wiring, disconnects, fuses, etc. are to be supplied and installed by the customer unless these options have been special-ordered from PoolPak.

Field-Installed Sensor Mounting

Outside Air Temperature and Relative Humidity Sensor

This factory-supplied combination sensor is to be field-mounted outdoors in a location that is out of direct sunlight. A double factory provided radiation shield must be used if the sensor will be in direct sunlight. The sensor may be mounted on a north-facing building wall, as explained below, for indoor PoolPak units.

For indoor applications, mounting the outside air Temperature and Relative Humidity sensor in the outside air intake duct is not permissible because true outdoor temperature and humidity will not always be available.

The sensor should be mounted on a north wall, out of direct sunlight and away from other heat sources which can cause erroneous temperature readings. A wooden or two-layered aluminum sun shield should be constructed if the sensor must be mounted in an area exposed to direct sunlight.

Cold Surface Temperature Sensor

The purpose of the cold surface temperature sensor is to measure the temperature of the coldest surface in the pool enclosure. When the temperature of the interior surface at the cold surface temperature sensor drops to within 5°F of the dew point temperature set point of the space air, the relative humidity set point is automatically offset downward. This causes the PoolPak controller to activate humidity control and helps to prevent condensation on the cold surfaces.

▲CAUTION
Proper location of this sensor is critical. This factory-supplied cold surface temperature sensor must be field-mounted on the coldest surface in the natatorium such as the metal frame around an exterior window or door. If there are no exterior windows or doors, the cold surface temperature sensor should be mounted directly on an exterior wall surface. The cold surface temperature sensor may be mounted in any direction, with the body of the sensor in direct contact with the cold surface. Avoid mounting the cold surface temperature sensor where it will get direct exposure from sunlight.

EQUIPMENT SELECTION

PoolPak International offers engineers, architects, contractors and customers a computer generated equipment. It is of extreme importance that all moisture loads be accounted for. Examples of this would include waterfalls or whirlpools. These require special considerations in determining an accurate evaporation load and dehumidification duty. An input data form is shown as follows. This form is available at www.PoolPak.com as a Microsoft Excel file.

PROJECT DATA

Project Name:		Rep Name:	
Project Address:		Rep Office:	
Engineer:		Address:	
Company:		E-mail:	
Address:		Contractor:	
Phone/Fax:		Address:	
E-mail:			

Weather State & City: Weather data based on ASHRAE 0.4%.

User selectable weather data- enter below:

Design Winter Outside Air Temp: DB Temp °F

Design Summer Outside Air Temp : DB Temp °F WB Temp °F:

ROOM DESIGN

Length: ft.
Width: ft.
Height: ft.

Design Winter Building Heat Loss: (Do Not Include Outside Air Load) MBTU/Hr.

Design Summer Solar/Trans/Lights Sensible Heat Gain: (Including outside air.) MBTU/Hr.

* Indoor Dry Bulb Temperature: ºF

Indoor Relative Humidity: %

Average # of Spectators:

* AIR TEMPERATURE SHOULD BE 2˚ F ABOVE POOL WATER TEMPERATURE, BUT NOT MORE THAN 88˚ F.

POOL DATA

	USAGE **	AREA (ft2)	TEMP.***
Pool 1			ºF
Pool 2			ºF
Pool 3			ºF
Pool 4			ºF
Pool 5			ºF

Occupied Hours per Day:

APPLICATION	*** RECOMMENDED TEMPERATURE
Competitive	77 - 80˚F
Diving	82 - 86˚F
Recreational	80 - 85˚F
Therapy	86 - 92˚F
Whirlpool	99 - 104˚F

OTHER USAGES: Diving, Whirlpool, Wave Pool, Slide, Waterfall

** USAGE FACTORS	TYPICAL APPLICATION
Light	Therapy, Private, Residential, Retirement Home
Medium	School, YMCA, Health Club, University, Lodging, Commercial
Heavy	Municipal, "River Current"

DESIRED UNIT TYPE / FAN TYPE (POOLPAK OR POOLCOMPAK)

Supply & Return Fans (SR) (FC)		SWHP models
Supply & Return Fans (SR) (BIAF)		SWHP models
Supply Fan Only (S)		SWHP models
Supply & Exhaust Fans (SE)		SWHP models
Supply, Exhaust & Purge Fans (SEP)		SWHP models
Supply Fan Only		Vertical AW & HCD models (indoor only)
Supply Fan Only		Horizontal AW & HCD models

REFRIGERANT TYPE: R22 / R407C

DESIRED AIR CHANGE RATE

3 to 8 per hour recommended

AIRFLOW (CFM's)

Supply Airflow

Outside Airflow

0.5 CFM's per sq/ft // 15 CFM's per spectator

Single or Dual Point Power Single Power Power all units, Dual Point Power SR units only

Electrical Data Voltage / Phase / Hertz

AUXILIARY HEATING TYPE (select one)

None	
/* Electric	
** Hot Water	
Hot Water (Glycol)	
Natural Gas	
Steam (5 PSIG)	
Custom Hot Water Coil	

**available with all models

***duct mounted with PoolComPak models

*Available for all units.

AUXILIARY HEATING CAPACITY

Mbtuh

kw

Glycol type

% EWT

AUXILIARY SPACE COOLING (CHILLED WATER) COIL

Chilled Water Coil		Total Cooling
Chilled Water Coil (Glycol)		Glycol type

AUXILIARY CHILLED WATER CAPACITY

Sensible Cooling

% EWT

REFRIGERANT SYSTEM / HEAT REJECTION

None		
Air Cooled Condenser		Ambient temp F
Chilled Water Condenser		
Cooling Tower Condenser		

Return Air Orientation	
Supply Air Orientation	
Exhaust Air Orientation	
Exhaust/Purge Air Orientation	
Outside Air Orientation	

UNIT LOCATION

Specify indoor or outdoor

FAN MOTOR EFFICIENCY:

SWHP		AW/HCD
	TEFC-EPACT	ODP High
	Premium	ODP Premium

AIRFLOW ESP (in./ WC)

Exhaust Airflow	
Purge Airflow	
Supply Airflow	
Return Airlfow	

FAN ISOLATION: None

SWHP only — Seismic

LOW RETURN AIR TEMP:

Hot Gas Bypass Valve for Space Temps 70 to 75 F. HCD only.

POOL WATER CONDENSER

None		
Full Capacity		SWHP only
Partial Capacity		SWHP/AW
Non-Clean, Non-Vent, Single Wall		SWHP/ All AW's
Non-Clean, Vented Double Wall		SWHP / AWH only
Cleanable, Non-Vent, Single Wall		SWHP060-100 only
Cleanable, Vented Double Wall		SWHP120-300 only

* HCD models do not have pool water condensers

SPA WATER DESUPERHEATER

None	
Domestic Hot Water	
Whirlpool	

POOL WATER CONDENSER PIPE LOCATION

UNIT MOUNTED DISCONNECT: PoolComPak models AW & HCD, must be shipped separately.

UNIT MOUNTED DISCONNECT SWITCH FAN/CONTROL CIRCUIT: (Dual Point Power SR units only)

UNIT MOUNTED DISCONNECT-ELECTRIC HEAT: SWHP only

CODE / AGENCY LISTED: (Not available on SWHP models with electric heat)

COIL MATERIAL CHOICES:	SWHP					AW/HCD		
	Evaporator	Condenser (Reheat)	Aux Hot Water		Aux Chilled Water	Evaporator/ Condenser	Air Cooled Condenser (PAC)	Aux Hot Water
All Copper							N/A	
Vinyl Coat Alum Fins							N/A	
Aluminum Fins	N/A	N/A	N/A		N/A	N/A		N/A
Conformal Coat Alum Fins	N/A				N/A			

CURB CHOICES:	
None	
By PoolPak	
By Others	

STATIC PRESSURES EXTERNAL and/or TOTAL	PoolPak Units (SWHP)					PoolComPak Units
	SR	S		SE	SEP	AW / HCD
Return Air		N/A			N/A	N/A
Supply Air		N/A		N/A		N/A
Ducted Exhaust Air (indoor units only)	N/A	N/A				N/A
Ducted Purge Air (indoor units only)	N/A	N/A		N/A		N/A
Total Supply & Return	N/A					

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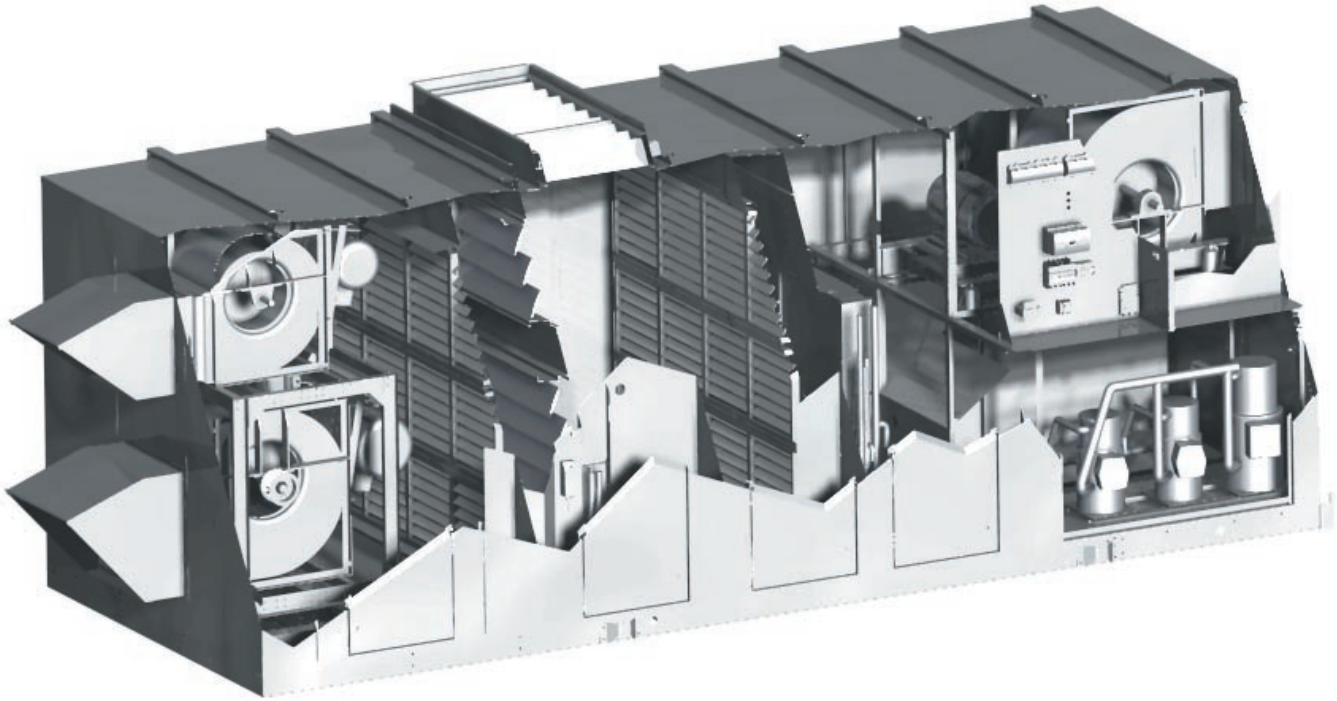
PoolPAK International



POOLPAK SWHP SEP UNIT

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UNIT SPECIFICATION

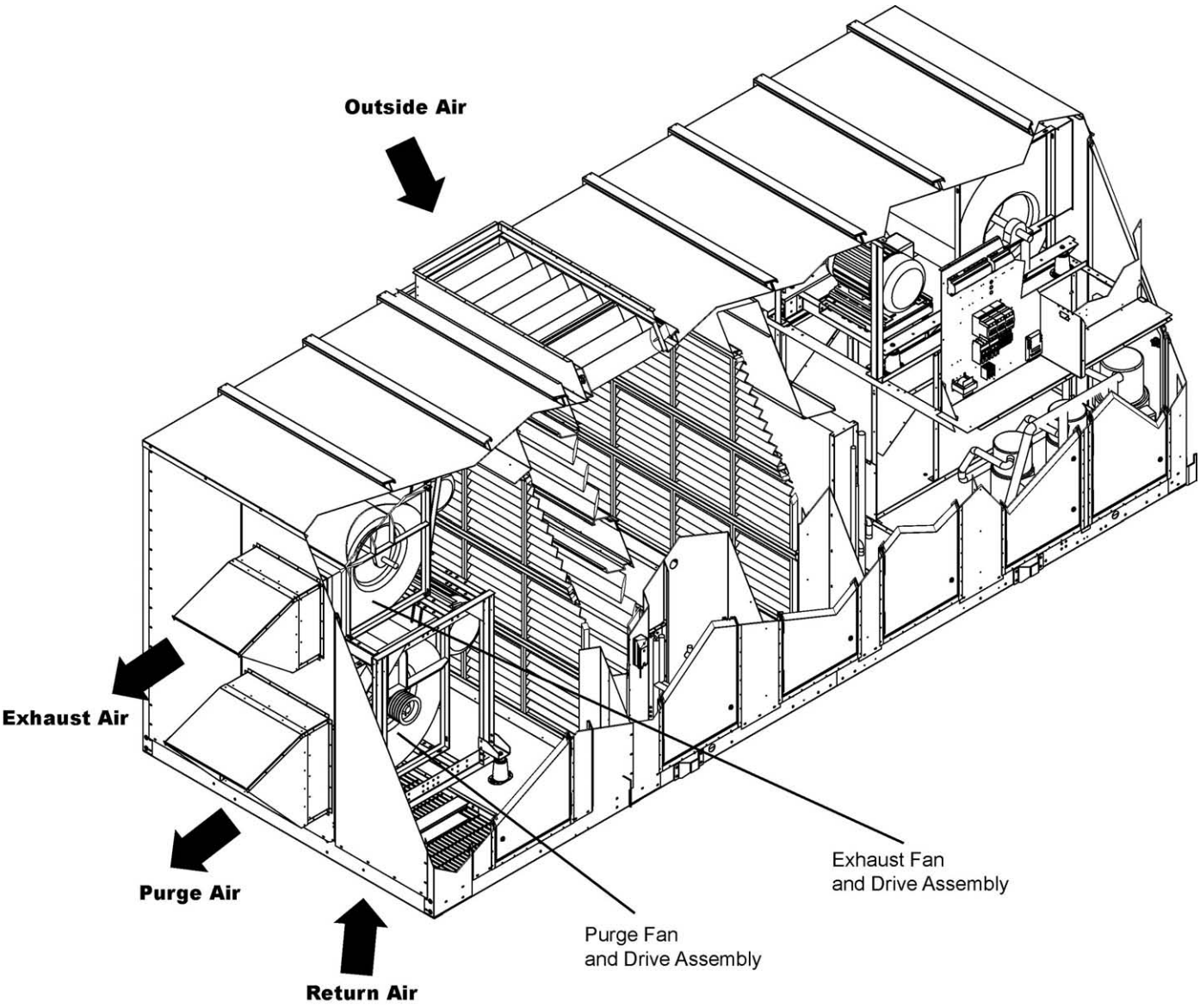

Figure Intr-2 SWHP SEP Isometric View

POOLPAK SWHP SEP QUICK SELECTION

Table Intr-1 shows the PoolPak unit sizes available along with other pertinent information.

PoolPak Model	Supply Air (CFM)	Lb/Hr Moisture Removal	Total Evaporator Capacity (MBH)1	Reheat Condenser Capacity (MBH)
Cabinet A				
060	5,000	79	181	222
080	8,000	102	234	287
100	10,000	125	284	351
Cabinet B				
100	15,000	125	284	351
120	12,000	142	325	406
140	15,000	166	388	483
190	18,000	200	468	586
Cabinet C				
140	21,000	166	388	483
190	24,000	200	468	586
220	24,000	241	576	712
260	30,000	281	648	812
300	30,000	338	802	994

At 82°F and 60% relative humidity

Table Intr-1 Quick Selection Chart for SWHP SEP

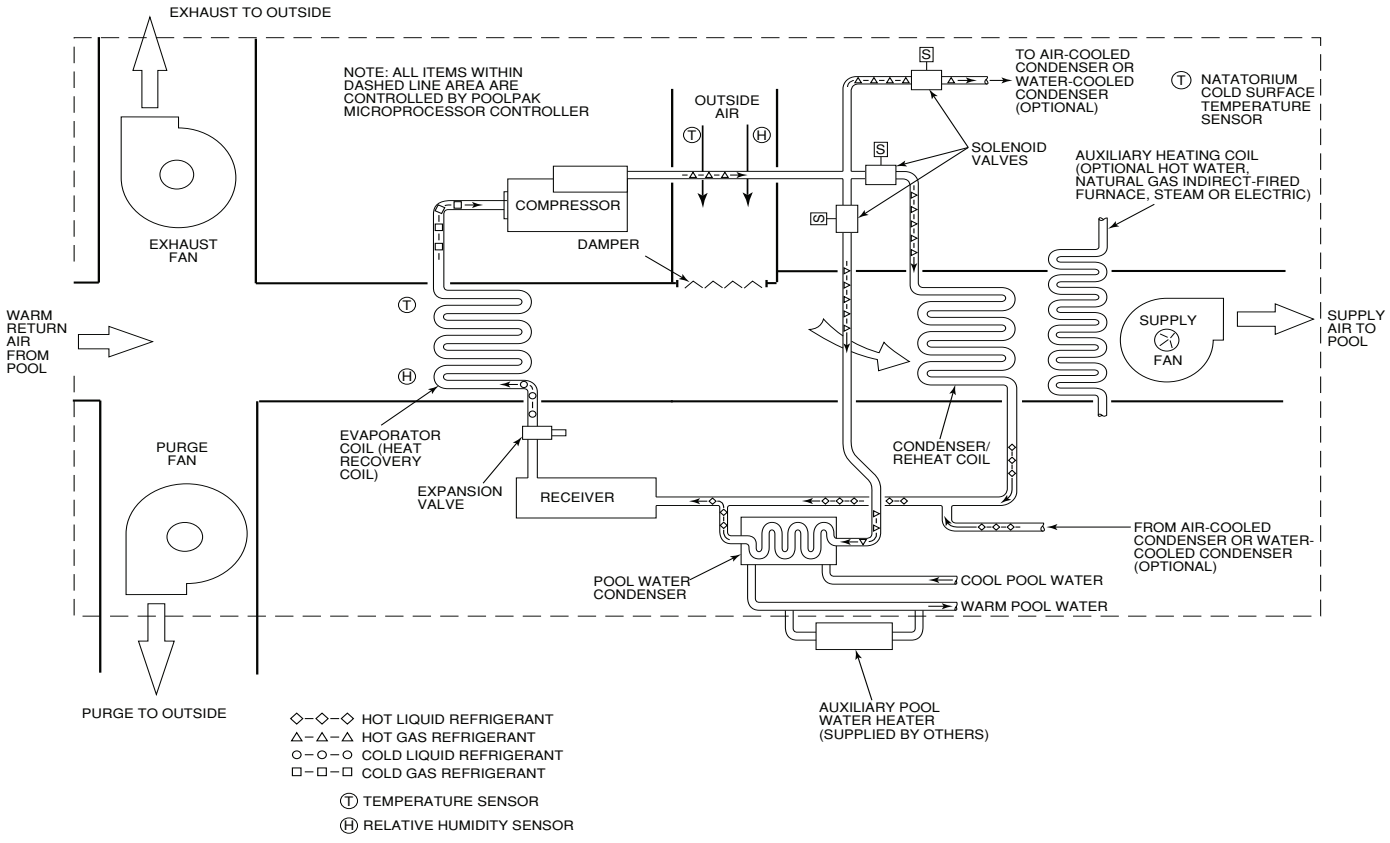

Figure Intr-1 PoolPak SWHP SEP Natatorium Environmental Control System Schematic

UNIT PERFORMANCE

The following tables show the performance for SWHP SEP units at 82°F and 60% relative humidty.

PoolPak Model	Supply Blower Size		Lb/Hr Moisture Removal	Total Evaporator Capacity (MBH1)	Reheat Condenser Capacity (MBH)	Hot Water Heating Coil Size
	Supply Air (CFM)					
	Min	Max				
A	C	D	F	G	H	J
Cabinet A						
060	4,000	5,000	79	181	222	A
060	5,000	7,000	79	181	222	A
060	7,000	9,000	79	181	222	B
080	5,500	6,500	102	234	287	B
080	6,500	8,000	102	234	287	B
080	8,000	10,000	102	234	287	C
100	6,500	10,000	125	284	351	C
Cabinet B						
100	10,000	15,000	125	284	351	E
120	7,000	10,000	142	325	406	D
120	10,000	12,000	142	325	406	D
120	12,000	15,000	142	325	406	E
120	15,000	18,000	142	325	406	F
140	9,000	15,000	166	388	483	E
140	15,000	18,000	166	388	483	F
190	11,000	18,000	200	468	586	F
Cabinet C						
140	18,000	21,000	166	388	483	G
140	18,000	21,000	166	388	483	G
190	18,000	21,000	200	468	586	G
190	18,000	21,000	200	468	586	G
190	21,000	24,000	200	468	586	H
220	14,000	20,000	241	576	712	G
220	14,000	20,000	241	576	712	G
220	20,000	24,000	241	576	712	H
260	15,000	24,000	281	648	812	H
260	24,000	30,000	281	648	812	J
300	19,000	30,000	338	802	994	J

Table Perf-4 PoolPak Unit Performance Summary

PoolPak SWHP Nomenclature

SWHP[1] 0190[2] SR[3] — 22[4] A[5] — C[6] JF[7] — R022[8]

1. Swimming-Pool Water Heat Pump

2. Nominal Refrigeration Size

a. 0060 - 15 tons
b. 0080 - 20 tons
c. 0100 - 25 tons
d. 0120 - 30 tons
e. 0140 - 35 tons
f. 0190 - 40 tons
g. 0220 - 50 tons
h. 0260 - 60 tons
i. 0300 - 70 tons

3. Fan Configuration

a. SR = Supply and Return fans
b. S = Supply fan
c. SE = Supply and Exhaust fans
d. SEP = Supply, Exhaust and Purge fans

4. Fan Motor Horsepower(s):

a. If "Item 3" is SR, then "Item 4" is the code for the supply and return fan motor horsepower combinations:

Code	Motor Sizes (HP)	Code	Motor Sizes (HP)	Code	Motor Sizes (HP)
03	3/3	15	15/15	30	30/30
05	5/5	17	15/20	35	30/40
07	7.5/7.5	20	20/20	40	40/40
08	7.5/10	22	20/25	45	40/50
10	10/10	25	25/25	50	50/50
12	10/15	27	25/30		

b. If "Item 3" is S, SE or SEP, then "Item 4" is the code for the supply fan motor horsepower:

Code	Motor Sizes (HP)	Code	Motor Sizes (HP)	Code	Motor Sizes (HP)
03	3	15	15	30	30
05	5	17	15	35	30
07	7.5	20	20	40	40
08	7.5	22	20	45	40
10	10	25	25	50	50
12	10	27	25		

5. Voltage

A = 208/3/60
C= 230/3/60
E = 460/3/60
G = 575/3/60
L = 380/3/50
J = 200/3/50

6. Cabinet Size

a. A
b. B
c. C

7. Internal Use Only

8. Refrigerant:

a. R022 = Refrigerant 22
b. R407 = Refrigerant 407c
c. R410 = Refrigerant 410a

ELECTRICAL DATA

PoolPak Model	Compressor No.	Voltage Code							
		A		C		E		G	
		208/3/60		230/3/60		460/3/60		575/3/60	
		RLA	LRA	RLA	LRA	RLA	LRA	RLA	LRA
60	1								
80	1	41.4	276	41.4	276	18.1	129	14.4	103
	2	41.4	276	41.4	276	18.1	129	14.4	103
100	1	60.5	414	60.5	414	26.3	196	21.0	157
	2	41.4	276	41.4	276	18.1	129	14.4	103
120	1	60.5	414	60.5	414	26.3	196	21.0	157
	2	60.5	414	60.5	414	26.3	196	21.0	157
140	1	41.4	276	41.4	276	18.1	129	14.4	103
	2	41.4	276	41.4	276	18.1	129	14.4	103
	3	60.5	414	60.5	414	26.3	196	21.0	157
190	1	41.4	276	41.4	276	18.1	129	14.4	103
	2	60.5	414	60.5	414	26.3	196	21.0	157
	3	60.5	414	60.5	414	26.3	196	21.0	157
220	1	41.4	276	41.4	276	18.1	129	14.4	103
	2	60.5	414	60.5	414	26.3	196	21.0	157
	3	41.4	276	41.4	276	18.1	129	14.4	103
	4	60.5	414	60.5	414	26.3	196	21.0	157
260	1	60.5	414	60.5	414	26.3	196	21.0	157
	2	60.5	414	60.5	414	26.3	196	21.0	157
	3	60.5	414	60.5	414	26.3	196	21.0	157
	4	60.5	414	60.5	414	26.3	196	21.0	157
300	1	41.4	276	41.4	276	18.1	129	14.4	103
	2	41.4	276	41.4	276	18.1	129	14.4	103
	3	60.5	414	60.5	414	26.3	196	21.0	157
	4	41.4	276	41.4	276	18.1	129	14.4	103
	5	41.4	276	41.4	276	18.1	129	14.4	103
	6	60.5	414	60.5	414	26.3	196	21.0	157

Table Perf-5 PoolPak Compressor electrical data for SWHP SEP

Motor HP*	Voltage Code							
	A		C		E		G	
	208/3/60		230/3/60		460/3/60		575/3/60	
	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA
3	9.5	62	8.5	68	4.3	34	3.6	27
5	14.8	92	13.4	102	6.7	51	5.7	41
7.5	22	118	20	130	10	65	8	52
10	29	26	157	174	13	87	11	70
15	42	215	38	238	19	119	16	95
20	56	289	51	320	26	160	21	128
25	71	356	64	394	32	197	26	158
30	83	429	76	474	38	237	31	190
40	110	570	98	630	50	315	40	252
50	143	840	130	760	61	362	49	290

*Based on high-efficiency Totally Enclosed Fan Cooled Motors (TEFC)

Table Perf-6 PoolPak Fan Motor electrical data

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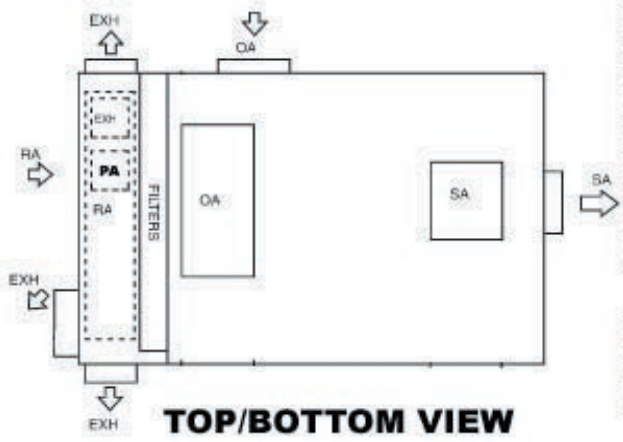
DIMENSIONS

POOLPAK UNIT

The dimensions shown in **Table Dim-1** refer to **Figures Dim-1**, **Dim-2** and **Dim-3**. For options and configurations not shown, contact the factory.



Available Airside Configurations SWHP SEP

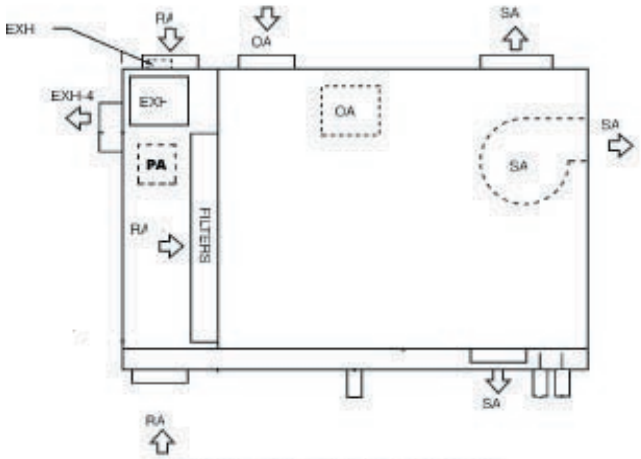
SA-TC07, Top(CW), Indoor only
SA-TC08, Top(CCW), Indoor only
SA-FC01, Front(CW) - B, C cabinets
SA-FC02, Ftront(CCW) - B, C cabinets
SA-FC01, Front(CW) - A cabinet no isolation
SA-FC02, Front(CCW) - A cabinet no isolation
SA-BN00, Bottom
SA-TN00, Top, Furnace
SA-FC00, Front, Furnace
SA-BN00, Bottom, Furnace

EA-LC13, Exh / Purge Fan Left (CW)
EA-RC10, Exh / Purge Fan Right (CCW)
EA-TC00, Exh / Purge Fan Top
EA-KC05, Exh / Purge Fan Rear (CW)

OA-LN, Full Outside Air – Left
OA-TC, Indoor only, Full Outside Air – Top

PA-LC13, Exh / Purge Left (CW)
PA-RC10, Exh / Purge Right (CCW)
PA-TC00, Exh / Purge Top
PA-KC05, Exh /Purge Rear (CW)

RA-TP, Top Indoor
RA-BP, Bottom
RA-LP, Left – Opposite Control Panel
RA-RP, Right – Control Panel



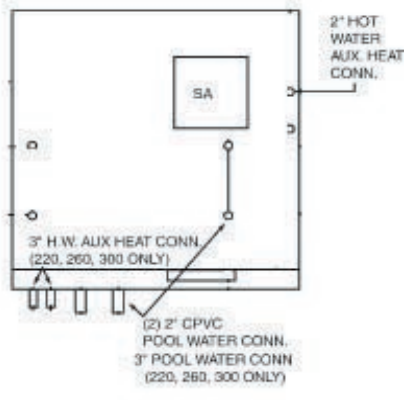
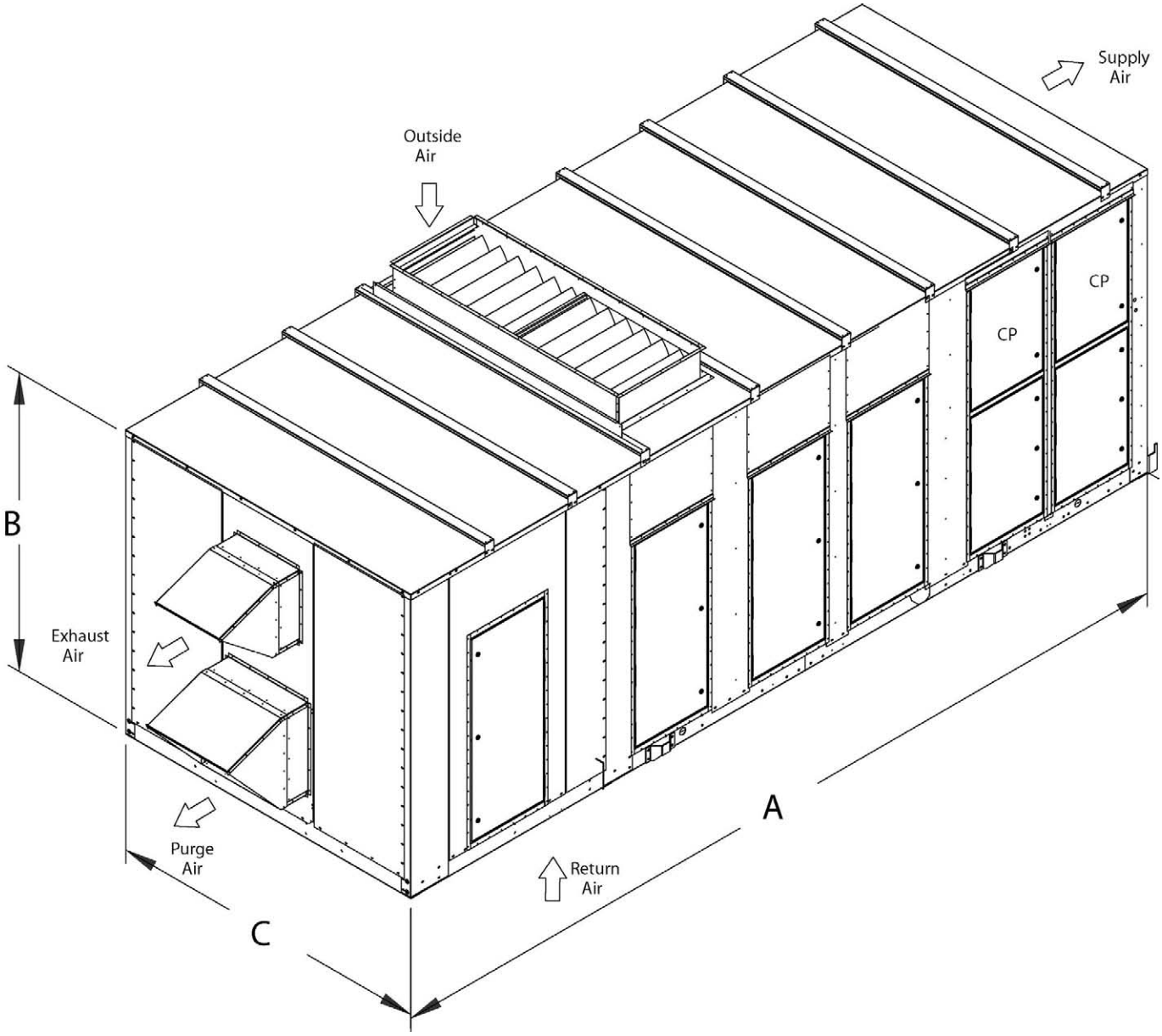


Figure Dim-1 PoolPak SWHP SEP Dimensions



Dimensions are illustrative only. Contact the factory for your specific requirements.

Figure Dim-2 PoolPak SWHP SEP Isometric, with Return Plenum

SWHP SEP - Unit (No Furnace)				
Model	**Length**	**Height**	**Width**	**Weight**
	“A”	**“B”**	**“C”**	**Lbs**
A Cabinet				
060	231.8	81.4	62.5	5100
080	231.8	81.4	62.5	5500
100	231.8	81.4	62.5	6500
B Cabinet				
100	245.8	90.5	95.0	7600
120	245.8	90.5	95.0	7700
140	245.8	90.5	95.0	8600
190	245.8	90.5	95.0	8800
C Cabinet				
140	321.4	101.5	95.0	11900
190	321.4	101.5	95.0	12000
220	321.4	101.5	95.0	12700
260	321.4	101.5	95.0	13200
300	321.4	101.5	95.0	13700

Table Dim-1 PoolPak SWHP SEP Dimensions, without furnace

SWHP SEP - Unit Dimensions (With Furnace)							
Model	**Furnace Output**	Front Supply	Top/Bottom Supply			Front Supply	Top/Bottom Supply
		Length		**Height**	**Width**	**Weight**	
	MBtuh	**“A”**	**“A”**	**“B”**	**“C”**	**Lbs**	**Lbs**
A Cabinet							
060	200,240,280,320	299.6	327.9	81.4	62.5	5600	5800
080	200,240,280,320	299.6	327.9	81.4	62.5	6000	6200
100	200,240,280,320,360	299.6	327.9	81.4	62.5	7000	7200
B Cabinet							
100	240,280,320,360,400,480,560,640	324	363.9	90.5	95.0	8400	8600
120	240,280,320,360,400,480,560,640	324	363.9	90.5	95.0	8500	8700
140	240,280,320,360,400,480,560,640	324	363.9	90.5	95.0	9400	9600
140	850,1000	310.2		90.5	95.0	10700	10900
190	240,280,320,360,400,480,560,640	324	363.9	90.5	95.0	9600	9800
190	850,1000	310.2		90.5	95.0	10900	11100
C Cabinet							
140	240,280,320,360,400,480,560,640	351.7	390.7	101.5	95.0	12700	12900
140	850,1000	374.8	405.2	101.5	95.0	14000	14200
190	280,320,360,400,480,560,640	351.7	390.7	101.5	95.0	12800	13000
190	850,1000	374.8	405.2	101.5	95.0	14100	14300
220	360,400,480,560,640	399.7	390.7	101.5	95.0	13500	13700
220	850,1000	374.8	405.2	101.5	95.0	14800	15000
260	360,400,480,560,640	351.7	390.7	101.5	95.0	14000	14200
260	850,1000	374.8	405.2	101.5	95.0	15300	15500
300	560,640	351.7	390.7	101.5	95.0	14500	14700
300	850,1000	374.8	405.2	101.5	95.0	15800	16000

* All Lengths in inches

Table Dim-1 PoolPak SWHP SEP Dimensions, with furnace

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CURB MOUNTING

Illustrated in Figure Dim-7 is a curb that has been designed specifically for the PoolPak product line. Refer to Table Dim-8 for roof curb dimensions. The outside dimensions of the curb are such that the base of the PoolPak extends over the edge of the curb on each side. This aids in preventing rain water, running down the sides of the unit, from getting between the base of the PoolPak and the curb. The curb also features a waterproof capped area under the PoolPak's compressor compartment with provisions for running the pool water lines through the cap.

It is the installing contractor's responsibility to properly complete the following:

- Flash the curb into the roof
- Insulate the curb
- Connect the supply and return duct to the PoolPak
- Connect condensate drain lines with appropriate traps
- Seal the curb's top surface to the bottom of the PoolPak with supplied gasket
- Seal the pool water pipes where they go through the curb cap under the compressor compartment

If specified when ordering, all water piping connections can be made through the curb. These water connectionsinclude: pool water, condensate, auxiliary hot water coil, chilled water coil, domestic hot water, and whirlpool water.

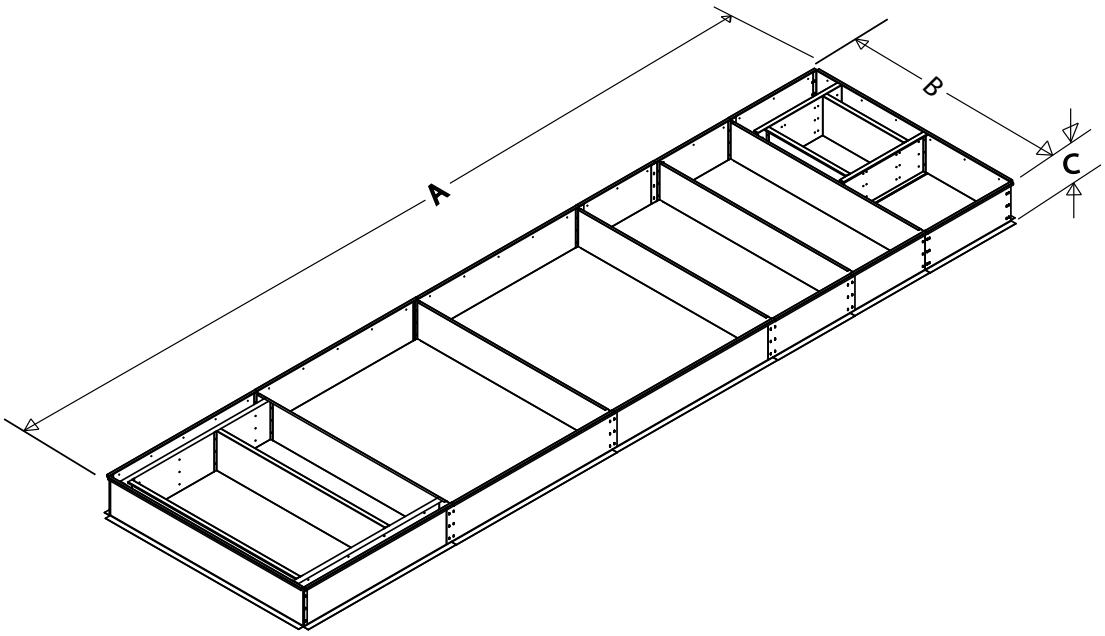
If the PoolPak is to be mounted on another manufacturer's curb, the PoolPak factory must be notified of this fact at the time the PoolPak sales order is submitted. PoolPaks produced for curb mounting, whether on a PoolPak curb or on another manufacturer's curb, receive special weatherizing and insulating that non-curb mounted PoolPaks do not receive.

NOTE

If the factory is not notified that a PoolPak is to be curb mounted, the PoolPak base will not be watertight, it will leak, and it will not be properly insulated.

If a non-PoolPak curb is used, note that the weather seal at the compressor end is under the bulkhead between the compressor and return air compartments. The pan under the compressor compartment isolates the area under the curb from the compressor compartment and from possible pool water or oil leaks as well as from the ambient conditions present in the compressor compartment.

Figure Dim-7 shows an isometric view of a typical SWHP Series S PoolPak curb. The figure shows optional return and supply duct attachments. Please refer to tables below for overall dimensions.



Dimensions are illustrative only. Contact the factory for your specific requirements.

Figure Dim-7 PoolPak SWHP SEP Curb, Isometric view

NOTE
Curb dimensions are illustrative only. Contact the factory for your specific requirements.

SWHP SEP - Curb (No Furnace)			
Model	**Length**	**Width**	**Height**
	"A"	**"C"**	**"B"**
A Cabinet			
060	230.3	61.0	16.0
080	230.3	61.0	16.0
100	230.3	61.0	16.0
B Cabinet			
100/120	244.3	93.5	16.0
140	244.3	93.5	16.0
190	244.3	93.5	16.0
C Cabinet			
140	319.9	93.5	16.0
190	319.9	93.5	16.0
220	319.9	93.5	16.0
260	319.9	93.5	16.0
300	319.9	93.5	16.0

Figure Dim-8 PoolPak SWHP SEP Curb Dimensions, without furnace

SWHP SEP - Curb Dimensions (With Furnace)					
Model	Furnace Output	Front Supply	Top/Bottom Supply		
		Length		Width	Height
	Mbtuh	"A"	"A"	"C"	"B"
A Cabinet					
060	200,240,280,320	298.1	326.4	61.0	16.0
080	200,240,280,320	298.1	326.4	61.0	16.0
100	200,240,280,320,360	298.1	326.4	61.0	16.0
B Cabinet					
100/120	240,280,320,360,400,480,560,640	322.5	362.4	93.5	16.0
140	240,280,320,360,400,480,560,640	322.5	362.4	93.5	16.0
140	850,1000	308.7	0.0	93.5	16.0
190	240,280,320,360,400,480,560,640	322.5	362.4	93.5	16.0
190	850,1000	308.7	0.0	93.5	16.0
C Cabinet					
140	240,280,320,360,400,480,560,640	350.2	389.2	93.5	16.0
140	850,1000	373.3	403.7	93.5	16.0
190	280,320,360,400,480,560,640	350.2	389.2	93.5	16.0
190	850,1000	373.3	403.7	93.5	16.0
220	360,400,480,560,640	398.2	389.2	93.5	16.0
220	850,1000	373.3	403.7	93.5	16.0
260	360,400,480,560,640	350.2	389.2	93.5	16.0
260	850,1000	373.3	403.7	93.5	16.0
300	560,640	350.2	389.2	93.5	16.0
300	850,1000	373.3	403.7	93.5	16.0

* All Lengths in inches

Table Dim-9 PoolPak SWHP SEP Curb Dimensions, with furnace

AIR CONDITIONING CONDENSER SELECTION GUIDE

POOLPAK-PROVIDED AIR-COOLED CONDENSER SELECTION AND ELECTRICAL INFORMATION

A. See **Table Perf-8** for selection of PoolPak Air-Cooled Condenser for each PoolPak model as a function of ambient temperature and electrical data. **Figures Dim-4** and **Dim-5** show the end and side views of the air cooled condensers.

B. **Table Perf-8 and Perf-9** shows the electrical data.

PoolPak Model (R 22)	Ambient Air (ºF)	ACC Selection	Arrangement: # rows X # Fans	Voltage & Phase	No. of Circuits	Gas	Liquid	charge Lbs./ circuit	Weight Lbs.	FLA	MCA	MOP	Remote ACC Heat Rejection[1]
60	95/ 100º	ACC0271	1 x 2	208/230-3-60	1	1-5/8	1-1/8	10	580	14.0	20.0	35.0	220
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	105º	ACC0331	1 x 2	208/230-3-60	1	1-5/8	1-1/8	15	630	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	110º	ACC0451	1 x 2	208/230-3-60	1	2-1/8	1-3/8	29	690	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	115º	ACC0621	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1010	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
				380-3-50						8.8	15.0	20.0	
80	95/ 100º	ACC0271	1 x 2	208/230-3-60	1	1-5/8	1-1/8	10	580	14.0	20.0	35.0	270
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0331	1 x 2	380-3-50	1	1-5/8	1-1/8	15	630	5.8	15.0	15.0	
	105º	ACC0331	1 x 2	208/230-3-60	1	1-5/8	1-1/8	15	630	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0431	1 x 2	380-3-50	1	2-1/8	1-3/8	29	680	5.8	15.0	15.0	
	110º	ACC0521	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
				380-3-50						8.8	15.0	20.0	
	115º	ACC0771	2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1390	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
100	95/ 100º	ACC0361	1 x 2	208/230-3-60	1	1-5/8	1-1/8	15	630	14.0	20.0	35.0	345
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0431	1 x 2	380-3-50	1	2-1/8	1-3/8	29	680	5.8	15.0	15.0	
	105º	ACC0431	1 x 2	208/230-3-60	1	2-1/8	1-3/8	29	680	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0491	1 x 3	380-3-50	1	2-1/8	1-3/8	22	930	8.8	15.0	20.0	
	110º	ACC0681	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1010	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
				380-3-50						8.8	15.0	20.0	
	115º	ACC0961	2 x 2	208/230-3-60	1	2-1/8	1-3/8	40	1490	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	

[1]Heat rejection at 120°F condensing temperature (MBtu/hr).

