

# PH4G

## 13.4 SEER2 Single and Three Phase

### 2-5 Nominal Tons (Sizes 24-60)

### Single Packaged Heat Pump System with R-410A Refrigerant

## Owner's Information Manual

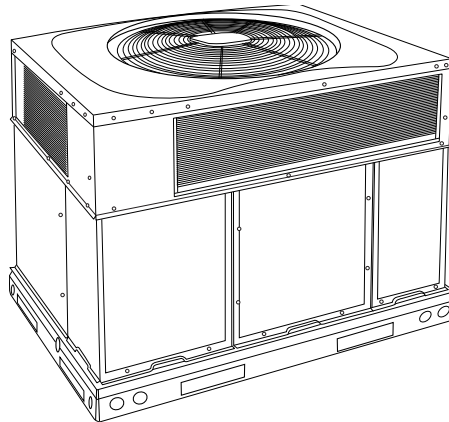


Fig. 1 – Unit PH4G

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### NOTE TO EQUIPMENT OWNER:

For your convenience, please record the model and serial numbers of your new equipment in the spaces provided. This information, along with the installation data and dealer contact information, will be helpful should your system require maintenance or service.

#### UNIT INFORMATION

Model # \_\_\_\_\_

Serial # \_\_\_\_\_

#### ACCESSORIES (List type of model #)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

#### INSTALLATION INFORMATION

Date Installed \_\_\_\_\_

#### DEALERSHIP CONTACT INFORMATION

Company Name \_\_\_\_\_

Address \_\_\_\_\_

Phone Number \_\_\_\_\_

Technician Name \_\_\_\_\_

#### NOTE TO INSTALLER:

This manual must be left with the equipment owner.


Our products are designed, tested and built in accordance with DOE standardized procedures; however, actual operating results and efficiencies may vary based on manufacturing and supplier tolerances, equipment configuration, operating conditions and installation practices.

## Safety Considerations

Improper installation adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions which may cause death, personal injury, or property damage. Consult a qualified installer, service agency, or your distributor or branch for information or assistance. The qualified installer or agency must use factory-authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with the kits or accessories when installing.

Follow all safety codes. Wear safety glasses, protective clothing, and work gloves. Use quenching cloth for brazing operations. Have a fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit. Consult local building codes, the current editions of the National Electrical Code (NEC) NFPA 70.

In Canada refer to the current editions of the Canadian electrical Code CSA C22.1.

Recognize safety information. This is the safety-alert symbol . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury. Understand these signal words; DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which will result in severe personal injury or death. WARNING signifies hazards which could result in personal injury or death. CAUTION is used to identify unsafe practices which may result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which will result in enhanced installation, reliability, or operation.

**NOTE:** Installer: This manual should be left with the equipment user.

### WARNING

#### **FIRE, EXPLOSION, ELECTRICAL SHOCK HAZARD**

Failure to follow this warning could result in personal injury, death, and/or property damage.

Installation and servicing of this equipment can be hazardous due to mechanical and electrical components. Only trained and qualified personnel should install, repair, or service this equipment.

### WARNING

#### **FIRE, EXPLOSION, ELECTRICAL SHOCK HAZARD**

Failure to follow this warning could result in personal injury, death or property damage.

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

### WARNING

#### **ELECTRICAL SHOCK HAZARD**

Failure to follow this warning could result in personal injury or death. Before performing recommended maintenance, be sure the main power switch to unit is turned off and a lock-out tag is installed. There may be more than one disconnect switch.

### CAUTION

#### **CUT HAZARD**

Failure to follow this caution may result in personal injury.

Sheet metal parts may have sharp edges or burrs. Use care and wear appropriate protective clothing, safety glasses and gloves when handling parts and servicing furnaces.

## Operating Your Unit

The operation of your heat pump system is controlled by the indoor thermostat. You simply adjust the thermostat and it maintains the indoor temperature at the level you select. Most thermostats of heat pump systems have 3 controls: a temperature control selector, a FAN control, and a SYSTEM or MODE control. Refer to your thermostat owner's manual for more information.

To better protect your investment and to eliminate unnecessary service calls, familiarize yourself with the following facts:

1. During heating, increasing the desired temperature setting more than 2°F (1.1°C) may cause the supplemental heaters to be turned on for a short period of time to satisfy the demand. Needless use of the supplementary heat reduces potential energy savings.
2. Ice or frost tends to form on the coil during winter heating operation. Your unit is designed to automatically melt the ice. When in this defrost cycle, it is normal for steam or fog to rise from the outdoor unit, and for water to drain from the outside of unit. Do not be alarmed!

#### **To start the unit:**

1. Turn on the electrical power supply to unit.
2. Set MODE control to desired mode and select temperature.

#### **To shut off unit:**

**NOTE:** If the unit is being shut down because of a malfunction, call your dealer as soon as possible.

1. Set system MODE control to OFF.
2. Turn off the electrical power supply to unit.

#### **Cooling Mode**

With the SYSTEM or MODE control set to COOL, your unit will run in cooling mode until the indoor temperature is lowered to the level you have selected. On extremely hot days, your unit will run for longer periods at a time and have shorter "off" periods than on moderate days.