[2]Two circuit air-cooled condenser, one for each compressor manifold, required for these units

Table Perf-8 SWHP SEP Optional Air-Cooled Condenser Data for R-22 (continued on next page)

PoolPak Model (R 22)	Ambient Air (°F)	ACC Selection	Arrangement: # rows X # Fans	Voltage & Phase	No. of Circuits	Gas	Liquid	charge Lbs./ circuit	Weight Lbs.	FLA	MCA	MOP	Remote ACC Heat Rejection [1]
120	95/ 100º	ACC0431	1 x 2	208/230-3-60	1	2-1/8	1-3/8	29	680	14.0	20.0	35.0	425
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0491	1 x 3	380-3-50	1	2-1/8	1-3/8	22	930	8.8	15.0	20.0	
	105º	ACC0551	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
		ACC0591	1 x 3	380-3-50	1	2-1/8	1-3/8	30	1000	8.8	15.0	20.0	
	110º	ACC0771	2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1390	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	115º	ACC1161	2 x 3	208/230-3-60	1	2-1/8	1-3/8	44	2060	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
140	95/ 100º	ACC0491	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	21.0	22.8	40.0	500
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
		ACC0591	1 x 3	380-3-50	1	2-1/8	1-3/8	30	1000	8.8	15.0	20.0	
	105º	ACC0661	2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1340	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	110º	ACC0921	2 x 2	208/230-3-60	1	2-1/8	1-3/8	40	1490	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	115º	ACC1371	2 x 3	208/230-3-60	1	2-1/8	1-3/8	58	2210	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
190	95/ 100º	ACC0591	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1000	21.0	22.8	40.0	600
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
		ACC0661	2 x 2	380-3-50	1	2-1/8	1-3/8	29	1340	11.7	15.0	20.0	
	105º	ACC0731	2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1340	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
		ACC0861	2 x 2	380-3-50	1	2-1/8	1-3/8	40	1440	11.7	15.0	20.0	
	110º	ACC1161	2 x 3	208/230-3-60	1	2-1/8	1-3/8	44	2060	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
	115º	ACC1811	2 x 4	208/230-3-60	1	2-1/8	1-3/8	140	2930	56.0	57.8	70.0	
				460-3-60						28.0	28.9	35.0	
				575-3-60						22.4	23.1	30.0	
				380-3-50						23.3	28.9	35.0	

[1]Heat rejection at 120°F condensing temperature (MBtu/hr).
[2]Two circuit air-cooled condenser, one for each compressor manifold, required for these units

Table Perf-8 SWHP SEP Optional Air-Cooled Condenser Data for R-22 (continued on next page)

PoolPak Model (R 22)	Ambient Air (ºF)	ACC Selection	Arrangement: # rows X # Fans	Voltage & Phase	No. of Circuits	Gas	Liquid	charge Lbs./ circuit	Weight Lbs.	FLA	MCA	MOP	Remote ACC Heat Rejection[1]
220	95/100º	ACC0732	2 x 2	208/230-3-60	2	2@ 1-5/8	2@ 1-1/8	14.5/ 14.5	1340	28.0	29.8	45.0	350/ 350[2]
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
		ACC0862	2 x 2	380-3-50	2	2@2-1/8	2@1-3/8	20/20	1440	11.7	15.0	20.0	
	105º	ACC0992	2 x 3	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	22/22	1990	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1092	2 x 3	380-3-50	2	2@2-1/8	2@1-3/8	22/22	1990	17.5	21.9	30.0	
	110º	ACC1372	2 x 3	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	29/29	2210	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
	115º	ACC1972	2 x 5	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	63/63	3410	70.0	71.8	90.0	
				460-3-60						35.0	35.9	45.0	
				575-3-60						28.0	28.7	35.0	
				380-3-50						29.2	35.9	45.0	
260	95/100º	ACC0862	2 x 2	208/230-3-60	2	2@2-1/8	2@1-3/8	20/20	1440	28.0	29.8	45.0	425/ 425[2]
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
		ACC0992	2 x 3	380-3-50	2	2@2-1/8	2@1-3/8	22/22	1990	17.5	21.9	30.0	
	105º	ACC1092	2 x 3	208/230-3-60	2	2@2-1/8	2@1-3/8	22/22	1990	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1292	2 x 3	380-3-50	2	2@2-1/8	2@1-3/8	29/29	2140	17.5	21.9	30.0	
	110º	ACC1652	2 x 4	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	52/52	2730	56.0	57.8	70.0	
				460-3-60						28.0	28.9	35.0	
				575-3-60						22.4	23.1	30.0	
				380-3-50						23.3	28.9	35.0	
	115º	ACC2442	2 x 5	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	86/86	3660	70.0	71.8	90.0	
				460-3-60						35.0	35.9	45.0	
				575-3-60						28.0	28.7	35.0	
				380-3-50						29.2	35.9	45.0	
300	95/100º	ACC0992	2 x 3	208/230-3-60	2	2@ 2 1/8	2@ 1-3/8	22/22	1990	42.0	43.8	60.0	500/ 500[2]
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1182	2 x 3	380-3-50	2	2@ 2-1/8	2@ 1-3/8	29/29	2140	17.5	21.9	30.0	
	105º	ACC1292	2 x 3	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	29/29	2140	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1462	2 x 4	380-3-50	2	2@ 2-1/8	2@ 1-3/8	52/52	2630	23.3	28.9	35.0	
	110º	ACC1922	2 x 4	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	70/70	2930	56.0	57.8	70.0	
				460-3-60						28.0	28.9	35.0	
				575-3-60						22.4	23.1	30.0	
				380-3-50						23.3	28.9	35.0	
	115º	ACC2932	2 x 6	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	102/ 102	4370	84.0	85.8	100.0	
				460-3-60						42.0	42.9	50.0	
				575-3-60						33.6	34.3	40.0	
				380-3-50						35.0	42.9	50.0	

[1]Heat rejection at 120°F condensing temperature (MBtu/hr).

[2]Two circuit air-cooled condenser, one for each compressor manifold, required for these units

Table Perf-8 SWHP SEP Optional Air-Cooled Condenser Data for R-22

PoolPak Model (R 407C)	Ambient Air (°F)	ACC Selection	Arrangement: # rows X # Fans	Voltage & Phase	No. of Circuits	Gas	Liquid	charge Lbs./ circuit	Weight Lbs.	FLA	MCA	MOP	Remote ACC Heat Rejection[1]
60	95/100°	ACC0271	1 x 2	208/230-3-60	1	1-5/8	1-1/8	10	580	14.0	20.0	35.0	220
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	105°	ACC0331	1 x 2	208/230-3-60	1	1-5/8	1-1/8	15	630	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	110°	ACC0451	1 x 2	208/230-3-60	1	2-1/8	1-3/8	29	690	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	115°	ACC0621	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1010	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
				380-3-50						8.8	15.0	20.0	
80	95/100°	ACC0331	1 x 2	208/230-3-60	1	1-5/8	1-1/8	15	630	14.0	20.0	35.0	270
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0361	1 x 2	380-3-50	1	1-5/8	1-1/8	15	630	5.8	15.0	15.0	
	105°	ACC0431	1 x 2	208/230-3-60	1	2-1/8	1-3/8	29	680	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	110°	ACC0521	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
				380-3-50						8.8	15.0	20.0	
	115°	ACC0831	2 x 2 2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1390	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
100	95/100°	ACC0431	1 x 2	208/230-3-60	1	2-1/8	1-3/8	29	680	14.0	20.0	35.0	345
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	105°	ACC0491	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0551	1 x 3	380-3-50	1	2-1/8	1-3/8	22	930	8.8	15.0	20.0	
	110°	ACC0681	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1010	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
				380-3-50						8.8	15.0	20.0	
	115°	ACC0961	2 x 2	208/230-3-60	1	2-1/8	1-3/8	40	1490	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	

[1]Heat rejection at 120°F condensing temperature (MBtu/hr).
[2]Two circuit air-cooled condenser, one for each compressor manifold, required for these units

Table Perf-9 SWHP SEP Optional Air-Cooled Condenser Data for R-407c (continued on next page)

PoolPak Model (R 407C)	Ambient Air (°F)	ACC Selection	Arrangement: # rows X # Fans	Voltage & Phase	No. of Circuits	Gas	Liquid	charge Lbs./ circuit	Weight Lbs.	FLA	MCA	MOP	Remote ACC Heat Rejection[1]
120	95/100°	ACC0491	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	14.0	20.0	35.0	425
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0551	1 x 3	380-3-50	1	2-1/8	1-3/8	22	930	8.8	15.0	20.0	
	105°	ACC0591	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1000	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
		ACC0641	1 x 3	380-3-50	1	2-1/8	1-3/8	30	1000	8.8	15.0	20.0	
	110°	ACC0771	2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1390	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	115°	ACC1161	2 x 3	208/230-3-60	1	2-1/8	1-3/8	44	2060	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
140	95/100°	ACC0551	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	21.0	22.8	40.0	500
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
		ACC0591	1 x 3	380-3-50	1	2-1/8	1-3/8	30	1000	8.8	15.0	20.0	
	105°	ACC0731	2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1340	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
		ACC0781	2 x 2	380-3-50	1	2-1/8	1-3/8	29	1340	11.7	15.0	20.0	
	110°	ACC0921	2 x 2	208/230-3-60	1	2-1/8	1-3/8	40	1490	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	115°	ACC1371	2 x 3	208/230-3-60	1	2-1/8	1-3/8	58	2210	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
190	95/100°	ACC0641	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1000	21.0	22.8	40.0	600
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
		ACC0731	2 X 2	380-3-50	1	2-1/8	1-3/8	29	1340	11.7	15.0	20.0	
	105°	ACC0861	2 x 2	208/230-3-60	1	2-1/8	1-3/8	40	1440	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	110°	ACC1161	2 x 3	208/230-3-60	1	2-1/8	1-3/8	44	2060	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
	115°	ACC1811	2 x 4	208/230-3-60	1	2-1/8	1-3/8	140	2930	56.0	57.8	70.0	
				460-3-60						28.0	28.9	35.0	
				575-3-60						22.4	23.1	30.0	
				380-3-50						23.3	28.9	35.0	

[1]Heat rejection at 120°F condensing temperature (MBtu/hr).
[2]Two circuit air-cooled condenser, one for each compressor manifold, required for these units

Table Perf-9 SWHP SEP Optional Air-Cooled Condenser Data for R-407c (continued on next page)

PoolPak Model (R 407C)	Ambient Air (ºF)	ACC Selection	Arrangement: # rows X # Fans	Voltage & Phase	No. of Circuits	Gas	Liquid	charge Lbs./ circuit	Weight Lbs.	FLA	MCA	MOP	Remote ACC Heat Rejection[1]
220	95/100º	ACC0862	2 x 2	208/230-3-60	2	2@2-1/8	2@1-3/8	20/20	1440	28.0	29.8	45.0	350/ 350
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	105º	ACC0992	2 x 3	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	22/22	1990	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1092	2 x 3	380-3-50	2	2@2-1/8	2@1-3/8	22/22	1990	17.5	21.9	30.0	
	110º	ACC1372	2 x 3	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	29/29	2210	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
	115º	ACC1972	2 x 5	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	63/63	3410	70.0	71.8	90.0	
				460-3-60						35.0	35.9	45.0	
				575-3-60						28.0	28.7	35.0	
				380-3-50						29.2	35.9	45.0	
260	95/100º	ACC0992	2 x 3	208/230-3-60	2 2	2@2-1/8	2@1-3/8	22/22	1990	28.0	29.8	45.0	425/ 425
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
		ACC1092	2 x 3	380-3-50		2@2-1/8	2@1-3/8	22/22	1990	17.5	21.9	30.0	
	105º	ACC1182	2 x 3	208/230-3-60	2	2@2-1/8	2@1-3/8	29/29	2140	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1292	2 x 3	380-3-50	2	2@2-1/8	2@1-3/8	29/29	2140	17.5	21.9	30.0	
	110º	ACC1652	2 x 4	208/230-3-60	2	2@2-1/8	2@1-3/8	52/52	2730	56.0	57.8	70.0	
				460-3-60						28.0	28.9	35.0	
				575-3-60						22.4	23.1	30.0	
				380-3-50						23.3	28.9	35.0	
	115º	ACC2442	2 x 5	208/230-3-60	2	2@2-1/8	2@1-3/8	86/86	3660	70.0	71.8	90.0	
				460-3-60						35.0	35.9	45.0	
				575-3-60						28.0	28.7	35.0	
				380-3-50						29.2	35.9	45.0	
300	95/100º	ACC1182	2 x 3	208/230-3-60	2	2@ 2 1/8	2@ 1-3/8	29/29	2140	42.0	43.8	60.0	500/ 500
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1292	2 x 3	380-3-50	2	2@2-1/8	2@1-3/8	29/29	2140	17.5	21.9	30.0	
	105º	ACC1462	2 x 4	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	52/52	2630	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1562	2 x 4	380-3-50	2	2@2-1/8	2@1-3/8	52/52	2630	23.3	28.9	35.0	
	110º	ACC1922	2 x 4	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	70/70	2930	56.0	57.8	70.0	
				460-3-60						28.0	28.9	35.0	
				575-3-60						22.4	23.1	30.0	
				380-3-50						23.3	28.9	35.0	
	115º	ACC2932	2 x 6	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	102/102	4370	84.0	85.8	100.0	
				460-3-60						42.0	42.9	50.0	
				575-3-60						33.6	34.3	40.0	
				380-3-50						35.0	42.9	50.0	

[1]Heat rejection at 120°F condensing temperature (MBtu/hr).
[2]Two circuit air-cooled condenser, one for each compressor manifold, required for these units

Table Perf-9 SWHP SEP Optional Air-Cooled Condenser Data for R-407c

POOLPAK PROVIDED REMOTE CHILLED AND COOLING TOWER WATER CONDENSER SELECTION

A. Select the proper size water condenser from **Table Perf-10**.

B. Tables in the DIMENSIONS section show the remote cabinet dimensions, piping connections and cabinet layout.

PoolPak Model	Cooling Tower Water Condenser[1]		Chilled Water Condenser[2]		Remote ACC Heat Rejection[3]
	gpm	Water (Feet)[4]	gpm	Water (Feet)[5]	Mbtu/hr
060	35	30	25	13	220
080	35	27	25	11	270
100	40	20	30	10	345
120	50	28	40	15	425
140	60	34	50	20	500
190	70	39	60	16	600
220	80	22	70	16	350/350[6]
260	100	30	80	17	425/425[6]
300	120	36	100	21	500/500[6]

[1]Maximum 85°F EWT

[2]Maximum 55°F EWT

[3]Heat rejection at 120°F condensing temperature

[4]Cleanable, nonvented condenser

[5]Spiral, nonvented condenser

[6]Two circuit water-cooled condenser, one for each compressor manifold, required for these units

Table Perf-10 PoolPak Optional Water Cooled Condenser Specifications for SWHP SEP

NON-POOLPAK-PROVIDED AIR-COOLED CONDENSER SELECTION PROCEDURE

The procedure for selecting an optional remote air-cooled condenser is:

A. Find the PoolPak total heat rejection capacity from **Table Perf-8**. Example: (for SWHP 140S): Heat Rejection Capacity = 500 MBtu/hr

B. Determine the difference between 120°F (the PoolPak design condensing temperature) and the design out door dry bulb temperature.

C. For the given Heat Rejection Capacity and temperature difference (from step B), select the proper sized condenser using R-22 refrigerant.

D. It is permissible to select a condenser with the proper capacity at the nominal temperature difference + 3°F. Choose the closest one.

E. The field wiring diagram (**Figure Wire-4**) requires an auxiliary transformer (115 VAC/20 VA), connected to the "Power in" at the air-cooled condenser, for proof of operation readiness.

F. Choose a condenser with fan-cycling head pressure controls set to maintain a minimum condensing temperature of 90°F.

If there are questions, consult the factory.

OPTIONAL AIR COOLED CONDENSER

The dimensions for the optional air cooled condensers are shown in **Figures Dim-4** and **Dim-5**.

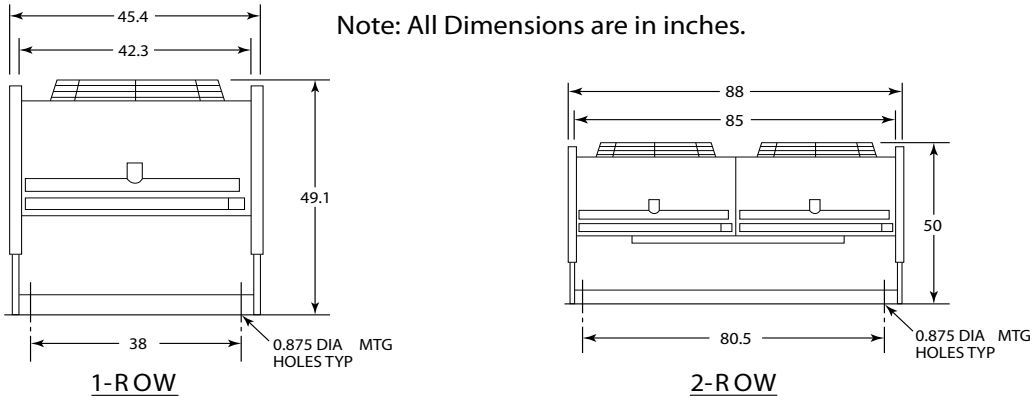


Figure Dim-4 PoolPak Air Cooled Condenser End views

NOTE: ALL DIMENSIONS ARE IN INCHES.

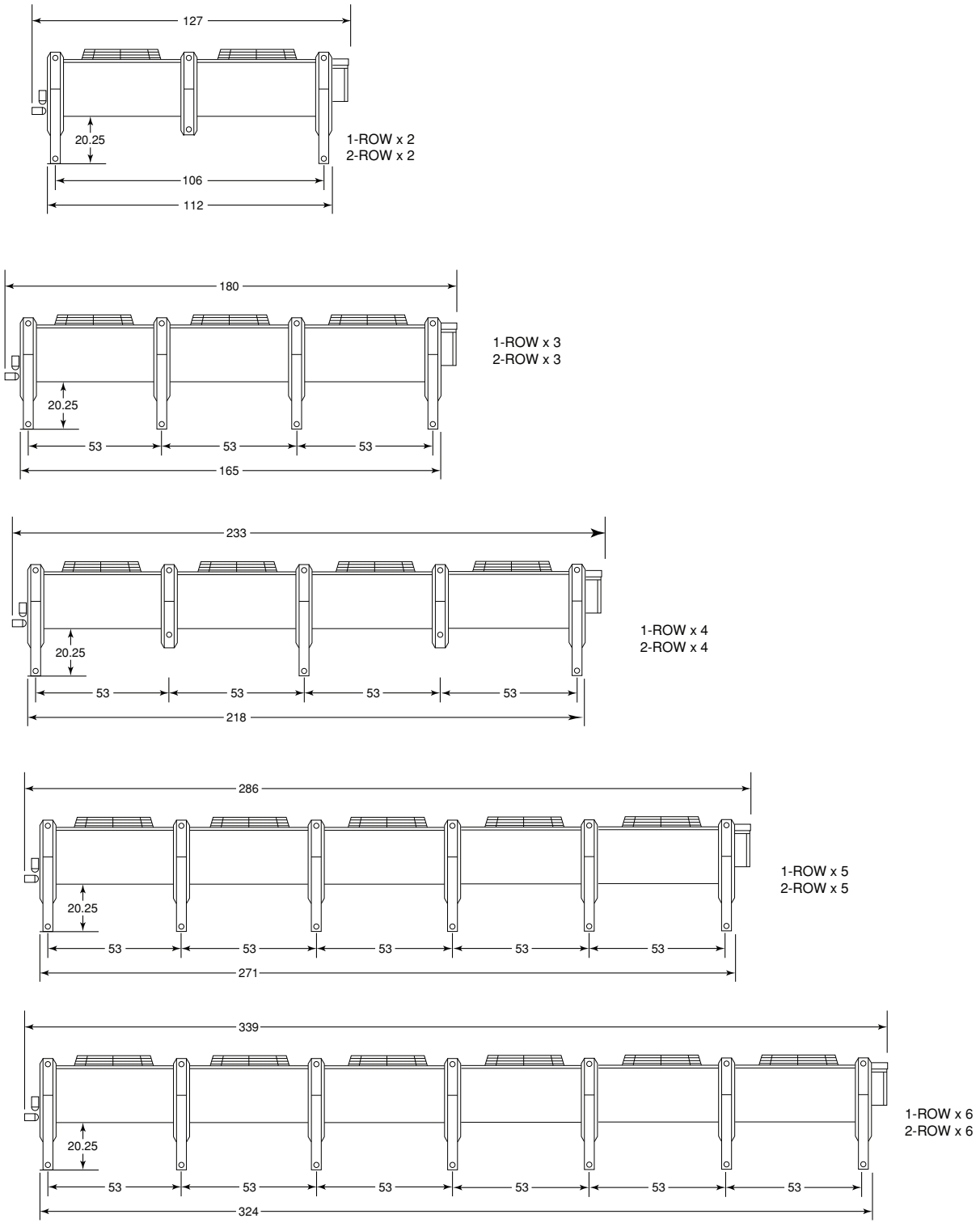


Figure Dim-5 PoolPak Air Cooled Condenser Side views

OPTIONAL WATER COOLED CONDENSER

The dimensions and connection data for the PoolPak optional remote cooling tower/chilled water cooled condenser are shown in **Table Dim-3**. **Figure Dim-6** shows the location of the dimensions.

Cabinet Size	Cooling Tower Cabinet Dimensions (Inches)						Weight (lb)
	A	B	C	D (dia*)	E (approx)	F (approx)	
A	79	44	63	2	15	55	1200
B	79	44	63	2	15	55	1200
C	79	44	63	2 or 3	15	55	1500

* CPVC Nominal Size - diameter depends on refrigerant system size

Cabinet Size	Chilled Water Cabinet Dimensions (Inches)						Weight (lb)
	A	B	C	D (dia**)	E (approx)	F (approx)	
A	79	44	63	1	15	55	950
B	79	44	63	1-1/2 or 2	15	55	1200
C	79	44	63	1-1/2 or 2 or 2-1/2	15	55	1500

** Male Pipe Thread - Copper

PoolPak Model	Water Piping		Refrigeration Connections				* OD Solder
			System 1*		System 2*		
	CPVC	MPT	Discharge	Liquid	Discharge	Liquid	
060	2	1	1-1/8	1-1/8	N/A	N/A	
080	2	1	1-3/8	1-1/8	N/A	N/A	
100	2	1-1/2	1-3/8	1-1/8	N/A	N/A	
120,140	2	1-1/2	1-5/8	1-3/8	N/A	N/A	
190	2	2	1-5/8	1-3/8	N/A	N/A	
220	3	2	1-3/8	1-1/8	1-3/8	1-1/8	
260	3	2	1-5/8	1-3/8	1-5/8	1-3/8	
300	3	2-1/2	1-5/8	1-3/8	1-5/8	1-3/8	

Table Dim-3 PoolPak Remote Water Cooled Condenser Data for SWHP SEP

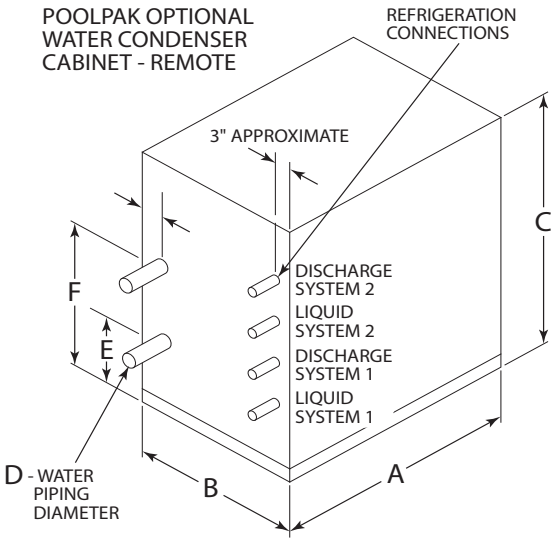


Figure Dim-6 PoolPak Remote Water Cooled Condenser view

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POOLWATER HEATING CONDENSER PERFORMANCE

PoolPak Model	Pool Water GPM	Water (WC-ft)[1]	Water (WC-ft)[2]	Water (WC-ft)[3]	Water (WC-ft)[4]	Heating Cap. Mbtu/hr
Full Water Condenser						
SWHP 060	25	18	15	13	11	220
SWHP 080	35	24	20	20	18	270
SWHP 100	40	15	13	20	10	345
SWHP 120	50	24	20	20	15	425
SWHP 140	60	23	20	19	23	500
SWHP 190	70	23	21	19	18	600
SWHP 220	80	18	15	20	15	700
SWHP 260	100	24	21	20	15	850
SWHP 300	120	25	22	20	23	1000
Partial Water Condenser						
SWHP 060	N/A	N/A	N/A	N/A	N/A	N/A
SWHP 080	20	16	14	12	10	130
SWHP 100	25	12	10	10	9	170
SWHP 120	25	18	12	14	10	195
SWHP 140	25	12	10	10	9	165
SWHP 190	30	13	11	10	9	200
SWHP 220	40	15	13	20	15	350
SWHP 260	50	23	26	19	15	430
SWHP 300	60	23	20	19	23	500

[1]Cleanable, vented condenser (double wall).

[2]Cleanable, nonvented condenser (single wall).

[3]Spiral, vented condenser (double wall).

[4]Spiral, nonvented condenser (single wall).

Table App-1 Pool Water Required Design flow for SWHP SEP

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INSTALLATION

LOCATION

The PoolPak unit is designed for indoor or outdoor locations, either ground-level or roof-top. The location must allow for free condensate drainage (without freezing), ventilation, supply and return ducts, and sufficient clearance for servicing the unit. Refer to **Figure Inst-1** for a typical roof-top installation.

For ground-level installation, precautions should be taken to protect the unit from tampering by or injury to unauthorized personnel. Safety precautions such as a fenced enclosure or additional locking devices on the panels or doors are advisable. Check with local authorities for safety regulations.

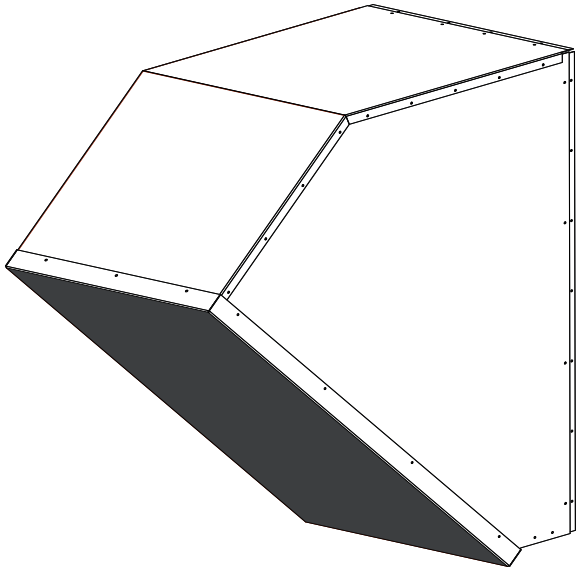


Figure App-3 Louver and Rainhood

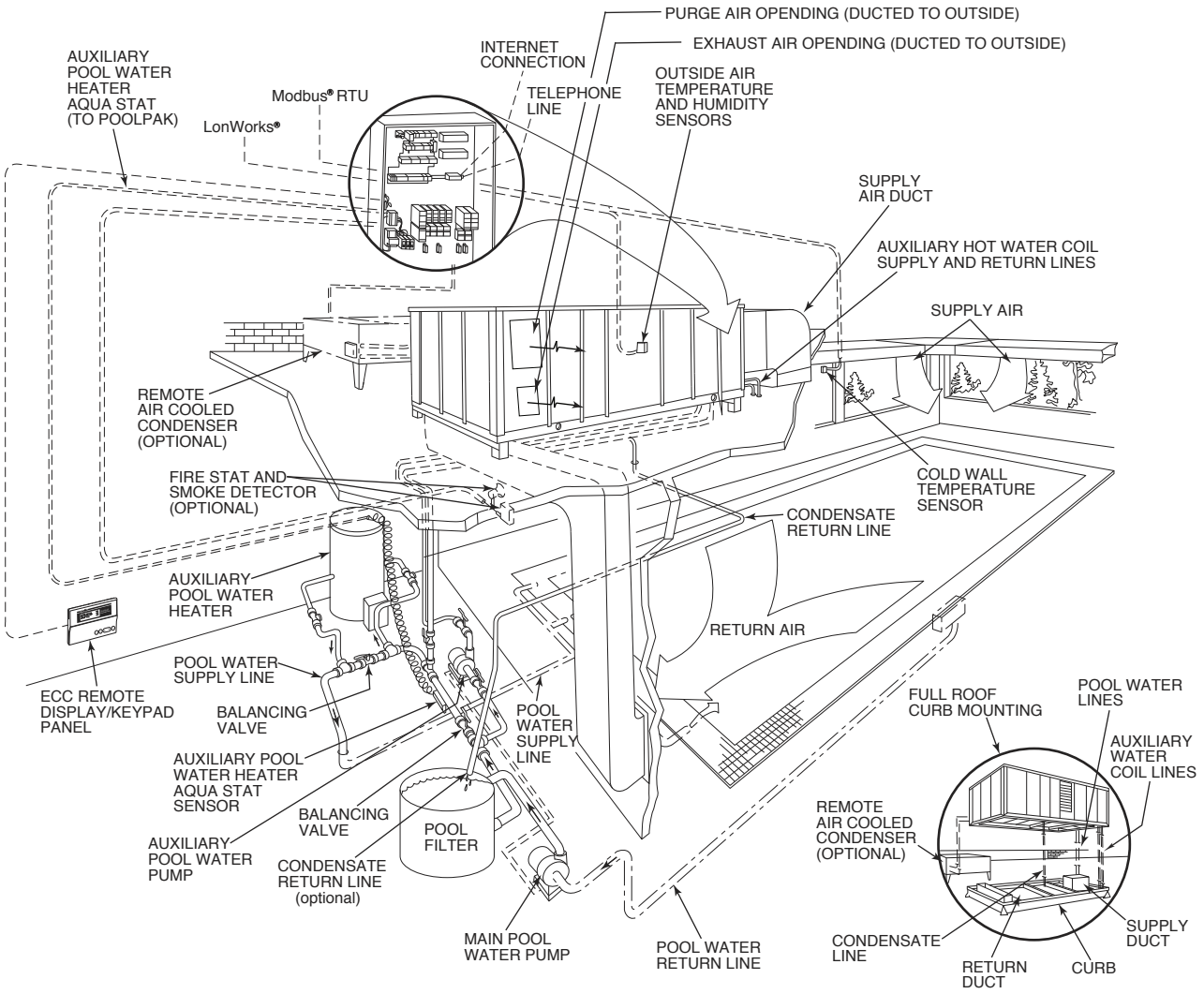


Figure Inst-1 PoolPak SWHP SEP Field Installation

Foundation

The unit must be mounted on a flat and level foundation capable of supporting the entire operating weight of the equipment. The unit MUST NOT set flat on a concrete slab. The PoolPak unit MUST BE raised 6 inches to allow for sufficient height to adequately trap the condensate line (see **Figure Inst-2**) and to allow for electrical service entrance. The unit must be supported at a minimum of six places, including all corners and the center points of each side (see **Figure Inst-3**). Each support should be at least 12 inches long. The unit must be level to ensure proper condensate drainage. If the unit is elevated beyond the normal reach of service personnel, a catwalk capable of supporting service personnel, their equipment, and the scroll compressor(s) (about 1,000 lb.) must be constructed around the unit by others.

For ground-level installation, a one-piece concrete slab with footers that extend below the frost line is highly recommended. Additionally, the slab should not be tied to the main building foundations to prevent noise transmission. The unit must be supported with adequate space to allow for a condensate line trap.

For roof-top installation, choose a location with adequate structural strength to support the entire weight of the unit and service personnel. For non-curb mounted units, provide spring vibration isolation to minimize vibration transmission to the roof structure. The unit must be situated with adequate height for a condensate line trap. The PoolPak unit may be mounted on equipment rails with spring vibration isolation. For any alternative mountings not discussed here, contact the factory for additional guidance. Care must be taken not to damage the roof. If the roof is bonded, consult the building contractor for allowable installation procedures.

UNIT LOCATION AND MOUNTING

The PoolPak Series S units are designed for indoor and outdoor locations: either ground level or roof top on a house keeping pad or curb. Foundation should be flat and level. Unit must not be set flat on concrete slab, but raised 6" to allow adequate space for condensate line trap. The unit must be supported at a minimum of six places including all corners and the center points of the length. Each support should be at least 12 inches long.

DAMPERS, OUTSIDE AIR AND EXHAUST

A rain hood is recommended for the Fresh Air Intake Damper and Exhaust Air Opening. Birdscreening is recommended.

POOL WATER CONDENSER

Piping must be schedule 80 CPVC (minimum). **PVC or COPPER IS NOT ACCEPTABLE.** The water circuit should be self-priming. Lines exposed to outdoor ambient conditions must be protected against freezing.

CONDENSATE DRAIN

All- section of the unit except the compressor section are equipped with drain pans. Each condensate drain upstream from air-cooled condenser coil is connected to a common drain outlet on either side of the unit base. Condensate drain piping external to the unit must be supplied and installed by the customer. Drain line must be sloped and trapped. Outdoor exposed lines must be protected against freezing with heat tape and insulation.

PoolPak Model	Minimum Straight Run (Feet)
SWHP 060	6
SWHP 080	6
SWHP 100	6
SWHP 120	8
SWHP 140	8
SWHP 190	8
SWHP 220	10
SWHP 260	10
SWHP 300	10

Table App-2 Supply fan duct straight run

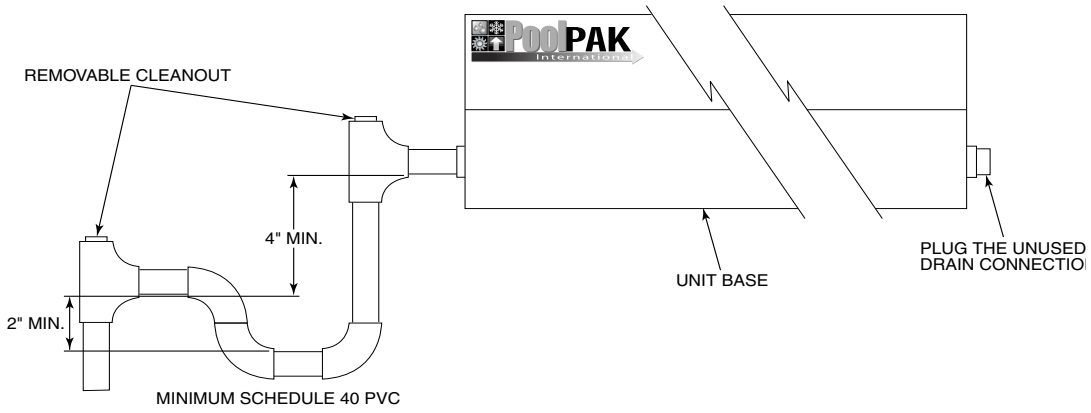


Figure Inst-2 Condensate drain trap (Note that this is the same as figure App-2, repeated here to make section stand alone)

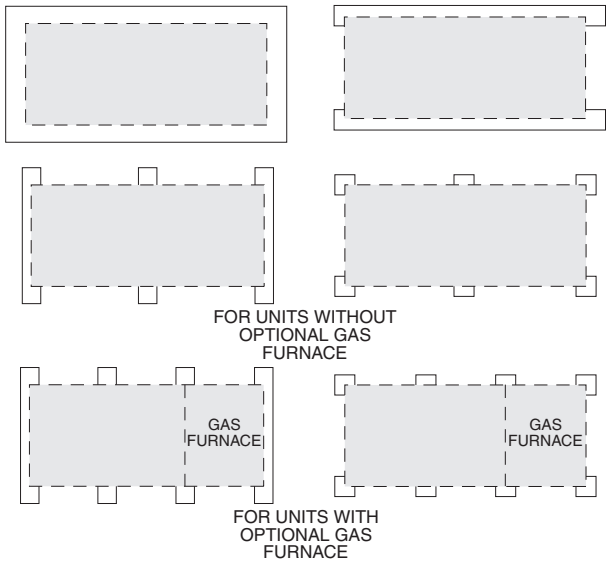


Figure Inst-3 PoolPak Unit Support Alternatives

Service Clearance

The clearance for service and repair must be 4 feet on all sides. For less than 4-foot clearances, consult your local PoolPak representative or the factory.

UNIT HOOKUP

Avoid tearing or damaging unit insulation while working on or around the unit. Do not stack access panels. Stand them upright with the insulation away from traffic.

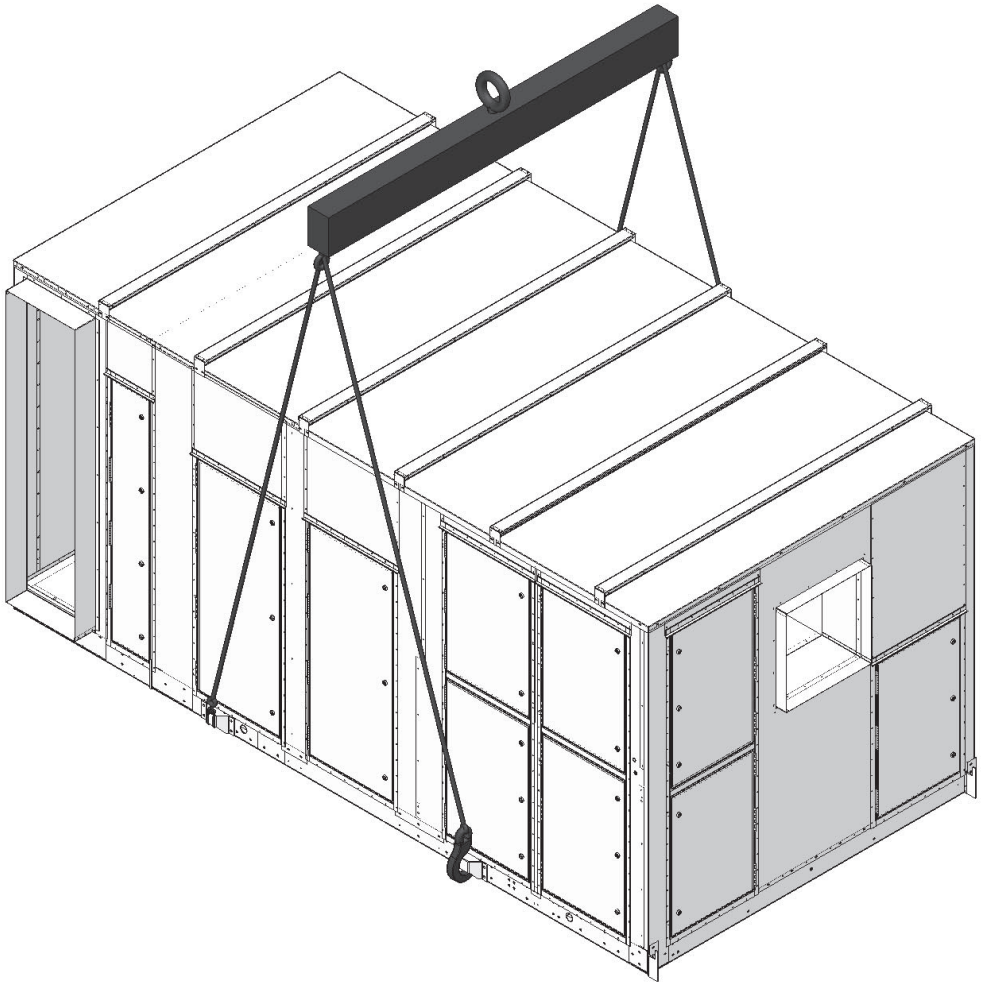
Gas Furnace Auxiliary Heat (Optional)

When using a gas furnace, power venting is provided for all unit sizes. **No additional venting or caps are provided. Please refer to the furnace manufacturer's manual for piping and venting instructions.** Natural gas furnaces are available with outputs of 180,000 to 1,250,000 BTU, as determined by unit configuration and project requirements.

INSPECTION

Immediately upon receiving the unit, inspect it for damage which may have occurred during transit. If damage is evident, note it on the carrier's freight bill. A written request for inspection by the carrier's agent should be made at once.

Failure to follow these directions will result in serious damage to the unit. **PoolPak will not accept responsibility or liability for repairing any resulting damage.**



NOTES:

RIGGING - Remove side outside air flange before lifting. Use cable or chain sling. Use spreader bars to prevent damage to unit. DO NOT USE FORKLIFT.

TRANSPORTING - Secure each unit to trailer by lifting holes to prevent damage to unit. These units shall not have any items stacked on top during transit. DO NOT SECURE WITH STRAP OR CHAIN OVER TOP OF UNIT.

SPREADER BARS - For A cabinet models, use 5-foot spreader bars. For B and C cabinet models use 8.5-foot spreader bars.

Figure Inst -4 SWHP SEP PoolPak Rigging

▲CAUTION
Lifting hooks must be blocked away from the side of the unit to prevent damage to the door panels while lifting. ***Do NOT walk on top of the unit or serious damage may result.***

HANDLING

Care should be taken during handling to avoid damage to panels, drain piping, etc. The PoolPak can be moved into position using pipe rollers underneath the base of the unit, or it can be lifted using a crane or a hoist attached through the four lifting holes provided in the unit base frame.

Use suitable spreaders or a frame to prevent damage to the PoolPak (see **Figure Inst-4**). Cables must be adjusted to length to correct for the heavier compressor end of the unit.

RIGGING AND WEIGHT

Figure Inst-4 shows the proper way to rig the PoolPak unit for lifting. Please refer to dimension tables for weights of specific product configurations.

OPTIONAL AIR COOLED CONDENSER REFRIGERANT PIPING GUIDELINES

Proper sizing and installation of the refrigerant piping from the PoolPak unit to the remote air cooled condenser is important. **Figure Inst-5** and **Table Inst-2** show guidelines for installations where the remote air cooled condenser piping is less than 100 feet long. **For installations with piping longer than 100 feet, contact the factory.**

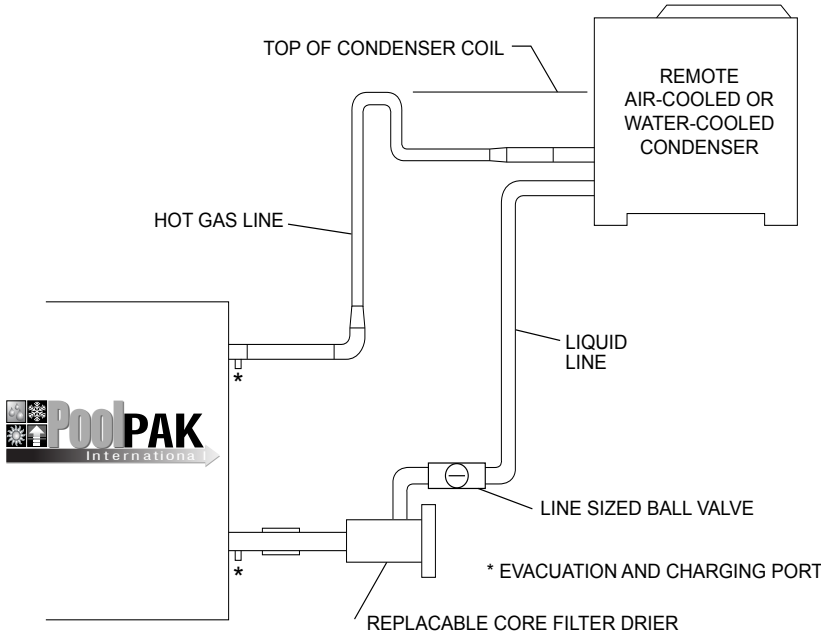


Figure Inst-5 Remote Air Cooled Condenser Refrigerant Piping Guideline

Remote Refrigerant Condensers above or at PoolPak Unit level**			
	Hot Gas Lines		
PoolPak Model	Horizontal Run	Vertical Riser	Liquid Lines
SWHP 060	1-3/8	1-3/8	7/8
SWHP 080	1-3/8	1-3/8	1-1/8
SWHP 100	1-5/8	1-5/8	1-1/8
SWHP 120	1-5/8	1-5/8	1-3/8
SWHP 140	2-1/8	1-5/8	1-3/8
SWHP 190	2-1/8	1-5/8	1-3/8
SWHP 220 ‡	1-5/8	1-5/8	1-1/8
	1-5/8	1-5/8	1-1/8
SWHP 260 ‡	1-5/8	1-5/8	1-3/8
	1-5/8	1-5/8	1-3/8
SWHP 300 ‡	2-1/8	1-5/8	1-3/8
	2-1/8	1-5/8	1-3/8

‡Models 220, 260, and 300 have two refrigeration circuits piped independently.

**** Refrigerant Condensers located below PoolPak Unit level, contact Factory**

Notes:

1. Tables for equivalent length of 100 feet or less. Contact factory for longer lines.

2. Double riser not required for vertical hot gas lines.

3. All pipe diameters are nominal OD inch sizes. Use only certified refrigeration tubing.

4. For scroll compressors, add 4 ounces of Trane No. 00042 or 00045 refrigerant oil per 10 pounds of R-22 refrigerant added.

Table Inst-2 Remote Air Cooled Condenser Refrigerant Piping Guideline

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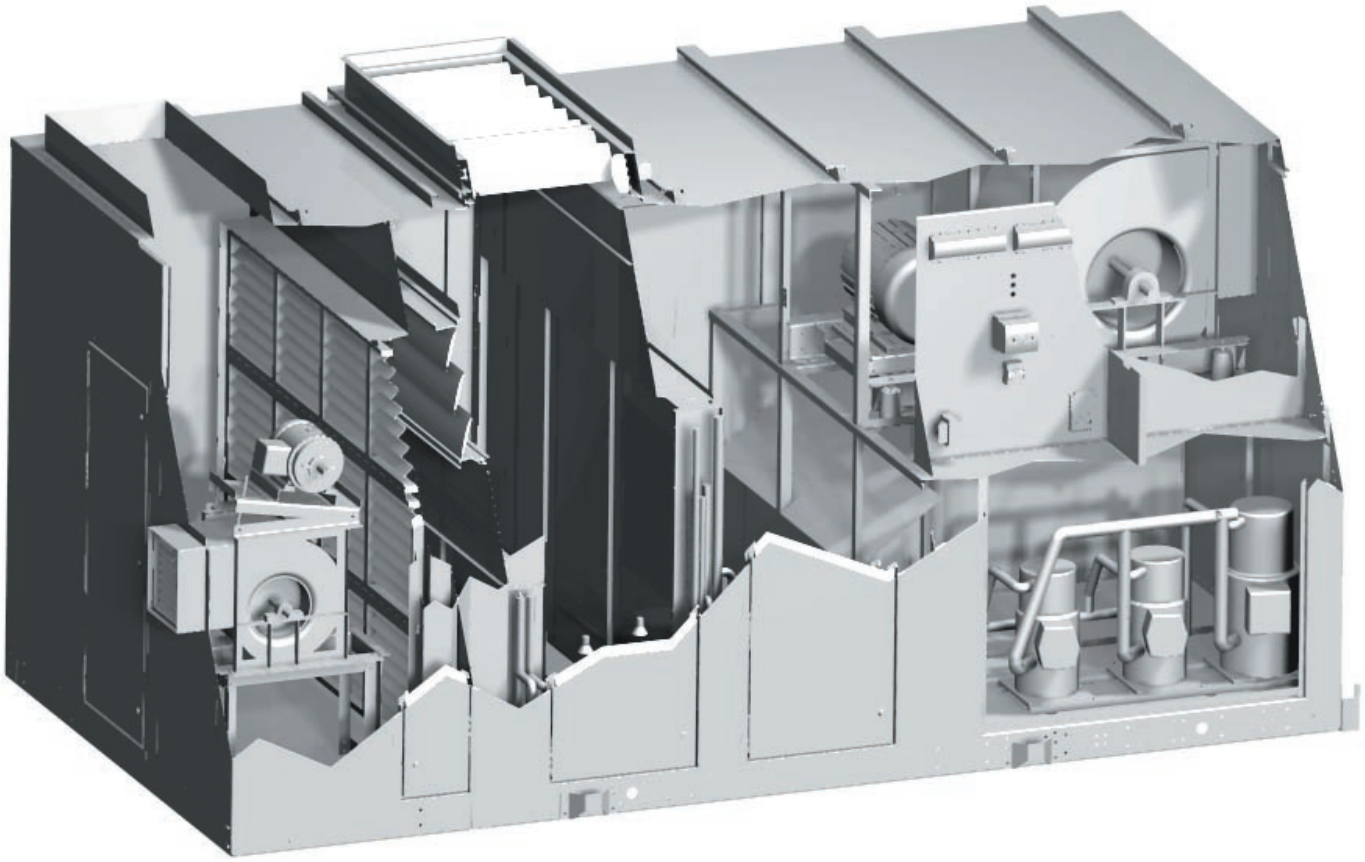
PoolPAK International



POOLPAK SWHP SE UNIT

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UNIT SPECIFICATION

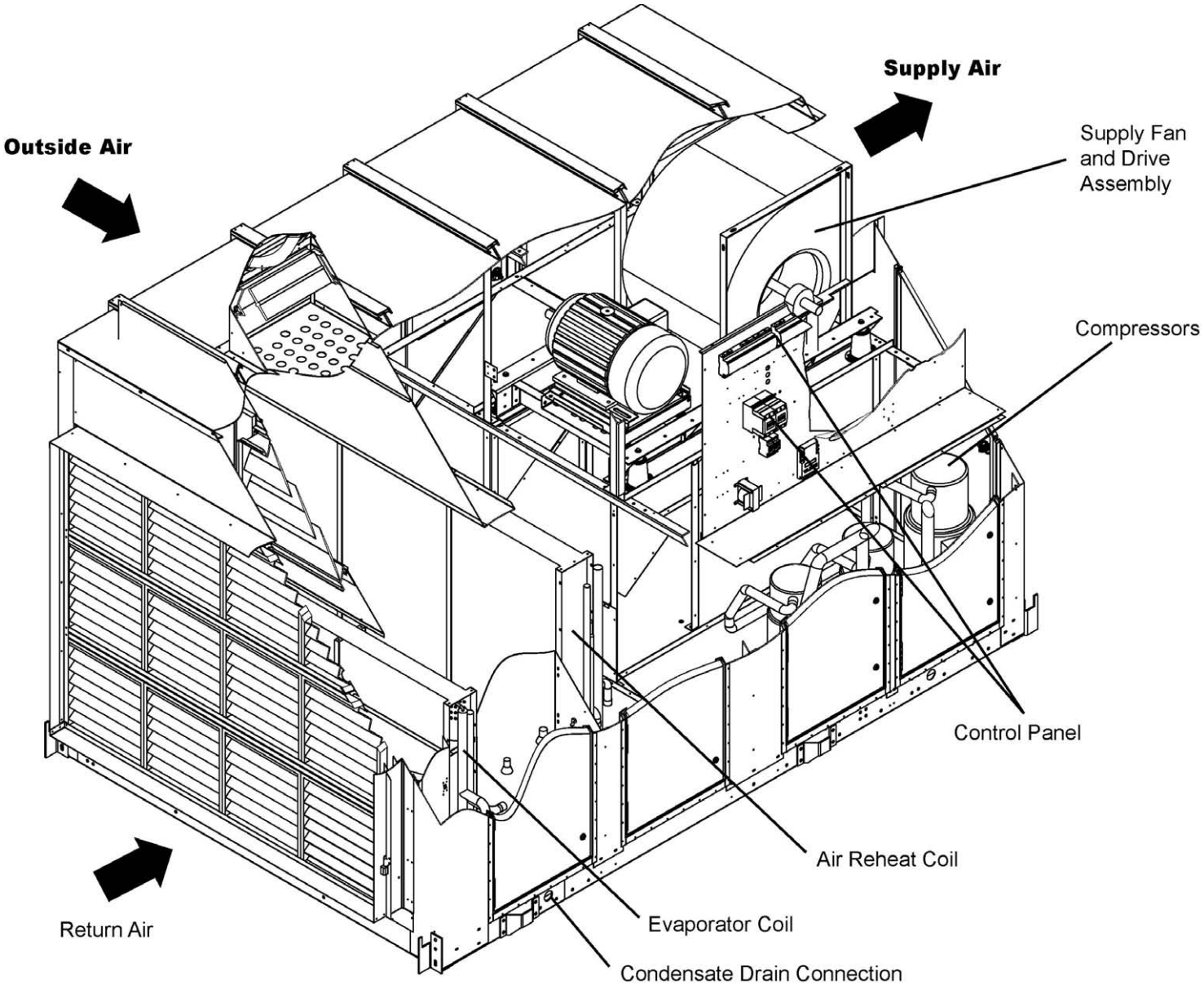

Figure Intr-2 SWHP SE Isometric View

POOLPAK SWHP SE QUICK SELECTION

Table Intr-1 shows the PoolPak unit sizes available along with other pertinent information.

PoolPak Model	Supply Air (CFM)	Lb/Hr Moisture Removal	Total Evaporator Capacity (MBH)1	Reheat Condenser Capacity (MBH)
Cabinet A				
060	5,000	79	181	222
080	8,000	102	234	287
100	10,000	125	284	351
Cabinet B				
100	15,000	125	284	351
120	12,000	142	325	406
140	15,000	166	388	483
190	18,000	200	468	586
Cabinet C				
140	21,000	166	388	483
190	24,000	200	468	586
220	24,000	241	576	712
260	30,000	281	648	812
300	30,000	338	802	994

At 82°F and 60% relative humidity

Table Intr-1 Quick Selection Chart for SWHP SE

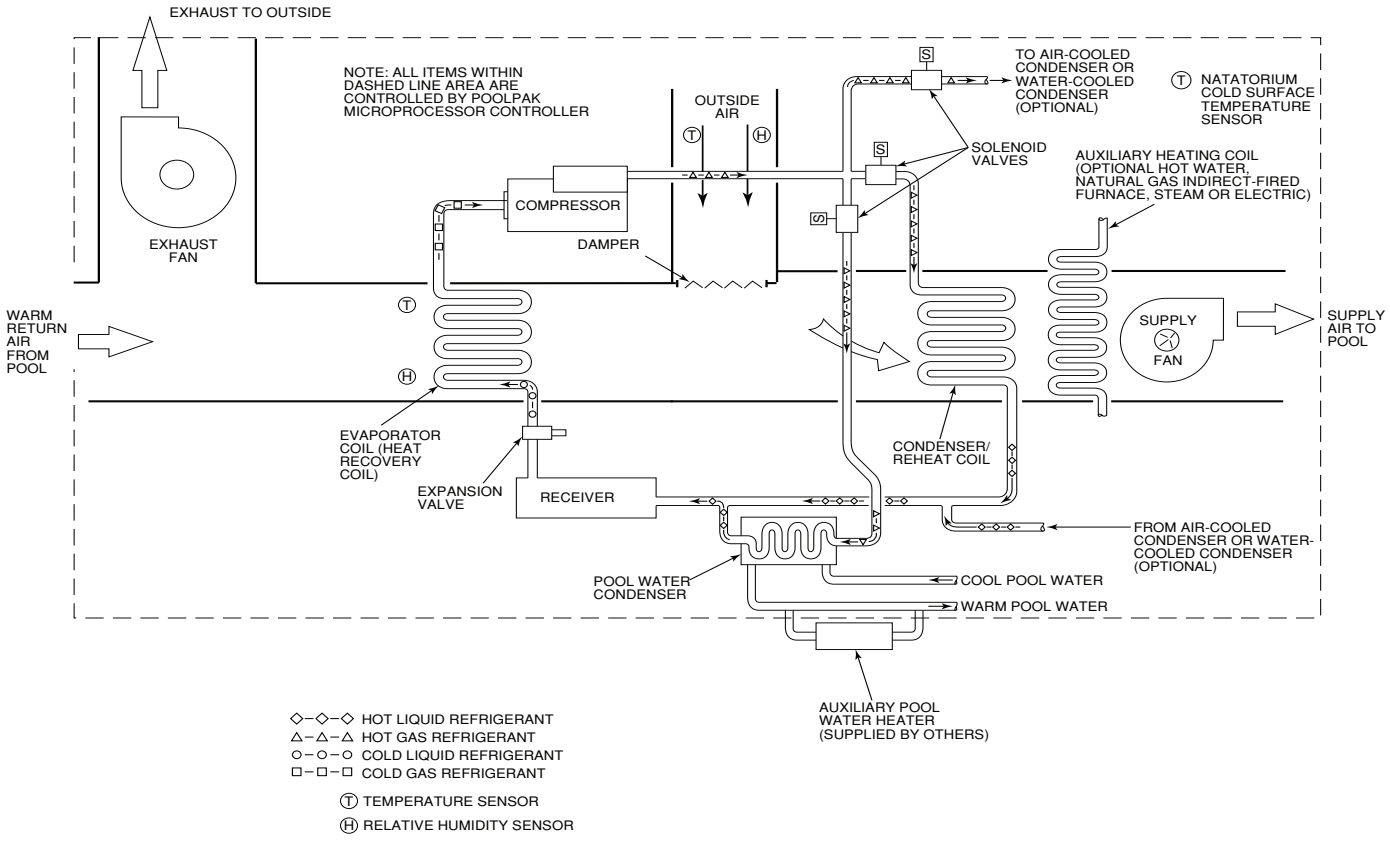

Figure Intr-1 PoolPak SWHP SE Natatorium Environmental Control System Schematic

UNIT PERFORMANCE

The following tables show the performance for SWHP SE units at 82°F and 60% relative humidty

PoolPak Model	Supply Blower Size		Lb/Hr Moisture Removal	Total Evaporator Capacity (MBH1)	Reheat Condenser Capacity (MBH)	Hot Water Heating Coil Size
	Supply Air (CFM)					
	Min	Max				
A	C	D	F	G	H	J
Cabinet A						
060	4,000	5,000	79	181	222	A
060	5,000	7,000	79	181	222	A
060	7,000	9,000	79	181	222	B
080	5,500	6,500	102	234	287	B
080	6,500	8,000	102	234	287	B
080	8,000	10,000	102	234	287	C
100	6,500	10,000	125	284	351	C
Cabinet B						
100	10,000	15,000	125	284	351	E
120	7,000	10,000	142	325	406	D
120	10,000	12,000	142	325	406	D
120	12,000	15,000	142	325	406	E
120	15,000	18,000	142	325	406	F
140	9,000	15,000	166	388	483	E
140	15,000	18,000	166	388	483	F
190	11,000	18,000	200	468	586	F
Cabinet C						
140	18,000	21,000	166	388	483	G
140	18,000	21,000	166	388	483	G
190	18,000	21,000	200	468	586	G
190	18,000	21,000	200	468	586	G
190	21,000	24,000	200	468	586	H
220	14,000	20,000	241	576	712	G
220	14,000	20,000	241	576	712	G
220	20,000	24,000	241	576	712	H
260	15,000	24,000	281	648	812	H
260	24,000	30,000	281	648	812	J
300	19,000	30,000	338	802	994	J

Table Perf-4 PoolPak Unit Performance Summary

PoolPak SWHP Nomenclature

SWHP[1] 0190[2] SR[3] — 22[4] A[5] — C[6] JF[7] — R022[8]

1. Swimming-Pool Water Heat Pump

2. Nominal Refrigeration Size

a. 0060 - 15 tons
b. 0080 - 20 tons
c. 0100 - 25 tons
d. 0120 - 30 tons
e. 0140 - 35 tons
f. 0190 - 40 tons
g. 0220 - 50 tons
h. 0260 - 60 tons
i. 0300 - 70 tons

3. Fan Configuration

a. SR = Supply and Return fans
b. S = Supply fan
c. SE = Supply and Exhaust fans
d. SEP = Supply, Exhaust and Purge fans

4. Fan Motor Horsepower(s):

a. If "Item 3" is SR, then "Item 4" is the code for the supply and return fan motor horsepower combinations:

Code	Motor Sizes (HP)	Code	Motor Sizes (HP)	Code	Motor Sizes (HP)
03	3/3	15	15/15	30	30/30
05	5/5	17	15/20	35	30/40
07	7.5/7.5	20	20/20	40	40/40
08	7.5/10	22	20/25	45	40/50
10	10/10	25	25/25	50	50/50
12	10/15	27	25/30		

b. If "Item 3" is S, SE or SEP, then "Item 4" is the code for the supply fan motor horsepower:

Code	Motor Sizes (HP)	Code	Motor Sizes (HP)	Code	Motor Sizes (HP)
03	3	15	15	30	30
05	5	17	15	35	30
07	7.5	20	20	40	40
08	7.5	22	20	45	40
10	10	25	25	50	50
12	10	27	25		

5. Voltage

A = 208/3/60
C= 230/3/60
E = 460/3/60
G = 575/3/60
L = 380/3/50
J = 200/3/50

6. Cabinet Size

a. A
b. B
c. C

7. Internal Use Only

8. Refrigerant:

a. R022 = Refrigerant 22
b. R407 = Refrigerant 407c
c. R410 = Refrigerant 410a

ELECTRICAL DATA

PoolPak Model	Compressor No.	Voltage Code							
		A		C		E		G	
		208/3/60		230/3/60		460/3/60		575/3/60	
		RLA	LRA	RLA	LRA	RLA	LRA	RLA	LRA
60	1								
80	1	41.4	276	41.4	276	18.1	129	14.4	103
	2	41.4	276	41.4	276	18.1	129	14.4	103
100	1	60.5	414	60.5	414	26.3	196	21.0	157
	2	41.4	276	41.4	276	18.1	129	14.4	103
120	1	60.5	414	60.5	414	26.3	196	21.0	157
	2	60.5	414	60.5	414	26.3	196	21.0	157
140	1	41.4	276	41.4	276	18.1	129	14.4	103
	2	41.4	276	41.4	276	18.1	129	14.4	103
	3	60.5	414	60.5	414	26.3	196	21.0	157
190	1	41.4	276	41.4	276	18.1	129	14.4	103
	2	60.5	414	60.5	414	26.3	196	21.0	157
	3	60.5	414	60.5	414	26.3	196	21.0	157
220	1	41.4	276	41.4	276	18.1	129	14.4	103
	2	60.5	414	60.5	414	26.3	196	21.0	157
	3	41.4	276	41.4	276	18.1	129	14.4	103
	4	60.5	414	60.5	414	26.3	196	21.0	157
260	1	60.5	414	60.5	414	26.3	196	21.0	157
	2	60.5	414	60.5	414	26.3	196	21.0	157
	3	60.5	414	60.5	414	26.3	196	21.0	157
	4	60.5	414	60.5	414	26.3	196	21.0	157
300	1	41.4	276	41.4	276	18.1	129	14.4	103
	2	41.4	276	41.4	276	18.1	129	14.4	103
	3	60.5	414	60.5	414	26.3	196	21.0	157
	4	41.4	276	41.4	276	18.1	129	14.4	103
	5	41.4	276	41.4	276	18.1	129	14.4	103
	6	60.5	414	60.5	414	26.3	196	21.0	157

Table Perf-5 PoolPak Compressor electrical data for SWHP SE

Motor HP*	Voltage Code							
	A		C		E		G	
	208/3/60		230/3/60		460/3/60		575/3/60	
	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA
3	9.5	62	8.5	68	4.3	34	3.6	27
5	14.8	92	13.4	102	6.7	51	5.7	41
7.5	22	118	20	130	10	65	8	52
10	29	26	157	174	13	87	11	70
15	42	215	38	238	19	119	16	95
20	56	289	51	320	26	160	21	128
25	71	356	64	394	32	197	26	158
30	83	429	76	474	38	237	31	190
40	110	570	98	630	50	315	40	252
50	143	840	130	760	61	362	49	290

*Based on high-efficiency Totally Enclosed Fan Cooled Motors (TEFC)

Table Perf-6 PoolPak Fan Motor electrical data

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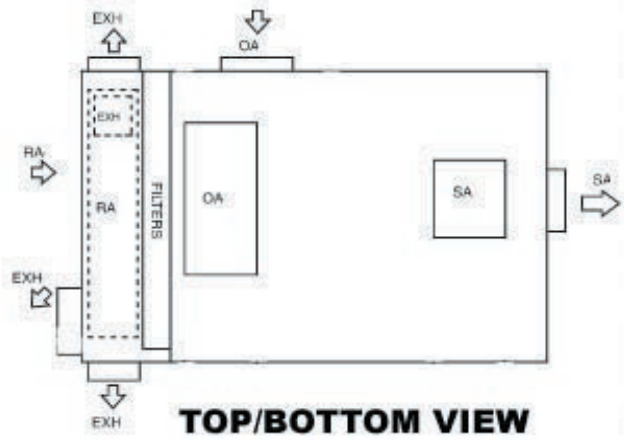
DIMENSIONS

POOLPAK UNIT

The dimensions shown in **Table Dim-1** refer to **Figures Dim-1**, **Dim-2** and **Dim-3**. For options and configurations not shown, contact the factory.



TOP/BOTTOM VIEW

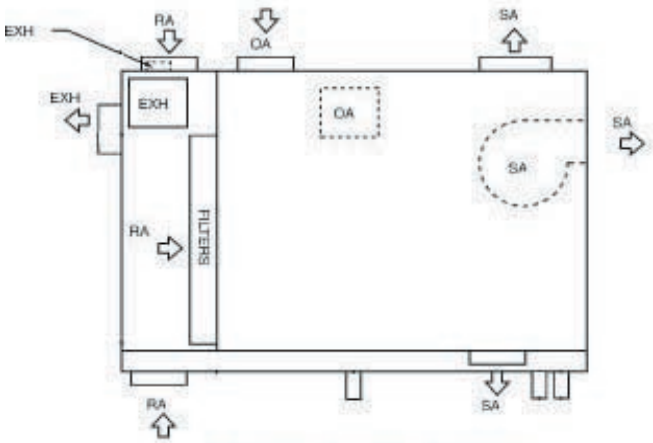
Available Airside Configurations SWHP SE

SA-TC07, Top(CW), Indoor only
SA-TC08, Top(CCW), Indoor only
SA-FC01, Front(CW) - B, C cabinets
SA-FC02, Front(CCW) - B, C cabinets
SA-FC01, Front(CW) - A cabinet no isolation
SA-FC02, Front(CCW) - A cabinet no isolation
SA-BN00, Bottom
SA-TN00, Top, Furnace
SA-FC00, Front, Furnace
SA-BN00, Bottom, Furnace

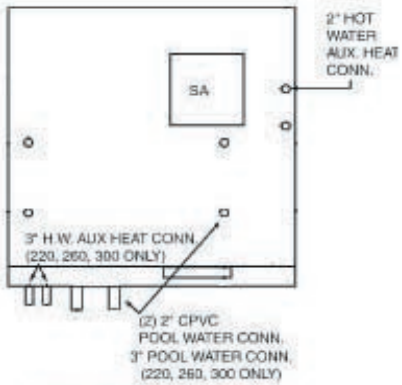
EA-LC13, Exh / Purge Fan Left (CW)
EA-RC10, Exh / Purge Fan Right (CCW)
EA-TC00, Exh / Purge Fan Top
EA-KC05, Exh / Purge Fan Rear (CW)

OA-LN, Full Outside Air – Left
OA-TC, Indoor only, Full Outside Air – Top

RA-TP, Top Indoor
RA-BP, Bottom
RA-LP, Left – Opposite Control Panel
RA-RP, Right – Control Panel

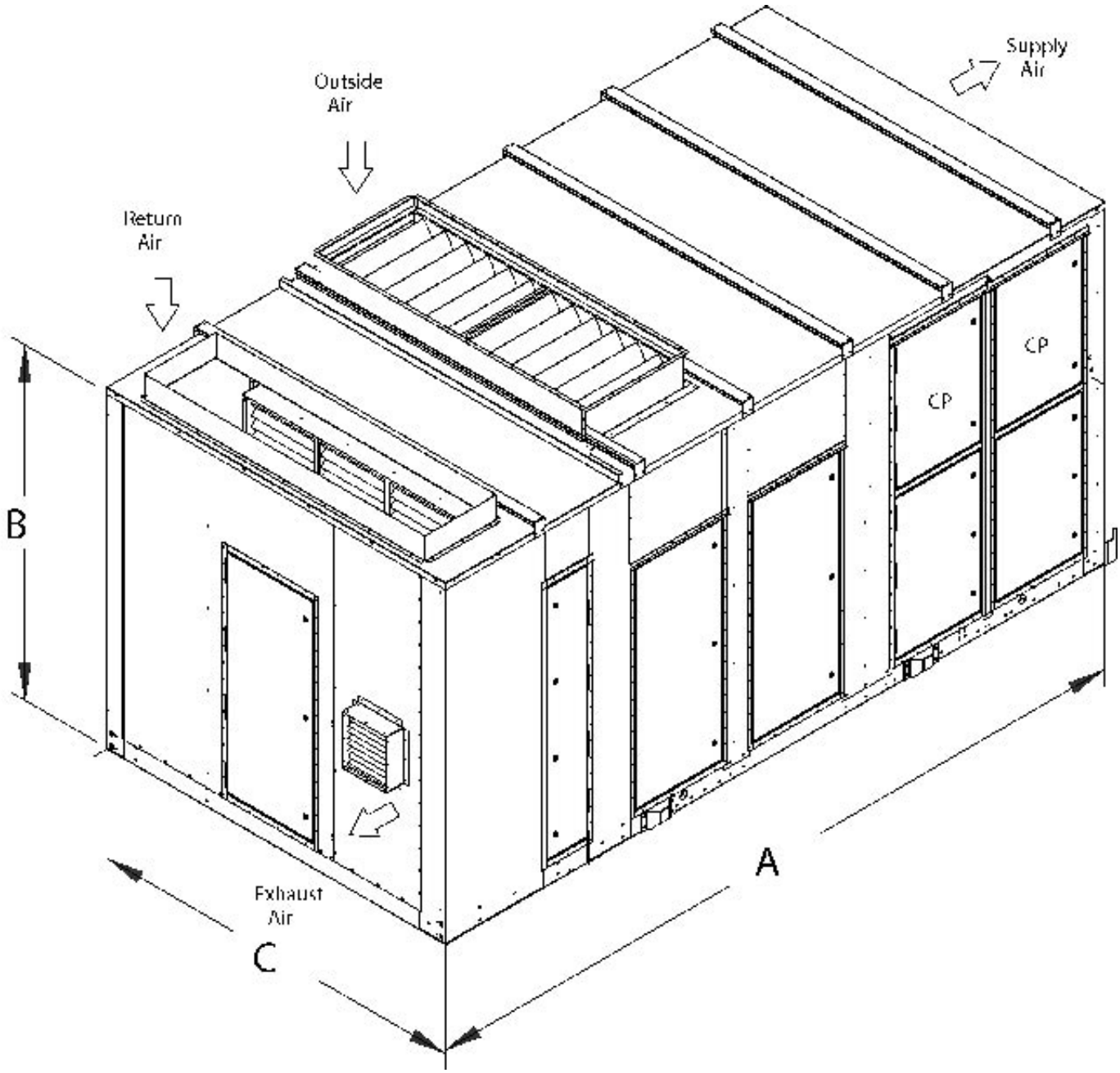


RIGHT SIDE VIEW
(CONTROL PANEL)



COMPRESSOR
REAR VIEW

Figure Dim-1 PoolPak SWHP SE Dimensions



Dimensions are illustrative only. Contact the factory for your specific requirements.

Figure Dim-2 PoolPak SWHP SE Isometric, with Return Plenum

SWHP SE - Unit (No Furnace)				
Model	**Length**	**Height**	**Width**	**Weight**
	“A”	**“B”**	**“C”**	**Lbs**
A Cabinet				
060	173.3	81.4	62.5	3900
080	173.3	81.4	62.5	4300
100	173.3	81.4	62.5	5300
B Cabinet				
100	185.0	90.5	95.0	6150
120	185.0	90.5	95.0	6250
140	185.0	90.5	95.0	7150
190	185.0	90.5	95.0	7350
C Cabinet				
140	249.4	101.5	95.0	9650
190	249.4	101.5	95.0	9750
220	249.4	101.5	95.0	10450
260	249.4	101.5	95.0	10950
300	249.4	101.5	95.0	11450

Table Dim-1 PoolPak SWHP SE Dimensions, without furnace

SWHP SE - Unit Dimensions (With Furnace)							
Model	**Furnace Output**	Front Supply	Top/Bottom Supply			Front Supply	Top/Bottom Supply
		Length		**Height**	**Width**	**Weight**	
	MBtuh	**“A”**	**“A”**	**“B”**	**“C”**	**Lbs**	**Lbs**
A Cabinet							
060	200,240,280,320	240.8	269.2	81.4	62.5	4400	4600
080	200,240,280,320	240.8	269.2	81.4	62.5	4800	5000
100	200,240,280,320,360	240.8	269.2	81.4	62.5	5800	6000
B Cabinet							
100	240,280,320,360,400,480,560,640	263.3	303.0	90.5	95.0	6950	7150
120	240,280,320,360,400,480,560,640	263.3	303.0	90.5	95.0	7050	7250
140	240,280,320,360,400,480,560,640	263.3	303.0	90.5	95.0	7950	8150
140	850,1000	286.2		90.5	95.0	9250	9450
190	240,280,320,360,400,480,560,640	263.3	303.0	90.5	95.0	8150	8350
190	850,1000	286.2		90.5	95.0	9450	9650
C Cabinet							
140	240,280,320,360,400,480,560,640	327.7	366.9	101.5	95.0	10450	10650
140	850,1000	351.0	381.4	101.5	95.0	11750	11950
190	280,320,360,400,480,560,640	327.7	366.9	101.5	95.0	10550	10750
190	850,1000	351.0	381.4	101.5	95.0	11850	12050
220	360,400,480,560,640	327.7	366.9	101.5	95.0	11250	11450
220	850,1000	351.0	381.4	101.5	95.0	12550	12750
260	360,400,480,560,640	327.7	366.9	101.5	95.0	11750	11950
260	850,1000	351.0	381.4	101.5	95.0	13050	13250
300	560,640	327.7	366.9	101.5	95.0	12250	12450
300	850,1000	351.0	381.4	101.5	95.0	13550	13750

Table Dim-1 PoolPak SWHP SE Dimensions, with furnace

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CURB MOUNTING

Illustrated in Figure Dim-7 is a curb that has been designed specifically for the PoolPak product line. Refer to Table Dim-8 for roof curb dimensions. The outside dimensions of the curb are such that the base of the PoolPak extends over the edge of the curb on each side. This aids in preventing rain water, running down the sides of the unit, from getting between the base of the PoolPak and the curb. The curb also features a waterproof capped area under the PoolPak's compressor compartment with provisions for running the pool water lines through the cap.

It is the installing contractor's responsibility to properly complete the following:

- Flash the curb into the roof
- Insulate the curb
- Connect the supply and return duct to the PoolPak
- Connect condensate drain lines with appropriate traps
- Seal the curb's top surface to the bottom of the PoolPak with supplied gasket
- Seal the pool water pipes where they go through the curb cap under the compressor compartment

If specified when ordering, all water piping connections can be made through the curb. These water connectionsinclude: pool water, condensate, auxiliary hot water coil, chilled water coil, domestic hot water, and whirlpool water.

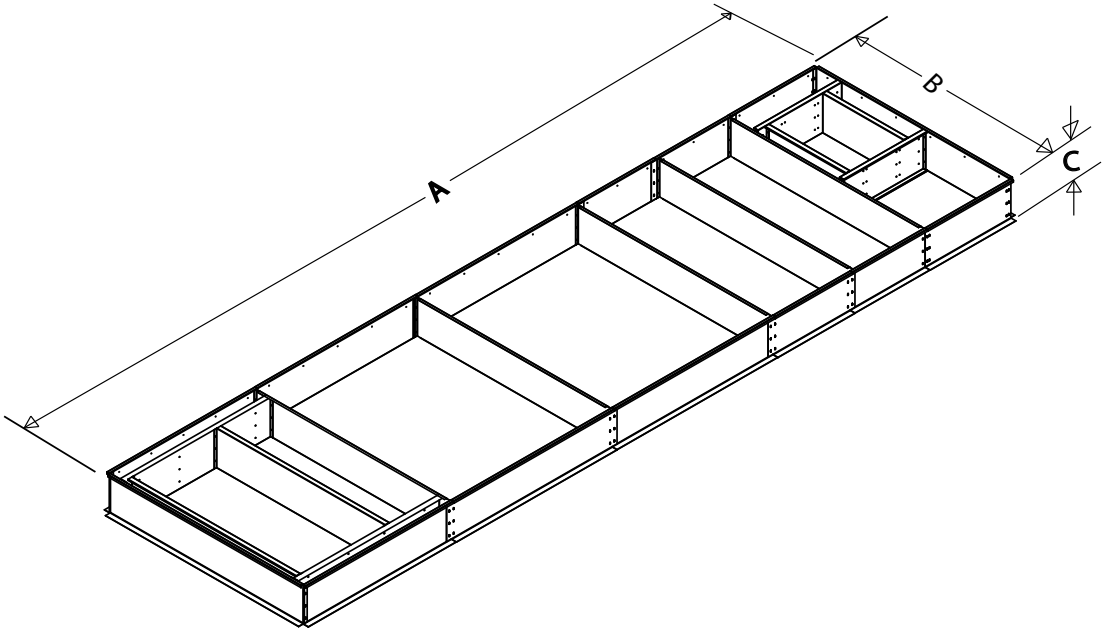
If the PoolPak is to be mounted on another manufacturer's curb, the PoolPak factory must be notified of this fact at the time the PoolPak sales order is submitted. PoolPaks produced for curb mounting, whether on a PoolPak curb or on another manufacturer's curb, receive special weatherizing and insulating that non-curb mounted PoolPaks do not receive.

NOTE

If the factory is not notified that a PoolPak is to be curb mounted, the PoolPak base will not be watertight, it will leak, and it will not be properly insulated.

If a non-PoolPak curb is used, note that the weather seal at the compressor end is under the bulkhead between the compressor and return air compartments. The pan under the compressor compartment isolates the area under the curb from the compressor compartment and from possible pool water or oil leaks as well as from the ambient conditions present in the compressor compartment.

Figure Dim-7 shows an isometric view of a typical SWHP Series S PoolPak curb. The figure shows optional return and supply duct attachments. Please refer to tables below for overall dimensions.



Dimensions are illustrative only. Contact the factory for your specific requirements.

Figure Dim-7 PoolPak SWHP SE Curb, Isometric view

NOTE
Curb dimensions are illustrative only. Contact the factory for your specific requirements.

SWHP SE - Curb (No Furnace)			
Model	**Length**	**Width**	**Height**
	"A"	**"C"**	**"B"**
A Cabinet			
060	171.8	61.0	16.0
080	171.8	61.0	16.0
100	171.8	61.0	16.0
B Cabinet			
100/120	183.5	93.5	16.0
140	183.5	93.5	16.0
190	183.5	93.5	16.0
C Cabinet			
140	247.9	93.5	16.0
190	247.9	93.5	16.0
220	247.9	93.5	16.0
260	247.9	93.5	16.0
300	247.9	93.5	16.0

Table Dim-8 PoolPak SWHP SE Curb Dimensions, without furnace

SWHP SE - Curb Dimensions (With Furnace)					
Model	Furnace Output	Front Supply	Top/Bottom Supply		
		Length		Width	Height
	MBtuh	"A"	"A"	"C"	"B"
A Cabinet					
060	200,240,280,320	239.3	267.7	61.0	16.0
080	200,240,280,320	239.3	267.7	61.0	16.0
100	200,240,280,320,360	239.3	267.7	61.0	16.0
B Cabinet					
100/120	240,280,320,360,400,480,560,640	261.8	301.5	93.5	16.0
140	240,280,320,360,400,480,560,640	261.8	301.5	93.5	16.0
140	850,1000	284.7	0.0	93.5	16.0
190	240,280,320,360,400,480,560,640	261.8	301.5	93.5	16.0
190	850,1000	284.7	0.0	93.5	16.0
C Cabinet					
140	240,280,320,360,400,480,560,640	326.2	365.4	93.5	16.0
140	850,1000	349.5	379.9	93.5	16.0
190	280,320,360,400,480,560,640	326.2	365.4	93.5	16.0
190	850,1000	349.5	379.9	93.5	16.0
220	360,400,480,560,640	326.2	365.4	93.5	16.0
220	850,1000	349.5	379.9	93.5	16.0
260	360,400,480,560,640	326.2	365.4	93.5	16.0
260	850,1000	349.5	379.9	93.5	16.0
300	560,640	326.2	365.4	93.5	16.0
300	850,1000	349.5	379.9	93.5	16.0

* All Lengths in inches

Table Dim-9 PoolPak SWHP SE Curb Dimensions, with furnace

AIR CONDITIONING CONDENSER SELECTION GUIDE

POOLPAK-PROVIDED AIR-COOLED CONDENSER SELECTION AND ELECTRICAL INFORMATION

A. See **Table Perf-8** for selection of PoolPak Air-Cooled Condenser for each PoolPak model as a function of ambient temperature and electrical data. **Figures Dim-4** and **Dim-5** show the end and side views of the air cooled condensers.

B. **Table Perf-8 and Perf-9** shows the electrical data.

PoolPak Model (R 22)	Ambient Air (ºF)	ACC Selection	Arrangement: # rows X # Fans	Voltage & Phase	No. of Circuits	Gas	Liquid	charge Lbs./ circuit	Weight Lbs.	FLA	MCA	MOP	Remote ACC Heat Rejection[1]
60	95/ 100º	ACC0271	1 x 2	208/230-3-60	1	1-5/8	1-1/8	10	580	14.0	20.0	35.0	220
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	105º	ACC0331	1 x 2	208/230-3-60	1	1-5/8	1-1/8	15	630	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	110º	ACC0451	1 x 2	208/230-3-60	1	2-1/8	1-3/8	29	690	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	115º	ACC0621	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1010	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
				380-3-50						8.8	15.0	20.0	
80	95/ 100º	ACC0271	1 x 2	208/230-3-60	1	1-5/8	1-1/8	10	580	14.0	20.0	35.0	270
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0331	1 x 2	380-3-50	1	1-5/8	1-1/8	15	630	5.8	15.0	15.0	
	105º	ACC0331	1 x 2	208/230-3-60	1	1-5/8	1-1/8	15	630	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0431	1 x 2	380-3-50	1	2-1/8	1-3/8	29	680	5.8	15.0	15.0	
	110º	ACC0521	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
				380-3-50						8.8	15.0	20.0	
	115º	ACC0771	2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1390	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
100	95/ 100º	ACC0361	1 x 2	208/230-3-60	1	1-5/8	1-1/8	15	630	14.0	20.0	35.0	345
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0431	1 x 2	380-3-50	1	2-1/8	1-3/8	29	680	5.8	15.0	15.0	
	105º	ACC0431	1 x 2	208/230-3-60	1	2-1/8	1-3/8	29	680	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0491	1 x 3	380-3-50	1	2-1/8	1-3/8	22	930	8.8	15.0	20.0	
	110º	ACC0681	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1010	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
				380-3-50						8.8	15.0	20.0	
	115º	ACC0961	2 x 2	208/230-3-60	1	2-1/8	1-3/8	40	1490	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	

[1]Heat rejection at 120°F condensing temperature (MBtu/hr).

[2]Two circuit air-cooled condenser, one for each compressor manifold, required for these units

Table Perf-8 SWHP SE Optional Air-Cooled Condenser Data for R-22 **(continued on next page)**

PoolPak Model (R 22)	Ambient Air (°F)	ACC Selection	Arrangement: # rows X # Fans	Voltage & Phase	No. of Circuits	Gas	Liquid	charge Lbs./ circuit	Weight Lbs.	FLA	MCA	MOP	Remote ACC Heat Rejection [1]
120	95/ 100º	ACC0431	1 x 2	208/230-3-60	1	2-1/8	1-3/8	29	680	14.0	20.0	35.0	425
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0491	1 x 3	380-3-50	1	2-1/8	1-3/8	22	930	8.8	15.0	20.0	
	105º	ACC0551	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
		ACC0591	1 x 3	380-3-50	1	2-1/8	1-3/8	30	1000	8.8	15.0	20.0	
	110º	ACC0771	2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1390	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	115º	ACC1161	2 x 3	208/230-3-60	1	2-1/8	1-3/8	44	2060	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
140	95/ 100º	ACC0491	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	21.0	22.8	40.0	500
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
		ACC0591	1 x 3	380-3-50	1	2-1/8	1-3/8	30	1000	8.8	15.0	20.0	
	105º	ACC0661	2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1340	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	110º	ACC0921	2 x 2	208/230-3-60	1	2-1/8	1-3/8	40	1490	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	115º	ACC1371	2 x 3	208/230-3-60	1	2-1/8	1-3/8	58	2210	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
190	95/ 100º	ACC0591	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1000	21.0	22.8	40.0	600
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
		ACC0661	2 x 2	380-3-50	1	2-1/8	1-3/8	29	1340	11.7	15.0	20.0	
	105º	ACC0731	2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1340	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
		ACC0861	2 x 2	380-3-50	1	2-1/8	1-3/8	40	1440	11.7	15.0	20.0	
	110º	ACC1161	2 x 3	208/230-3-60	1	2-1/8	1-3/8	44	2060	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
	115º	ACC1811	2 x 4	208/230-3-60	1	2-1/8	1-3/8	140	2930	56.0	57.8	70.0	
				460-3-60						28.0	28.9	35.0	
				575-3-60						22.4	23.1	30.0	
				380-3-50						23.3	28.9	35.0	

[1]Heat rejection at 120°F condensing temperature (MBtu/hr).
[2]Two circuit air-cooled condenser, one for each compressor manifold, required for these units

Table Perf-8 SWHP SE Optional Air-Cooled Condenser Data for R-22 (continued on next page)

PoolPak Model (R 22)	Ambient Air (ºF)	ACC Selection	Arrangement: # rows X # Fans	Voltage & Phase	No. of Circuits	Gas	Liquid	charge Lbs./ circuit	Weight Lbs.	FLA	MCA	MOP	Remote ACC Heat Rejection[1]
220	95/100º	ACC0732	2 x 2	208/230-3-60	2	2@ 1-5/8	2@ 1-1/8	14.5/ 14.5	1340	28.0	29.8	45.0	350/ 350[2]
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
		ACC0862	2 x 2	380-3-50	2	2@2-1/8	2@1-3/8	20/20	1440	11.7	15.0	20.0	
	105º	ACC0992	2 x 3	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	22/22	1990	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1092	2 x 3	380-3-50	2	2@2-1/8	2@1-3/8	22/22	1990	17.5	21.9	30.0	
	110º	ACC1372	2 x 3	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	29/29	2210	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
	115º	ACC1972	2 x 5	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	63/63	3410	70.0	71.8	90.0	
				460-3-60						35.0	35.9	45.0	
				575-3-60						28.0	28.7	35.0	
				380-3-50						29.2	35.9	45.0	
260	95/100º	ACC0862	2 x 2	208/230-3-60	2	2@2-1/8	2@1-3/8	20/20	1440	28.0	29.8	45.0	425/ 425[2]
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
		ACC0992	2 x 3	380-3-50	2	2@2-1/8	2@1-3/8	22/22	1990	17.5	21.9	30.0	
	105º	ACC1092	2 x 3	208/230-3-60	2	2@2-1/8	2@1-3/8	22/22	1990	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1292	2 x 3	380-3-50	2	2@2-1/8	2@1-3/8	29/29	2140	17.5	21.9	30.0	
	110º	ACC1652	2 x 4	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	52/52	2730	56.0	57.8	70.0	
				460-3-60						28.0	28.9	35.0	
				575-3-60						22.4	23.1	30.0	
				380-3-50						23.3	28.9	35.0	
	115º	ACC2442	2 x 5	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	86/86	3660	70.0	71.8	90.0	
				460-3-60						35.0	35.9	45.0	
				575-3-60						28.0	28.7	35.0	
				380-3-50						29.2	35.9	45.0	
300	95/100º	ACC0992	2 x 3	208/230-3-60	2	2@ 2 1/8	2@ 1-3/8	22/22	1990	42.0	43.8	60.0	500/ 500[2]
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1182	2 x 3	380-3-50	2	2@ 2-1/8	2@ 1-3/8	29/29	2140	17.5	21.9	30.0	
	105º	ACC1292	2 x 3	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	29/29	2140	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1462	2 x 4	380-3-50	2	2@ 2-1/8	2@ 1-3/8	52/52	2630	23.3	28.9	35.0	
	110º	ACC1922	2 x 4	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	70/70	2930	56.0	57.8	70.0	
				460-3-60						28.0	28.9	35.0	
				575-3-60						22.4	23.1	30.0	
				380-3-50						23.3	28.9	35.0	
	115º	ACC2932	2 x 6	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	102/ 102	4370	84.0	85.8	100.0	
				460-3-60						42.0	42.9	50.0	
				575-3-60						33.6	34.3	40.0	
				380-3-50						35.0	42.9	50.0	

[1]Heat rejection at 120°F condensing temperature (MBtu/hr).

[2]Two circuit air-cooled condenser, one for each compressor manifold, required for these units

Table Perf-8 SWHP SE Optional Air-Cooled Condenser Data for R-22

PoolPak Model (R 407C)	Ambient Air (°F)	ACC Selection	Arrangement: # rows X # Fans	Voltage & Phase	No. of Circuits	Gas	Liquid	charge Lbs./ circuit	Weight Lbs.	FLA	MCA	MOP	Remote ACC Heat Rejection[1]
60	95/100°	ACC0271	1 x 2	208/230-3-60	1	1-5/8	1-1/8	10	580	14.0	20.0	35.0	220
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	105°	ACC0331	1 x 2	208/230-3-60	1	1-5/8	1-1/8	15	630	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	110°	ACC0451	1 x 2	208/230-3-60	1	2-1/8	1-3/8	29	690	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	115°	ACC0621	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1010	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
				380-3-50						8.8	15.0	20.0	
80	95/100°	ACC0331	1 x 2	208/230-3-60	1	1-5/8	1-1/8	15	630	14.0	20.0	35.0	270
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0361	1 x 2	380-3-50	1	1-5/8	1-1/8	15	630	5.8	15.0	15.0	
	105°	ACC0431	1 x 2	208/230-3-60	1	2-1/8	1-3/8	29	680	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	110°	ACC0521	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
				380-3-50						8.8	15.0	20.0	
	115°	ACC0831	2 x 2 2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1390	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
100	95/100°	ACC0431	1 x 2	208/230-3-60	1	2-1/8	1-3/8	29	680	14.0	20.0	35.0	345
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	105°	ACC0491	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0551	1 x 3	380-3-50	1	2-1/8	1-3/8	22	930	8.8	15.0	20.0	
	110°	ACC0681	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1010	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
				380-3-50						8.8	15.0	20.0	
	115°	ACC0961	2 x 2	208/230-3-60	1	2-1/8	1-3/8	40	1490	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	

[1]Heat rejection at 120°F condensing temperature (MBtu/hr).
[2]Two circuit air-cooled condenser, one for each compressor manifold, required for these units

Table Perf-9 SWHP SE Optional Air-Cooled Condenser Data for R-407c (continued on next page)

PoolPak Model (R 407C)	Ambient Air (°F)	ACC Selection	Arrangement: # rows X # Fans	Voltage & Phase	No. of Circuits	Gas	Liquid	charge Lbs./ circuit	Weight Lbs.	FLA	MCA	MOP	Remote ACC Heat Rejection[1]
120	95/100°	ACC0491	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	14.0	20.0	35.0	425
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0551	1 x 3	380-3-50	1	2-1/8	1-3/8	22	930	8.8	15.0	20.0	
	105°	ACC0591	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1000	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
		ACC0641	1 x 3	380-3-50	1	2-1/8	1-3/8	30	1000	8.8	15.0	20.0	
	110°	ACC0771	2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1390	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	115°	ACC1161	2 x 3	208/230-3-60	1	2-1/8	1-3/8	44	2060	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
140	95/100°	ACC0551	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	21.0	22.8	40.0	500
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
		ACC0591	1 x 3	380-3-50	1	2-1/8	1-3/8	30	1000	8.8	15.0	20.0	
	105°	ACC0731	2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1340	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
		ACC0781	2 x 2	380-3-50	1	2-1/8	1-3/8	29	1340	11.7	15.0	20.0	
	110°	ACC0921	2 x 2	208/230-3-60	1	2-1/8	1-3/8	40	1490	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	115°	ACC1371	2 x 3	208/230-3-60	1	2-1/8	1-3/8	58	2210	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
190	95/100°	ACC0641	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1000	21.0	22.8	40.0	600
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
		ACC0731	2 X 2	380-3-50	1	2-1/8	1-3/8	29	1340	11.7	15.0	20.0	
	105°	ACC0861	2 x 2	208/230-3-60	1	2-1/8	1-3/8	40	1440	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	110°	ACC1161	2 x 3	208/230-3-60	1	2-1/8	1-3/8	44	2060	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
	115°	ACC1811	2 x 4	208/230-3-60	1	2-1/8	1-3/8	140	2930	56.0	57.8	70.0	
				460-3-60						28.0	28.9	35.0	
				575-3-60						22.4	23.1	30.0	
				380-3-50						23.3	28.9	35.0	

[1]Heat rejection at 120°F condensing temperature (MBtu/hr).
[2]Two circuit air-cooled condenser, one for each compressor manifold, required for these units

Table Perf-9 SWHP SE Optional Air-Cooled Condenser Data for R-407c (continued on next page)

PoolPak Model (R 407C)	Ambient Air (ºF)	ACC Selection	Arrangement: # rows X # Fans	Voltage & Phase	No. of Circuits	Gas	Liquid	charge Lbs./ circuit	Weight Lbs.	FLA	MCA	MOP	Remote ACC Heat Rejection[1]
220	95/100º	ACC0862	2 x 2	208/230-3-60	2	2@2-1/8	2@1-3/8	20/20	1440	28.0	29.8	45.0	350/ 350
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	105º	ACC0992	2 x 3	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	22/22	1990	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1092	2 x 3	380-3-50	2	2@2-1/8	2@1-3/8	22/22	1990	17.5	21.9	30.0	
	110º	ACC1372	2 x 3	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	29/29	2210	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
	115º	ACC1972	2 x 5	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	63/63	3410	70.0	71.8	90.0	
				460-3-60						35.0	35.9	45.0	
				575-3-60						28.0	28.7	35.0	
				380-3-50						29.2	35.9	45.0	
260	95/100º	ACC0992	2 x 3	208/230-3-60	2 2	2@2-1/8	2@1-3/8	22/22	1990	28.0	29.8	45.0	425/ 425
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
		ACC1092	2 x 3	380-3-50		2@2-1/8	2@1-3/8	22/22	1990	17.5	21.9	30.0	
	105º	ACC1182	2 x 3	208/230-3-60	2	2@2-1/8	2@1-3/8	29/29	2140	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1292	2 x 3	380-3-50	2	2@2-1/8	2@1-3/8	29/29	2140	17.5	21.9	30.0	
	110º	ACC1652	2 x 4	208/230-3-60	2	2@2-1/8	2@1-3/8	52/52	2730	56.0	57.8	70.0	
				460-3-60						28.0	28.9	35.0	
				575-3-60						22.4	23.1	30.0	
				380-3-50						23.3	28.9	35.0	
	115º	ACC2442	2 x 5	208/230-3-60	2	2@2-1/8	2@1-3/8	86/86	3660	70.0	71.8	90.0	
				460-3-60						35.0	35.9	45.0	
				575-3-60						28.0	28.7	35.0	
				380-3-50						29.2	35.9	45.0	
300	95/100º	ACC1182	2 x 3	208/230-3-60	2	2@ 2 1/8	2@ 1-3/8	29/29	2140	42.0	43.8	60.0	500/ 500
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1292	2 x 3	380-3-50	2	2@2-1/8	2@1-3/8	29/29	2140	17.5	21.9	30.0	
	105º	ACC1462	2 x 4	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	52/52	2630	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1562	2 x 4	380-3-50	2	2@2-1/8	2@1-3/8	52/52	2630	23.3	28.9	35.0	
	110º	ACC1922	2 x 4	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	70/70	2930	56.0	57.8	70.0	
				460-3-60						28.0	28.9	35.0	
				575-3-60						22.4	23.1	30.0	
				380-3-50						23.3	28.9	35.0	
	115º	ACC2932	2 x 6	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	102/102	4370	84.0	85.8	100.0	
				460-3-60						42.0	42.9	50.0	
				575-3-60						33.6	34.3	40.0	
				380-3-50						35.0	42.9	50.0	

[1]Heat rejection at 120°F condensing temperature (MBtu/hr).
[2]Two circuit air-cooled condenser, one for each compressor manifold, required for these units

Table Perf-9 SWHP SE Optional Air-Cooled Condenser Data for R-407c

POOLPAK PROVIDED REMOTE CHILLED AND COOLING TOWER WATER CONDENSER SELECTION

A. Select the proper size water condenser from **Table Perf-10**.

B. Tables in the DIMENSIONS section show the remote cabinet dimensions, piping connections and cabinet layout.

PoolPak Model	Cooling Tower Water Condenser[1]		Chilled Water Condenser[2]		Remote ACC Heat Rejection[3]
	gpm	Water (Feet)[4]	gpm	Water (Feet)[5]	Mbtu/hr
060	35	30	25	13	220
080	35	27	25	11	270
100	40	20	30	10	345
120	50	28	40	15	425
140	60	34	50	20	500
190	70	39	60	16	600
220	80	22	70	16	350/350[6]
260	100	30	80	17	425/425[6]
300	120	36	100	21	500/500[6]

[1]Maximum 85°F EWT

[2]Maximum 55°F EWT

[3]Heat rejection at 120°F condensing temperature

[4]Cleanable, nonvented condenser

[5]Spiral, nonvented condenser

[6]Two circuit water-cooled condenser, one for each compressor manifold, required for these units

Table Perf-10 PoolPak Optional Water Cooled Condenser Specifications for SWHP SE

NON-POOLPAK-PROVIDED AIR-COOLED CONDENSER SELECTION PROCEDURE

The procedure for selecting an optional remote air-cooled condenser is:

A. Find the PoolPak total heat rejection capacity from **Table Perf-8**. Example: (for SWHP 140S): Heat Rejection Capacity = 500 MBtu/hr

B. Determine the difference between 120°F (the PoolPak design condensing temperature) and the design out door dry bulb temperature.