#### **Heating Mode**

With the SYSTEM or MODE control set to HEAT, your unit will run in heating mode until the room temperature is raised to the level you have selected. Of course, your unit will run for longer periods to maintain a comfortable environment on cooler days and nights than on moderate ones.

#### **Supplemental Heat**

Your unit is your primary heating source. Your system may also be equipped with a supplemental heating source such as electric heat. On cold days and nights, your system will automatically turn on the supplemental heat, as needed, in order to maintain the level of comfort you have selected.

When your heat pump needs additional heat to keep you comfortable your thermostat will turn on the supplemental heat (if equipped).

#### **Defrost Mode**

When your unit is providing heat to your home or office and the outdoor temperature drops below 45°F (7.2°C), moisture may begin to freeze on the surface of the coil. If allowed to build up, this ice would impede airflow across the coil and reduce the amount of heat absorbed from the outside air. So, to maintain energy-efficient operation, your unit has an automatic defrost mode.

The defrost mode starts at a preset time interval of 60 minutes, although, it may be reset to 30, 90 or 120 minutes. Defrost will start at the preset time only if the ice is sufficient to interfere with normal heating operation.

After the ice is melted from the coil, or after a maximum of 10 minutes in defrost mode, the unit automatically switches back to normal heating operation.

Do not be alarmed if steam or fog appears at the outdoor unit during defrost mode. Water vapor from the melting ice may condense into a mist in the cold outside air.

During certain weather conditions such as heavy snow and freezing rain it is not uncommon for ice to build up on the unit grille. This is normal for these weather conditions. Do not attempt to remove the ice from the unit grille. This condition will not affect the proper function of the unit and will clear within a few days.

**Emergency Heating Mode**

In the event of primary unit heat failure, the emergency heat mode allows your supplemental heating source to keep your home or office warm until your unit can be serviced. Contact your dealer in the event of primary unit heat failure.

**Maintenance and Service**

This section discusses maintenance that should be performed by your dealer and care you, as the owner, may wish to handle for your new unit.

**Routine Maintenance**

All routine maintenance should be handled by skilled, experienced personnel. Your dealer can help you establish a standard procedure.

To assure proper functioning of the unit, flow of condenser air must not be obstructed from reaching the unit. Clearance from the top of the unit is 48 in. (1219 mm). Clearance of at least 36 in. (914 mm) is required on sides except the power entry side (42 in. [1067 mm] clearance) and the duct side (12 in. [305 mm] minimum clearance).

**Maintenance and Care for the Equipment Owner**

Before proceeding with those things you might want to maintain yourself, please carefully consider the following:

**! WARNING**

**FIRE, EXPLOSION, ELECTRICAL SHOCK, CUT HAZARD**

Failure to follow this warning could result in personal injury, death or property damage.

1. TURN OFF ELECTRICAL POWER TO YOUR UNIT BEFORE SERVICING OR PERFORMING MAINTENANCE AND INSTALL A LOCK-OUT TAG. THERE MAY BE MORE THAN ONE DISCONNECT SWITCH.
2. When removing access panels or performing maintenance functions inside your unit, be aware of sharp sheet metal parts and screws. Although special care is taken to reduce sharp edges to a minimum, be extremely careful when handling parts or reaching into the unit.

**Air Filters**

The air filter(s) should be checked every 3 or 4 weeks and changed or cleaned whenever it becomes dirty. Dirty filters produce excessive stress on the blower motor and can cause the motor to overheat and shut down.

This unit must have an air filter in place before it can be operated. These filters should be located in at least one of two places. In many applications, the installer will provide return air filter grilles mounted on the wall or ceiling of the conditioned structure. In the instance of filter grilles, the filters can simply be removed from the grille and replaced.

The other typical application is an accessory filter rack installed inside the unit itself. The following information is given to assist in changing filters used in these internal filter racks.

Filter kits are available as a purchased accessory or a factory installed option. The same filter kit is included with the accessory economizers and factory installed economizers.

**Table 1 – Replacement Filter Sizes**

Unit Size	Filter Size
24-30	2 each 20 x 12 x 1 (508 x 305 x 25 mm)
36-42	1 each 24 x 14 x 1 (610 x 356 x 25 mm), 24 x 16 x 1 (610 x 406 x 25 mm)
48* -60*	1 each 24 x 16 x 1 (610 x 406 x 25 mm), 24 x 18 x 1 (610 x 457 x 25 mm)

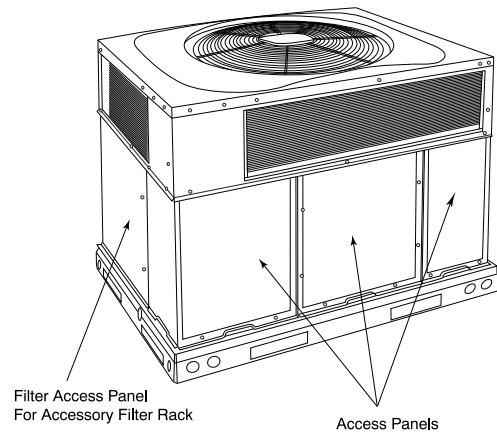
\*.Units with bent indoor coil.