C. For the given Heat Rejection Capacity and temperature difference (from step B), select the proper sized condenser using R-22 refrigerant.

D. It is permissible to select a condenser with the proper capacity at the nominal temperature difference + 3°F. Choose the closest one.

E. The field wiring diagram (**Figure Wire-4**) requires an auxiliary transformer (115 VAC/20 VA), connected to the "Power in" at the air-cooled condenser, for proof of operation readiness.

F. Choose a condenser with fan-cycling head pressure controls set to maintain a minimum condensing temperature of 90°F.

If there are questions, consult the factory.

OPTIONAL AIR COOLED CONDENSER

The dimensions for the optional air cooled condensers are shown in **Figures Dim-4** and **Dim-5**.

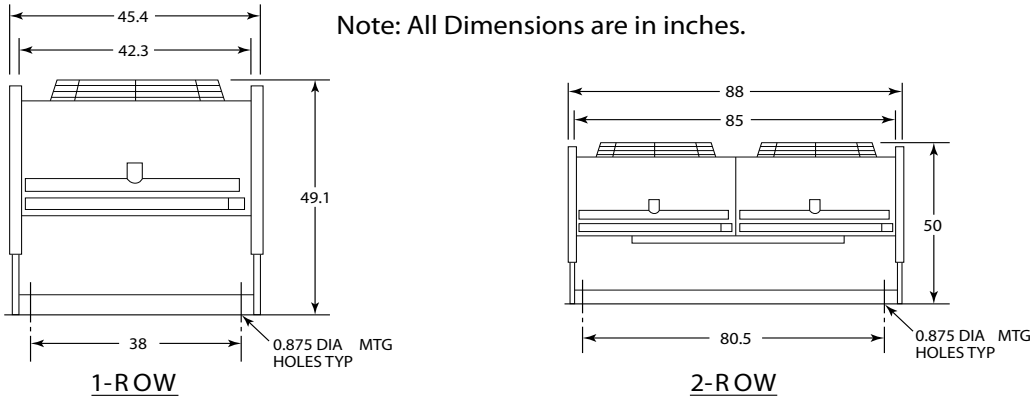


Figure Dim-4 PoolPak Air Cooled Condenser End views

NOTE: ALL
DIMENSIONS
ARE IN
INCHES.

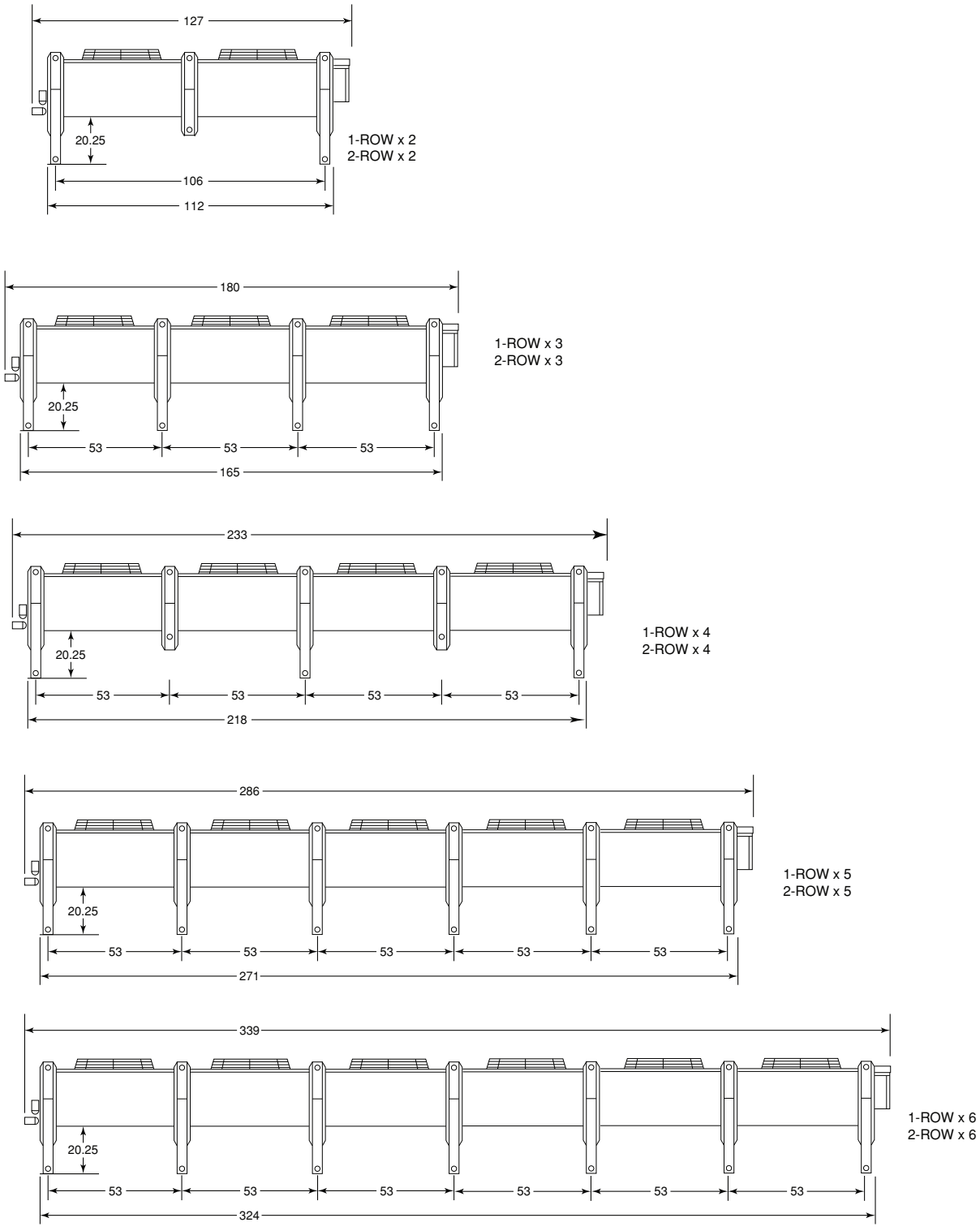


Figure Dim-5 PoolPak Air Cooled Condenser Side views

OPTIONAL WATER COOLED CONDENSER

The dimensions and connection data for the PoolPak optional remote cooling tower/chilled water cooled condenser are shown in **Table Dim-3**. **Figure Dim-6** shows the location of the dimensions.

Cabinet Size	Cooling Tower Cabinet Dimensions (Inches)						Weight (lb)
	A	B	C	D (dia*)	E (approx)	F (approx)	
A	79	44	63	2	15	55	1200
B	79	44	63	2	15	55	1200
C	79	44	63	2 or 3	15	55	1500

* CPVC Nominal Size - diameter depends on refrigerant system size

Cabinet Size	Chilled Water Cabinet Dimensions (Inches)						Weight (lb)
	A	B	C	D (dia**)	E (approx)	F (approx)	
A	79	44	63	1	15	55	950
B	79	44	63	1-1/2 or 2	15	55	1200
C	79	44	63	1-1/2 or 2 or 2-1/2	15	55	1500

** Male Pipe Thread - Copper

PoolPak Model	Water Piping		Refrigeration Connections				* OD Solder
			System 1*		System 2*		
	CPVC	MPT	Discharge	Liquid	Discharge	Liquid	
060	2	1	1-1/8	1-1/8	N/A	N/A	
080	2	1	1-3/8	1-1/8	N/A	N/A	
100	2	1-1/2	1-3/8	1-1/8	N/A	N/A	
120,140	2	1-1/2	1-5/8	1-3/8	N/A	N/A	
190	2	2	1-5/8	1-3/8	N/A	N/A	
220	3	2	1-3/8	1-1/8	1-3/8	1-1/8	
260	3	2	1-5/8	1-3/8	1-5/8	1-3/8	
300	3	2-1/2	1-5/8	1-3/8	1-5/8	1-3/8	

Table Dim-3 PoolPak Remote Water Cooled Condenser Data for SWHP SE

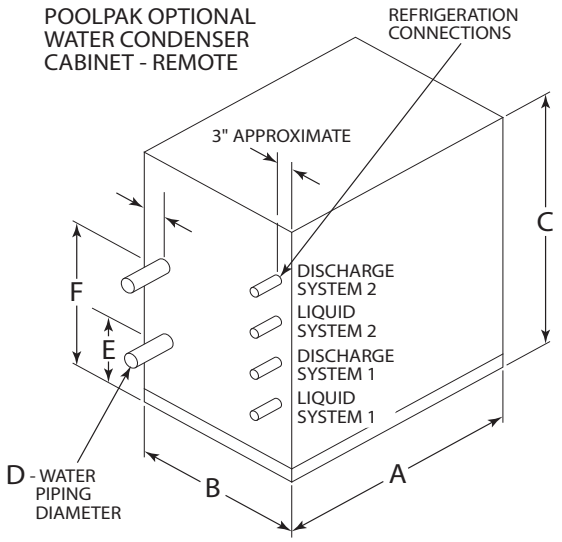


Figure Dim-6 PoolPak Remote Water Cooled Condenser view

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POOLWATER HEATING CONDENSER PERFORMANCE

PoolPak Model	Pool Water GPM	Water (WC-ft)[1]	Water (WC-ft)[2]	Water (WC-ft)[3]	Water (WC-ft)[4]	Heating Cap. Mbtu/hr
Full Water Condenser						
SWHP 060	25	18	15	13	11	220
SWHP 080	35	24	20	20	18	270
SWHP 100	40	15	13	20	10	345
SWHP 120	50	24	20	20	15	425
SWHP 140	60	23	20	19	23	500
SWHP 190	70	23	21	19	18	600
SWHP 220	80	18	15	20	15	700
SWHP 260	100	24	21	20	15	850
SWHP 300	120	25	22	20	23	1000
Partial Water Condenser						
SWHP 060	N/A	N/A	N/A	N/A	N/A	N/A
SWHP 080	20	16	14	12	10	130
SWHP 100	25	12	10	10	9	170
SWHP 120	25	18	12	14	10	195
SWHP 140	25	12	10	10	9	165
SWHP 190	30	13	11	10	9	200
SWHP 220	40	15	13	20	15	350
SWHP 260	50	23	26	19	15	430
SWHP 300	60	23	20	19	23	500

[1]Cleanable, vented condenser (double wall).

[2]Cleanable, nonvented condenser (single wall).

[3]Spiral, vented condenser (double wall).

[4]Spiral, nonvented condenser (single wall).

Table App-1 Pool Water Required Design flow for SWHP SE

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INSTALLATION

LOCATION

The PoolPak unit is designed for indoor or outdoor locations, either ground-level or roof-top. The location must allow for free condensate drainage (without freezing), ventilation, supply and return ducts, and sufficient clearance for servicing the unit. Refer to **Figure Inst-1** for a typical roof-top installation.

For ground-level installation, precautions should be taken to protect the unit from tampering by or injury to unauthorized personnel. Safety precautions such as a fenced enclosure or additional locking devices on the panels or doors are advisable. Check with local authorities for safety regulations.

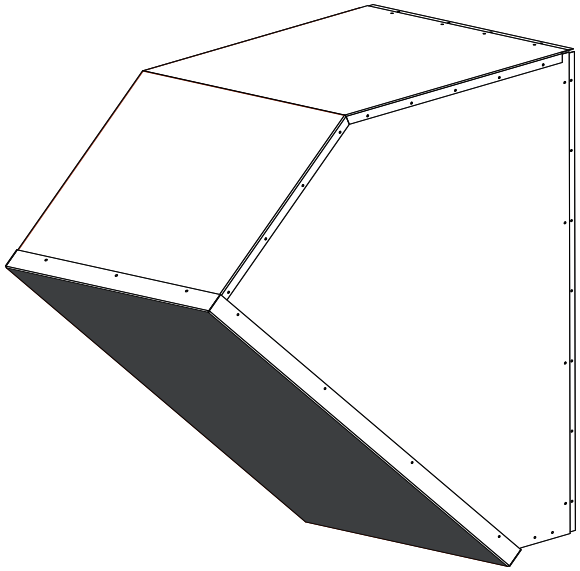


Figure App-3 Louver and Rainhood

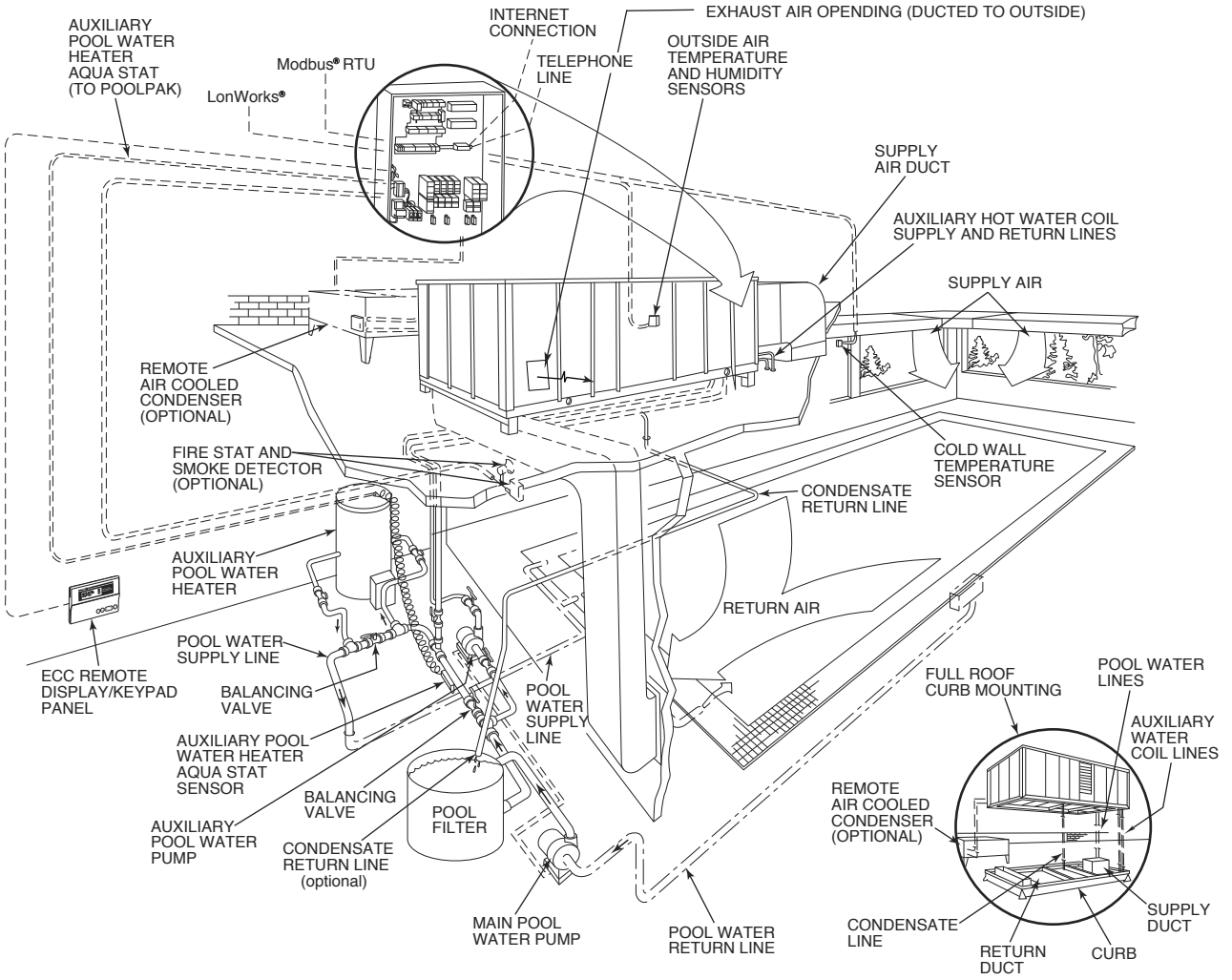


Figure Inst-1 PoolPak SWHP SE Field Installation

Foundation

The unit must be mounted on a flat and level foundation capable of supporting the entire operating weight of the equipment. The unit MUST NOT set flat on a concrete slab. The PoolPak unit MUST BE raised 6 inches to allow for sufficient height to adequately trap the condensate line (see **Figure Inst-2**) and to allow for electrical service entrance. The unit must be supported at a minimum of six places, including all corners and the center points of each side (see **Figure Inst-3**). Each support should be at least 12 inches long. The unit must be level to ensure proper condensate drainage. If the unit is elevated beyond the normal reach of service personnel, a catwalk capable of supporting service personnel, their equipment, and the scroll compressor(s) (about 1,000 lb.) must be constructed around the unit by others.

For ground-level installation, a one-piece concrete slab with footers that extend below the frost line is highly recommended. Additionally, the slab should not be tied to the main building foundations to prevent noise transmission. The unit must be supported with adequate space to allow for a condensate line trap.

For roof-top installation, choose a location with adequate structural strength to support the entire weight of the unit and service personnel. For non-curb mounted units, provide spring vibration isolation to minimize vibration transmission to the roof structure. The unit must be situated with adequate height for a condensate line trap. The PoolPak unit may be mounted on equipment rails with spring vibration isolation. For any alternative mountings not discussed here, contact the factory for additional guidance. Care must be taken not to damage the roof. If the roof is bonded, consult the building contractor for allowable installation procedures.

UNIT LOCATION AND MOUNTING

The PoolPak Series S units are designed for indoor and outdoor locations: either ground level or roof top on a house keeping pad or curb. Foundation should be flat and level. Unit must not be set flat on concrete slab, but raised 6" to allow adequate space for condensate line trap. The unit must be supported at a minimum of six places including all corners and the center points of the length. Each support should be at least 12 inches long.

DAMPERS, OUTSIDE AIR AND EXHAUST

A rain hood is recommended for the Fresh Air Intake Damper and Exhaust Air Opening. Birdscreening is recommended.

POOL WATER CONDENSER

Piping must be schedule 80 CPVC (minimum). **PVC or COPPER IS NOT ACCEPTABLE.** The water circuit should be self-priming. Lines exposed to outdoor ambient conditions must be protected against freezing.

CONDENSATE DRAIN

All- section of the unit except the compressor section are equipped with drain pans. Each condensate drain upstream from air-cooled condenser coil is connected to a common drain outlet on either side of the unit base. Condensate drain piping external to the unit must be supplied and installed by the customer. Drain line must be sloped and trapped. Outdoor exposed lines must be protected against freezing with heat tape and insulation.

PoolPak Model	Minimum Straight Run (Feet)
SWHP 060	6
SWHP 080	6
SWHP 100	6
SWHP 120	8
SWHP 140	8
SWHP 190	8
SWHP 220	10
SWHP 260	10
SWHP 300	10

Table App-2 Supply fan duct straight run

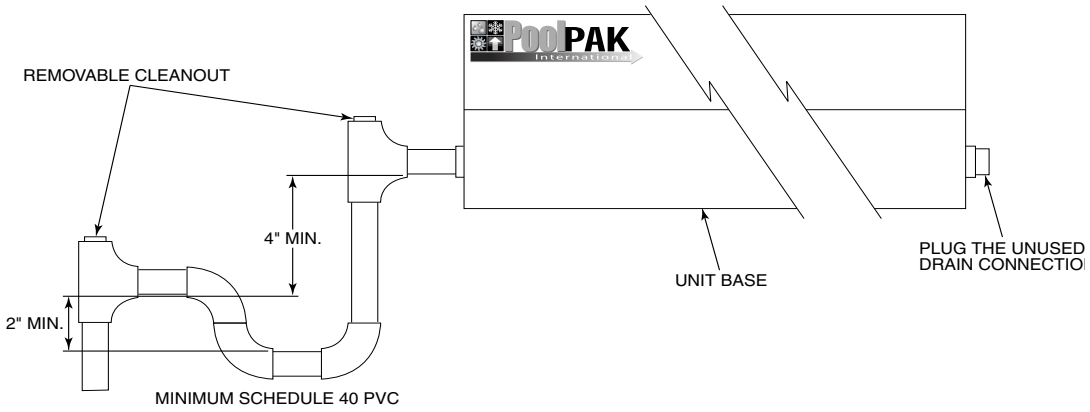


Figure Inst-2 Condensate drain trap (Note that this is the same as figure App-2, repeated here to make section stand alone)

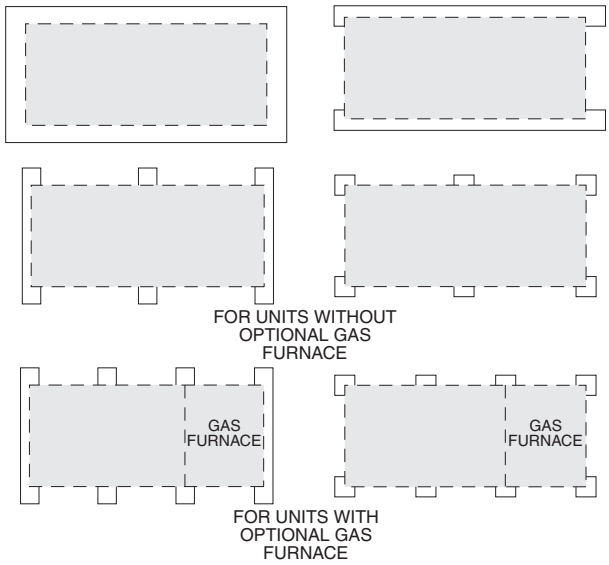


Figure Inst-3 PoolPak Unit Support Alternatives

Service Clearance

The clearance for service and repair must be 4 feet on all sides. For less than 4-foot clearances, consult your local PoolPak representative or the factory.

UNIT HOOKUP

Avoid tearing or damaging unit insulation while working on or around the unit. Do not stack access panels. Stand them upright with the insulation away from traffic.

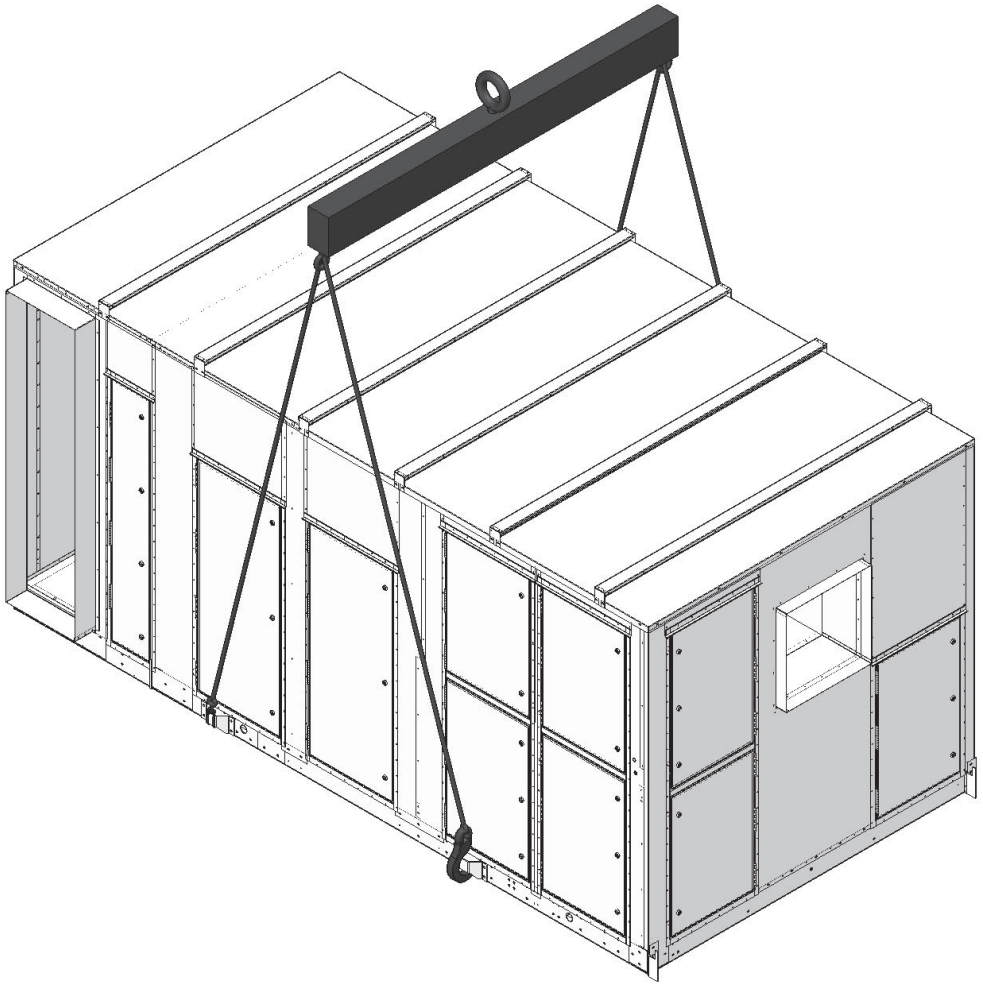
Gas Furnace Auxiliary Heat (Optional)

When using a gas furnace, power venting is provided for all unit sizes. **No additional venting or caps are provided. Please refer to the furnace manufacturer's manual for piping and venting instructions.** Natural gas furnaces are available with outputs of 180,000 to 1,250,000 BTU, as determined by unit configuration and project requirements.

INSPECTION

Immediately upon receiving the unit, inspect it for damage which may have occurred during transit. If damage is evident, note it on the carrier's freight bill. A written request for inspection by the carrier's agent should be made at once.

Failure to follow these directions will result in serious damage to the unit. **PoolPak will not accept responsibility or liability for repairing any resulting damage.**



NOTES:

RIGGING - Remove side outside air flange before lifting. Use cable or chain sling. Use spreader bars to prevent damage to unit. DO NOT USE FORKLIFT.

TRANSPORTING - Secure each unit to trailer by lifting holes to prevent damage to unit. These units shall not have any items stacked on top during transit. DO NOT SECURE WITH STRAP OR CHAIN OVER TOP OF UNIT.

SPREADER BARS - For A cabinet models, use 5-foot spreader bars. For B and C cabinet models use 8.5-foot spreader bars.

Figure Inst -4 SWHP SE PoolPak Rigging

▲CAUTION
Lifting hooks must be blocked away from the side of the unit to prevent damage to the door panels while lifting. ***Do NOT walk on top of the unit or serious damage may result.***

HANDLING

Care should be taken during handling to avoid damage to panels, drain piping, etc. The PoolPak can be moved into position using pipe rollers underneath the base of the unit, or it can be lifted using a crane or a hoist attached through the four lifting holes provided in the unit base frame.

Use suitable spreaders or a frame to prevent damage to the PoolPak (see **Figure Inst-4**). Cables must be adjusted to length to correct for the heavier compressor end of the unit.

RIGGING AND WEIGHT

Figure Inst-4 shows the proper way to rig the PoolPak unit for lifting. Please refer to dimension tables for weights of specific product configurations.

OPTIONAL AIR COOLED CONDENSER REFRIGERANT PIPING GUIDELINES

Proper sizing and installation of the refrigerant piping from the PoolPak unit to the remote air cooled condenser is important. **Figure Inst-5** and **Table Inst-2** show guidelines for installations where the remote air cooled condenser piping is less than 100 feet long. **For installations with piping longer than 100 feet, contact the factory.**

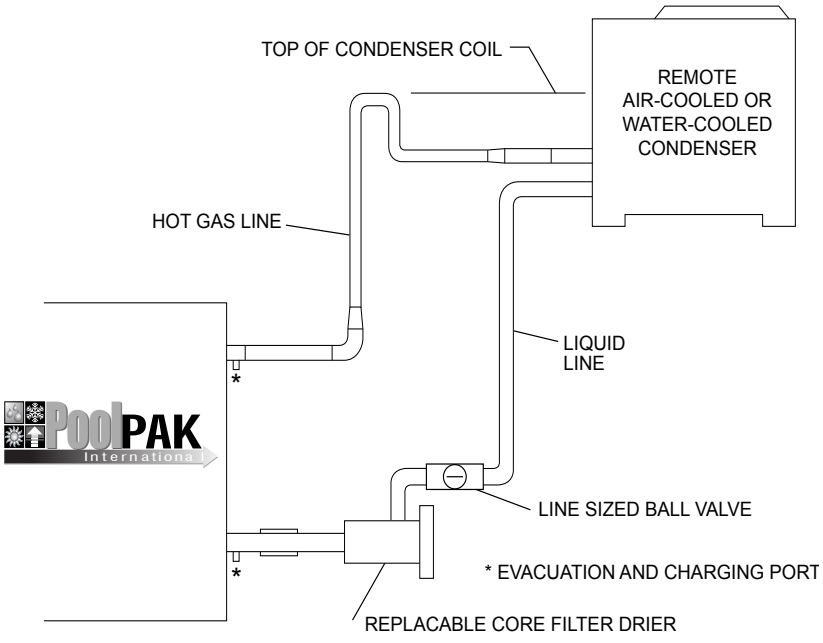


Figure Inst-5 Remote Air Cooled Condenser Refrigerant Piping Guideline

Remote Refrigerant Condensers above or at PoolPak Unit level**			
	Hot Gas Lines		
PoolPak Model	Horizontal Run	Vertical Riser	Liquid Lines
SWHP 060	1-3/8	1-3/8	7/8
SWHP 080	1-3/8	1-3/8	1-1/8
SWHP 100	1-5/8	1-5/8	1-1/8
SWHP 120	1-5/8	1-5/8	1-3/8
SWHP 140	2-1/8	1-5/8	1-3/8
SWHP 190	2-1/8	1-5/8	1-3/8
SWHP 220 ‡	1-5/8	1-5/8	1-1/8
	1-5/8	1-5/8	1-1/8
SWHP 260 ‡	1-5/8	1-5/8	1-3/8
	1-5/8	1-5/8	1-3/8
SWHP 300 ‡	2-1/8	1-5/8	1-3/8
	2-1/8	1-5/8	1-3/8

‡Models 220, 260, and 300 have two refrigeration circuits piped independently.

**** Refrigerant Condensers located below PoolPak Unit level, contact Factory**

Notes:

1. Tables for equivalent length of 100 feet or less. Contact factory for longer lines.

2. Double riser not required for vertical hot gas lines.

3. All pipe diameters are nominal OD inch sizes. Use only certified refrigeration tubing.

4. For scroll compressors, add 4 ounces of Trane No. 00042 or 00045 refrigerant oil per 10 pounds of R-22 refrigerant added.

Table Inst-2 Remote Air Cooled Condenser Refrigerant Piping Guideline

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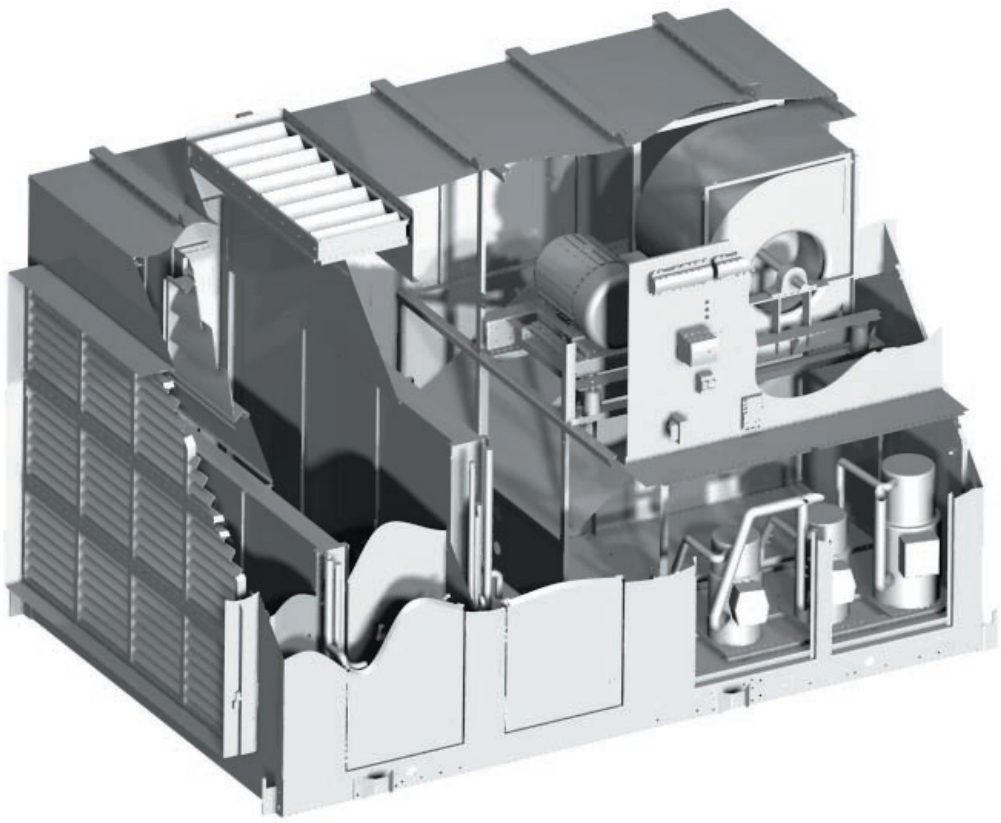
PoolPAK International



POOLPAK SWHP S UNIT

Supercedes SWHP Single Fan

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UNIT SPECIFICATION

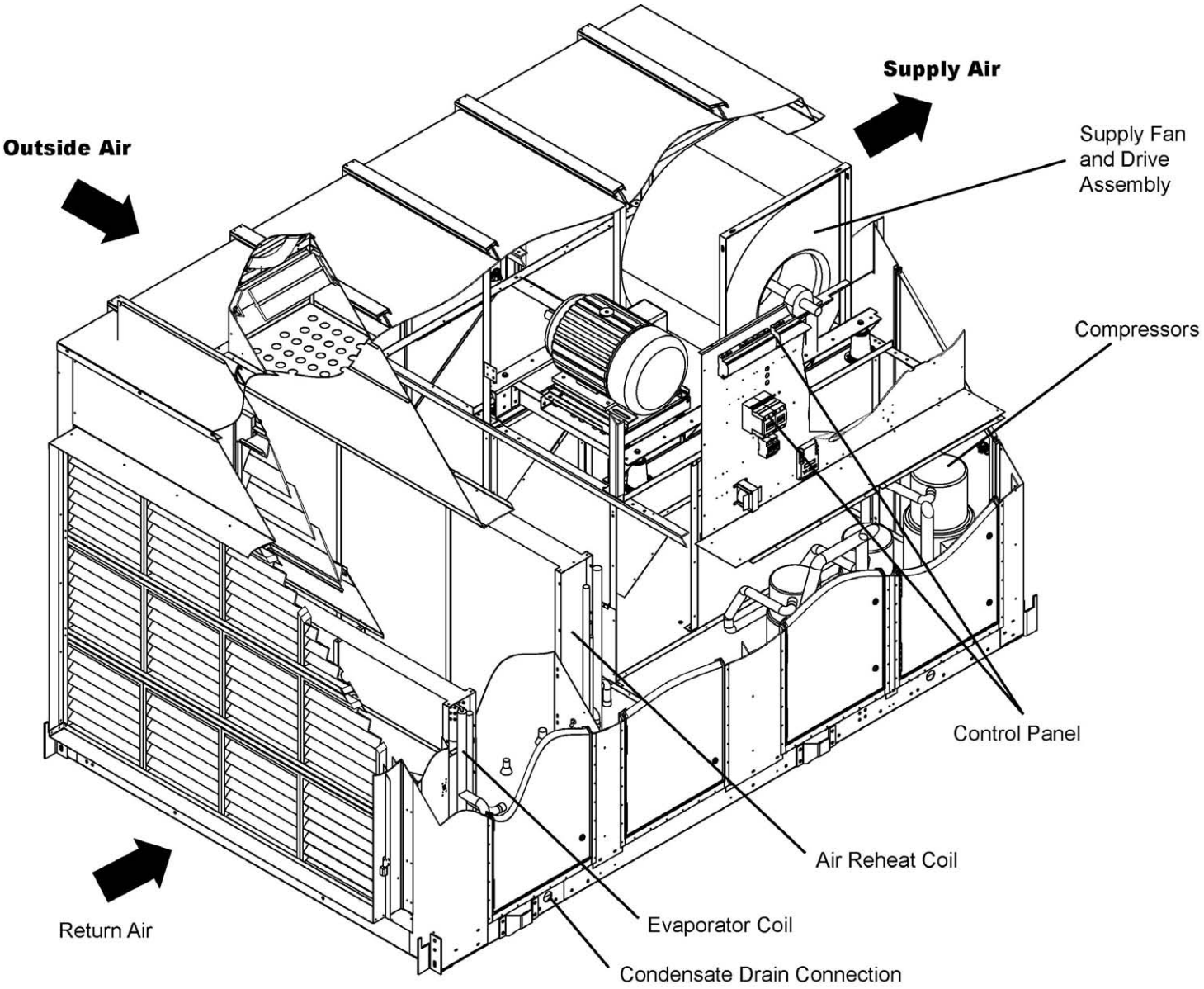

Figure Intr-2 SWHP S Isometric View

POOLPAK SWHP S QUICK SELECTION

Table Intr-1 shows the PoolPak unit sizes available along with other pertinent information.

PoolPak Model	Supply Air (CFM)	Lb/Hr Moisture Removal	Total Evaporator Capacity (MBH)1	Reheat Condenser Capacity (MBH)
Cabinet A				
060	5,000	79	181	222
080	8,000	102	234	287
100	10,000	125	284	351
Cabinet B				
100	15,000	125	284	351
120	12,000	142	325	406
140	15,000	166	388	483
190	18,000	200	468	586
Cabinet C				
140	21,000	166	388	483
190	24,000	200	468	586
220	24,000	241	576	712
260	30,000	281	648	812
300	30,000	338	802	994

At 82°F and 60% relative humidity

Table Intr-1 Quick Selection Chart for SWHP S

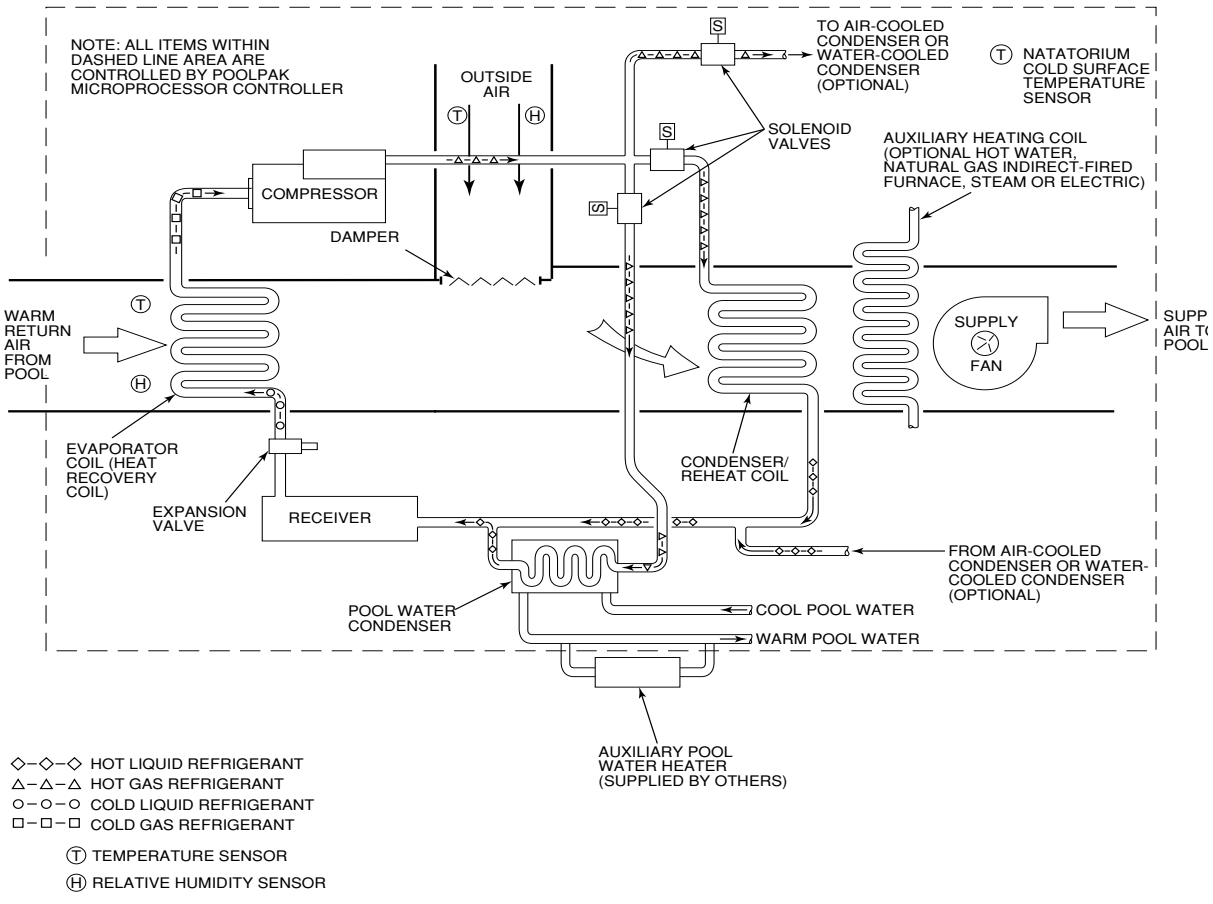

Figure Intr-1 PoolPak SWHP S Natatorium Environmental Control System Schematic

UNIT PERFORMANCE

The following tables show the performance for SWHP S at 82°F and 60% relative humidty

PoolPak Model	Supply Blower Size		Lb/Hr Moisture Removal	Total Evaporator Capacity (MBH1)	Reheat Condenser Capacity (MBH)	Hot Water Heating Coil Size
	Supply Air (CFM)					
	Min	Max				
A	C	D	F	G	H	J
Cabinet A						
060	4,000	5,000	79	181	222	A
060	5,000	7,000	79	181	222	A
060	7,000	9,000	79	181	222	B
080	5,500	6,500	102	234	287	B
080	6,500	8,000	102	234	287	B
080	8,000	10,000	102	234	287	C
100	6,500	10,000	125	284	351	C
Cabinet B						
100	10,000	15,000	125	284	351	E
120	7,000	10,000	142	325	406	D
120	10,000	12,000	142	325	406	D
120	12,000	15,000	142	325	406	E
120	15,000	18,000	142	325	406	F
140	9,000	15,000	166	388	483	E
140	15,000	18,000	166	388	483	F
190	11,000	18,000	200	468	586	F
Cabinet C						
140	18,000	21,000	166	388	483	G
140	18,000	21,000	166	388	483	G
190	18,000	21,000	200	468	586	G
190	18,000	21,000	200	468	586	G
190	21,000	24,000	200	468	586	H
220	14,000	20,000	241	576	712	G
220	14,000	20,000	241	576	712	G
220	20,000	24,000	241	576	712	H
260	15,000	24,000	281	648	812	H
260	24,000	30,000	281	648	812	J
300	19,000	30,000	338	802	994	J

Table Perf-4 PoolPak Unit Performance Summary

PoolPak SWHP Nomenclature

SWHP[1] 0190[2] SR[3] — 22[4] A[5] — C[6] JF[7] — R022[8]

1. Swimming-Pool Water Heat Pump

2. Nominal Refrigeration Size

a. 0060 - 15 tons
b. 0080 - 20 tons
c. 0100 - 25 tons
d. 0120 - 30 tons
e. 0140 - 35 tons
f. 0190 - 40 tons
g. 0220 - 50 tons
h. 0260 - 60 tons
i. 0300 - 70 tons

3. Fan Configuration

a. SR = Supply and Return fans
b. S = Supply fan
c. SE = Supply and Exhaust fans
d. SEP = Supply, Exhaust and Purge fans

4. Fan Motor Horsepower(s):

a. If "Item 3" is SR, then "Item 4" is the code for the supply and return fan motor horsepower combinations:

Code	Motor Sizes (HP)	Code	Motor Sizes (HP)	Code	Motor Sizes (HP)
03	3/3	15	15/15	30	30/30
05	5/5	17	15/20	35	30/40
07	7.5/7.5	20	20/20	40	40/40
08	7.5/10	22	20/25	45	40/50
10	10/10	25	25/25	50	50/50
12	10/15	27	25/30		

b. If "Item 3" is S, SE or SEP, then "Item 4" is the code for the supply fan motor horsepower:

Code	Motor Sizes (HP)	Code	Motor Sizes (HP)	Code	Motor Sizes (HP)
03	3	15	15	30	30
05	5	17	15	35	30
07	7.5	20	20	40	40
08	7.5	22	20	45	40
10	10	25	25	50	50
12	10	27	25		

5. Voltage

A = 208/3/60
C= 230/3/60
E = 460/3/60
G = 575/3/60
L = 380/3/50
J = 200/3/50

6. Cabinet Size

a. A
b. B
c. C

7. Internal Use Only

8. Refrigerant:

a. R022 = Refrigerant 22
b. R407 = Refrigerant 407c
c. R410 = Refrigerant 410a

ELECTRICAL DATA

PoolPak Model	Compressor No.	Voltage Code							
		A		C		E		G	
		208/3/60		230/3/60		460/3/60		575/3/60	
		RLA	LRA	RLA	LRA	RLA	LRA	RLA	LRA
60	1								
80	1	41.4	276	41.4	276	18.1	129	14.4	103
	2	41.4	276	41.4	276	18.1	129	14.4	103
100	1	60.5	414	60.5	414	26.3	196	21.0	157
	2	41.4	276	41.4	276	18.1	129	14.4	103
120	1	60.5	414	60.5	414	26.3	196	21.0	157
	2	60.5	414	60.5	414	26.3	196	21.0	157
140	1	41.4	276	41.4	276	18.1	129	14.4	103
	2	41.4	276	41.4	276	18.1	129	14.4	103
	3	60.5	414	60.5	414	26.3	196	21.0	157
190	1	41.4	276	41.4	276	18.1	129	14.4	103
	2	60.5	414	60.5	414	26.3	196	21.0	157
	3	60.5	414	60.5	414	26.3	196	21.0	157
220	1	41.4	276	41.4	276	18.1	129	14.4	103
	2	60.5	414	60.5	414	26.3	196	21.0	157
	3	41.4	276	41.4	276	18.1	129	14.4	103
	4	60.5	414	60.5	414	26.3	196	21.0	157
260	1	60.5	414	60.5	414	26.3	196	21.0	157
	2	60.5	414	60.5	414	26.3	196	21.0	157
	3	60.5	414	60.5	414	26.3	196	21.0	157
	4	60.5	414	60.5	414	26.3	196	21.0	157
300	1	41.4	276	41.4	276	18.1	129	14.4	103
	2	41.4	276	41.4	276	18.1	129	14.4	103
	3	60.5	414	60.5	414	26.3	196	21.0	157
	4	41.4	276	41.4	276	18.1	129	14.4	103
	5	41.4	276	41.4	276	18.1	129	14.4	103
	6	60.5	414	60.5	414	26.3	196	21.0	157

Table Perf-5 PoolPak Compressor electrical data for SWHP S

Motor HP*	Voltage Code							
	A		C		E		G	
	208/3/60		230/3/60		460/3/60		575/3/60	
	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA
3	9.5	62	8.5	68	4.3	34	3.6	27
5	14.8	92	13.4	102	6.7	51	5.7	41
7.5	22	118	20	130	10	65	8	52
10	29	26	157	174	13	87	11	70
15	42	215	38	238	19	119	16	95
20	56	289	51	320	26	160	21	128
25	71	356	64	394	32	197	26	158
30	83	429	76	474	38	237	31	190
40	110	570	98	630	50	315	40	252
50	143	840	130	760	61	362	49	290

*Based on high-efficiency Totally Enclosed Fan Cooled Motors (TEFC)

Table Perf-6 PoolPak Fan Motor electrical data

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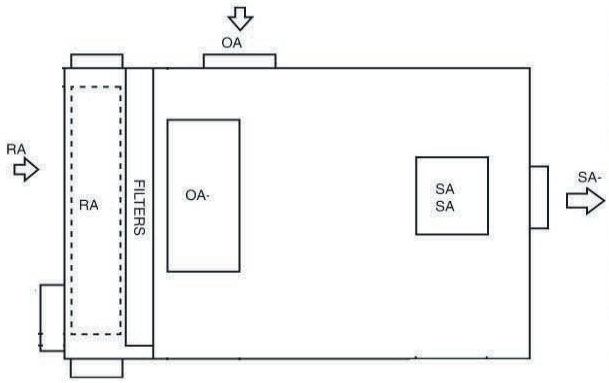
DIMENSIONS

POOLPAK UNIT

The dimensions shown in **Table Dim-1** refer to **Figures Dim-1**, and **Dim-2**. For options and configurations not shown, contact the factory.



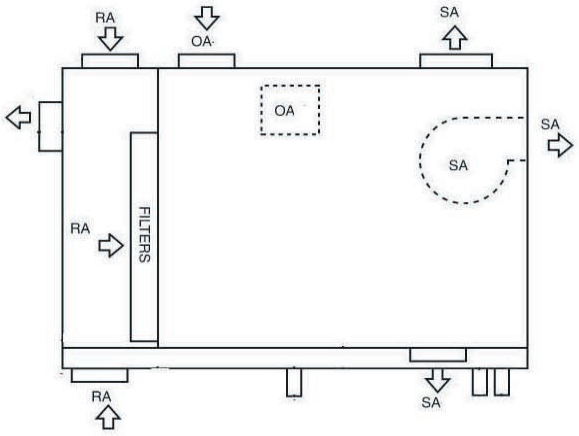
TOP/BOTTOM VIEW

Available Airside Configurations SWHP S

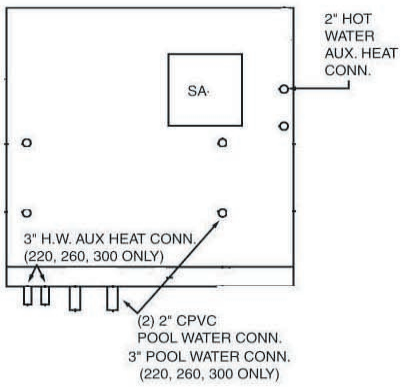
SA-TC07, Top(CW), Indoor only
SA-TC08, Top(CCW), Indoor only
SA-FC01, Front(CW) - B, C cabinets
SA-FC02, Front(CCW) - B, C cabinets
SA-FC01, Front(CW) - A cabinet no isolation
SA-FC02, Front(CCW) - A cabinet no isolation
SA-BN00, Bottom
SA-TN00, Top, Furnace
SA-FC00, Front, Furnace
SA-BN00, Bottom, Furnace

OA-LN, Partial Outside Air Left
– Balance Damper
OA-TC, Indoor only Partial Outside Air Top
– Balance Damper
OA-LN, Partial Outside Air Left
– Motorized Damper
OA- TC, Indoor only, Partial Outside Air Top
– Motorized Damper

RA-KN, No Plenum – Rear
RA-TP, Top Indoor
RA-BP, Bottom
RA-LP, Left – Opposite Control Panel
RA-RP, Right – Control Panel

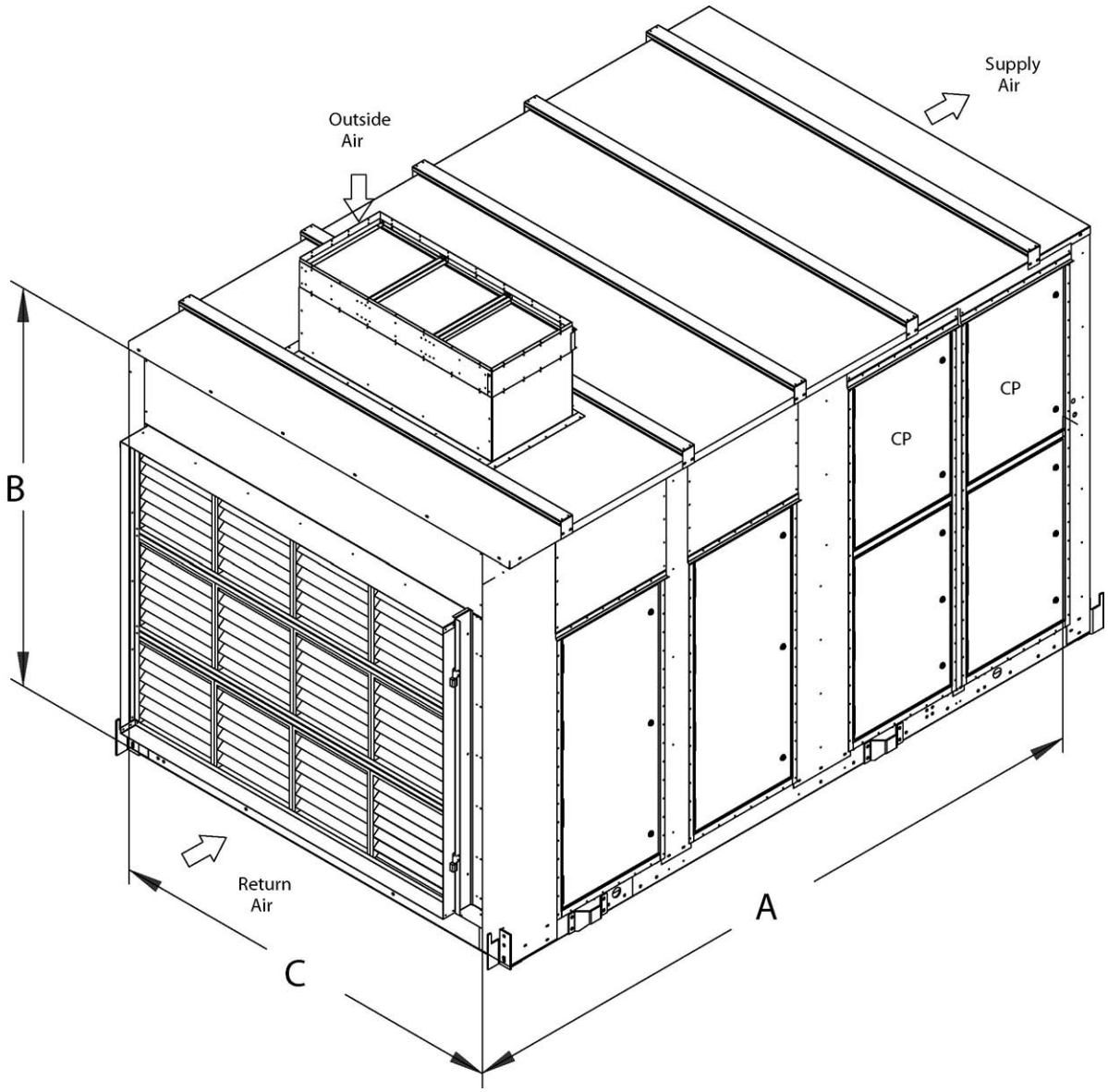


RIGHT SIDE VIEW
(CONTROL PANEL)



COMPRESSOR
REAR VIEW

Figure Dim-1 PoolPak SWHP S Dimensions



Dimensions are illustrative only. Contact the factory for your specific requirements.

Figure Dim-2 PoolPak SWHP S Isometric, No Return Plenum

SWHP S - Unit (No Furnace)						
Model	No Return Plenum	Return Plenum	Height	Width	No Return Plenum	Return Plenum
	Length				Weight	
	"A"	"A"	"B"	"C"	Lbs	Lbs
A Cabinet						
060	133.0	173.3	81.4	62.5	3000	3700
080	133.0	173.3	81.4	62.5	3400	4100
100	133.0	173.3	81.4	62.5	4600	5100
B Cabinet						
100	145.0	185.0	90.5	95.0	5000	5900
120	145.0	185.0	90.5	95.0	5100	6000
140	145.0	185.0	90.5	95.0	6000	6900
190	145.0	185.0	90.5	95.0	6200	7100
C Cabinet						
140	180.9	249.4	101.5	95.0	8400	9400
190	180.9	249.4	101.5	95.0	8500	9500
220	180.9	249.4	101.5	95.0	9000	10000
260	180.9	249.4	101.5	95.0	9500	10500
300	180.9	249.4	101.5	95.0	10000	11000

PoolPak SWHP S Dimensions, without furnace

SWHP S - Unit Dimensions (With Furnace)					
Model	Furnace Output	No Return Plenum		Return Plenum	
		Front Supply	Top/Bottom Supply	Front Supply	Top/Bottom Supply
		Length			
	Mbtuh	"A"	"A"	"A"	"A"
A Cabinet					
060	200,240,280,320	200.8	229.2	240.8	269.2
080	200,240,280,320	200.8	229.2	240.8	269.2
100	200,240,280,320,360	200.8	229.2	240.8	269.2
B Cabinet					
100	240,280,320,360,400,480,560,640	223.0	263.2	263.3	303.0
120	240,280,320,360,400,480,560,640	223.0	263.2	263.3	303.0
140	240,280,320,360,400,480,560,640	223.0	263.2	263.3	303.0
140	850,1000	246.2		286.2	
190	240,280,320,360,400,480,560,640	223.0	263.2	263.3	303.0
190	850,1000	246.2		286.2	
C Cabinet					
140	240,280,320,360,400,480,560,640	259.3	298.3	327.7	366.9
140	850,1000	282.4	312.8	350.8	381.2
190	280,320,360,400,480,560,640	259.3	298.3	327.7	366.9
190	850,1000	282.4	312.8	350.8	381.2
220	360,400,480,560,640	259.3	298.3	327.7	366.9
220	850,1000	282.4	312.8	350.8	381.2
260	360,400,480,560,640	259.3	298.3	327.7	366.9
260	850,1000	282.4	312.8	350.8	381.2
300	560,640	259.3	298.3	327.7	366.9
300	850,1000	282.4	312.8	350.8	381.2

* All Lengths in inches

PoolPak SWHP S Dimensions, with furnace (continued on next page)

SWHP S - Unit Dimensions (With Furnace)						
Model	Height	Width	No Return Plenum		Return Plenum	
			Front Supply	Top/Bottom Supply	Front Supply	Top/Bottom Supply
			Weight			
	"B"	"C"	Lbs	Lbs	Lbs	Lbs
A Cabinet						
060	81.4	62.5	3500	3700	4200	4400
080	81.4	62.5	3900	4100	4600	4800
100	81.4	62.5	5100	5300	5600	5800
B Cabinet						
120	90.5	95.0	5900	6100	6800	7000
140	90.5	95.0	6800	7000	7700	7900
140	90.5	95.0	8100	8300	9000	9200
190	90.5	95.0	7000	7200	7900	8100
190	90.5	95.0	8300	8500	9200	9400
C Cabinet						
140	101.5	95.0	9200	9400	10200	10400
140	101.5	95.0	10500	10700	11500	11700
190	101.5	95.0	9300	9500	10300	10500
190	101.5	95.0	10600	10800	11600	11800
220	101.5	95.0	9800	10000	10800	11000
220	101.5	95.0	11200	11400	12100	12300
260	101.5	95.0	10300	10500	11300	11500
260	101.5	95.0	11600	11800	12600	12800
300	101.5	95.0	10800	11000	11800	12000
300	101.5	95.0	12100	12300	13100	13300

* All Lengths in inches

PoolPak SWHP S Dimensions, with furnace (continued from previous page)

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CURB MOUNTING

Illustrated in Figure Dim-7 is a curb that has been designed specifically for the PoolPak product line. Refer to Table Dim-8 for roof curb dimensions. The outside dimensions of the curb are such that the base of the PoolPak extends over the edge of the curb on each side. This aids in preventing rain water, running down the sides of the unit, from getting between the base of the PoolPak and the curb. The curb also features a waterproof capped area under the PoolPak's compressor compartment with provisions for running the pool water lines through the cap.

It is the installing contractor's responsibility to properly complete the following:

- Flash the curb into the roof
- Insulate the curb
- Connect the supply and return duct to the PoolPak
- Connect condensate drain lines with appropriate traps
- Seal the curb's top surface to the bottom of the PoolPak with supplied gasket
- Seal the pool water pipes where they go through the curb cap under the compressor compartment

If specified when ordering, all water piping connections can be made through the curb. These water connectionsinclude: pool water, condensate, auxiliary hot water coil, chilled water coil, domestic hot water, and whirlpool water.

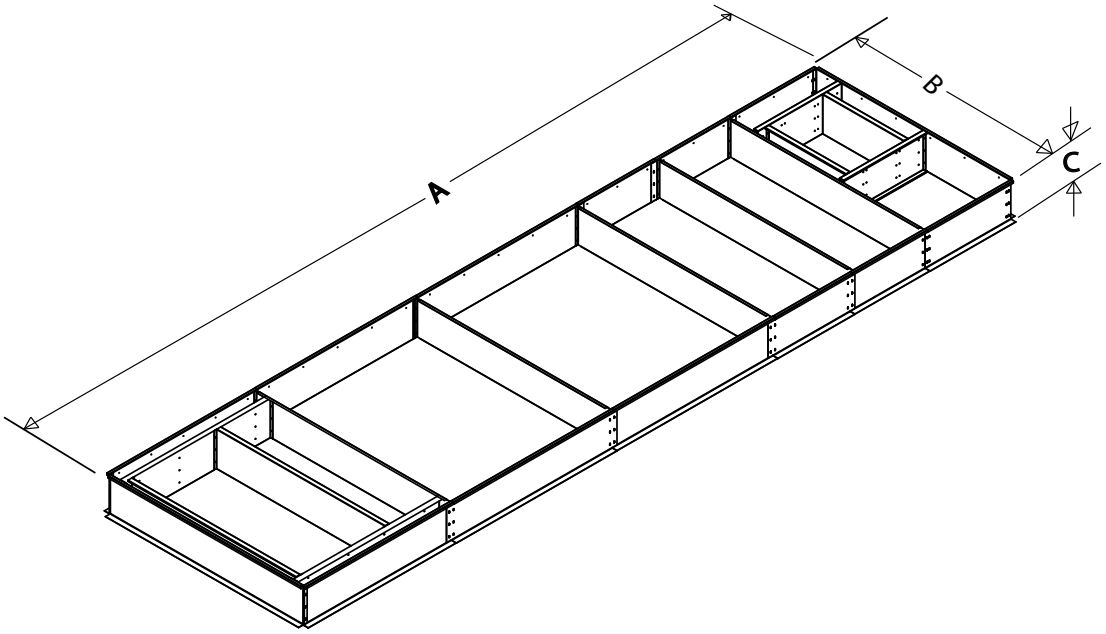
If the PoolPak is to be mounted on another manufacturer's curb, the PoolPak factory must be notified of this fact at the time the PoolPak sales order is submitted. PoolPaks produced for curb mounting, whether on a PoolPak curb or on another manufacturer's curb, receive special weatherizing and insulating that non-curb mounted PoolPaks do not receive.

NOTE

If the factory is not notified that a PoolPak is to be curb mounted, the PoolPak base will not be watertight, it will leak, and it will not be properly insulated.

If a non-PoolPak curb is used, note that the weather seal at the compressor end is under the bulkhead between the compressor and return air compartments. The pan under the compressor compartment isolates the area under the curb from the compressor compartment and from possible pool water or oil leaks as well as from the ambient conditions present in the compressor compartment.

Figure Dim-7 shows an isometric view of a typical SWHP Series S PoolPak curb. The figure shows optional return and supply duct attachments. Please refer to tables below for overall dimensions.



Dimensions are illustrative only. Contact the factory for your specific requirements.

Figure Dim-7 PoolPak SWHP S Curb, Isometric view

NOTE
Curb dimensions are illustrative only. Contact the factory for your specific requirements.

SWHP S - Curb (No Furnace)				
Model	No Return Plenum	Return Plenum	Width	Height
	Length			
	"A"	"A"	"C"	"B"
A Cabinet				
060	131.5	171.8	61.0	16.0
080	131.5	171.8	61.0	16.0
100	131.5	171.8	61.0	16.0
B Cabinet				
100/120	143.5	183.5	93.5	16.0
140	143.5	183.5	93.5	16.0
190	143.5	183.5	93.5	16.0
C Cabinet				
140	179.4	247.9	93.5	16.0
190	179.4	247.9	93.5	16.0
220	179.4	247.9	93.5	16.0
260	179.4	247.9	93.5	16.0
300	179.4	247.9	93.5	16.0

Table Dim-8 PoolPak SWHP S Curb Dimensions, without furnace

SWHP S - Curb Dimensions (With Furnace)							
Model	Furnace Output	No Return Plenum		Return Plenum			
		Front Supply	Top/Bottom Supply	Front Supply	Top/Bottom Supply		
		Length				Width	Height
	MBtuh	"A"	"A"	"A"	"A"	"C"	"B"
A Cabinet							
060	200,240,280,320	199.3	227.7	239.3	267.7	61.0	16.0
080	200,240,280,320	199.3	227.7	239.3	267.7	61.0	16.0
100	200,240,280,320,360	199.3	227.7	239.3	267.7	61.0	16.0
B Cabinet							
100/120	240,280,320,360,400,480,560,640	221.5	261.7	261.8	301.5	93.5	16.0
140	240,280,320,360,400,480,560,640	221.5	261.7	261.8	301.5	93.5	16.0
140	850,1000	244.7	0.0	284.7	0.0	93.5	16.0
190	240,280,320,360,400,480,560,640	221.5	261.7	261.8	301.5	93.5	16.0
190	850,1000	244.7	0.0	284.7	0.0	93.5	16.0
C Cabinet							
140	240,280,320,360,400,480,560,640	257.8	296.8	326.2	365.4	93.5	16.0
140	850,1000	280.9	311.3	349.3	379.7	93.5	16.0
190	280,320,360,400,480,560,640	257.8	296.8	326.2	365.4	93.5	16.0
190	850,1000	280.9	311.3	349.3	379.7	93.5	16.0
220	360,400,480,560,640	257.8	296.8	326.2	365.4	93.5	16.0
220	850,1000	280.9	311.3	349.3	379.7	93.5	16.0
260	360,400,480,560,640	257.8	296.8	326.2	365.4	93.5	16.0
260	850,1000	280.9	311.3	349.3	379.7	93.5	16.0
300	560,640	257.8	296.8	326.2	365.4	93.5	16.0
300	850,1000	280.9	311.3	349.3	379.7	93.5	16.0

* All Lengths in inches

Table Dim-9 PoolPak SWHP S Curb Dimensions, with furnace

AIR CONDITIONING CONDENSER SELECTION GUIDE

POOLPAK-PROVIDED AIR-COOLED CONDENSER SELECTION AND ELECTRICAL INFORMATION

A. See **Table Perf-8** for selection of PoolPak Air-Cooled Condenser for each PoolPak model as a function of ambient temperature and electrical data. **Figures Dim-4** and **Dim-5** show the end and side views of the air cooled condensers.

B. **Table Perf-8 and Perf-9** shows the electrical data.

PoolPak Model (R 22)	Ambient Air (ºF)	ACC Selection	Arrangement: # rows X # Fans	Voltage & Phase	No. of Circuits	Gas	Liquid	charge Lbs./ circuit	Weight Lbs.	FLA	MCA	MOP	Remote ACC Heat Rejection[1]
60	95/ 100º	ACC0271	1 x 2	208/230-3-60	1	1-5/8	1-1/8	10	580	14.0	20.0	35.0	220
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	105º	ACC0331	1 x 2	208/230-3-60	1	1-5/8	1-1/8	15	630	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	110º	ACC0451	1 x 2	208/230-3-60	1	2-1/8	1-3/8	29	690	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	115º	ACC0621	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1010	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
				380-3-50						8.8	15.0	20.0	
80	95/ 100º	ACC0271	1 x 2	208/230-3-60	1	1-5/8	1-1/8	10	580	14.0	20.0	35.0	270
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0331	1 x 2	380-3-50	1	1-5/8	1-1/8	15	630	5.8	15.0	15.0	
	105º	ACC0331	1 x 2	208/230-3-60	1	1-5/8	1-1/8	15	630	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0431	1 x 2	380-3-50	1	2-1/8	1-3/8	29	680	5.8	15.0	15.0	
	110º	ACC0521	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
				380-3-50						8.8	15.0	20.0	
	115º	ACC0771	2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1390	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
100	95/ 100º	ACC0361	1 x 2	208/230-3-60	1	1-5/8	1-1/8	15	630	14.0	20.0	35.0	345
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0431	1 x 2	380-3-50	1	2-1/8	1-3/8	29	680	5.8	15.0	15.0	
	105º	ACC0431	1 x 2	208/230-3-60	1	2-1/8	1-3/8	29	680	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0491	1 x 3	380-3-50	1	2-1/8	1-3/8	22	930	8.8	15.0	20.0	
	110º	ACC0681	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1010	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
				380-3-50						8.8	15.0	20.0	
	115º	ACC0961	2 x 2	208/230-3-60	1	2-1/8	1-3/8	40	1490	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	

[1]Heat rejection at 120°F condensing temperature (MBtu/hr).

[2]Two circuit air-cooled condenser, one for each compressor manifold, required for these units

Table Perf-8 SWHP S Optional Air-Cooled Condenser Data for R-22 **(continued on next page)**

PoolPak Model (R 22)	Ambient Air (°F)	ACC Selection	Arrangement: # rows X # Fans	Voltage & Phase	No. of Circuits	Gas	Liquid	charge Lbs./ circuit	Weight Lbs.	FLA	MCA	MOP	Remote ACC Heat Rejection [1]
120	95/ 100º	ACC0431	1 x 2	208/230-3-60	1	2-1/8	1-3/8	29	680	14.0	20.0	35.0	425
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0491	1 x 3	380-3-50	1	2-1/8	1-3/8	22	930	8.8	15.0	20.0	
	105º	ACC0551	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
		ACC0591	1 x 3	380-3-50	1	2-1/8	1-3/8	30	1000	8.8	15.0	20.0	
	110º	ACC0771	2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1390	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	115º	ACC1161	2 x 3	208/230-3-60	1	2-1/8	1-3/8	44	2060	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
140	95/ 100º	ACC0491	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	21.0	22.8	40.0	500
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
		ACC0591	1 x 3	380-3-50	1	2-1/8	1-3/8	30	1000	8.8	15.0	20.0	
	105º	ACC0661	2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1340	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	110º	ACC0921	2 x 2	208/230-3-60	1	2-1/8	1-3/8	40	1490	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	115º	ACC1371	2 x 3	208/230-3-60	1	2-1/8	1-3/8	58	2210	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
190	95/ 100º	ACC0591	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1000	21.0	22.8	40.0	600
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
		ACC0661	2 x 2	380-3-50	1	2-1/8	1-3/8	29	1340	11.7	15.0	20.0	
	105º	ACC0731	2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1340	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
		ACC0861	2 x 2	380-3-50	1	2-1/8	1-3/8	40	1440	11.7	15.0	20.0	
	110º	ACC1161	2 x 3	208/230-3-60	1	2-1/8	1-3/8	44	2060	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
	115º	ACC1811	2 x 4	208/230-3-60	1	2-1/8	1-3/8	140	2930	56.0	57.8	70.0	
				460-3-60						28.0	28.9	35.0	
				575-3-60						22.4	23.1	30.0	
				380-3-50						23.3	28.9	35.0	

[1]Heat rejection at 120°F condensing temperature (MBtu/hr).
[2]Two circuit air-cooled condenser, one for each compressor manifold, required for these units

Table Perf-8 SWHP S Optional Air-Cooled Condenser Data for R-22 (continued on next page)

PoolPak Model (R 22)	Ambient Air (ºF)	ACC Selection	Arrangement: # rows X # Fans	Voltage & Phase	No. of Circuits	Gas	Liquid	charge Lbs./ circuit	Weight Lbs.	FLA	MCA	MOP	Remote ACC Heat Rejection[1]
220	95/100º	ACC0732	2 x 2	208/230-3-60	2	2@ 1-5/8	2@ 1-1/8	14.5/ 14.5	1340	28.0	29.8	45.0	350/ 350[2]
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
		ACC0862	2 x 2	380-3-50	2	2@2-1/8	2@1-3/8	20/20	1440	11.7	15.0	20.0	
	105º	ACC0992	2 x 3	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	22/22	1990	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1092	2 x 3	380-3-50	2	2@2-1/8	2@1-3/8	22/22	1990	17.5	21.9	30.0	
	110º	ACC1372	2 x 3	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	29/29	2210	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
	115º	ACC1972	2 x 5	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	63/63	3410	70.0	71.8	90.0	
				460-3-60						35.0	35.9	45.0	
				575-3-60						28.0	28.7	35.0	
				380-3-50						29.2	35.9	45.0	
260	95/100º	ACC0862	2 x 2	208/230-3-60	2	2@2-1/8	2@1-3/8	20/20	1440	28.0	29.8	45.0	425/ 425[2]
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
		ACC0992	2 x 3	380-3-50	2	2@2-1/8	2@1-3/8	22/22	1990	17.5	21.9	30.0	
	105º	ACC1092	2 x 3	208/230-3-60	2	2@2-1/8	2@1-3/8	22/22	1990	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1292	2 x 3	380-3-50	2	2@2-1/8	2@1-3/8	29/29	2140	17.5	21.9	30.0	
	110º	ACC1652	2 x 4	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	52/52	2730	56.0	57.8	70.0	
				460-3-60						28.0	28.9	35.0	
				575-3-60						22.4	23.1	30.0	
				380-3-50						23.3	28.9	35.0	
	115º	ACC2442	2 x 5	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	86/86	3660	70.0	71.8	90.0	
				460-3-60						35.0	35.9	45.0	
				575-3-60						28.0	28.7	35.0	
				380-3-50						29.2	35.9	45.0	
300	95/100º	ACC0992	2 x 3	208/230-3-60	2	2@ 2 1/8	2@ 1-3/8	22/22	1990	42.0	43.8	60.0	500/ 500[2]
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1182	2 x 3	380-3-50	2	2@ 2-1/8	2@ 1-3/8	29/29	2140	17.5	21.9	30.0	
	105º	ACC1292	2 x 3	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	29/29	2140	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1462	2 x 4	380-3-50	2	2@ 2-1/8	2@ 1-3/8	52/52	2630	23.3	28.9	35.0	
	110º	ACC1922	2 x 4	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	70/70	2930	56.0	57.8	70.0	
				460-3-60						28.0	28.9	35.0	
				575-3-60						22.4	23.1	30.0	
				380-3-50						23.3	28.9	35.0	
	115º	ACC2932	2 x 6	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	102/ 102	4370	84.0	85.8	100.0	
				460-3-60						42.0	42.9	50.0	
				575-3-60						33.6	34.3	40.0	
				380-3-50						35.0	42.9	50.0	

[1]Heat rejection at 120°F condensing temperature (MBtu/hr).

[2]Two circuit air-cooled condenser, one for each compressor manifold, required for these units

Table Perf-8 SWHP S Optional Air-Cooled Condenser Data for R-22

PoolPak Model (R 407C)	Ambient Air (°F)	ACC Selection	Arrangement: # rows X # Fans	Voltage & Phase	No. of Circuits	Gas	Liquid	charge Lbs./ circuit	Weight Lbs.	FLA	MCA	MOP	Remote ACC Heat Rejection[1]
60	95/100°	ACC0271	1 x 2	208/230-3-60	1	1-5/8	1-1/8	10	580	14.0	20.0	35.0	220
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	105°	ACC0331	1 x 2	208/230-3-60	1	1-5/8	1-1/8	15	630	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	110°	ACC0451	1 x 2	208/230-3-60	1	2-1/8	1-3/8	29	690	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	115°	ACC0621	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1010	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
				380-3-50						8.8	15.0	20.0	
80	95/100°	ACC0331	1 x 2	208/230-3-60	1	1-5/8	1-1/8	15	630	14.0	20.0	35.0	270
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0361	1 x 2	380-3-50	1	1-5/8	1-1/8	15	630	5.8	15.0	15.0	
	105°	ACC0431	1 x 2	208/230-3-60	1	2-1/8	1-3/8	29	680	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	110°	ACC0521	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
				380-3-50						8.8	15.0	20.0	
	115°	ACC0831	2 x 2 2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1390	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
100	95/100°	ACC0431	1 x 2	208/230-3-60	1	2-1/8	1-3/8	29	680	14.0	20.0	35.0	345
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
				380-3-50						5.8	15.0	15.0	
	105°	ACC0491	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	14.0	20.0	35.0	
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0551	1 x 3	380-3-50	1	2-1/8	1-3/8	22	930	8.8	15.0	20.0	
	110°	ACC0681	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1010	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
				380-3-50						8.8	15.0	20.0	
	115°	ACC0961	2 x 2	208/230-3-60	1	2-1/8	1-3/8	40	1490	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	

[1]Heat rejection at 120°F condensing temperature (MBtu/hr).
[2]Two circuit air-cooled condenser, one for each compressor manifold, required for these units

Table Perf-9 SWHP S Optional Air-Cooled Condenser Data for R-407c **(continued on next page)**

PoolPak Model (R 407C)	Ambient Air (°F)	ACC Selection	Arrangement: # rows X # Fans	Voltage & Phase	No. of Circuits	Gas	Liquid	charge Lbs./ circuit	Weight Lbs.	FLA	MCA	MOP	Remote ACC Heat Rejection[1]
120	95/100°	ACC0491	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	14.0	20.0	35.0	425
				460-3-60						7.0	15.0	15.0	
				575-3-60						5.6	15.0	15.0	
		ACC0551	1 x 3	380-3-50	1	2-1/8	1-3/8	22	930	8.8	15.0	20.0	
	105°	ACC0591	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1000	21.0	22.8	40.0	
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
		ACC0641	1 x 3	380-3-50	1	2-1/8	1-3/8	30	1000	8.8	15.0	20.0	
	110°	ACC0771	2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1390	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	115°	ACC1161	2 x 3	208/230-3-60	1	2-1/8	1-3/8	44	2060	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
140	95/100°	ACC0551	1 x 3	208/230-3-60	1	2-1/8	1-3/8	22	930	21.0	22.8	40.0	500
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
		ACC0591	1 x 3	380-3-50	1	2-1/8	1-3/8	30	1000	8.8	15.0	20.0	
	105°	ACC0731	2 x 2	208/230-3-60	1	2-1/8	1-3/8	29	1340	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
		ACC0781	2 x 2	380-3-50	1	2-1/8	1-3/8	29	1340	11.7	15.0	20.0	
	110°	ACC0921	2 x 2	208/230-3-60	1	2-1/8	1-3/8	40	1490	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	115°	ACC1371	2 x 3	208/230-3-60	1	2-1/8	1-3/8	58	2210	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
190	95/100°	ACC0641	1 x 3	208/230-3-60	1	2-1/8	1-3/8	30	1000	21.0	22.8	40.0	600
				460-3-60						10.5	15.0	20.0	
				575-3-60						8.4	15.0	15.0	
		ACC0731	2 X 2	380-3-50	1	2-1/8	1-3/8	29	1340	11.7	15.0	20.0	
	105°	ACC0861	2 x 2	208/230-3-60	1	2-1/8	1-3/8	40	1440	28.0	29.8	45.0	
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	110°	ACC1161	2 x 3	208/230-3-60	1	2-1/8	1-3/8	44	2060	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
	115°	ACC1811	2 x 4	208/230-3-60	1	2-1/8	1-3/8	140	2930	56.0	57.8	70.0	
				460-3-60						28.0	28.9	35.0	
				575-3-60						22.4	23.1	30.0	
				380-3-50						23.3	28.9	35.0	

[1]Heat rejection at 120°F condensing temperature (MBtu/hr).
[2]Two circuit air-cooled condenser, one for each compressor manifold, required for these units

Table Perf-9 SWHP S Optional Air-Cooled Condenser Data for R-407c (continued on next page)

PoolPak Model (R 407C)	Ambient Air (ºF)	ACC Selection	Arrangement: # rows X # Fans	Voltage & Phase	No. of Circuits	Gas	Liquid	charge Lbs./ circuit	Weight Lbs.	FLA	MCA	MOP	Remote ACC Heat Rejection[1]
220	95/100º	ACC0862	2 x 2	208/230-3-60	2	2@2-1/8	2@1-3/8	20/20	1440	28.0	29.8	45.0	350/ 350
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
				380-3-50						11.7	15.0	20.0	
	105º	ACC0992	2 x 3	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	22/22	1990	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1092	2 x 3	380-3-50	2	2@2-1/8	2@1-3/8	22/22	1990	17.5	21.9	30.0	
	110º	ACC1372	2 x 3	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	29/29	2210	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
				380-3-50						17.5	21.9	30.0	
	115º	ACC1972	2 x 5	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	63/63	3410	70.0	71.8	90.0	
				460-3-60						35.0	35.9	45.0	
				575-3-60						28.0	28.7	35.0	
				380-3-50						29.2	35.9	45.0	
260	95/100º	ACC0992	2 x 3	208/230-3-60	2 2	2@2-1/8	2@1-3/8	22/22	1990	28.0	29.8	45.0	425/ 425
				460-3-60						14.0	15.0	20.0	
				575-3-60						11.2	15.0	15.0	
		ACC1092	2 x 3	380-3-50		2@2-1/8	2@1-3/8	22/22	1990	17.5	21.9	30.0	
	105º	ACC1182	2 x 3	208/230-3-60	2	2@2-1/8	2@1-3/8	29/29	2140	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1292	2 x 3	380-3-50	2	2@2-1/8	2@1-3/8	29/29	2140	17.5	21.9	30.0	
	110º	ACC1652	2 x 4	208/230-3-60	2	2@2-1/8	2@1-3/8	52/52	2730	56.0	57.8	70.0	
				460-3-60						28.0	28.9	35.0	
				575-3-60						22.4	23.1	30.0	
				380-3-50						23.3	28.9	35.0	
	115º	ACC2442	2 x 5	208/230-3-60	2	2@2-1/8	2@1-3/8	86/86	3660	70.0	71.8	90.0	
				460-3-60						35.0	35.9	45.0	
				575-3-60						28.0	28.7	35.0	
				380-3-50						29.2	35.9	45.0	
300	95/100º	ACC1182	2 x 3	208/230-3-60	2	2@ 2 1/8	2@ 1-3/8	29/29	2140	42.0	43.8	60.0	500/ 500
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1292	2 x 3	380-3-50	2	2@2-1/8	2@1-3/8	29/29	2140	17.5	21.9	30.0	
	105º	ACC1462	2 x 4	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	52/52	2630	42.0	43.8	60.0	
				460-3-60						21.0	21.9	30.0	
				575-3-60						16.8	20.0	25.0	
		ACC1562	2 x 4	380-3-50	2	2@2-1/8	2@1-3/8	52/52	2630	23.3	28.9	35.0	
	110º	ACC1922	2 x 4	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	70/70	2930	56.0	57.8	70.0	
				460-3-60						28.0	28.9	35.0	
				575-3-60						22.4	23.1	30.0	
				380-3-50						23.3	28.9	35.0	
	115º	ACC2932	2 x 6	208/230-3-60	2	2@ 2-1/8	2@ 1-3/8	102/102	4370	84.0	85.8	100.0	
				460-3-60						42.0	42.9	50.0	
				575-3-60						33.6	34.3	40.0	
				380-3-50						35.0	42.9	50.0	

[1]Heat rejection at 120°F condensing temperature (MBtu/hr).
[2]Two circuit air-cooled condenser, one for each compressor manifold, required for these units

Table Perf-9 SWHP S Optional Air-Cooled Condenser Data for R-407c

POOLPAK PROVIDED REMOTE CHILLED AND COOLING TOWER WATER CONDENSER SELECTION

A. Select the proper size water condenser from **Table Perf-10**.

B. Tables in the DIMENSIONS section show the remote cabinet dimensions, piping connections and cabinet layout.

PoolPak Model	Cooling Tower Water Condenser[1]		Chilled Water Condenser[2]		Remote ACC Heat Rejection[3]
	gpm	Water (Feet)[4]	gpm	Water (Feet)[5]	Mbtu/hr
060	35	30	25	13	220
080	35	27	25	11	270
100	40	20	30	10	345
120	50	28	40	15	425
140	60	34	50	20	500
190	70	39	60	16	600
220	80	22	70	16	350/350[6]
260	100	30	80	17	425/425[6]
300	120	36	100	21	500/500[6]

[1]Maximum 85°F EWT

[2]Maximum 55°F EWT

[3]Heat rejection at 120°F condensing temperature

[4]Cleanable, nonvented condenser

[5]Spiral, nonvented condenser

[6]Two circuit water-cooled condenser, one for each compressor manifold, required for these units

Table Perf-10 PoolPak Optional Water Cooled Condenser Specifications for SWHP S

NON-POOLPAK-PROVIDED AIR-COOLED CONDENSER SELECTION PROCEDURE

The procedure for selecting an optional remote air-cooled condenser is:

A. Find the PoolPak total heat rejection capacity from **Table Perf-8**. Example: (for SWHP 140S): Heat Rejection Capacity = 500 MBtu/hr

B. Determine the difference between 120°F (the PoolPak design condensing temperature) and the design out door dry bulb temperature.

C. For the given Heat Rejection Capacity and temperature difference (from step B), select the proper sized condenser using R-22 refrigerant.

D. It is permissible to select a condenser with the proper capacity at the nominal temperature difference + 3°F. Choose the closest one.

E. The field wiring diagram (**Figure Wire-4**) requires an auxiliary transformer (115 VAC/20 VA), connected to the "Power in" at the air-cooled condenser, for proof of operation readiness.

F. Choose a condenser with fan-cycling head pressure controls set to maintain a minimum condensing temperature of 90°F.

If there are questions, consult the factory.

OPTIONAL AIR COOLED CONDENSER

The dimensions for the optional air cooled condensers are shown in **Figures Dim-4** and **Dim-5**..

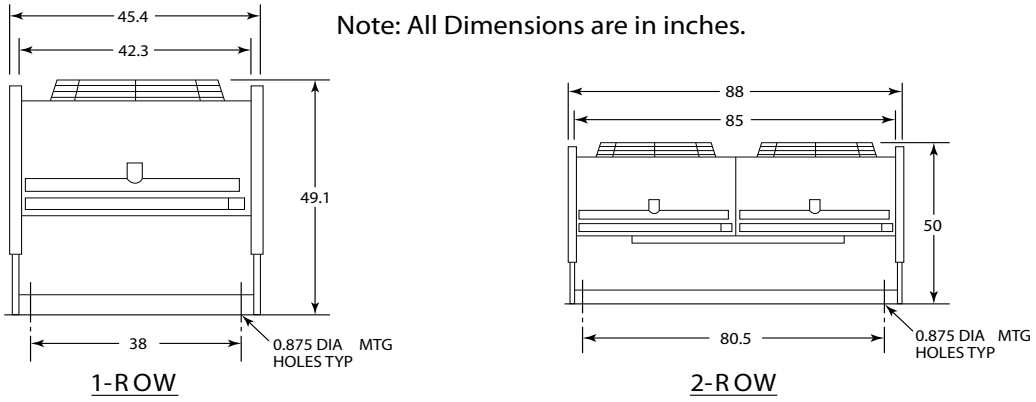


Figure Dim-4 PoolPak Air Cooled Condenser End views

NOTE: ALL DIMENSIONS ARE IN INCHES.

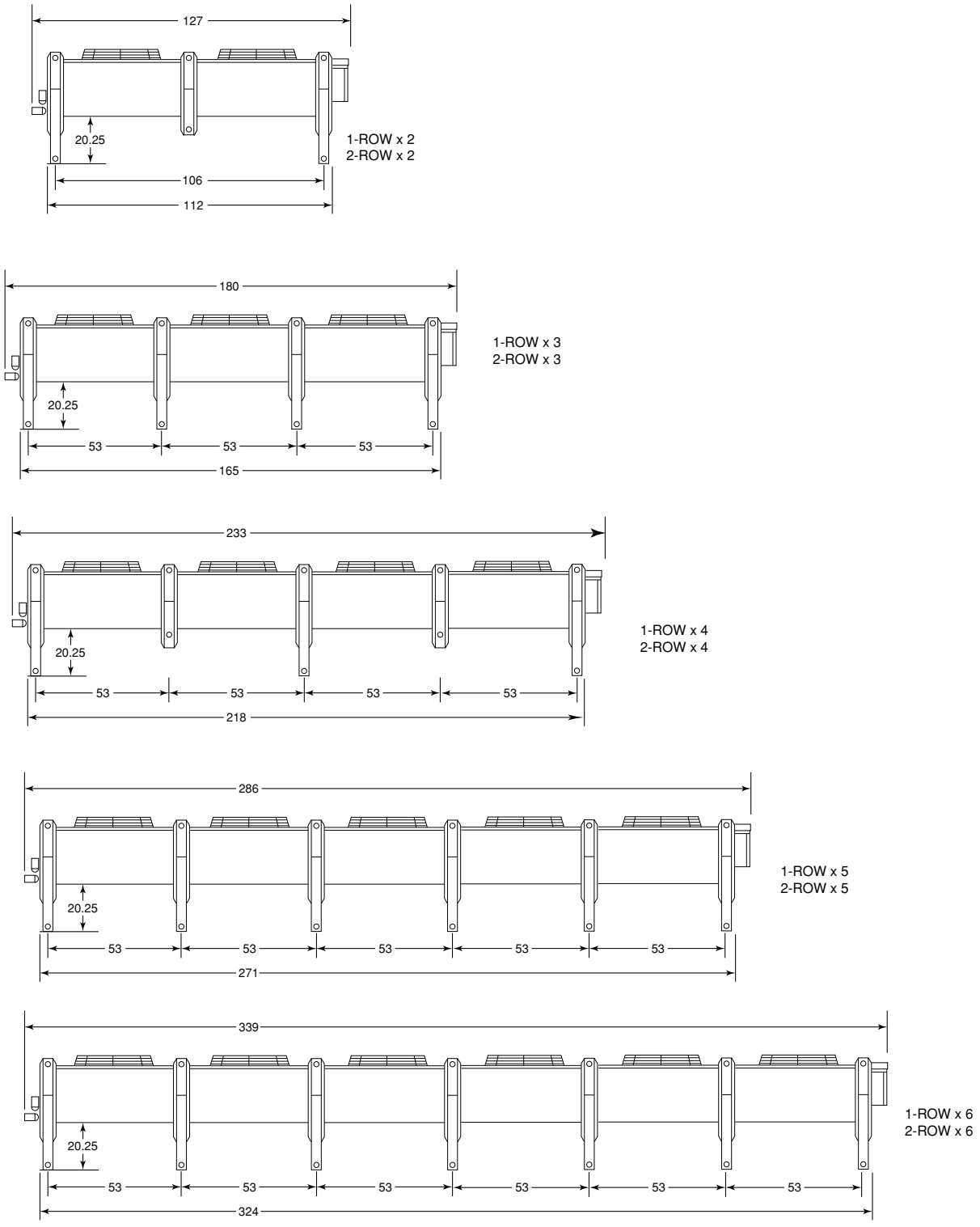


Figure Dim-5 PoolPak Air Cooled Condenser Side views

OPTIONAL WATER COOLED CONDENSER

The dimensions and connection data for the PoolPak optional remote cooling tower/chilled water cooled condenser are shown in **Table Dim-3**. **Figure Dim-6** shows the location of the dimensions.

Cabinet Size	Cooling Tower Cabinet Dimensions (Inches)						Weight (lb)
	A	B	C	D (dia*)	E (approx)	F (approx)	
A	79	44	63	2	15	55	1200
B	79	44	63	2	15	55	1200
C	79	44	63	2 or 3	15	55	1500

* CPVC Nominal Size - diameter depends on refrigerant system size

Cabinet Size	Chilled Water Cabinet Dimensions (Inches)						Weight (lb)
	A	B	C	D (dia**)	E (approx)	F (approx)	
A	79	44	63	1	15	55	950
B	79	44	63	1-1/2 or 2	15	55	1200
C	79	44	63	1-1/2 or 2 or 2-1/2	15	55	1500

** Male Pipe Thread - Copper

PoolPak Model	Water Piping		Refrigeration Connections				* OD Solder
			System 1*		System 2*		
	CPVC	MPT	Discharge	Liquid	Discharge	Liquid	
060	2	1	1-1/8	1-1/8	N/A	N/A	
080	2	1	1-3/8	1-1/8	N/A	N/A	
100	2	1-1/2	1-3/8	1-1/8	N/A	N/A	
120,140	2	1-1/2	1-5/8	1-3/8	N/A	N/A	
190	2	2	1-5/8	1-3/8	N/A	N/A	
220	3	2	1-3/8	1-1/8	1-3/8	1-1/8	
260	3	2	1-5/8	1-3/8	1-5/8	1-3/8	
300	3	2-1/2	1-5/8	1-3/8	1-5/8	1-3/8	

Table Dim-3 PoolPak Remote Water Cooled Condenser Data for SWHP S

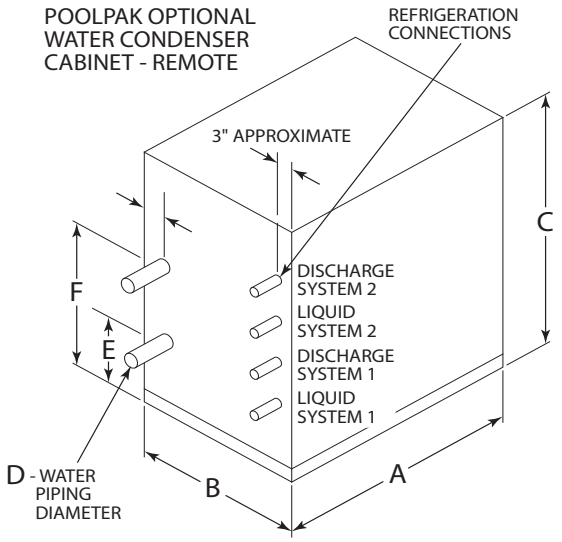


Figure Dim-6 PoolPak Remote Water Cooled Condenser view

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POOLWATER HEATING CONDENSER PERFORMANCE

PoolPak Model	Pool Water GPM	Water (WC-ft)[1]	Water (WC-ft)[2]	Water (WC-ft)[3]	Water (WC-ft)[4]	Heating Cap. Mbtu/hr
Full Water Condenser						
SWHP 060	25	18	15	13	11	220
SWHP 080	35	24	20	20	18	270
SWHP 100	40	15	13	20	10	345
SWHP 120	50	24	20	20	15	425
SWHP 140	60	23	20	19	23	500
SWHP 190	70	23	21	19	18	600
SWHP 220	80	18	15	20	15	700
SWHP 260	100	24	21	20	15	850
SWHP 300	120	25	22	20	23	1000
Partial Water Condenser						
SWHP 060	N/A	N/A	N/A	N/A	N/A	N/A
SWHP 080	20	16	14	12	10	130
SWHP 100	25	12	10	10	9	170
SWHP 120	25	18	12	14	10	195
SWHP 140	25	12	10	10	9	165
SWHP 190	30	13	11	10	9	200
SWHP 220	40	15	13	20	15	350
SWHP 260	50	23	26	19	15	430
SWHP 300	60	23	20	19	23	500

[1]Cleanable, vented condenser (double wall).

[2]Cleanable, nonvented condenser (single wall).

[3]Spiral, vented condenser (double wall).

[4]Spiral, nonvented condenser (single wall).

Table App-1 Pool Water Required Design flow for SWHP S

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INSTALLATION

LOCATION

The PoolPak unit is designed for indoor or outdoor locations, either ground-level or roof-top. The location must allow for free condensate drainage (without freezing), ventilation, supply and return ducts, and sufficient clearance for servicing the unit. Refer to **Figure Inst-1** for a typical roof-top installation.

For ground-level installation, precautions should be taken to protect the unit from tampering by or injury to unauthorized personnel. Safety precautions such as a fenced enclosure or additional locking devices on the panels or doors are advisable. Check with local authorities for safety regulations.

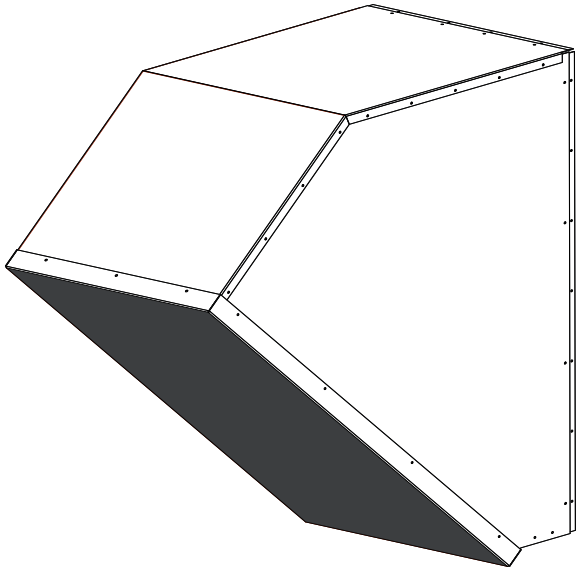


Figure App-3 Louver and Rainhood

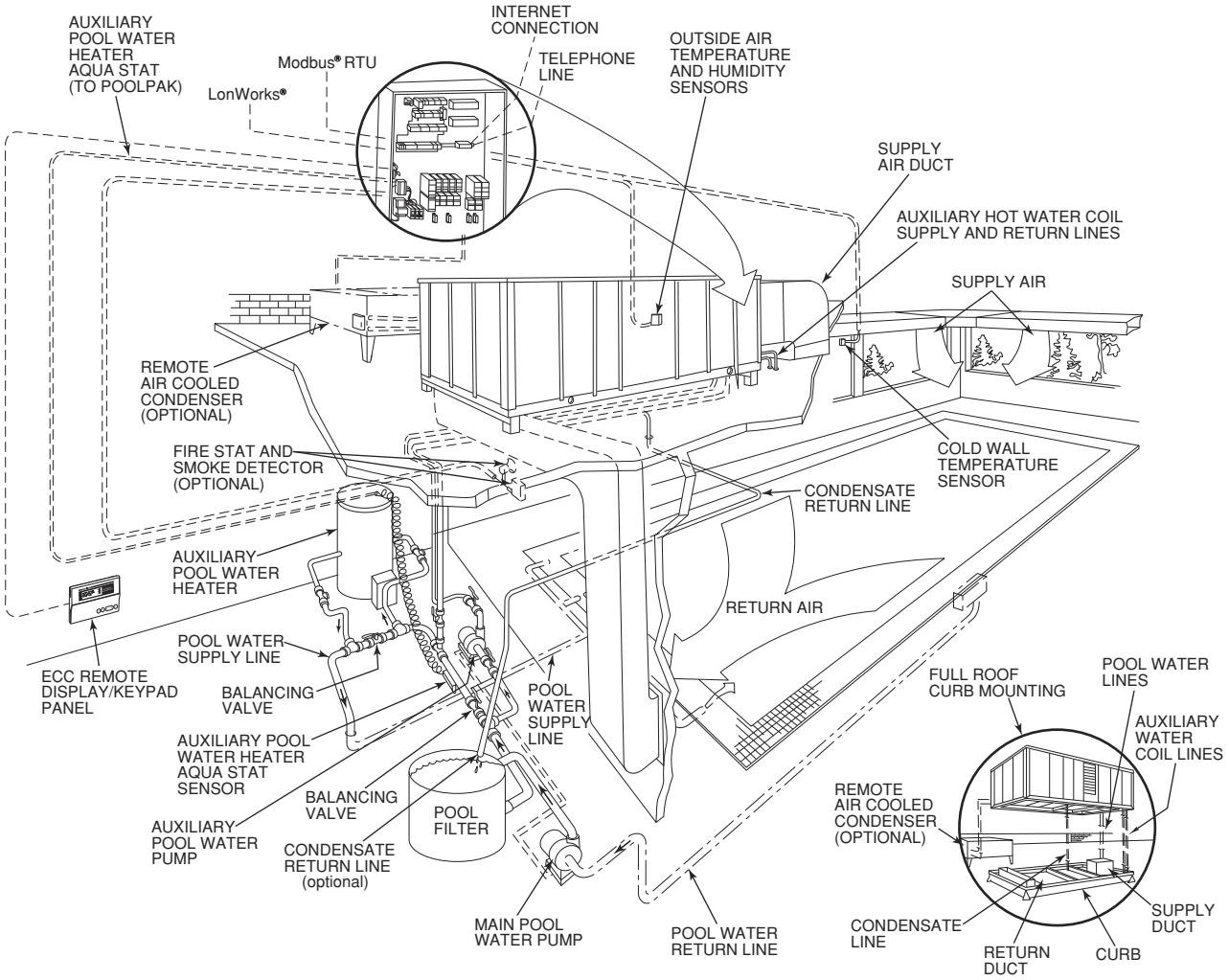


Figure Inst-1 PoolPak SWHP S Field Installation

Foundation

The unit must be mounted on a flat and level foundation capable of supporting the entire operating weight of the equipment. The unit MUST NOT set flat on a concrete slab. The PoolPak unit MUST BE raised 6 inches to allow for sufficient height to adequately trap the condensate line (see **Figure Inst-2**) and to allow for electrical service entrance. The unit must be supported at a minimum of six places, including all corners and the center points of each side (see **Figure Inst-3**). Each support should be at least 12 inches long. The unit must be level to ensure proper condensate drainage. If the unit is elevated beyond the normal reach of service personnel, a catwalk capable of supporting service personnel, their equipment, and the scroll compressor(s) (about 1,000 lb.) must be constructed around the unit by others.

For ground-level installation, a one-piece concrete slab with footers that extend below the frost line is highly recommended. Additionally, the slab should not be tied to the main building foundations to prevent noise transmission. The unit must be supported with adequate space to allow for a condensate line trap.

For roof-top installation, choose a location with adequate structural strength to support the entire weight of the unit and service personnel. For non-curb mounted units, provide spring vibration isolation to minimize vibration transmission to the roof structure. The unit must be situated with adequate height for a condensate line trap. The PoolPak unit may be mounted on equipment rails with spring vibration isolation. For any alternative mountings not discussed here, contact the factory for additional guidance. Care must be taken not to damage the roof. If the roof is bonded, consult the building contractor for allowable installation procedures.

UNIT LOCATION AND MOUNTING

The PoolPak Series S units are designed for indoor and outdoor locations: either ground level or roof top on a house keeping pad or curb. Foundation should be flat and level. Unit must not be set flat on concrete slab, but raised 6" to allow adequate space for condensate line trap. The unit must be supported at a minimum of six places including all corners and the center points of the length. Each support should be at least 12 inches long.

DAMPERS, OUTSIDE AIR AND EXHAUST

A rain hood is recommended for the Fresh Air Intake Damper and Exhaust Air Opening. Birdscreening is recommended.

POOL WATER CONDENSER

Piping must be schedule 80 CPVC (minimum). **PVC or COPPER IS NOT ACCEPTABLE.** The water circuit should be self-priming. Lines exposed to outdoor ambient conditions must be protected against freezing.

CONDENSATE DRAIN

All- section of the unit except the compressor section are equipped with drain pans. Each condensate drain upstream from air-cooled condenser coil is connected to a common drain outlet on either side of the unit base. Condensate drain piping external to the unit must be supplied and installed by the customer. Drain line must be sloped and trapped. Outdoor exposed lines must be protected against freezing with heat tape and insulation.

PoolPak Model	Minimum Straight Run (Feet)
SWHP 060	6
SWHP 080	6
SWHP 100	6
SWHP 120	8
SWHP 140	8
SWHP 190	8
SWHP 220	10
SWHP 260	10
SWHP 300	10

Table App-2 Supply fan duct straight run

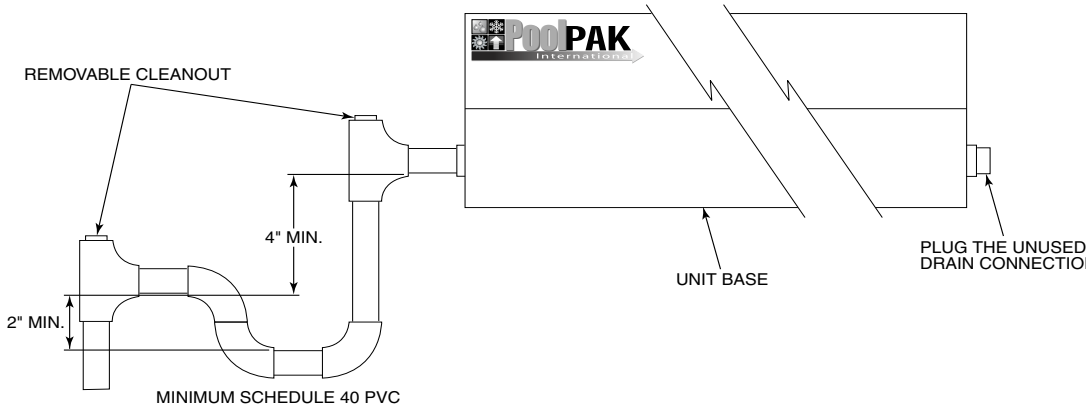


Figure Inst-2 Condensate drain trap (Note that this is the same as figure App-2, repeated here to make section stand alone)

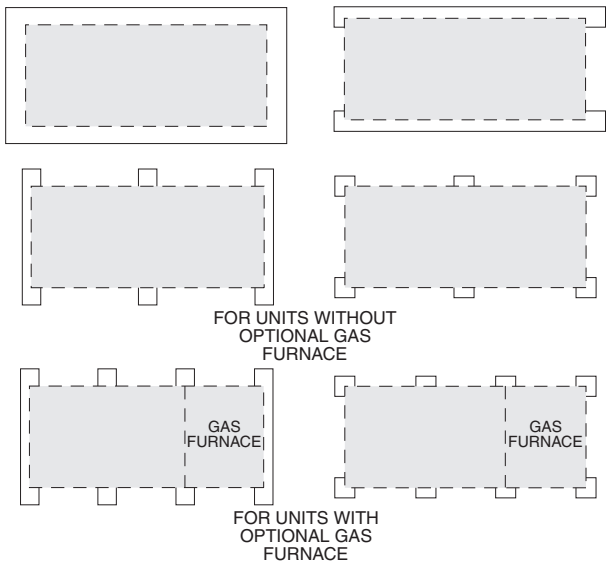


Figure Inst-3 PoolPak Unit Support Alternatives

Service Clearance

The clearance for service and repair must be 4 feet on all sides. For less than 4-foot clearances, consult your local PoolPak representative or the factory.

UNIT HOOKUP

Avoid tearing or damaging unit insulation while working on or around the unit. Do not stack access panels. Stand them upright with the insulation away from traffic.

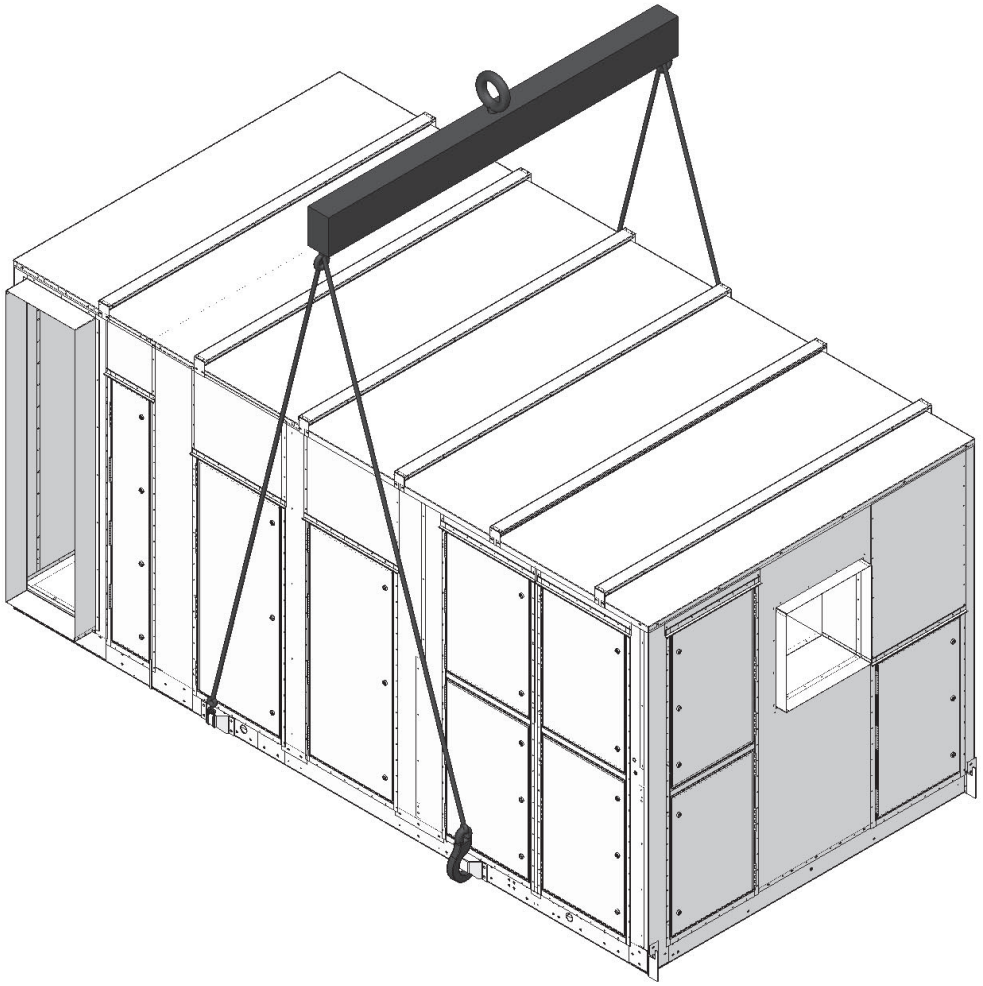
Gas Furnace Auxiliary Heat (Optional)

When using a gas furnace, power venting is provided for all unit sizes. **No additional venting or caps are provided. Please refer to the furnace manufacturer's manual for piping and venting instructions.** Natural gas furnaces are available with outputs of 180,000 to 1,250,000 BTU, as determined by unit configuration and project requirements.

INSPECTION

Immediately upon receiving the unit, inspect it for damage which may have occurred during transit. If damage is evident, note it on the carrier's freight bill. A written request for inspection by the carrier's agent should be made at once.

Failure to follow these directions will result in serious damage to the unit. **PoolPak will not accept responsibility or liability for repairing any resulting damage.**



NOTES:

RIGGING - Remove side outside air flange before lifting. Use cable or chain sling. Use spreader bars to prevent damage to unit. DO NOT USE FORKLIFT.

TRANSPORTING - Secure each unit to trailer by lifting holes to prevent damage to unit. These units shall not have any items stacked on top during transit. DO NOT SECURE WITH STRAP OR CHAIN OVER TOP OF UNIT.

SPREADER BARS - For A cabinet models, use 5-foot spreader bars. For B and C cabinet models use 8.5-foot spreader bars.

Figure Inst -4 SWHP S PoolPak Rigging

▲CAUTION
Lifting hooks must be blocked away from the side of the unit to prevent damage to the door panels while lifting. ***Do NOT walk on top of the unit or serious damage may result.***

HANDLING

Care should be taken during handling to avoid damage to panels, drain piping, etc. The PoolPak can be moved into position using pipe rollers underneath the base of the unit, or it can be lifted using a crane or a hoist attached through the four lifting holes provided in the unit base frame.

Use suitable spreaders or a frame to prevent damage to the PoolPak (see **Figure Inst-4**). Cables must be adjusted to length to correct for the heavier compressor end of the unit.

RIGGING AND WEIGHT

Figure Inst-4 shows the proper way to rig the PoolPak unit for lifting. Please refer to dimension tables for weights of specific product configurations.

OPTIONAL AIR COOLED CONDENSER REFRIGERANT PIPING GUIDELINES

Proper sizing and installation of the refrigerant piping from the PoolPak unit to the remote air cooled condenser is important. **Figure Inst-5** and **Table Inst-2** show guidelines for installations where the remote air cooled condenser piping is less than 100 feet long. **For installations with piping longer than 100 feet, contact the factory.**

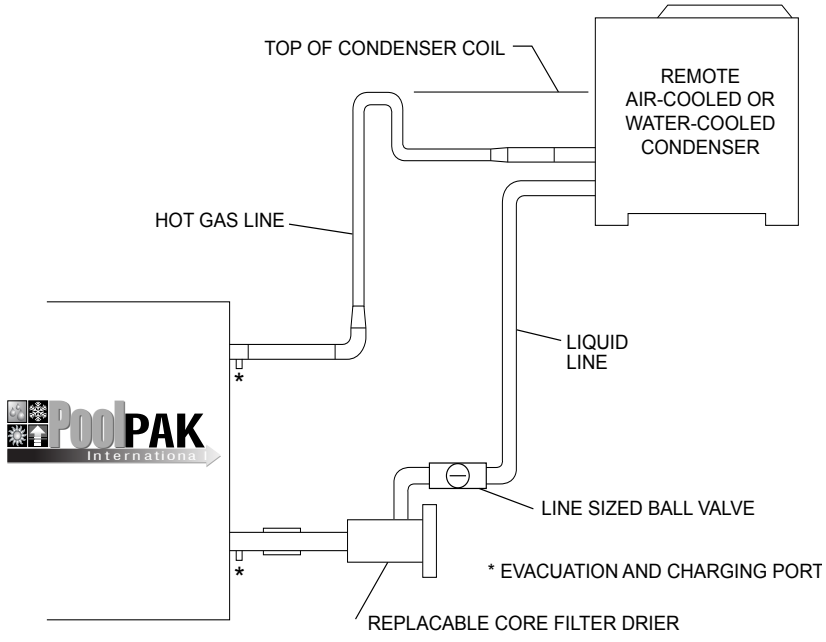


Figure Inst-5 Remote Air Cooled Condenser Refrigerant Piping Guideline

Remote Refrigerant Condensers above or at PoolPak Unit level**			
	Hot Gas Lines		
PoolPak Model	Horizontal Run	Vertical Riser	Liquid Lines
SWHP 060	1-3/8	1-3/8	7/8
SWHP 080	1-3/8	1-3/8	1-1/8
SWHP 100	1-5/8	1-5/8	1-1/8
SWHP 120	1-5/8	1-5/8	1-3/8
SWHP 140	2-1/8	1-5/8	1-3/8
SWHP 190	2-1/8	1-5/8	1-3/8
SWHP 220 ‡	1-5/8	1-5/8	1-1/8
	1-5/8	1-5/8	1-1/8
SWHP 260 ‡	1-5/8	1-5/8	1-3/8
	1-5/8	1-5/8	1-3/8
SWHP 300 ‡	2-1/8	1-5/8	1-3/8
	2-1/8	1-5/8	1-3/8

‡Models 220, 260, and 300 have two refrigeration circuits piped independently.

**** Refrigerant Condensers located below PoolPak Unit level, contact Factory**

Notes:

1. Tables for equivalent length of 100 feet or less. Contact factory for longer lines.

2. Double riser not required for vertical hot gas lines.

3. All pipe diameters are nominal OD inch sizes. Use only certified refrigeration tubing.

4. For scroll compressors, add 4 ounces of Trane No. 00042 or 00045 refrigerant oil per 10 pounds of R-22 refrigerant added.

Table Inst-2 Remote Air Cooled Condenser Refrigerant Piping Guideline

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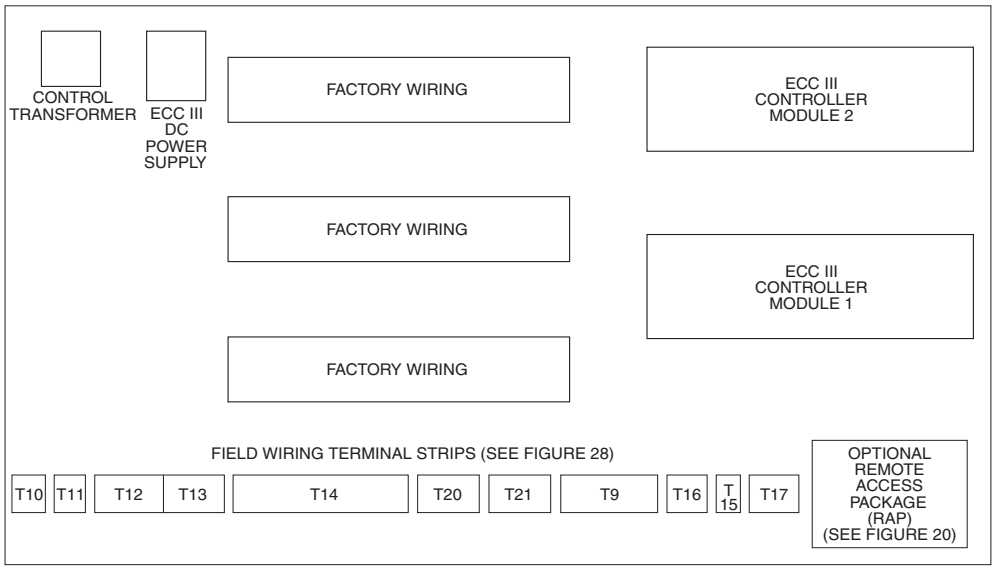
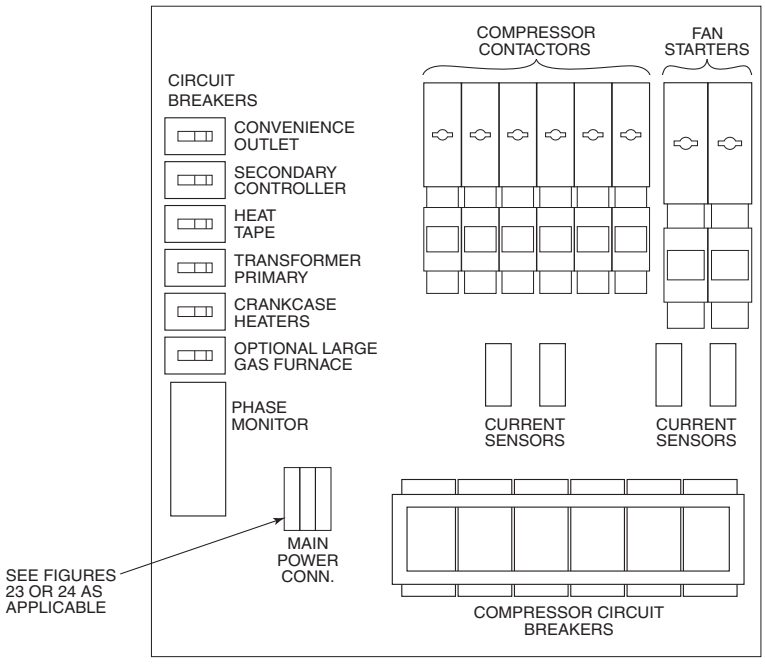
WIRING

Control and Power Panel

Figure Wire-1 shows the relative locations of the components in the control and power panels. In the PoolPak S Series, the power panel is located to the right of the control panel.



CONTROL PANEL



POWER PANEL

Figure Wire-1 PoolPak Power and Control Panel

PoolPak Single Point Power Wiring

The contractor is required to supply (unless supplied as an option by PoolPak) and install a separate fused disconnect. Recommended sizing is provided in the SELECTION PROCEDURE of this manual.
See **Figure Wire-2**.

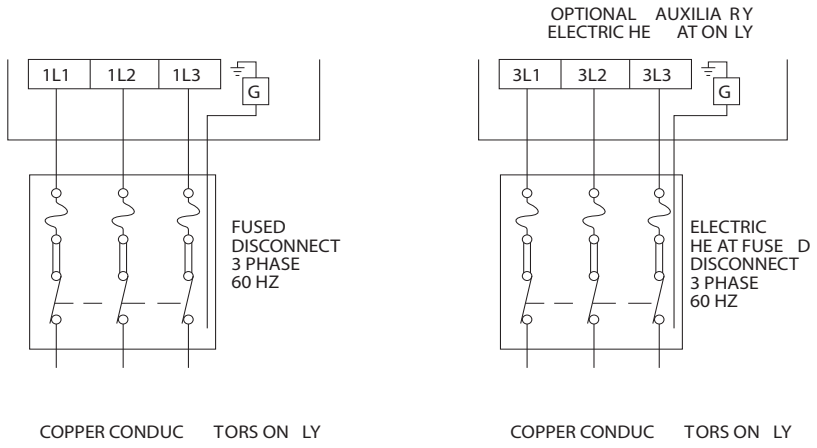


Figure Wire-2 PoolPak Power Wiring

When the auxiliary electric heater option is provided, a second power connection point (3L1, 3L2, and 3L3) is provided in the supply fan compartment. The second power connection feeds the auxiliary electric heating coil. With this option, the contractor is required to supply and install a second fused disconnect. See **Figure Wire-2**.

If a remote air-cooled condenser is required, a separate power feed must be provided for the air-cooled condenser.

Switch Panel

Figure Wire-3 shows the PoolPak switch panel.

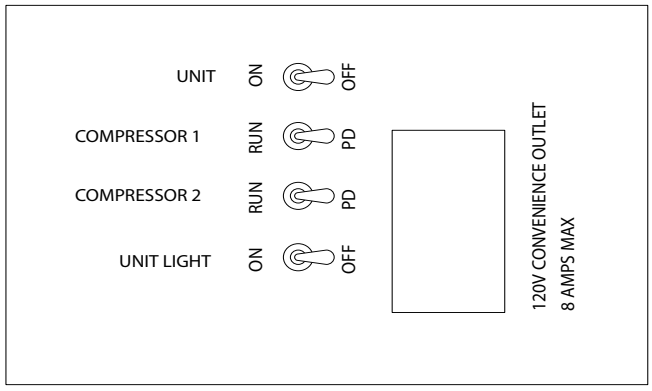


Figure Wire-3 PoolPak Switch Panel

Unit

This switch controls the operation of the entire unit, including fans. This switch must be “ON” for unit operation. When it is turned “OFF”, the compressor, fans, all solenoid valves, and damper motors are de-energized. Power is also removed from the ECC III controller. However, all set points are retained in nonvolatile memory.

Compressor #1 and Compressor #2

This switch enables the compressor operating mode. The “PD” position puts the compressor in a standby mode but leaves the fan and controls operating normally. The “RUN” position allows normal operation of the refrigeration system, provided all safeties are satisfied.

Unit Light

This switch energizes and de-energizes the customer-specified “service lighting” on the PoolPak unit.

Field Connections

Figure Wire-3 shows the relative location of the low voltage field connections. The following sections explain the various connections. The Section numbers are keyed to the figure.

1. REMOTE INTERFACE UNIT

The Remote Interface Unit (RIU) allows the user to view space temperature and relative humidity and pool water temperature. It also provides the ability to change set points, receive alarm notifications, and perform advanced diagnostic functions.

The RIU should be mounted in a convenient location, outside the natatorium, that is protected from splashing pool water and corrosive air. The ambient temperature of the mounting location must always be greater than 32°F. The maximum distance from the PoolPak control panel is 1,000 feet. For distances greater than 1,000 feet, contact the factory.

▲CAUTION
Mounting the RIU inside the natatorium may cause damage to the unit. Problems occuring from mounting the RIU in the natatorium will not be covered under warranty.

The ECC III includes a 7-foot long, black RJ25 cable. If the RIU is to be mounted directly to the PoolPak unit, this cable can be plugged directly into port J10 on control module CM1 in the PoolPak control panel.

For remote mounting of the RIU, the installing contractor must run a six-conductor (three twisted pairs), 16-20 AWG cable from the PoolPak control panel to the remote location. One end of this cable will terminate on terminal block T17 in the control panel. The other end will terminate on a factory-supplied RJ25 jack. The wires for terminals T17.1 and T17.2 should be from the same twisted pair. The second pair should be used for T17.3 and T17.4 and the third pair for T17.5 and T17.6. Proper polarity and connection is essential for correct operation of the RIU. Improper wiring can cause permanent damage. Please review the color code and connections to the RJ25 jack carefully.

The RIU includes a mounting bracket that is designed to fit a standard, single-gang box, mounted horizontally in the wall. The RJ25 jack and most of the black cable should be placed inside the box before installing the mounting bracket. Use the screws that come with the box to secure the bracket. Using an “extra deep” box will make it easier to fit the RJ25 cable and jack inside. After the mounting bracket is secured to the wall, connect the RJ25 cable to the jack on the back of the RIU. Slide the RIU onto the bracket until it snaps into place.

An extra RJ25 cable is supplied to allow direct connection of the RIU at the PoolPak control panel during service or startup.

2. OUTSIDE AIR TEMPERATURE AND RELATIVE HUMIDITY SENSOR

The ECC III uses an outside air temperature and humidity sensor to make smart economizer decisions and to prevent air-cooled condenser operation during low ambient conditions.

The sensor should be mounted on the exterior surface of a north-facing wall without exposure to direct sunlight. Wire entry to the sensor terminal box is provided with a compression-type fitting, suitable for cable diameters of from 1/8 to 1/4 inch.

▲CAUTION
Do not connect a conduit directly to the sensor's terminal box.

Use a small piece of UV-resistant cable to make the transition from the conduit to the sensor. A direct conduit connection will allow condensation to form inside the sensor, resulting in permanent damage.

Orient the sensor as shown on the included instruction sheet. Proper orientation of the sensor and radiation shield is essential. Carefully review the wiring connections shown on the field-wiring diagram.

▲CAUTION
Improper connection may damage the sensor and/or the ECC III control module. The cable should be four-conductor (two twisted pairs), 16-20 AWG copper.

3. SURFACE TEMPERATURE SENSOR

This sensor measures the temperature of the coldest surface in the pool enclosure. When the temperature of the surface drops within 5°F of the space dew point, the dew point set point will automatically be reset downward to help prevent condensation on the cold surface. It should be noted that this function will not be able to compensate for lower-quality building materials, such as single-pane glass or non-thermally broken window frames.

The sensor should be mounted on an exterior window or skylight frame not subject to direct sunlight. In cases where there are no exterior doors or windows, the sensor should be mounted on the interior surface of an exterior wall. Avoid mounting the surface temperature sensor where it will get direct exposure from sunlight. The sensor housing has a single 1/8-inch hole for mounting.

Wire as shown on the field-wiring diagram. Electrical connection should be made with two-conductor (one shielded, twisted pair), 16-20 AWG copper cable. Connect the shield drain wire to ground at the PoolPak control panel end only.

4. SMOKE PURGE INPUT

The ECC III can receive a contact closure from a building fire and smoke control system. This input must be connected to dry (voltage free) contacts only. When this input is activated, the ECC III will energize the return fan only and will open the exhaust air damper to 100%, while closing the outside air intake and recirculation dampers to 0%. The compressors will be disabled during this mode, and the RIU will display an alarm message indicating that smoke purge mode has been activated. Using the ECC III configuration menu, it is possible to set this input to be active on open or active on close. This feature does not apply to Series S, SE,and SEP units.

5. FIRE TRIP INPUT

The ECC III can receive a contact closure from a building fire and smoke control system. This input must be connected to dry (voltage free) contacts only. When this input is activated, the ECC III will shut down the compressors and all unit-mounted fans, and will close the outside air and exhaust air dampers. The RIU will display an alarm message indicating that fire trip mode has been activated. Using the ECC III configuration menu, it is possible to set this input to be active on open or active on close.

6. OCCUPIED MODE INPUT

The ECC III can receive a contact closure from a Building Automation System (BAS) or from a time clock to override the occupancy schedule stored in the controller's memory. This input must be connected to dry (voltage free) contacts only. If the schedule is currently requesting unoccupied operation, activating this input will force the controller into occupied mode. Although this input overrides the ECC III internal schedule, it will not override commands sent to the controller via the LonWorks® or Modbus® interfaces.

7. PURGE MODE INPUT

The ECC III can receive a contact closure from a remote mounted switch or from a BAS. This input must be connected to dry (voltage free) contacts only. When activated, the controller will shut down the compressors. During purge mode operation, the ECC III will attempt to maintain space temperature with the auxiliary heating system. If the supply air temperature drops to 40°F, purge mode is automatically terminated to provide freeze protection. Purge mode commands sent to the ECC III through the LonWorks® or Modbus® interface take precedence over the purge mode input.

Series S units are capable of performing a purge mode. However, additional components both inside and outside the PoolPak unit are required.

8. REMOTE EXHAUST FAN INTERLOCK

The ECC III can receive a contact closure from a remote exhaust fan. This input must be connected to dry (voltage free) contacts only.

9. ALARM OUTPUT

The ECC III will activate the alarm output when uncleared alarms are present. This output mimics the status of the red alarm light on the RIU. The output provides form C dry contacts. The contacts may be directly connected to an external circuit, provided it is 24 VAC maximum and the current does not exceed 1A inductive.

10. AUXILIARY POOL WATER HEATING SYSTEM

The auxiliary pool water heating system is not provided by PoolPak. The ECC III provides a dry contact closure that signals a need for auxiliary water heating. The contacts may be directly connected to the heater control circuit, provided it is 24 VAC maximum and the current does not exceed 1A inductive. Any other application will require the use of an additional field-provided and installed relay to interface to the heater. The auxiliary heating system must provide its own thermostat, wired in series with the output of the ECC III. Typically, the set point for this thermostat is 2°F above the pool water temperature set point in the ECC III.

11. AUXILIARY AIR HEATING SYSTEM

The auxiliary heating system is normally factory-installed inside the PoolPak unit. In this case, all interface wiring between the ECC III and the heater is factory-installed. If the PoolPak is not equipped with an auxiliary heating option, the ECC III provides contact closures to control three discrete stages of auxiliary air heating. The contacts may be directly connected to the heater's control circuit provided it is 24 VAC maximum and the current does not exceed 1A inductive. The three outputs are energized in order, by number, as heating demands dictate.

12. SYSTEM 1 REMOTE AIR-COOLED CONDENSER INTERLOCK AND CONTROL

The ECC III monitors terminals T10.1 and T10.2 for 120 VAC from the remote air-cooled condenser. This 120 VAC proof signal indicates that power is on at the remote condenser. The ECC III will not select the mechanical air conditioning mode if the proof signal is inactive. When mechanical air conditioning is selected, a 120 VAC control signal is sent to the remote condenser through terminals T10.3 and T10.4. This signal energizes the fan starters in the ACC.

13. SYSTEM 2 REMOTE AIR-COOLED CONDENSER INTERLOCK AND CONTROL

The ECC III monitors terminals T11.1 and T11.2 for 120 VAC provided by the remote air-cooled condenser. This 120 VAC proof signal indicates that power is on at the remote condenser. In most cases, a single remote condenser is used for both system 1 and system 2. For this reason, the factory installs jumpers from T10.1 and T10.2 to T11.1 and T11.2, respectively. This allows a single 120 VAC proof signal from the condenser to activate the proof input of both systems. When mechanical air conditioning is selected, a 120 VAC control signal is sent to the remote condenser through terminals T11.3 and T11.4. This signal energizes the fan starters in the ACC.

14. AUXILIARY AIR HEAT CONTROL VALVE

The ECC III provides an analog signal to control a proportional hot water or steam valve. Normally, the valve is factory-mounted and wired inside the PoolPak unit. However, if a remote valve is used, it can be connected directly to the PoolPak control panel. Terminal block T12 provides 24 VDC power and a control signal. The actuator on the external valve must consume less than 5 VA at 24 VDC. The default control signal to the actuator is 2-10 VDC. The voltage span of the control signal can be adjusted in the configuration menu.

15. BUILDING AUTOMATION SYSTEM INTERFACE CONNECTION

The ECC III is capable of direct connection to LonWorks® or Modbus® B-AS systems. When equipped with the LonWorks® interface, the ECC III utilizes an Echelon FTT10 transceiver for connection to a TP/FT-10 network channel. The Modbus® RTU interface is RS485-based, with user selectable baud rates of 1,200, 2,400, 4,800, 9,600, and 19,200.

This interface allows a BAS to monitor detailed dehumidifier status information. It also allows the BAS to make set point changes, to control occupancy modes, and to control purge mode.

Detailed information on BAS interface operation is available on the PoolPak website at www.poolpak.com.

16. MULTI-UNIT NETWORK CONNECTION

The ECC III utilizes a proprietary, private network to coordinate with other PoolPak units operating in the same space. This allows up to five PoolPak units to coordinate operation using a master/slave scheme. The PoolPak units are connected to each other by daisy-chaining the three terminals of T15. The network is RS485-based. The connections should be made with 24 AWG minimum, category 5 cable. Use wires from the same pair for the connection of terminals 1 and 2. The total network length should not exceed 500 feet. For total network lengths of more than 500 feet, contact the factory.

17. SYSTEM 1 REMOTE WATER-COOLED CONDENSER INTERLOCK

The ECC III monitors the entering water temperature in the remote water-cooled condenser to ensure it is below 90°F. Field wiring must be connected between the normally closed, open on rise contacts of the system 1 temperature switch located in the condenser enclosure and relay 5R, terminals 11 and 14 located on the PoolPak Control Panel. The ECC III will not select the mechanical air conditioning mode if the proof signal is inactive.

18. SYSTEM 2 REMOTE WATER-COOLED CONDENSER INTERLOCK

The ECC III monitors the entering water temperature in the remote water-cooled condenser to ensure it is below 90°F. Field wiring must be connected between the normally closed, open on rise contacts of the system 2 temperature switch located in the condenser enclosure and relay X5R, terminals 11 and 14 located on the PoolPak Control Panel. The ECC III will not select the mechanical air conditioning mode if the proof signal is inactive.

PoolPak Wiring Schematic

Figure Wire-5 (3 sheets) shows the complete ladder diagram for the PoolPak unit.

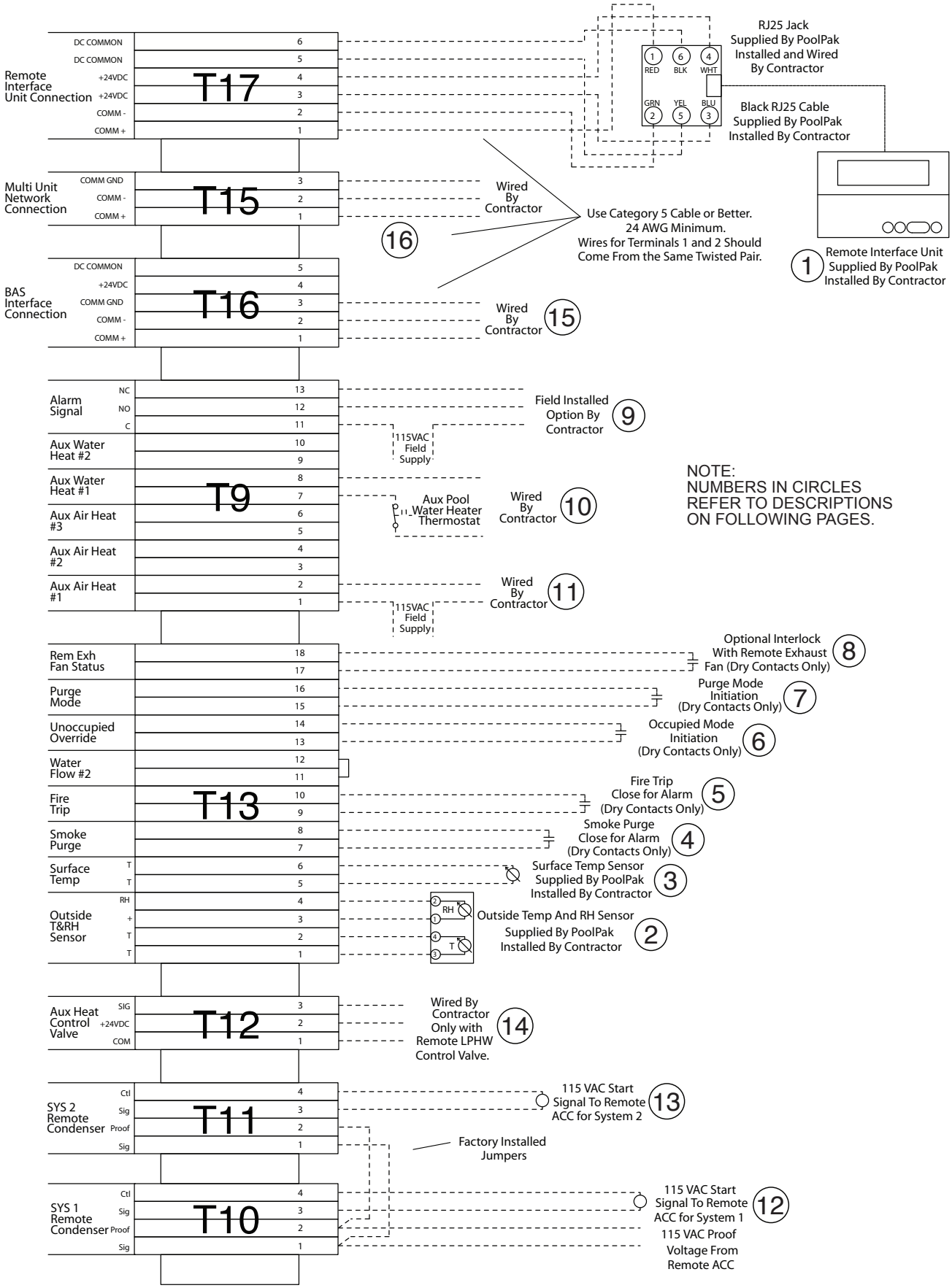
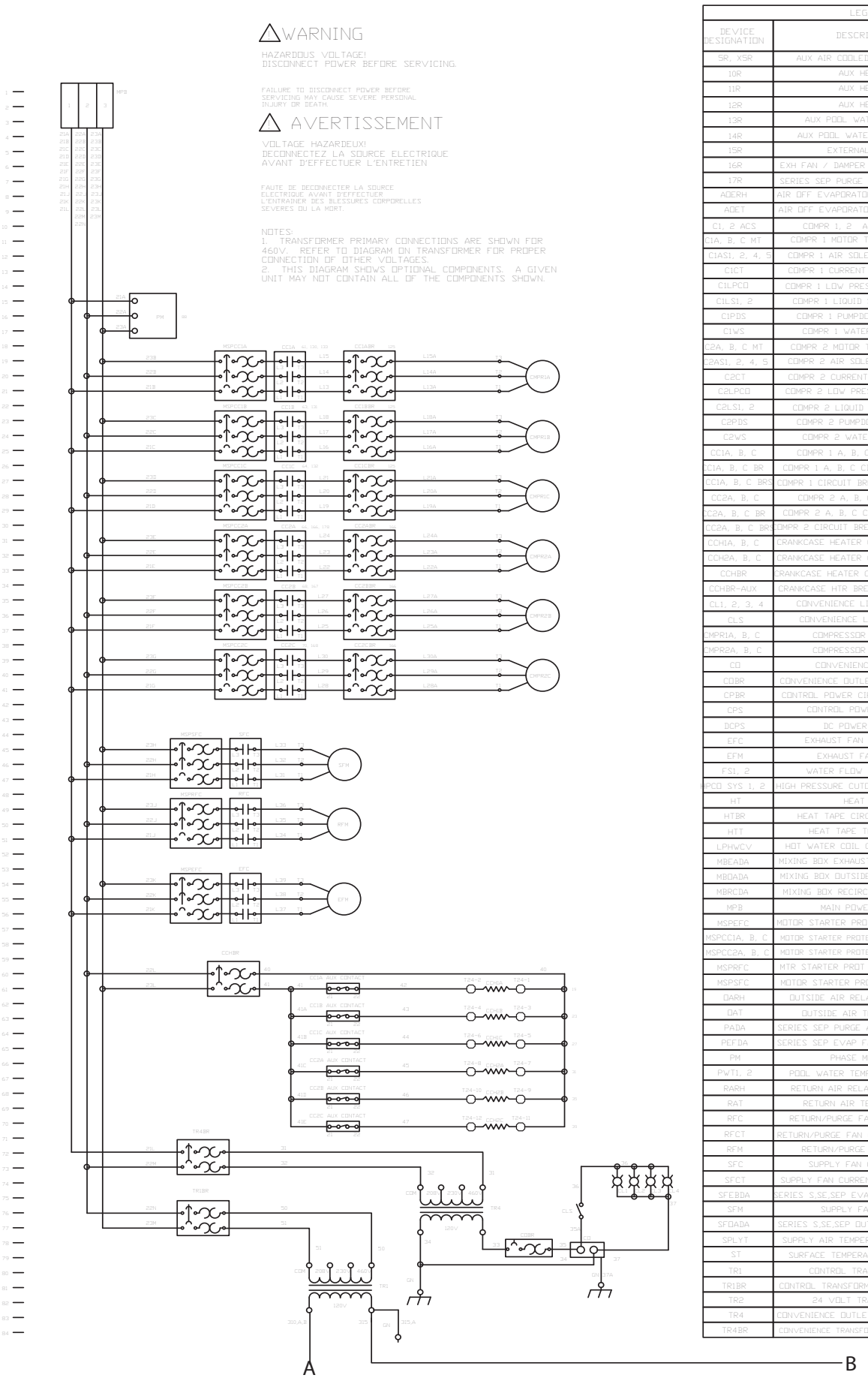


Figure Wire-4 ECC III Field Wiring Diagram



LEGEND		
DEVICE DESIGNATION	DESCRIPTION	LINE NUMBER
5R, X5R	AUX AIR COOLED CONDENSER	21,137,142,163
10R	AUX HEAT #1	124,150
11R	AUX HEAT #2	125,154
12R	AUX HEAT #3	126,159
13R	AUX POOL WATER HEATER	127,163
14R	AUX POOL WATER HEATER #2	128,168
15R	EXTERNAL ALARM	129,172
16R	EXH FAN / DAMPER CONTROL RELAY	162,183
17R	SERIES SEP PURGE CONTROL RELAY	120,216
ADERH	AIR DFF EVAPORATOR RELATIVE HUMIDITY	174
ADET	AIR DFF EVAPORATOR TEMPERATURE	150
C1, 2 ACS	COMPR 1, 2 A/C SOLENOID	135,177
C1A, B, C MT	COMPR 1 MOTOR TEMPERATURE	127
C1AS1, 2, 4, 5	COMPR 1 AIR SOLENOID 1, 2, 4, 5	139,140,141,177
C1CT	COMPR 1 CURRENT TRANSDUCER	139
C1LPCO	COMPR 1 LOW PRESSURE CUTOUT	125
C1LS1, 2	COMPR 1 LIQUID SOLENOID 1, 2	136,137
C1PDS	COMPR 1 PUMPDOWN SWITCH	120
C1WS	COMPR 1 WATER SOLENOID	138
C2A, B, C MT	COMPR 2 MOTOR TEMPERATURE	166
C2AS1, 2, 4, 5	COMPR 2 AIR SOLENOID 1, 2, 4, 5	173,174,175,178
C2CT	COMPR 2 CURRENT TRANSDUCER	175
C2LPCO	COMPR 2 LOW PRESSURE CUTOUT	164
C2LS1, 2	COMPR 2 LIQUID SOLENOID 1, 2	170,171
C2PDS	COMPR 2 PUMPDOWN SWITCH	162
C2WS	COMPR 2 WATER SOLENOID	172
CC1A, B, C	COMPR 1 A, B, C CONTACTOR	19,23,27
CC1A, B, C BR	COMPR 1 A, B, C CIRCUIT BREAKER	120,121,122 19,23,27
CC1A, B, C BRS	COMPR 1 CIRCUIT BREAKER STATUS SWITCH	127
CC2A, B, C	COMPR 2 A, B, C CONTACTOR	31,35,39 167,168,169
CC2A, B, C BR	COMPR 2 A, B, C CIRCUIT BREAKER	31,35,39
CC2A, B, C BRS	COMPR 2 CIRCUIT BREAKER STATUS SWITCH	166
CCH1A, B, C	CRANKCASE HEATER COMPR 1 A, B, C	61,63,65
CCH2A, B, C	CRANKCASE HEATER COMPR 2 A, B, C	67,68,70
CCHBR	CRANKCASE HEATER CIRCUIT BREAKER	60
CCHBR-AUX	CRANKCASE HTR BREAKER AUX CONTACT	126
CL1, 2, 3, 4	CONVENIENCE LIGHT 1, 2, 3, 4	73
CLS	CONVENIENCE LIGHT SWITCH	75
CMPR1A, B, C	COMPRESSOR 1 A, B, C	19,23,27
CMPR2A, B, C	COMPRESSOR 2 A, B, C	31,35,39
CO	CONVENIENCE OUTLET	78
COBR	CONVENIENCE OUTLET CIRCUIT BREAKER	78
CPBR	CONTROL POWER CIRCUIT BREAKER	85
CPS	CONTROL POWER SWITCH	92
DCPS	DC POWER SUPPLY	96
EFC	EXHAUST FAN CONTACTOR	54,182
EFM	EXHAUST FAN MOTOR	54
FS1, 2	WATER FLOW SWITCH 1, 2	122,123
HPCO SYS 1, 2	HIGH PRESSURE CUTOUT SYSTEM 1, 2	115,162
HT	HEAT TAPE	89
HTBR	HEAT TAPE CIRCUIT BREAKER	89
HTT	HEAT TAPE THERMOSTAT	89
LPHWCV	HOT WATER COIL CONTROL VALVE	151,195,200
MBEADA	MIXING BOX EXHAUST AIR DMPR ACTUATOR	138,148,194,199
MBOADA	MIXING BOX OUTSIDE AIR DMPR ACTUATOR	140,150,192,197
MBRCDA	MIXING BOX RECIRC AIR DMPR ACTUATOR	139,149,193,198
MPB	MAIN POWER BLOCK	1
MSPEFC	MOTOR STARTER PROTECTOR EXHAUST FAN	54
MSPCC1A, B, C	MOTOR STARTER PROTECTOR COMPR 1 A, B, C	19,23,27
MSPCC2A, B, C	MOTOR STARTER PROTECTOR COMPR 2 A, B, C	31,35,39
MSPRFC	MTR STARTER PROT RETURN/PURGE FAN	49
MSPSFC	MOTOR STARTER PROTECTOR SUPPLY FAN	45
OARH	OUTSIDE AIR RELATIVE HUMIDITY	173
OAT	OUTSIDE AIR TEMPERATURE	148
PADA	SERIES SEP PURGE AIR DPR ACTUATOR	214
PEFDA	SERIES SEP EVAP FACE DPR ACTUATOR	218
PM	PHASE MONITOR	15,89
PWT1, 2	POOL WATER TEMPERATURE 1, 2	180,182
RARH	RETURN AIR RELATIVE HUMIDITY	172
RAT	RETURN AIR TEMPERATURE	146
RFC	RETURN/PURGE FAN CONTACTOR	49,123
RFCT	RETURN/PURGE FAN CURRENT TRANSDUCER	138
RFM	RETURN/PURGE FAN MOTOR	49
SFC	SUPPLY FAN CONTACTOR	45,122
SFCT	SUPPLY FAN CURRENT TRANSDUCER	137
SFEBDA	SERIES S,SE,SEP EVAP BYP DPR ACTUATOR	208
SFM	SUPPLY FAN MOTOR	45
SFOADA	SERIES S,SE,SEP OUT AIR DPR ACTUATOR	204
SPLYT	SUPPLY AIR TEMPERATURE SENSOR	184
ST	SURFACE TEMPERATURE SENSOR	152
TR1	CONTROL TRANSFORMER	80
TR1BR	CONTROL TRANSFORMER CIRCUIT BREAKER	76
TR2	24 VOLT TRANSFORMER	96
TR4	CONVENIENCE OUTLET TRANSFORMER	74
TR4BR	CONVENIENCE TRANSFORMER CIRCUIT BREAKER	72

Figure Wire-5 PoolPak Wiring Schematic (continued on next page)

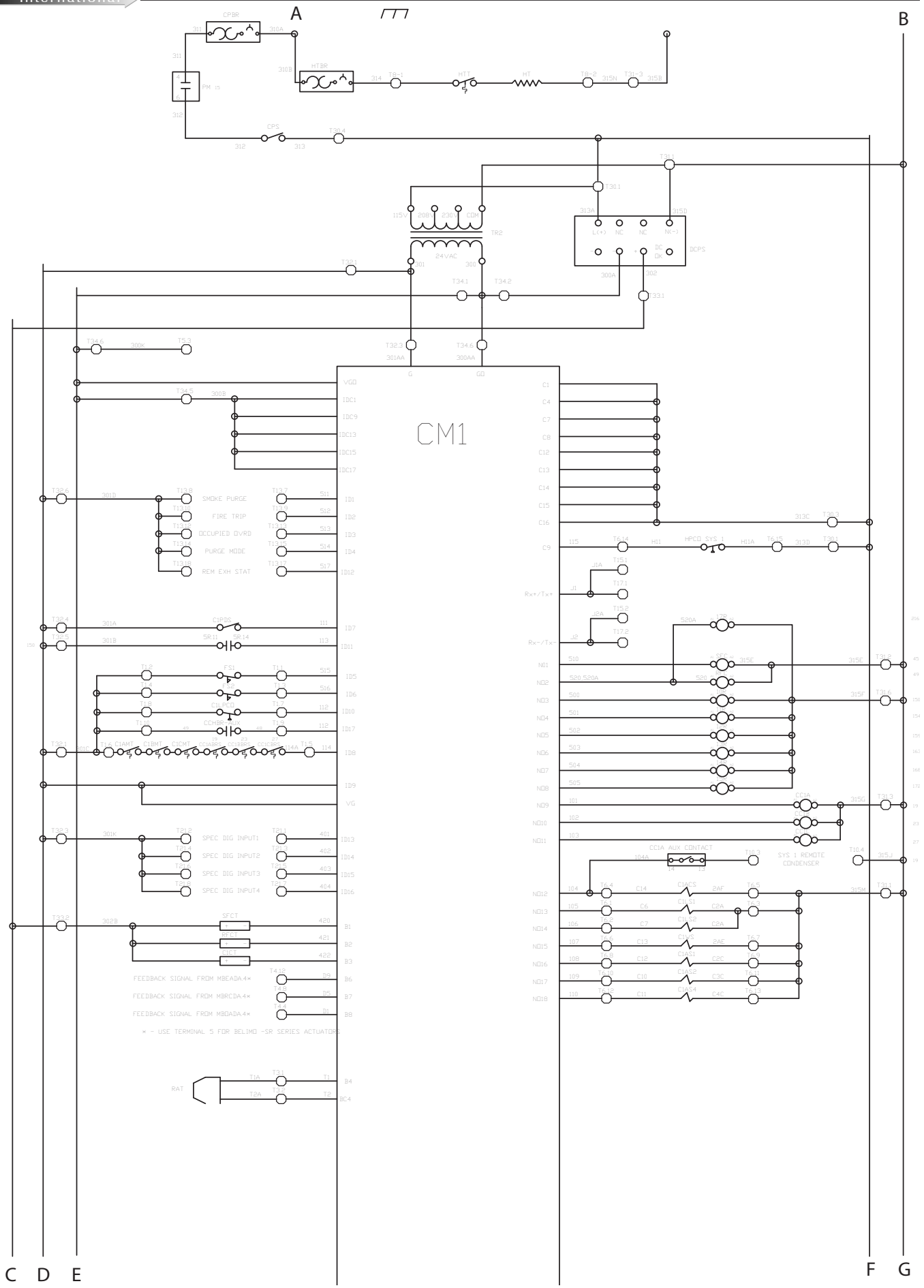


Figure Wire-5 PoolPak Wiring Schematic (continued on next page)

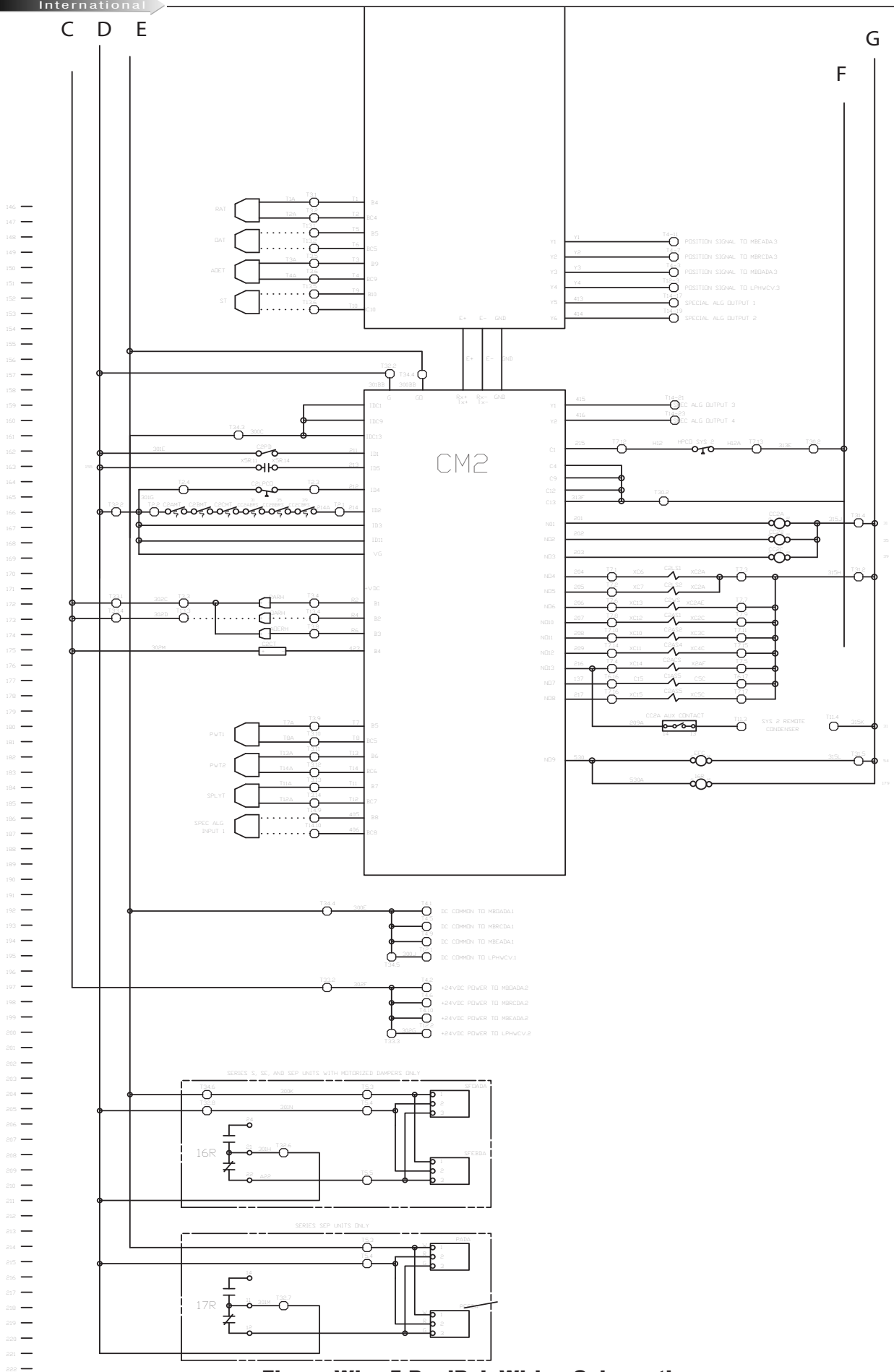


Figure Wire-5 PoolPak Wiring Schematic

OPERATION

STATUS SCREENS—VI KEY

Normally, the RIU (**Figure Oper-1**) will automatically rotate between four different screens to display the status of the system. Pressing the HOLD/ROTATE key will stop the automatic screen rotation and will hold the presently-displayed screen. After a 10-minute delay, the screens will resume normal rotation. The user may also turn off the hold function before the delay terminates by pressing the HOLD/ROTATE key a second time.

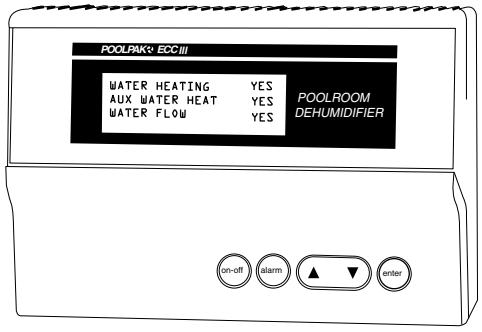


Figure Oper-1 Remote Interface Unit (RIU)

Screen 1 displays:

- Day, Date, and Time (24-Hour Format)
- Space Temperature
- Space Relative Humidity
- Space Dew Point

Screen 2 displays:

- Pool Water Temperature #1
- Pool Water Temperature #2

> ***NOTE***
> ***Pool Water Temperature Values will not be displayed if the water flow switch is not closed***

- Outside Air Temperature
- Outside Air Relative Humidity

Screen 3 displays: This screen does not appear on Series S, SE,and SEP units.

- Outside Air Damper Position
- Recirc Air Damper Position
- Exhaust Air Damper Position

Screen 4 displays:

- System 1 Mode OFF, AIR HEAT, WATER HEAT, AIR COOL
  - OFF - System 1 compressors are not active
  - AIR HEAT - System 1 compressors on; air reheat coil is active
  - WATER HEAT - System 1 compressors on; pool heat is active
  - AIR COOL - System 1 compressors on; AC condenser is active
- System 2 Mode OFF, AIR HEAT, WATER HEAT, AIR COOL
  - OFF - System 2 compressors are not active
  - AIR HEAT - System 2 compressors on; air reheat coil is active
  - WATER HEAT - System 2 compressors on; pool heat is active
  - AIR COOL - System 2 compressors on; AC condenser is active
- Occupancy Status OCC or UNOCC
  - OCC - Occupied; outside air is being introduced to the space to meet ventilation requirements
  - UNOCC - Unoccupied; outside air will not be introduced into the space unless required by the smart economizer

CHANGING SET POINTS

Four set points, space temperature, space relative humidity, pool water temperature 1, and pool water temperature 2, can be accessed through the RIU. To change a set point, press the corresponding set point key. The associated set point screen will appear. Use the UP and DOWN keys to select the new set point value. Press the ENTER key to save the change.

NOTE
Tip: Set points can also be changed with the keys on the ECC III main control module CM1. For space temperature, press PRG and the DOWN arrow simultaneously. For relative humidity, press PRG and the UP arrow simultaneously. For water temperature, press PRG and ENTER simultaneously.

SPACE TEMPERATURE (RANGE 70-95ºF)

The space temperature should normally be set to about 2°F above the pool water temperature to minimize the water evaporation rate.

SPACE RELATIVE HUMIDITY (RANGE 45-65%)

A normal setting for the space relative humidity set point is 50-60%. Lower set points require more electricity to satisfy the dehumidification requirement.

POOL WATER TEMPERATURE (RANGE 75-95ºF)

A normal setting for the pool water temperature set point is between 78°F and 83 °F, depending on the type of use for the pool (competitive swimming *vs.* recreation).

SERVICE

The following instructions detail the service functions of the ECC III. These instructions are meant for use by a qualified HVAC service technician. Improper settings will cause poor operation.

CONFIGURATION MENU—I KEY (ESC ON CM1 KEYPAD)

Pressing the "I" key or ESC prompts the user for the service password: 0005. Press the UP arrow key until the service password is displayed, then press the ENTER key. The user may then set the ECC III control parameters for the specific application and user preferences.

Pressing the UP and DOWN arrow keys will cycle through the available parameters. When the parameter to be changed is shown on the screen, press the II key to move the cursor to the parameter's value. Once the cursor is highlighting the parameter to be changed, use the UP and DOWN arrow keys to change the value. Press ENTER to accept the new value. The cursor will then move to the next field on the screen. If no other parameter changes are required on the current screen, press the "II" key until the cursor returns to the upper left corner of the screen. The UP and DOWN arrow keys may now be used to navigate the parameter list again.

Tip: Parameters that correspond directly to the old ECC II are listed with the ECC II key number.

Default parameter values are shown in bold-faced type.

The following parameters are available in the configuration menu:

Occupancy Schedule

The ECC III can store up to 28 schedule events. An event is a change to occupied mode or unoccupied mode.

To view the current list of events stored in the controller's memory, press the II key to move the cursor to the Event #: field. Use the UP and DOWN arrow keys to cycle through the events one at a time. It will take a second for the screen to update after the event number is changed. For each event, the screen shows the day of the week, the hour in 24-hour format, the minute, and the event type.

To enter or change an event, select the event number and then press ENTER. The cursor will move to the Day field. Use the UP and DOWN keys to select the correct day. Press ENTER. Set the correct hour. Press ENTER. Repeat this process for the minutes and event type. After pressing ENTER in the event type field, the cursor will move to the "Save This Event" field. If the event information shown on the screen is correct, use the UP arrow key to change the Save field to YES. The cursor will automatically return to the upper left corner of the screen. Otherwise, press ENTER while NO is displayed and repeat the process to enter the correct schedule information.

Purge Mode Schedule

The ECC III can store up to 28 schedule events. An event is a change to purge mode or "no purge" mode.

To view the current list of events stored in the controller's memory, press the "II" key to move the cursor to the Event #: field. Use the UP and DOWN arrow keys to cycle through the events one at a time. It will take a second for the screen to update after the event number is changed. For each event, the screen shows the day of the week, the hour in 24-hour format, the minute, and the event type.

To enter or change an event, select the event number and then press ENTER. The cursor will move to the Day field. Use the UP and DOWN keys to select the correct day. Press ENTER. Set the correct hour. Press ENTER. Repeat this process for the minutes and event type. After pressing ENTER in the event type field, the cursor will move to the "Save This Event" field. If the event information shown on the screen is correct, use the UP arrow key to change the Save field to YES. The cursor will automatically return to the upper left corner of the screen. Otherwise, press ENTER while NO is displayed and repeat the process to enter the correct schedule information.

PoolPak Series S units are capable of performing a purge mode. However, additional components both inside an outside the PoolPak unit are required.

*Timed Purge Mode - **OFF** (Range OFF or ON)*

By opening the outside air and exhaust air dampers to 100%, the ECC III can introduce large quantities of outside air to the pool enclosure. This can be useful during "shocking" of the pool water. Purge mode remains active for an adjustable period of time and then automatically terminates.

To start a timed purge cycle, move the cursor to the Purge Mode: parameter and set it to ON. If the ECC III detects a supply air temperature less than 40°F during a purge cycle, the cycle will be terminated immediately to protect the coils from freeze damage. Although compressor operation is disabled during purge mode, the ECC III will utilize the auxiliary air heating system to maintain the space temperature during a purge cycle.

*Purge Length - 30 **min** (Range 1 to 999)*

This parameter sets the duration of a purge mode cycle in minutes.

*Time Remaining - **Read Only***

This read only parameter indicates how many minutes remain in the current purge mode cycle.

Event Mode Schedule

The ECC III can store up to 28 schedule events. An event is a change to "Start" or "End" Event Mode. During Event Mode, the minimum damper positions is raised to a value higher than the minimum damper setpoint. This value is set in the field below.

To view the current list of events stored in the controller's memory, press the "II" key to move the cursor to the Event #: field. Use the UP and DOWN arrow keys to cycle through the events one at a time. It will take a second for the screen to update after the event number is changed. For each event, the screen shows the day of the week, the hour in 24-hour format, the minute, and the event type.

To enter or change an event, select the event number and then press ENTER. The cursor will move to the Day field. Use the UP and DOWN keys to select the correct day. Press ENTER. Set the correct hour. Press ENTER. Repeat this process for the minutes and event type. After pressing ENTER in the event type field, the cursor will move to the "Save This Event" field. If the event information shown on the screen is correct, use the UP arrow key to change the Save field to YES. The cursor will automatically return to the upper left corner of the screen. Otherwise, press ENTER while NO is displayed and repeat the process to enter the correct schedule information.

*Event Minimum Damper Position - 45 **%** (Range 0 to 75)*

This parameter sets the minimum intake damper position during event mode.

*Event Mode Active - Yes or **No***

053. Time SP - N/A

This parameter allows adjustment of the ECC III's internal clock. The time is in 24-hour format (e.g., 21:00:00 is 9 p.m.). It is normal for the field to briefly flash the old value when a change is made.

054. Day - N/A

This parameter allows adjustment of the day of the week in the internal calendar of the ECC III. It is normal for the field to briefly flash the old value when a change is made.

055. Date - N/A

This parameter allows adjustment of the month and day in the internal calendar of the ECC III. It is normal for the field to briefly flash the old value when a change is made.

056. Year - N/A

This parameter allows adjustment of the year in the internal calendar of the ECC III. It is normal for the field to briefly flash the old value when a change is made.

057. Max Dpr % - 80% (Range 0-100%)

Maximum outside air damper position set point. During normal operation, the outside air damper position will not exceed this number. This parameter does not apply to Series S, SE,and SEP units.

058. Min Dpr % - 20% (Range 0-100%)

Minimum outside air damper position set point. During normal operation in occupied periods, the outside air damper position will not be less than this number. During unoccupied periods, the outside air damper may actually close depending on space conditioning requirements. This parameter does not apply to Series S, SE,and SEP units.

061. SI Display - °F (Range °F-°C)

This parameter allows the user to select the temperature units the ECC III will use to display system conditions and set points.

*062. BaudRate - **4,800** (Range 1,200-19,200)*

This parameter controls the baud rate of the ECC III's BAS serial port.

When connected to a LonWorks® based BAS, this parameter must always be set to 4,800. For Modbus® networks, this parameter should be set as required for the installation.

*063. Unit ID - **Read Only***

This read only parameter displays the ECC III's address on the private multi-unit network. The DIP switches, on control module CM1 in the PoolPak control panel, set the value of this parameter.

071. Stages Installed - N/A (Range 1 to 4)

This parameter indicates how many compressor stages are installed in the PoolPak unit.

For an SWHP60, set this parameter to 1.

For an SWHP80-SWHP120, set this parameter to 2.

For an SWHP140-SWHP190, set this parameter to 3.

For an SWHP220-SWHP300, set this parameter to 4.

072. Ext Conds - 1 (Range 0 to 3)

This parameter indicates what type of external heat rejection (for air-cooling mode) is installed on the PoolPak unit.

For units with no external heat rejection, set this parameter to 0. For a standard air-cooled condenser, set this parameter to 1. For a cooling tower or chilled water condenser, set this parameter to 2. For air cooling with a chilled water coil, set this parameter to 3.

073. Cpr Delay - 5 (Range 1 to 9)

This parameter sets the minimum time, in minutes, that the compressor must be off before it can be restarted.

This value is automatically reset to 5 minutes when power to the controller is cycled.

076. Manual Ctl - 0 (Range 0 to 1)

This parameter places the ECC III into manual control mode. The actual type of manual control is set by parameter

078. Manual Mode.

077. Manual Stg - 0 (Range 0 to 7)

This parameter sets the number of stages to be activated during Manual Modes 0, 1, and 2. It has no effect in Manual Mode 3.

078. Manual Mode - 0 (Range 0 to 3)

This parameter selects the type of manual mode operation as follows:

- Air Heating Mode

- Water Heating Mode

- Air Cooling Mode

- Output Test Mode

NOTE
All manual mode parameters are reset to the default values when power to the controller is cycled. Power to the controller must be cycled when the user is finished with manual control mode.

079. Split Wtr - 0 (Range 0 to 1)

This parameter indicates whether the PoolPak's water heating system is set up to heat a single pool (0) or two pools (1).

080. Temp Delay - 8.0 (Range 0.0 to 99.9)

This parameter is used by the ECC III fuzzy logic engine for space temperature control. **Do not change this parameter unless instructed to do so by the factory.**

081. Dpt Delay - 5.0 (Range 0.0 to 99.9)

This parameter is used by the ECC III fuzzy logic engine for space dew point control. **Do not change this parameter unless instructed to do so by the factory.**

082. Max T Rate - 4 (Range 0 to 99)

This parameter is used by the ECC III fuzzy logic engine for space temperature control. **Do not change this parameter unless instructed to do so by the factory.**

083. Dpr Delay - 6.0 (Range 0.0 to 9.9)

This parameter is used by the ECC III fuzzy logic engine for mixing box damper control. **Do not change this parameter unless instructed to do so by the factory.**

086. Aux Ht First - No (Range No to Yes)

This parameter determines whether the ECC III will use the compressor(s) or the auxiliary heat first when satisfying a space heating requirement. If there is a simultaneous dehumidification requirement, the compressor(s) will be activated.

A setting of No will cause the ECC III to use the compressor(s) before using the auxiliary heating system.

087. Aux Ht Inst - 3 (Range 0 to 3)

This parameter indicates how many stages of auxiliary air heat are installed in the PoolPak.

Set this parameter to the actual number of stages installed. Use a setting of 3 for hot water and steam coils.

*088. F/W Cool - **00.0** (Range 00.0 to 30.0)*

This parameter controls the PoolPak flywheel air conditioning feature. A setting of 00.0 disables flywheel cooling.

A setting of 5.0 or greater activates flywheel cooling. The parameter value is the number of degrees that the space temperature is allowed to drop below the set point while cooling the pool during the unoccupied period. This parameter does not apply to Series S, SE,and SEP units.

NOTE
Parameters 90-99 are used to calibrate the ECC III sensors. This offset value is added to the actual reading from the sensor. The resulting value is used for control and display. If a given sensor reads 2.0°F too high, the corresponding offset value should be set to -2.0°F.

*090. Offs Rtn F - **00.0** (Range -99.9 to 99.9) - Space Temperature Sensor Offset*

*091. Offs Rtn % - **00.0** (Range -99.9 to 99.9) - Space Relative Humidity Sensor Offset*

*092. Offs OA F - **00.0** (Range -99.9 to 99.9) - Outside Air Temperature Sensor Offset*

*093. Offs OA % - **00.0** (Range -99.9 to 99.9) - Outside Air Relative Humidity Sensor Offset*

*094. Offs AOE F - **00.0** (Range -99.9 to 99.9) - Air Off Evap Temperature Sensor Offset*

*095. Offs AOE % - **00.0** (Range -99.9 to 99.9) - Air Off Evap Relative Humidity Sensor Offset*

*096. Offs PW#1 - **00.0** (Range -99.9 to 99.9) - Pool Water Temperature 1 Offset*

*097. Offs PW#2 - **00.0** (Range -99.9 to 99.9) - Pool Water Temperature 2 Offset*

*098. Offs Surf - **00.0** (Range -99.9 to 99.9) - Surface Temperature Sensor Offset*

*099. Offs Supl F - **00.0** (Range -99.9 to 99.9) - Supply Temperature Sensor Offset*

*100. Fan, Wtr - **S**, F (Range O or **S**, N or P or F)*

This parameter indicates the type of PoolPak unit and the type of pool water condenser installed.

The first parameter before the comma indicates whether the PoolPak is an SR Series (O) or S, SE, SEP Series (S) design.

The second parameter indicates the type of pool water condenser, (N)ot installed, (P)artial condensing, or (F)ull condensing.

Network Ctl - Yes or ***No***

This parameter determines whether the unit will participate in the master/slave environment. Setting this parameter to No will cause the unit to operate as a standard single unit. The unit will never become the master on the network and will not listen to demands broadcast by the master. Although units with this parameter set to No do not participate in the master/slave environment, they are still accessible from any RIU connected to the network.

Water Temp Ctl - ***Local*** *or Net*

This parameter determines whether the unit will control water temperature based on the master's command (Net) or its own temperature sensor and set points (Local). If a unit set to Local becomes the master in the network, other units in the network will not use the master's command for water heating. Instead, they will look for the next unit in line that is set for Net water temperature control. Typically, this parameter is set to Local only when the unit is connected to a different pool than the rest of the units on the network.

BAS Addr - ***001***

This parameter is the address of the controller on the BAS network. This parameter may be adjusted as necessary for a Modbus® based network. For LonWorks® based networks, this parameter must always be set to 1.

LonWorks Inst - Yes or ***No***

This parameter configures the ECC III to use the LonWorks® interface card. If this parameter is not set to Yes when connected to a LonWorks® network, the ECC III values, as seen by the LonWorks® devices, will be incorrect.

SpclOptxxxx - Yes or ***No***

All parameters starting with the prefix "SpclOpt" enable special control sequences. Leave all special control sequences disabled unless instructed otherwise by the factory.

DCV Installed - Yes or ***No***

This parameter indicates whether the demand-controlled ventilation option is installed. This parameter does not apply to Series S, SE,and SEP units.

This option consists of a unit-mounted sensor that measures the CO_2 level in the space. As the CO_2 level rises above a set point, the ECC III will override the minimum damper set point to provide additional outside air for ventilation.

Dpr Offs Lim ***-15.0*** *(Range 00.0 to 30.0)*

This parameter sets the maximum amount (%) that the minimum damper position can be offset for CO_2-based ventilation. This parameter does not apply to Series S, SE,and SEP units.

Min CO_2 Level - ***500.0*** *(Range 0000.0 to 3000.0)*

This parameter sets the CO_2 level at which the damper position override is activated. This parameter does not apply to Series S, SE,and SEP units.

Max CO_2 Level - ***800.0*** *(Range 0000.0 to 3000.0)*

This parameter sets the CO_2 level at which the damper position override is at the maximum allowed offset (Dpr Offs Lim). This parameter does not apply to Series S, SE,and SEP units.

OA Temp Lim - ***050.0*** *(Range 000.0 to 100.0)*

This parameter sets the outside air temperature at which the ECC III starts to limit the outside air damper position to ensure the mixed air temperature is at least 50°F. This parameter does not apply to Series S, SE,and SEP units.

Do not change this parameter unless instructed to do so by the factory.

*Ser Port Proto - **RS485** (RS485, RS232, or MBRTU)*

This parameter sets the protocol assigned to the ECC III BAS serial port communication.

Units with a LonWorks® interface should be set for RS485.

Units with a Modbus® interface should be set for MBRTU.

*Dpr Err Tol % - **3.0%** (Range 0.0 to 100%)*

This parameter sets the maximum discrepancy allowed between the requested damper position and the actual position before a damper position error is shown. This parameter does not apply to Series S, SE,and SEP units.

Do not change this parameter unless instructed to do so by the factory.

*Fuzzy Calc Dly - **020** (Range 10 to 100)*

This parameter controls the frequency of the fuzzy logic engine's calculations.

Do not change this parameter unless instructed to do so by the factory.

Stg Delays

The parameters on this screen set the delay times for compressor staging. The parameters listed for Low Press set the low pressure cutout bypass duration. The ECC III will ignore the low pressure cutout input for this many seconds after a compressor is started or staged up or down.

The four staging delay times should be set to **180** for PoolPaks equipped with scroll compressors.

Older PoolPak units, equipped with semi-hermetic reciprocating compressors should have staging delay times of 30.

The low pressure cutout bypass should be set for **20.**

Do not change these parameters unless instructed to do so by the factory.

Cur Dly

The parameters on this screen set the time in seconds that the ECC III waits after starting a motor to check for current. If this many seconds have elapsed and the current read by the ECC III is still less than the threshold value, a fan or compressor alarm will be generated.

Supply Fan, Return Fan, and Compressor 1 should be set to **5** seconds. Compressor 2 should be set to **9** seconds.

Do not change these parameters unless instructed to do so by the factory.

Prf Cur

The parameters on this screen set the threshold values for motor current. If the measured motor current is less than this value, the ECC III reads the motor status as off. Conversely, if the motor current is greater than this value, the motor status is on.

All four parameters should be set to **2.5A.**

Do not change these parameters unless instructed to do so by the factory.

*Enable Pumpdown - Yes or **No***

This parameter indicates whether the ECC III will perform a pumpdown cycle before shutting off a compressor. This parameter should be set to No for units equipped with scroll compressors. Older units with semi-hermetic reciprocating compressors should be set to Yes.

*Cmpr Type - **SCROLL** or RECIP*

This parameter indicates the type of compressor installed in the unit.

Improper setting of this parameter may cause permanent damage to the unit.

Refrig Size

This parameter indicates the size of the refrigeration system installed in the unit. Proper setting of this parameter should match the first section of the unit model number shown on the data plate.

Example: For unit model number SWHP300-40E, this parameter should be set to SWHP300.

*Setpoint Passwd - **0000** (Range 0000 to 9999)*

This parameter can be used to require a password for set point changes. If this parameter is set to 0000, no password will be required.

Setting this parameter to any other value will cause the ECC III to ask for a password whenever a set point button is pressed. The password value is the same as the value set for this parameter.

*Damper Pos Corr - **On** or Off*

This parameter enables damper position correction based on the feedback signal from the actuator. This parameter does not apply to Series S, SE,and SEP units.

*Monitor Exh Fan? – Yes or **No***

When enabled, the controller will generate an alarm if the exhaust fan status contact closure input is not active.

*AC Proof Alm – **Disable** or Enable*

When enabled, the controller will generate an alarm if the AC Proof status contact closure input is not active.

*DprMinVolts - **2.0** (Range 0.0 to 10.0)*

This parameter sets the analog output voltage that sets the damper actuators to 0% open.

The value of this parameter must be less than DprMaxVolts for proper operation.

DprMaxVolts ***-10.0*** *(Range 0.0 to 10.0)*

This parameter sets the analog output voltage that sets the damper actuators to 100% open.

The value of this parameter must be greater than DprMinVolts for proper operation.

AuxAirMinVolts ***- 2.0*** *(Range 0.0 to 10.0)*

This parameter sets the analog output voltage that sets the hot water valve actuator to 0% open.

The value of this parameter must be less than AuxAirMaxVolts for proper operation.

AuxAirMaxVolts ***-10.0*** *(Range 0.0 to 10.0)*

This parameter sets the analog output voltage that sets the hot water valve actuator to 100% open.

The value of this parameter must be greater than AuxAirMinVolts for proper operation.

Fire Trip Actv ***- CLOSE*** *(Range OPEN or CLOSE)*

This parameter sets the operation of the digital input for fire trip mode. A setting of CLOSE means fire trip mode will be active when the dry contacts connected to the PoolPak are closed. A setting of OPEN means fire trip mode will be active when the dry contacts are open.

Smk Purge Actv ***- CLOSE*** *(Range OPEN or CLOSE)*

This parameter sets the operation of the digital input for smoke purge mode. A setting of CLOSE means smoke purge mode will be active when the dry contacts connected to the PoolPak are closed. A setting of OPEN means smoke purge mode will be active when the dry contacts are open.

Buzzer Enable – Yes or ***No***

When set to Yes, a buzzer will sound whenever the alarm light is lit.

Buzzer Delay – ***0060*** *(Range 0 – 9999)*

The number seconds between alarm buzzer tones.

Expansion Board Enables

The parameters on this screen determine wheter or not the CM3 and CM4 Expansion Boards are enabled. Both should be set for **No**.

Do not change these parameters unless instructed to do so by the factory.

Pool Tmp Displ – ***NORM*** *(Range Norm or Always)*

With this parameter set to Norm, the water temperature is displayed only when the pool water flow switch input is active. With this parameter set to Always, the water temperature is displayed at all times, even when the pool water flow switch input is not active.

Sys1 HGSoftStart – ***Yes*** *or No*

This parameter determines if the System 1 Hot Gas Soft Start Valve feature is installed.

Improper setting of this parameter may cause permanent damage to the unit.

*Sys1 HGOverlapPer – **7***

This parameter determines the period of time that the active valve remains open during a mode change.

Improper setting of this parameter may cause permanent damage to the unit.

*Sys1 HG SftStrtPer – **5***

This parameter determines the time that the System 1 Hot Gas Soft Start Valve opens prior to opening the reheat valve during a mode change.

Improper setting of this parameter may cause permanent damage to the unit.

*Sys2 HGSftStrt – **Yes** or No*

This parameter determines if the System 2 Hot Gas Soft Start Valve feature is installed.

Improper setting of this parameter may cause permanent damage to the unit.

Sys2 HGOverlapPer – 7

This parameter determines the time that the active valve remains open during a mode change.

Improper setting of this parameter may cause permanent damage to the unit.

*Sys 2 HGSftStrtPer – **5***

This parameter determines the time that the System 2 Hot Gas Soft Start Valve opens prior to opening the reheat valve during a mode change.

Improper setting of this parameter may cause permanent damage to the unit.

*WtrHtHiEvent – **0.5** (Range –9.9 to 9.9)*

This parameter determines the point, as related to the Pool Water Setpoint, at which the PoolPak will stop a water heating need.

*WtrHtLoEvent – **-0.2** (Range –9.9 to 9.9)*

This parameter determines the point, as related to the Pool Water Setpoint, at which the PoolPak will start a water heating need.

*AuxWtrHtHiEvent – **-0.2** (Range –9.9 to 9.9)*

This parameter determines the point, as related to the Pool Water Setpoint, at which the PoolPak will disable the auxliary water heat contacts.

*AuxWtrHtLoEvent – **-0.7** (Range –9.9 to 9.9)*

This parameter determines the point, as related to the Pool Water Setpoint, at which the PoolPak will enable the auxliary water heat contacts.

*Power Freq – **60 Hz** (Range 50 or 60 Hz)*

This parameter determines the power frequency of the unit.

Improper setting of this parameter may cause permanent damage to the unit.

*WtrHtCalcDly – **120s** (Range 1 – 999)*

This parameter sets the interval in minutes at which the controller determines water heating need

*Compressor 1 Enabled – **Yes** or No*

This parameter provides the option to disable system 1 compressors operation using the software.

*Compressor 2 Enabled – **Yes** or No*

This paranater provides the option to disable system 2 compressors operation using the software.

*Run Timer Save Interval – **4** (Range 1 – 9)*

This parameter sets the interval in hours at which the controller records the run times.

*Crankcase Heater Breaker Status Installed – **Yes** or No*

When set to Yes, the controller will monitor the status of the crankcase heater breakers. If any of the breakers are off, an alarm is generated and the compressors are disabled. This parameter should be set to No if the unit is not equipped with this feature.

*SF Econo Enabled – **OFF** or ON*

This feature allows for a single fan economizer cycle using a purge fan. This feature requires additional components both inside unit and in the rest of the system.

Do not change these parameters unless instructed to do so by the factory.

*Econo OATempLim – **60.0** (Range 50.0 – 99.9)*

This parameter sets the outside air temperature low limit for operation in economizer mode.

*Econo MaxTmpRis – **03.0** (Range 01.0 – 10.0)*

This parameter sets the maximum temperature rise above the return air temperature setpoint for operation in economizer mode.

*Econo OATempDif – **07.0** (Range 00.0 – 30.0)*

This parameter sets the number of degrees the outside air temperature must be below the return air temperature for operation in economizer mode.

ADVANCED CONFIGURATION MENU—IV KEY

Pressing the "IV" key (ESC + UP on CM1 keypad) prompts the user for the password (9995). Press the DOWN arrow key until the service password is displayed and then press the ENTER key. The parameters contained in the advanced configuration menu are for use by an experienced HVAC service technician only. Improper settings will cause poor operation and, in some cases, permanent damage to the PoolPak unit.

The advanced configuration menu contains parameters of two major types: detailed sensor configuration and manual control of each analog input, analog output, and digital output.

Sensor Configuration Properties

Each sensor configuration screen contains the following parameters: Fail - **Read Only**

This flag indicates the current status of the sensor. A value of **OFF** is normal, indicating that the reading from the sensor is within the expected range. A value of ON indicates that the value read from the sensor is outside of the expected range.

Tol - (Range varies by sensor)

This value is the tolerance used by the sensor failure detection feature. If the reading of the sensor is greater than the Max parameter plus the tolerance parameter, the sensor is considered failed. If the reading from the sensor is less than the Min parameter minus the tolerance parameter, the sensor is also considered failed.

This parameter is present only on the screens for current loop based sensors (4-20 mA).

Offs - (Range varies by sensor)

This value is added to the actual reading from the sensor. The resulting value is used by the ECC III for control decisions.

Example: If the reading from the space relative humidity sensor is 2.0% higher than the actual value, setting the offset parameter to -2.0% will calibrate the sensor reading.

The offsets for common sensors are also adjustable from the configuration menu as parameters 90-99.

Min - (Range varies by sensor)

For current loop sensors (4-20 mA), this parameter is the sensor value when the current in the loop is 4 mA.

For voltage mode signals (0-10 VDC), this parameter is the sensor value when the voltage is 0 VDC.

For thermistor-based sensors, this parameter is the low limit value. Any sensor with a reading less than this parameter will be flagged as failed.

Max - (Range varies by sensor)

For current loop sensors (4-20 mA), this parameter is the sensor value when the current in the loop is 20 mA.

For voltage mode signals (0-10 VDC), this parameter is the sensor value when the voltage is 10 VDC.

For thermistor-based sensors, this parameter is the high limit value. Any sensor with a reading greater than this parameter will be flagged as failed.

*Ovrd - **000.0** (Range varies by sensor)*

Setting this parameter to a non-zero value will cause the ECC III to use this number instead of the actual reading from the sensor. This parameter is stored in the ECC III permanent memory and will remain even if power to the controller is cycled.

This parameter can be used to temporarily restore unit operation if a sensor has failed. The following sensor configuration screens are available:

SplyFanCurr - Supply Fan Current Transducer

Default Values: Tol = 5.0, Min = 0.0, Max = 100.0

RtnFanCurr - Return Fan Current Transducer

Default Values: Tol = 5.0, Min = 0.0, Max = 100.0

This parameter does not apply to Series S, SE,and SEP units.

Cmpr1Curr - Compressor System 1 Current Transducer

Default Values: Tol = 5.0, Min = 0.0, Max = 100.0

RtnAirRH - Space Relative Humidity Sensor

Default Values: Tol = 10.0, Min = 0.0, Max = 100.0

OutsAirRH - Outside Air Relative Humidity Sensor

Default Values: Tol = 10.0, Min = 0.0, Max = 100.0

AirOffEvapRH - Air Leaving Evaporator Relative Humidity Sensor

Default Values: Tol = 10.0, Min = 0.0, Max = 100.0

This parameter does not apply to Series S, SE,and SEP units.

Cmpr2Curr - Compressor System 2 Current Transducer

Default Values: Tol = 5.0, Min = 0.0, Max = 100.0

OAFltrPD - Outside Air Filter Pressure Drop Sensor

Default Values: Tol = 5.0, Min = 0.0, Max = 200.0

RtnFltrPD - Return Air Filter Pressure Drop Sensor

Default Values: Tol = 5.0, Min = 0.0, Max = 200.0

ExhDprFdBk - Exhaust Damper Actuator Feedback Signal

Default Values: Tol = 5.0, Min = -25.0, Max = 100.0

This parameter does not apply to Series S, SE,and SEP units.

OutsDprFdBk - Outside Damper Actuator Feedback Signal

Default Values: Tol = 5.0, Min = -25.0, Max = 100.0

This parameter does not apply to Series S, SE,and SEP units.

RcrcDprFdBk - Recirculation Damper Actuator Feedback Signal

Default Values: Tol = 5.0, Min = -25.0, Max = 100.0

This parameter does not apply to Series S, SE,and SEP units.

RtnAirCO2 - Space Air CO_2 Level Sensor

Default Values: Tol = 50.0, Min = 0000.0, Max = 2000.0

SpacePres - Space Air Pressure Sensor

Default Values: Tol = 5.0, Min = 000.0, Max = 500.0

Cpr1SucPr - Compressor System 1 Suction Pressure Transducer

Default Values: Tol = 10.0, Min = 000.0, Max = 250.0

Cpr2SucPr - Compressor System 2 Suction Pressure Transducer

Default Values: Tol = 10.0, Min = 000.0, Max = 500.0

Cpr2DisPr - Compressor System 2 Discharge Pressure Transducer

Default Values: Tol = 10.0, Min = 000.0, Max = 500.0

Cpr1DisPr - Compressor System 1 Discharge Pressure Transducer

Default Values: Tol = 10.0, Min = 000.0, Max = 500.0

RtnAirTemp - Space Temperature Sensor

Default Values: Min = 025.0, Max = 135.0

OutsAirTemp - Outside Air Temperature Sensor

Default Values: Min = -040.0, Max = 135.0

AOETemp - Air Leaving Evaporator Temperature Sensor

Default Values: Min = 020.0, Max = 110.0

This parameter does not apply to Series S, SE,and SEP units.

SurfaceTemp - Cold Surface Temperature Sensor

Default Values: Min = 000.0, Max = 135.0

PoolTemp1 - Pool 1 Temperature Sensor

Default Values: Min = 030.0, Max = 135.0

PoolTemp2 - Pool 2 Temperature Sensor

Default Values: Min = 030.0, Max = 135.0

SplyAirTemp - Supply Air Temperature Sensor

Default Values: Min = 000.0, Max = 180.0

SpclOptAI1 - Special Option Thermistor Input 1

Default Values: Min = 000.0, Max = 150.0

SpclOptAI2 - Special Option Thermistor Input 2

Default Values: Min = 000.0, Max = 150.0

SpclOptAI3 - Special Option Thermistor Input 3

Default Values: Min = 000.0, Max = 150.0

SpclOptAI4 - Special Option Thermistor Input 4

Default Values: Min = 000.0, Max = 150.0

Cmpr1SuctT - Compressor System 1 Suction Temperature Sensor

Default Values: Min = 000.0, Max = 135.0

Cmpr2SuctT - Compressor System 2 Suction Temperature Sensor

Default Values: Min = 000.0, Max = 135.0

Cmpr2MiscT - Compressor System 2 Misc. Temperature Sensor

Default Values: Min = -040.0, Max = 150.0

Cmpr1MiscT - Compressor System 1 Misc. Temperature Sensor

Default Values: Min = -040.0, Max = 150.0

System Run Timers

The ECCIII contains run time counters for the following: Cmpr1A, Cmpr1B, Cmpr1C, Cmpr2A, Cmpr2B, Cmpr2C, Sply Fan, Rtn Fan, Sys1 AC Mode, Sys2 AC Mode, Sys1 Wtr Heat, Sys2 Wtr Heat, Sys1 RH Mode, Sys2 RH Mode.

The counters will accumulate the number of hours each device has been active since the unit was started. The contents of each counter are saved in permanent memory so they will not be affected by loss of power. Each timer has the following fields:

Val – 000,000h This is the number of hours the the device or mode of operation has be in use.

It is possible to manually adjust the value field of each counter if a controller has to be replaced or if the firmware is updated.

Thr – 999,999h Not used.

Do not change these parameters unless instructed to do so by the factory.

Adj – 3600 The number of seconds for each hour recorded.

Do not change these parameters unless instructed to do so by the factory.

Reset – OFF Setting this to ON will set the value to 0 hours.

Do not change these parameters unless instructed to do so by the factory.

Digital Input Status

The ECCIII displays the status of the following digital input relays as either **OP** to indicate the input is open, or **CL** to indicate the input in closed:

SmokePurgeDI – Smoke Purge contacts

FireTripDI –Fire Trip contacts

OccOvrdDI – Occupied Overide contacts

PurgeModeDI – Purge Mode contacts

WtrFlow1DI – System 1 Water Flow Switch

WtrFlow2DI – System 2 Water Flow Switch

S1PmpDwnSwDI – System 1 Compressor Pumpdown Switch

S1MtrTempDI – System 1 Compressor Breakers and Thermal Overload (Scrolls); System 1 Motor Temperature Module (Recips)

S1OilPressDI – System 1 Compressor Oil Pressure switch (Recips only)

S1LowPressDI – System 1 Low Pressure Switch

S1ACCProofDI – System 1 Air-cooled condenser voltage proof; System 1 Water-cooled condenser temperature proof

RemExhFanStatDI – Remote Exhaust Fan Status contacts

S2PmpDwnSwDI – System 2 Compressor Pumpdown Switch

S2MtrTempDI – System 2 Compressor Breakers and Thermal Overload (Scrolls); System 2 Motor Temperature Module (Recips)

S2OilPressDI – System 2 Compressor Oil Pressure switch (Recips only)

S2LowPressDI – System 2 Low Pressure Switch

S2ACCProofDI – System 2 Air-cooled condenser voltage proof; System 2 Water-cooled condenser temperature proof

SpclOptDI1 – Special Option 1 contacts

SpclOptDI2 – Special Option 2 contacts

SpclOptDI3 – Special Option 3 contacts

SpclOptDI4 – Special Option 4 contacts

MANUAL CONTROL PARAMETERS

The ECC III contains an enhanced manual control mode for improved troubleshooting efficiency. This allows a qualified HVAC service technician to manually control all digital and analog outputs.

▲WARNING!

Before using any of the manual control mode functions, place the controller into manual output test mode. This can be done through parameters 76 and 78 under the configuration menu (Key I). Set parameters 76 to 1 and 78 to 3. This will immediately shut off all digital outputs and bypass all normal control logic. When manually energizing digital outputs, make sure that the power to the compressor contactors is disconnected at the motor starter or compressor disconnect switch. Energizing compressors while all solenoid valves are closed may cause permanent damage to the unit!

Digital Output Tests

Each digital output of the ECC III may be controlled individually by setting the corresponding parameter to one of three possible values: AUTO, ON, or OFF. A setting of AUTO gives control of the digital output relay to the software in the ECC III. ON will force the output relay to energize regardless of the status requested by the software. OFF will force the output relay to de-energize regardless of the status requested by the software.

The following manual digital output parameters are available:

- Sply Fan Outp - Supply Fan Contactor
- Rtn Fan Outp - Return Fan Contactor; Purge Fan Contactor (Series S, SE,and SEP units Only)
- Aux Air 1 Outp - Auxiliary Air Heating Stage 1 Relay
- Aux Air 2 Outp - Auxiliary Air Heating Stage 2 Relay
- Aux Air 3 Outp - Auxiliary Air Heating Stage 3 Relay
- Aux Wtr 1 Outp - Auxiliary Water Heating 1 Relay
- Aux Wtr 2 Outp - Auxiliary Water Heating 2 Relay
- Alarm Outp - Alarm Output Relay
- S1 Cmpr 1 Outp - Compressor 1A Contactor (Scrolls); Sys 1 Compressor Contactor (Recip)
- S1 Cmpr 2 Outp - Compressor 1B Contactor (Scrolls); Sys 1 Stage 2 Unloader (Recip)
- S1 Cmpr 3 Outp - Compressor 1C Contactor (Scrolls); Sys 1 Stage 3 Unloader (Recip)
- S1 AC Sol Outp - System 1 AC Solenoid Valve
- S1 Liq #1 Outp - System 1 Liquid Solenoid Valve 1
- S1 Liq #2 Outp - System 1 Liquid Solenoid Valve 2
- S1 Wtr Sl Outp - System 1 Water Heating Solenoid Valve
- S1 Reh 1 Outp - System 1 Air Reheat Solenoid Valve 1
- S1 Reh 2 Outp - System 1 Air Reheat Solenoid Valve 2
- S1 RH1 Sft-Strt - System 1 Air Reheat Soft Start Solenoid Valve 4
- S1 RH2 SftStrt - System 1 Air Reheat Soft Start Solenoid Valve (Spl 2 Dig Outp)
- S2 AC Sol Outp - System 2 AC Solenoid Valve
- S2 Liq #1 Outp - System 2 Liquid #1 Solenoid Valve
- S2 Liq #2 Outp - System 2 Liquid #2 Solenoid Valve
- S2 Wtr Sl Outp - System 2 Water Heating Solenoid Valve
- S2 Reh 1 Outp - System 2 Air Reheat Solenoid Valve 1
- S2 Reh 2 Outp - System 2 Air Reheat Solenoid Valve 2

- S2 RH1 SftStrt - System 1 Air Reheat Soft Start Solenoid Valve 4
- S2 RH2 SftStrt - System 1 Air Reheat Soft Start Solenoid Valve (Spl 2 Dig Outp)
- Exh Fan Outp - Exhaust Fan Contactor
- S2 Cmpr 1 Outp - Compressor 2A Contactor (Scrolls); Sys 2 Compressor Contactor (Recip)
- S2 Cmpr 2 Outp - Compressor 2B Contactor (Scrolls); Sys 2 Stage 2 Unloader (Recip)
- S2 Cmpr 3 Outp - Compressor 2C Contactor (Scrolls); Sys 2 Stage 3 Unloader (Recip)
- Sys 2 Stage 3 Unloader (Recip)

Analog Output Tests

Each analog output of the ECC may be controlled individually by setting the corresponding parameter. If the parameter is set to 0, the analog output will remain under the control of the ECC software. Any other value will override automatic control and force the output to the value of this parameter. To manually force an output to 0, set the parameter to 0.1.

The following analog output test parameters are available:

- Exh Dpr Pos - Exhaust Air Damper Actuator Position

  This parameter does not apply to Series S, SE,and SEP units.

- Rcrc Dpr Pos - Recirculation Air Damper Actuator Position

  This parameter does not apply to Series S, SE,and SEP units.

- Outs Dpr Pos - Outside Air Damper Actuator Position

  This parameter does not apply to Series S, SE,and SEP units.

- AuxAirHtSig - Auxiliary Air Heating Control Valve Position
- Spl1 AlgOut - Special Option Analog Output 1
- Spl2AlgOut - Special Option Analog Output 2
- Spl3 AlgOut - Special Option Analog Output 3
- Spl4AlgOut - Special Option Analog Output 4

SYSTEM STATUS INFORMATION—III KEY (ESC + DOWN ON CM1'S KEYPAD)

Pressing the "III" key accesses the System Status Information menu. Use the Up and Down keys to scroll through the list of parameters. All parameters contained in this menu are read only.

Tip: Parameters that correspond directly to the old ECC II are listed with the ECC II key number.

The following parameters are available in this menu:

01. Day Of Week - Occupancy Status - Date

Occupancy Status is shown as an "O" for occupied and a "U" for unoccupied.

02. Time - Time of Day

03. Spc Air T - Space Air Temperature

04. Spc RH % - Space Relative Humidity

05. PoolWtr 1 - Pool Water Temperature 1

06. PoolWtr 2 - Pool Water Temperature 2

07. Outside T - Outside Air Temperature

08. Outside % - Outside Air Relative Humidity

09. Damper Pos - Outside Air Damper Position

Indicates the requested position of the outside air and exhaust air dampers. Recirculation damper position is 100% minus this value. This parameter does not apply to Series S, SE,and SEP units.

10. Compr #1 - System 1 Compressor Status

OFF or ON

11. Compr Avl #1 - System 1 Compressor Anticycle Timer Status

NO or YES. YES means the anticycle duration has elapsed and the compressor can be started.

12. Low Press #1 - System 1 Low Pressure Cutout Status

NRM or LOW. NRM is normal. LOW means the low pressure cutout switch is open.

13. Hi Press #1 - System 1 High Pressure Cutout Status

NRM or ALM. NRM is normal. ALM means the high pressure cutout has opened and the compressor is supposed to running.

14. Oil Press #1 - Sys 1 Compressor Oil Pressure Status (Recip Only)

NRM or ALM. NRM is normal. ALM means the oil pressure in the compressor is too low.

15. Motor T #1 - Sys 1 Compressor Motor Temperature Cutout Status

NRM or ALM. NRM is normal. ALM means the winding temperature inside the compressor is too high or the compressor circuit breaker has tripped.

16. Operation #1 - System 1 Compressor Control Switch Status

RUN or PD. PD is pumpdown. Units with scroll compressors do not use pumpdown. In this case, the compressor will simply shut off when the switch is placed in the PD position.

17. Stages #1 - System 1 Compressor Stages Active

0, 1, 2, or 3 as applicable

18. Curr Flt #1 - System 1 Current Compressor Fault Code

0 Normal Operation, No Faults

1 Compressor Control Switch in Pumpdown/Off Position

2 System Startup Is Active (2 minutes after power application)

3 Return Fan Motor Not Running

4 Supply Fan Motor Not Running

5 Fire Trip Active

6 Smoke Purge Active

7 Space Temperature Sensor Error (<60°F or >105°F)

8 Supply and Return Fan Motors Not Running

9 Supply Temperature Less Than 40°F. Freeze Danger.

11 Low Oil Pressure (Recip Only)

13 Low Refrigerant Pressure

14 High Motor Temperature

15 High Refrigerant Pressure

16 Compressor Current Transducer Failed

17 Crankcase Heater Breaker Off

50 10 Faults Since Last Reset, Compressor Locked Out

19. Last Flt #1 - System 1 Last Compressor Fault Code

The same codes apply as shown for 18.

20. Compr #2 - System 2 Compressor Status

OFF or ON

21. Compr Avl #2 - System 2 Compressor Anticycle Timer Status

NO or YES. YES means the anticycle duration has elapsed and the compressor can be started.

22. Low Press #2 - System 2 Low Pressure Cutout Status

NRM or LOW. NRM is normal. LOW means the low pressure cutout switch is open.

23. Hi Press #2 - System 2 High Pressure Cutout Status

NRM or ALM. NRM is normal. ALM means the high pressure cutout has opened and the compressor is supposed to running.

24. Oil Press #2 - Sys 2 Compressor Oil Pressure Status (Recip Only)

NRM or ALM. NRM is normal. ALM means the oil pressure in the compressor is too low.

25. Motor T #2 - Sys 2 Compressor Motor Temperature Cutout Status

NRM or ALM. NRM is normal. ALM means the temperature of the windings inside the compressor is too high or the compressor circuit breaker has tripped.

26. Operation #2 - System 2 Compressor Control Switch Status

RUN or PD. PD is pumpdown. Units with scroll compressors may not use pumpdown. In this case, the compressor will simply shut off when the switch is placed in the PD position.

27. Stages #2 - System 2 Compressor Stages Active

0, 1, 2, or 3 as applicable

28. Curr Flt #2 - System 2 Current Compressor Fault Code

0 - Normal Operation, No Faults
1 - Compressor Control Switch in pumpdown/Off Position
11 - Low Oil Pressure (Recip Only)
13 - Low Refrigerant Pressure
14 - High Motor Temperature
15 - High Refrigerant Pressure
16 - Compressor Current Transducer Failed
17 - Crankcase Heater Breaker Off
50 - 10 Faults Since Last Reset, Compressor Locked Out

Last Flt #2 - System 2 Last Compressor Fault Code

The same codes apply as shown for 28.

30. Supply Fan - Supply Fan Motor Status

ON or OFF

31. Return Fan - Return Fan Motor Status; Purge Fan Motor Status (Series S, SE,and SEP units Only)

ON or OFF

32. Smoke Purge - Smoke Purge Input Status

NRM or ALM. NRM is normal.

33. Fire Trip - Fire Trip Input Status

NRM or ALM. NRM is normal.

34. Surface T - Surface Temperature

35. Supply T - Supply Air Temperature

36. Dampr Err - Damper Error Code This parameter does not apply to Series S, SE,and SEP units.

000 - Normal Operation, No Error
003 - Outside Air Damper Position Error
020 - Exhaust Air Damper Position Error
023 - Exhaust Air and Outside Air Damper Position Error
050 - Exhaust and Recirc Dampers Closed. Return Fan Off
060 - Recirc and Outside Dampers Closed. Supply Fan Off
070 - OA Damper Open and OA Temp <40°F. Both Fans Off

080 - All three dampers closed. Both Fans Off
100 - Recirc Air Damper Position Error
103 - Recirc and Outside Air Damper Position Error
120 - Recirc and Exhaust Air Damper Position Error
123 - Recirc, Exhaust, and Outside Air Damper Position Error

37. Wtr #1 Need - Pool 1 Water Heating Requirement

YES or NO. YES indicates that pool 1 has a water heating requirement.

38. Wtr #2 Need - Pool 2 Water Heating Requirement

YES or NO. YES indicates that pool 2 has a water heating requirement.

39. Wtr Flow #1 - System 1 Pool Water Flow Switch Status

ON or OFF

40. Wtr Flow #2 - System 2 Pool Water Flow Switch Status

ON or OFF

41. Off Evap - Air Leaving Evaporator Temperature

42. Off Evap % - Air Leaving Evaporator Relative Humidity

43. AOE Dpt - Air Leaving Evaporator Dewpoint Temperature

44. Space Dpt - Space Dewpoint Temperature

45. Outs Dpt - Outside Air Dewpoint Temperature

46. Ht/Cool Need - Current Space Heating and Cooling Requirements

A positive value indicates a heating requirement. A negative value indicates a cooling requirement.

A value of 0 indicates no heating or cooling is required. If the compressors are running for dehumidification, the unit will default to air heating.

47. Dehumid Need - Current Space Dehumidification Requirements

A value of 0 indicates no dehumidification is required.

48. Stages - Compressor Stages Running

0, 1, 2, 3, or 4 as applicable

49. Version - ECC Control Module 1 Software Version Number

104. Purge - Purge Mode Status

ON or OFF. ON indicates the unit is currently operating in purge mode.

CM2 SW Ver - ECC Control Module 2 Software Version Number

CM3 SW Ver - ECC Control Module 3 Software Version Number

124. ACC #1 Stat - System 1 Air Cooled Condenser Status

ON or OFF. ON indicates that power is on and the outside air temperature is greater than 60°F if equipped with a remote air-cooled condenser or the entering water temperature is less than 90°F if equipped with a water-cooled condenser. If this parameter is OFF, the ECC III will not select air conditioning mode.

125. ACC #2 Stat - System 2 Air Cooled Condenser Status

ON or OFF. ON indicates that power is on and the outside air temperature is greater than 60°F if equipped with a remote air-cooled condenser or the entering water temperature is less than 90°F if equipped with a water-cooled condenser. If this parameter is OFF, the ECC III will not select air conditioning mode.

140. Cpr 1 Mode - System 1 Mode of Operation

0 - Pumpdown/Off
1 - Air Heating
3 - Water Heating
4 - Air Cooling

141. Cpr 2 Mode - System 2 Mode of Operation

0 - Pumpdown/Off
1 - Air Heating
3 - Water Heating
4 - Air Cooling

142. Occ_Flag - Occupancy Mode

OCC - Occupied

UNOCC - Unoccupied

170. Fault Cnt 1 - System 1 Compressor Fault Count Since Last Reset

If the value of this parameter reaches 10, the compressor will be locked out. The unit must be reset to allow the compressor to run.

171. Fault Cnt 2 - System 2 Compressor Fault Count Since Last Reset

If the value of this parameter reaches 10, the compressor will be locked out. The unit must be reset to allow the compressor to run.

172. Exh Dpr - Actual Exhaust Air Damper Position

This is the actual position of the exhaust air damper as reported by the actuator's feedback signal. This parameter does not apply to Series S, SE,and SEP units.

173. Rcrc Dpr - Actual Recirculation Air Damper Position.

This is the actual position of the recirculation air damper as reported by the actuator's feedback signal. This parameter does not apply to Series S, SE,and SEP units.

174. Outs Dpr - Actual Outside Air Damper Position

This is the actual position of the outside air damper as reported by the actuator's feedback signal. This parameter does not apply to Series S, SE,and SEP units.

175. Des Dpr - Desired Outside Air Damper Position

This is the position of the outside air damper requested by the ECC III's mixing box control routine. This parameter does not apply to Series S, SE,and SEP units.

176. Min D Alw - Minimum Damper Position Setpoint

This parameter does not apply to Series S, SE,and SEP units.

177. Max D Alw - Maximum Damper Position Setpoint

This parameter does not apply to Series S, SE,and SEP units.

178. Economiz - Economizer Status

ON or OFF. ON indicates that the ECC III is currently using the economizer feature to maintain space conditions. This parameter does not apply to Series S, SE,and SEP units.

180. Aux Air Ht - Auxiliary Air Heating Stages Active

0, 1, 2, or 3 as applicable.

181. Aux Wtr 1 - Pool 1 Auxiliary Water Heater Status

YES or NO. YES indicates that auxiliary water heating is needed for pool 1. The relay contacts for the interface with the auxiliary heating system are normally closed. This means that the ECC III will energize the relay to shut off the auxiliary pool water heater.

182. Aux Wtr 2 - Pool 2 Auxiliary Water Heater Status

YES or NO. YES indicates that auxiliary water heating is needed for pool 2. The relay contacts for the interface with the auxiliary heating system are normally closed. This means that the ECC III will energize the relay to shut off the auxiliary pool water heater.

183. Flywhl Act - Flywheel Cooling Status

YES or NO. YES indicates that flywheel cooling is active. This parameter does not apply to Series S, SE,and SEP units.

184. Cpr1 Remain - System 1 Anticycle Time Remaining

This parameter is the number of seconds remaining in the compressor's anticycle timer. When this number reaches 0, the compressor can be started immediately.

185. Cpr2 Remain - System 2 Anticycle Time Remaining

This parameter is the number of seconds remaining in the compressor's anticycle timer. When this number reaches 0, the compressor can be started immediately.

Sply Fan Curr - Supply Fan Motor Current

Rtn Fan Curr - Return Fan Motor Current

This parameter does not apply to Series S, SE,and SEP units.

Cmpr 1 Curr - System 1 Compressor Current

Cmpr 2 Curr - System 2 Compressor Current

Dpr Limit Code - Damper Position Limit Code

This parameter does not apply to Series S, SE,and SEP units.

0 - Standard Min and Max Position Set Points.
1 - Fire Trip. Outside and Exhaust Dampers to 0%.
2 - Smoke Purge. Outside and Recirc Dampers to 0%. Exhaust Damper to 100%.
3 - Unoccupied Mode with No Dew Point Override. Outside and Exhaust Dampers May Close to 0%.
4 - Flywheel Air-Conditioning. Outside and Exhaust Dampers to 100%.
5 - Outside Air Temp Below Limit. Outside Damper Position Limited to Maintain 50°F Mixed Air Temperature.
6 - Air-Cooling Required and Compressor is Active.
7 - Air Heating or Dehumidification and Compressor is Active.
8 - Supply Temperature Less than 40°F. Outside Air Damper to 0%.
9 - Heating and Outside Air Temperature is less than Air Leaving Evaporator Temperature.
10 - System Startup Mode is Active.

FzyDprChg - Fuzzy Logic Mixing Box Control Output 0.0 - 150.0

A value greater than 75.0 indicates that the fuzzy logic routine has determined that the outside air damper should be moved toward the open position. Values less than 75.0 indicate that the outside air damper should be moved toward the closed position. As the value gets farther from 75.0, the changes to the damper position will be more aggressive and frequent. This parameter does not apply to Series S, SE,and SEP units.

FzyRatCprChg - Fuzzy Logic Space Temperature Control Variable 0.0 - 200.0

A value greater than 100.0 indicates that the fuzzy logic routine has determined that the number of heat/cool stages should be increased. Values less than 100.0 indicate that the number of heat/cool stages should be decreased. As the value gets farther away from 100.0, changes to the number of stages will happen more often.

FzyDptCprChg - Fuzzy Logic Dew Point Control Variable 0.0 - 200.0

A value greater than 100.0 indicates that the fuzzy logic routine has determined that the number of dehumidification stages should be increased. Values less than 100.0 indicate that the number of dehumidification stages should be decreased. As the value gets farther away from 100.0, changes to the number of stages will happen more often.

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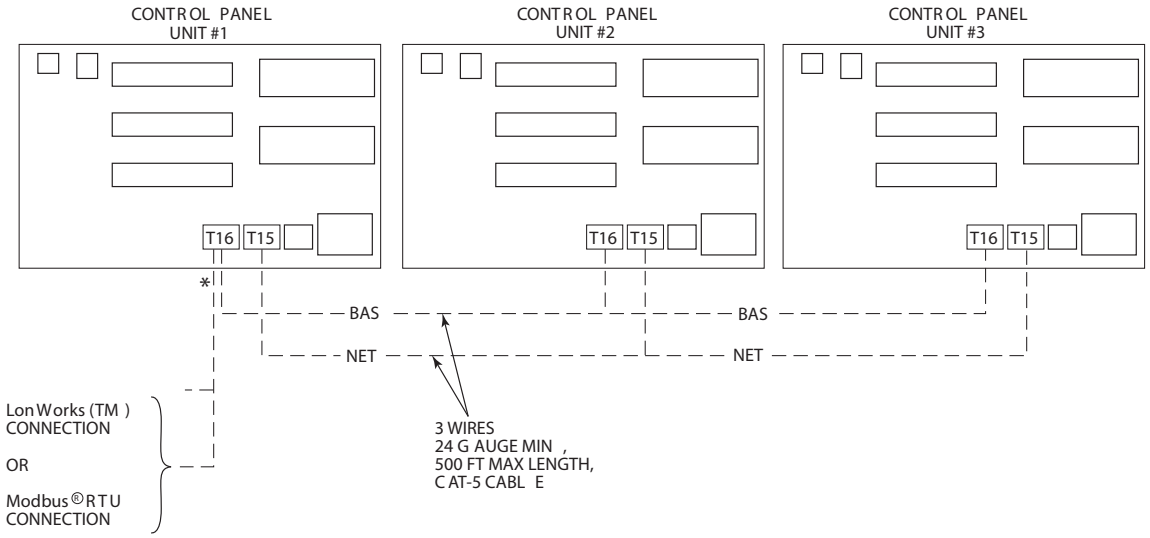
ECC III NETWORK OPERATION

ECC III networking allows up to five PoolPak units to be connected together over a proprietary, private network. The units will work with each other to control water temperature, air temperature, and relative humidity. Networked PoolPak units have all the features of standard PoolPak units plus the ability to control water temperature in multiple pools. All units on the network are accessible from any RIU (Remote Interface Unit) on the network. Refer to **Figure Nwork-1** for multiple PoolPak unit field communication loop connections.



* MAY BE CONNECTED ON ANY T16 TERMINAL BLOCK

Figure Nwork-1 PoolPak ECC III Multiple Unit Field Connections

Networked ECC III units operate in a master/slave environment. This means that the fuzzy logic engine in one unit (master) determines heating, cooling, and dehumidification requirements and broadcasts them over the network to the other units (slaves). This ensures that each unit will make control decisions based on the same information. During steady state conditions, all units networked together will operate in the same basic mode (i.e., heating or cooling). Slight discrepancies in damper position and number of stages active are normal. This is caused by slight sensor calibration differences among the units.

Each networked unit contains all sensors and controls necessary for independent operation and is capable of acting in the master role. Units on the network are identified by an address of one to five. The unit with the lowest address having no un-cleared alarms will be the master unit. If an alarm condition occurs in the master unit, it will give up the role of master. The unit with the next lowest address and no un-cleared alarms will take over the master role. The unit that experienced the alarm condition will operate in the slave role until the alarm is cleared at the RIU. In the unlikely event that all units have un-cleared alarms, they will each act individually.

A single RIU can be used to monitor all units on the network. Indicator lights beside Roman numeral buttons I through V indicate which unit is being displayed. The next unit in line can be selected by pressing the V button. If an alarm condition occurs in a unit, the corresponding light will flash and the RIU will automatically switch to the unit with the alarm. The light will continue to flash even if the RIU is displaying another unit.

For the standard configuration, all set points can be changed while the RIU is displaying any unit. The set point is automatically updated in every unit on the network. Other configurations may require the RIU to be displaying a particular unit to change the set point.

The RIU provides two network status screens. They can be accessed through the status menu accessed with key III. The first screen displays the status of units one through five as ONLINE or OFFLINE. Use this screen to verify that all units on the network are connected and communicating with each other. The second screen displays network information for the unit that is being displayed by the RIU, including network role, connection status, and network address.

Cm1 Configuration

The unit's networking address is set by the DIP switches located next to connector J11 on control module CM1 in the PoolPak control panel. All DIP switches should be OFF except as follows:

Unit Address = 1, SW1 = ON

Unit Address = 2, SW2 = ON

Unit Address = 3, SW1 = ON, SW2 = ON

Unit Address = 4, SW3 = ON

Unit Address = 5, SW1 = ON, SW3 = ON

Riu Configuration

The network address is set by DIP switches located on the back of the RIU. The following table shows the correct switch positions for the common RIU addresses.

Address	DIP SW 1	DIP SW 2	DIP SW 3	DIP SW 4
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON

To configure the ECC III RIU addresses, press and hold keys I, II, and III at the same time for approximately 10 seconds. The display will show the RIU address and ask for the "IO Board Addr". Use the UP and DOWN keys to select the ECC III address to be configured, then press ENTER. Use the keypad to enter the RIU configuration. Set the terminal type as "SH" for shared. When prompted "OK?", select "Y" to save the configuration and to exit. The RIU will go blank and then beep several times before bringing up the normal status display.

Network Configuration

Using the following parameters, it is possible to configure the ECC III network to accommodate a wide variety of installation options. Press the "I" key to access these parameters on the configuration menu. These parameters must be set in each unit individually. Default values are shown in bold type.

*Network Ctl - Yes or **No***

Determines whether the unit will participate in the master/slave environment. Setting this parameter to No will cause the unit to act like a standard single ECC III unit. This unit will never become the master on the network and will not listen to the control variables broadcast by the master. Although units with this parameter set to No do not participate in the master/slave environment, they are still accessible through any network RIU. Like Local pool water control, this parameter, when set to No, requires this unit to be displayed on the RIU before changing any of the set points.

*Water Temp Ctl - **Local** or Net*

Determines whether the unit will control water temperature based on the master's command (Net) or its own temperature sensor(s) and set points (Local). If a unit set to Local becomes the master, other units in the network will not use the master's command for water heating. Instead, they will look at the next unit in line that is not set to Local. This parameter is set to Local only if the unit is connected to a different pool than the rest of the units on the network. Because the unit is controlling water temperature on its own, it is necessary to select the correct unit with the RIU before changing the water temperature set point.

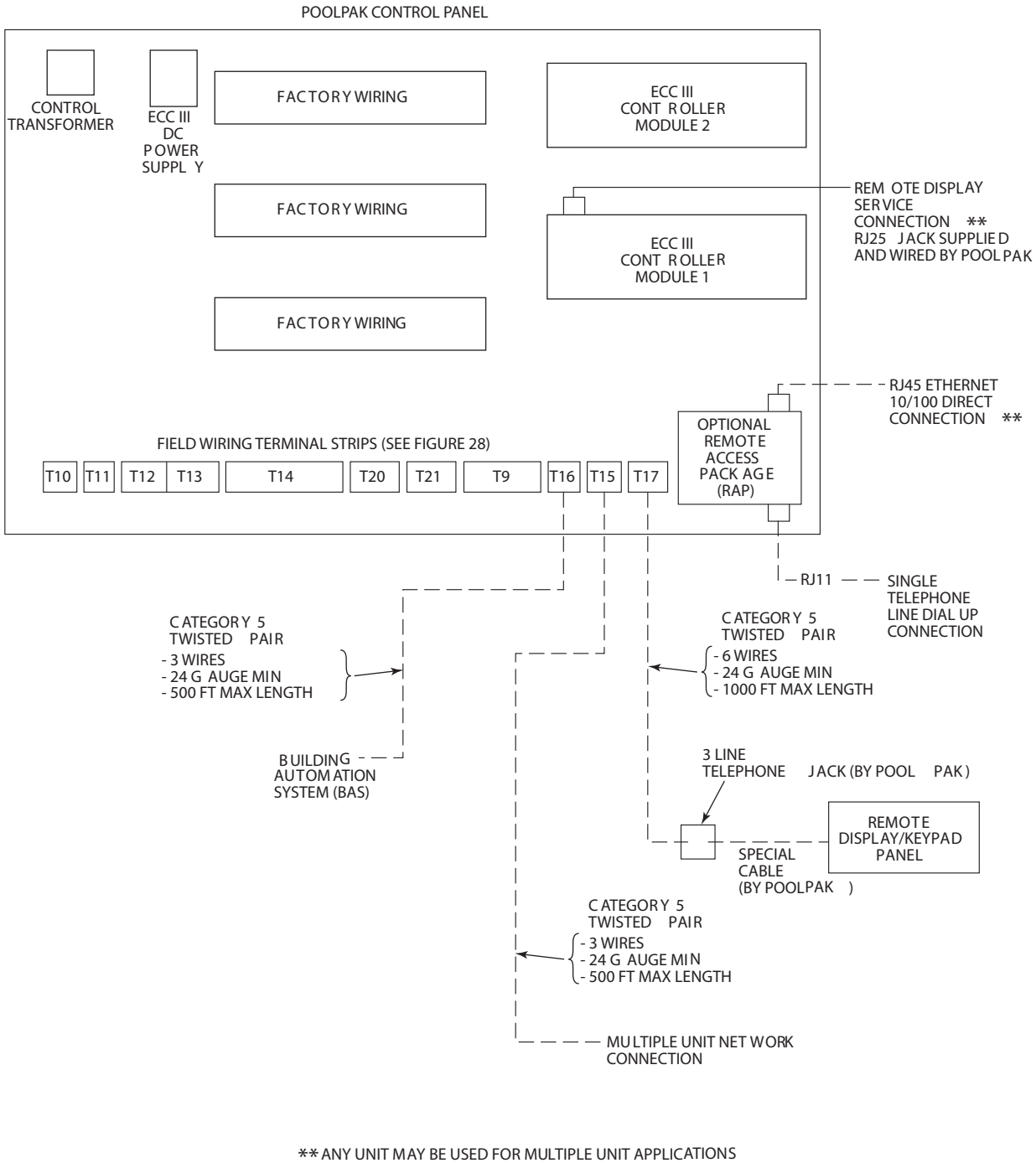
Changing Network Set Points

Each unit on the network maintains two groups of set points: network and local. If a unit has the Network Ctl parameter set to Yes and the Water Temp Ctl parameter set to Net, it will control to the network set points. Set points changed when the RIU is displaying this unit will be changed in every unit on the network with the same Network Ctl and Water Temp Ctl parameters. Units that are configured for Network Ctl and Local Water Temp Ctl will use the local water temperature set point and the network air temperature and relative humidity set points. The water temperature set point will only be changed in the unit currently being displayed by the RIU. Units that are not configured for Network Control will use all local set points. Therefore, any set points changed while the control panel is displaying this unit will be changed only in this unit.

REMOTE INTERFACE PANELS

REMOTE INTERFACE UNIT (RIU)

The PoolPak ECC III control system includes a Remote Interface Unit (RIU) display/keypad panel (**Figure Rpnl-1**) that can be located remotely from the unit for the convenience of the owner. A standard three-line telephone jack connects to the control system at terminal block T17 using a six-wire cable. The RIU connects to this telephone jack using the special RJ-25 cable supplied.



** ANY UNIT MAY BE USED FOR MULTIPLE UNIT APPLICATIONS

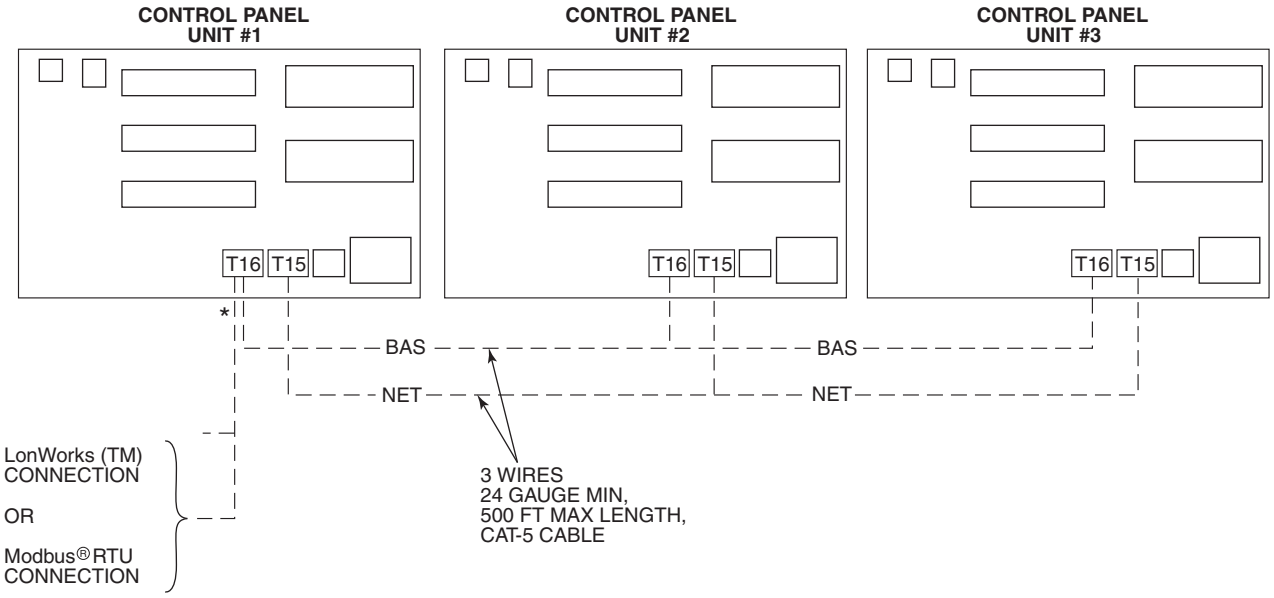
Figure Rpnl-1 PoolPak ECC III Remote Connections

SERVICE DISPLAY CONNECTION

For service convenience, there is an auxiliary RJ25 jack located on the upper left side of ECC III Control Module #1, port J10 (**Figure Rpnl-1**). The RIU may be removed from its remote location and connected here using the special RJ-25 cable supplied with the control system.

MULTIPLE UNIT INTERFACING

When there is more than one PoolPak unit installed at a single site, the units should be connected together as shown in **Figure Rpnl-2**. This is necessary so that each PoolPak unit can be coordinated. It also allows the owner to access PoolPak operational information for all the units from a single location.



* MAY BE CONNECTED ON ANY T16 TERMINAL BLOCK

Figure Rpnl-2 PoolPak ECC III Multiple Unit Field Communication Loop Connection

BUILDING AUTOMATION SYSTEM (BAS) CONNECTION

The PoolPak ECC III control system provides two optional Building Automation System (BAS) connection types, LonWorks® or ModBus®. When the optional Remote Access Package (RAP) is installed, LonWorks® is the only option available. These standard BAS connections are attached to the building system at any T16 terminal block.

POOLPAK REMOTE ACCESS PACKAGE (RAP)

The PoolPak Remote Access Package (RAP) (**Figure Rpnl-1**) is a stand-alone communication system. The system runs an embedded web server over an IEEE 802.3 10/100 BaseT ethernet or an embedded dial-in server over a standard phone line. The web server operates on TCP/IP port 80, the Internet default for web traffic. The web server port is configurable. The RAP can be accessed from either an internal network or the Internet. IP addresses and ports must be routed to the RAP for access via the Internet. Virtual Private Network Connections (VPN) to the RAP will not be supported. The dial-in server can be used where a full-time ethernet connection is not available.

ETHERNET 10/100 DIRECT CONNECTION

When the optional RAP is installed, the ECC III control system can be connected to an external network using the ethernet 10/100 BASE T connection on the upper right side of the RAP (see **Figure Rpnl-1**).

TELEPHONE LINE CONNECTION

A standard RJ11 single line analog phone jack is provided on the lower right side of the optional RAP (see **Figure Rpnl-1**). This connection may be used for dial-up access instead of the direct ethernet connection.

SEND EMAILS - ALERTS FOR ALARMS

When a critical alarm occurs with the PoolPak unit, the RAP will send an email to the PoolPak Service Department, via a mail server maintained by PoolPak. The Internet connection can be either ethernet or dial-up, connected directly to the server at PoolPak. The RAP will create no other network traffic.

TROUBLESHOOTING

When properly installed according to the instructions in this manual, the PoolPak ECC III control system will perform as designed and will provide a pool environment that is both comfortable and cost effective. However, in the unlikely event that the system does not function properly, the ECC III has many features that will help a service technician resolve the issue.

The PoolPak has numerous safety devices designed to protect the system from failures. The compressor(s) will be shut down when any of the following occur:

- High Refrigerant Pressure
- Low Refrigerant Pressure
- High Compressor Motor Temperature
- Low Compressor Oil Pressure
- Fan Motors Not Operating
- Compressor Motor Overload

Additionally, the compressor and/or fan motors will be shut down when a fire control system alerts the ECC III that a fire trip or smoke purge mode of operation is required.

Whenever a fault condition occurs, the alarm button on the RIU (Remote Interface Unit) and CM1 will glow red and the displays will show the fault condition and a recommended course of action. After 10 compressor-related faults occur, the affected compressor system will be locked out for protection. Repetitive faults can cause compressor motor failure. When a compressor fault condition exists, it must be diagnosed and corrected before resetting the system.

After a fault has been eliminated, the control panel alarm light will remain lit. However, the alarm will no longer be shown in the normal status screen rotation. Pressing the alarm key will show any faults that have occurred since the alarm light was reset.

ALARM RESET

To reset the alarm light, press and hold key VI and then press the ALARM button. If there are currently no active fault conditions, the alarm light will go off. The alarm contact closure output of the controller operates in conjunction with the alarm light on the RIU and CM1. To reset the alarm light using the keypad on CM1, press ALARM and ESC at the same time.

The following fault conditions are detected by the ECC III control system:

Supply Fan Not Running

The controller has detected that the supply fan motor is not running even though the digital output for the contactor is energized. This condition is detected by the current transducer for the supply fan motor. The most likely cause is a motor overload condition that caused the motor protector to trip.

Fire Trip Active

An external fire control system has requested fire trip operation by sending a contact closure to the PoolPak's Fire Trip terminals.

Smoke Purge Active

An external control has requested smoke purge operation by sending a contact closure to the PoolPak's Smoke Purge terminals.

Return Air Temperature Out of Range

The return air temperature is outside of the safe operating range (60°F to 105°F) for the compressor(s). If the space temperature is close to the set point, the most likely cause of this alarm is a defective return air temperature sensor.

Fan Not Running

The controller has detected that the fan motor is not running even though the appropriate digital outputs are energized. The most likely cause is the motor protector has been set to the OFF position.

Freeze Danger, Low Supply Air Temperature

The supply air temperature measured by the controller is less than 40°F. This condition can potentially damage a hot water or steam coil. The ECC III will close the outside and exhaust air dampers in an attempt to protect the non-functioning coil. The most likely cause of this condition is a failure of the auxiliary heat source (e.g., hot water pump or valve).

High Compressor Motor Temperature

The controller has detected that the temperature of the compressor motor winding is too high or the compressor motor is drawing too much current. Two devices in units equipped with scroll compressors detect this condition: a thermal switch in the compressor winding and a calibrated circuit breaker. If either device opens for any compressor, the entire bank of compressors will be shut down.

High Refrigerant Pressure

The controller has detected that the compressor is not running even though the digital output for the compressor contactor is energized. This condition is detected with the current transducer for the compressor motor. The most likely cause is the high-pressure safety switch is open. The switch opens if the discharge pressure exceeds safe limits. The most likely cause of this condition is insufficient airflow caused by dirty filters or loose belts.

Low Refrigerant Pressure

The controller has detected that the low-pressure safety switch is open. The switch opens if the suction pressure drops below 20 psig. The most likely cause is insufficient evaporator airflow caused by dirty filters or loose belts.

Compressor Current Transducer Failed

The controller has detected that the current transducer for the compressor has failed. Compressor operation will be disabled to prevent repetitive high pressure faults. The most likely cause of this fault is a defective compressor motor current transducer.

Compressor Crankcase Heater Breaker Off

The controller has detected that the crankcase heater breaker has tripped. Compressor operation will be disabled to prevent oil loss. Operation of all crankcase heaters should be checked before resetting the breaker. The most likely cause of this fault is a defective crankcase heater.

10 Fault Compressor Lockout

Ten compressor faults have occurred since the unit was last reset. This condition indicates that a repetitive compressor fault is present. See the history log to determine the mode of operation to assist in determining the cause of the lockout.

Sensor Failure (All Sensors)

The controller has detected that the value of a system sensor is outside of the expected range. The alarm screen will show which sensor has failed. The most likely cause is a defective sensor.

Expansion Board Comm Failure

The main control module CM1 is unable to communicate with the expansion card, CM2. The most likely cause is a blown fuse on the control module CM2.

FAULT HISTORY LOG

To assist in troubleshooting, the ECC III maintains a log of the 50 most recent faults. The log contains the date and time of occurrence, along with the fault code and a snap shot of system conditions at the time of the fault.

The fault history log is accessed from the System Status Information menu. Press the III key to access the menu and then press the UP arrow key until the fault history screen is displayed.

Each fault in the log is assigned a number from 1 to 50. Fault number 1 is the most recent and 50 is the oldest. To cycle through the list of faults, move the cursor to the fault number and then use the UP and DOWN arrow keys to cycle through the faults one at a time. Each fault is displayed with the following parameters:

Date & Time - Date and time the fault occurred. The date is in MMDD format. The time is in 24-hour format, HHMM.

FC: - Code number assigned to the fault. The codes are as follows:

2 - Power Restored
3 - Return Fan Motor Not Running
4 - Supply Fan Motor Not Running
5 - Fire Trip Active
6 - Smoke Purge Active
7 - Space Temperature Out of Range
8 - Supply and Return Fan Motors Not Running
9 - Supply Temperature Less than 40°F
11 - Low Oil Pressure in Compressor System 1 (Recips Only)
13 - Low Refrigerant Pressure in Compressor System 1
14 - High Motor Temperature in Compressor System 1
15 - High Refrigerant Pressure in Compressor System 1
16 - Compressor Current Transducer Failed
17 - Crankcase Heater Breaker Off
50 - 10 Fault Lockout of Compressor System 1

111 - Low Oil Pressure in Compressor System 2 (Recips Only)

113 - Low Refrigerant Pressure in Compressor System 2

114 - High Motor Temperature in Compressor System 2

115 - High Refrigerant Pressure in Compressor System 2

116 - Compressor Current Transducer Failed

117 - Crankcase Heater Breaker Off

150 - 10 Fault Lockout of Compressor System 2

T: - Return air temperature at the time the fault occurred.

RH: - Return air relative humidity at the time the fault occurred.

OT: - Outside air temperature at the time the fault occurred.

DP: - Outside air damper position at the time the fault occurred.

C1: - Compressor System 1 Mode at the time the fault occurred. The codes are as follows:

0 - Off

1 - Air Heating

3 - Water Heating

4 - Air Cooling

C2: - Compressor System 2 Mode at the time the fault occurred. The codes are the same as C1.

S1: - Compressor System 1 stages active at the time the fault occurred.

S2: - Compressor System 2 stages active at the time the fault occurred.

ST: - Supply air temperature at the time the fault occurred.

For more detailed troubleshooting guidelines, contact the factory.

MAINTENANCE

PREVENTATIVE MAINTENANCE

Each PoolPak has been constructed of the finest materials available in order to withstand the harsh environment to which it will be subjected. To maximize the effectiveness and life of the PoolPak, it is imperative to initiate a program of scheduled maintenance. A regular maintenance program will return dividends by preventing costly and unexpected periods of downtime.

> ***NOTE***
> ***It is the responsibility of the owner to provide the necessary, routine maintenance for the PoolPak unit.***

If a system failure occurs due to improper maintenance during the warranty period, PoolPak International will not be responsible for costs incurred to return the unit to satisfactory operation.

POOL WATER CHEMISTRY

Proper maintenance of the pool water chemistry is important for many reasons. One of the more important reasons is that proper maintenance of pool water chemistry will greatly extend the useful life of all the various pieces of equipment related to the operation of the pool. These include devices as simple as light switches and door hinges as well as more complicated pool-related equipment such as filter systems and the dehumidification system.

It is extremely important to properly control combined chlorine levels in the pool water and to properly maintain the pool water pH level between 7.2 and 7.6. Excessive combined chlorine levels or higher/lower pH levels will cause deterioration of PoolPak components that come in contact with the pool enclosure, air, or pool water.

> ***NOTE***
> ***Failure to maintain the pool water pH level between 7.2 and 7.6 or to properly control the combined chlorine level at less than 0.3 ppm will void the manufacturer's warranty on the PoolPak.***

Combined chlorine levels in the pool water should be maintained at less than 0.3 ppm. The level of combined chlorine in the pool water is controlled by super-chlorinating (shocking) the pool. The frequency of super-chlorination required to properly control the combined chlorine level in the pool is directly proportional to the bather load. The heavier the bather load, the more frequently the pool will have to be super-chlorinated.

The proper control of pool water pH is important to the longevity of the equipment related to the operation of the pool. The proper control of pool air pH is also extremely important to the longevity of much of the pool-related equipment. Pool air pH is governed by the level of combined chlorine (chloromines) in the pool water. It is relatively simple to detect high levels of combined chlorine in the pool water. If the pool room has a strong chlorine odor or if there are complaints of eye irritation and/or breathing difficulty, these are all indicators of high levels of chloromines in the air, which are, in turn, caused by high levels of combined chlorine in the pool water.

A more detailed discussion of pool water chemistry can be found on the PoolPak International website (www.poolpak. com).

MONTHLY MAINTENANCE

> ***NOTE***
> ***To prevent personal injury, disconnect all electrical power to the unit prior to performing any of the following maintenance procedures.***

Perform the following on a monthly basis:

1. AIR FILTERS: Check and replace as necessary.

2. FANS AND DRIVES: Check for worn or loose belts and adjust or replace as necessary. When it is necessary to replace one belt in a set, the entire set of belts should be replaced. Fan belts can be retightened 24 to 48 hours after replacement. Check that the four fan-bearing locking-collar setscrews are tight and lubricate the bearings using high quality lithium grease.
3. COMPRES-SOR OIL LEVEL: The ideal time for checking the oil level is during an extended period of operation because then there will be the least amount of refrigerant mixed with the oil. The compressor should have been in operation at least 1/2 hour and the crankcase should feel warm or hot to the touch. During the period of operation, the refrigerant will be pumped out of the oil until only the normal quantity remains.
   The compressor is equipped with an oil sight glass for checking oil level. The sight glass is located in the crankcase handhole cover. Oil should be added to the system by a qualified refrigerant service technician only. ***The oil level in the compressor is correct when oil is visible between the bottom and two-thirds of the sight glass.***
4. REFRIGERANT CHARGE: Check the two sight glasses located in the valve compartment on the end of the evaporator coil. When the refrigerant charge is correct, there should be no bubbles in the sight glasses. Intermittant bubbles are normal during the first 10 minutes of operation or following a change in stages or operating mode. glasses.
5. CONDENSATE LINE: Ensure that it is free of obstructions. Always keep the condensate trap and lines free and clear. The PoolPak is capable of producing up to 40 gallons of condensate per hour.
6. UNIT INTERIOR/EXTERIOR: Check for torn insulation and repair if necessary. Check for scratches, nicks, rust, etc. and repaint promptly using Fox Gard Gray, Part No. 13-0008Z003.
7. LOGBOOK: Check and record, in the logbook, the following actual operating values and the values read from the ECCIII controller display:
   - Space Temperature
   - Space Relative Humidity
   - Pool Water Temperature
   - Pool Water pH
8. DAMPER OPERATION: Ensure that dampers open and close fully without binding.

ANNUAL MAINTENANCE

Perform the following on an annual basis:

1. All items listed under MONTHLY MAINTENANCE.
2. COMPRESSOR AND REFRIGERATION SYSTEM: The compressor and refrigeration system should be inspected annually by a qualified service technician. At minimum, the following items should be done:
   a. Change and inspect the refrigerant filter drier (only if the system has been open).
   b. Complete unit operation test including log entries.
   c. Inspect fan bearings and belts for excessive wear and replace if necessary.
   d. General refrigeration system inspection for possible leaks, chafing between tubing, or other items detrimental to operation.
   e. Touch up scratches in the paint.
   f. Check electrical connections for tightness including those in the compressor electrical box.
   g. Clean debris and dirt from drain pans.

For more information contact:

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