To replace or inspect filters in accessory filter rack:

1. Remove the filter access panel (See Fig. 3) using a 5/16-in. nut driver.
2. Remove the filter(s) by pulling it out of the unit. If the filter(s) is dirty, clean or replace with a new one.

When installing the new filter(s), note the direction of the airflow arrows on the filter frame.

If you have difficulty locating your air filter(s) or have questions concerning proper filter maintenance, contact your dealer for instructions. When replacing filters, always use the same size and type of filter that was supplied originally by the installer. See Table 1 for filter sizes supplied with accessory filter rack.



**Fig. 2 – Accessory Filter Rack Access Panel**

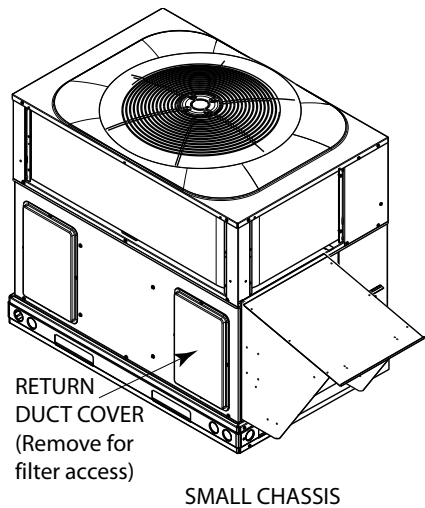
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**! WARNING**

**FIRE AND UNIT OPERATION HAZARD**

Failure to follow this warning could result in personal injury, death or property damage.

Never operate your unit without filters in place. An accumulation of dust and lint on internal parts of your unit can cause loss of efficiency.



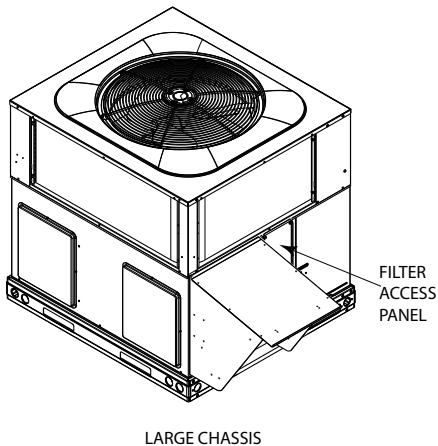
**Fig. 3 – Small Chassis Filter Access**

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### **Replacing or inspecting filters in units with economizers**

Small Chassis (See Fig. 3)

1. Remove return air duct cover at rear of unit using a 5/16-in. nut driver.
2. Remove the filter(s) by pulling it out and through the unit duct opening. If filter is dirty, replace both filters with new ones.



**Fig. 4 – Large Chassis Filter Access**

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When installing the new filters, note the direction of the airflow arrows on the filter frame, which should be pointing at the indoor coil.

3. Reinstall duct cover ensuring opening is air and water tight.

Large Chassis (See Fig. 4)

1. Remove filter access door using a 5/16-in. nut driver.
2. Remove the filter(s) by pulling it out and through the unit filter access door. If filter is dirty, replace both filters with new ones.

Units with bent indoor coils, install 24 x 18 x 1 (610 x 457 x 25 mm) filter first and then install 24 x 16 x 1 (610 x 406 x 25) filter.

When installing the new filters, note the direction of the airflow arrows on the filter frame, which should be pointing at the indoor coil.

3. Reinstall filter access door ensuring opening is air and watertight.

### **Fans and Fan Motor**

Periodically check the condition of fan wheels and housings and fan-motor shaft bearings. Contact your dealer for the required annual maintenance.

### **Indoor and Outdoor Coils**

Cleaning of the coils should only be done by qualified service personnel. Contact your dealer for the required annual maintenance.

### **Condensate Drain**

The drain pan and condensate drain line should be checked and cleaned at the same time the cooling coils are checked by your dealer.

### **Compressor**

All compressors are factory shipped with a normal charge of the correct type and quantity of refrigeration grade oil.

### **Condenser Fan**

## **! WARNING**

### **PERSONAL INJURY AND UNIT DAMAGE HAZARD**

Failure to follow this warning could result in personal injury, death or property damage.

Do not poke sticks, screwdrivers, or any other object into revolving fan blades.

The fan must be kept free of all obstructions to ensure proper cooling. Contact your dealer for any required service.

### **Electrical Controls and Wiring**

Electrical controls are difficult to check without proper instrumentation. If there are any discrepancies in the operating cycle, contact your local dealer and request service.

### **Refrigerant Circuit**

The refrigerant circuit is difficult to check for leaks without the proper equipment. If inadequate cooling is suspected, contact your local dealer for service.

## **! WARNING**

### **EXPLOSION, BURN AND ENVIRONMENTAL HAZARD**

Failure to follow this warning could result in personal injury, death or property damage.

System under pressure. Relieve pressure and recover all refrigerant before system repair or final unit disposal. Use all service ports and open all flow-control devices, including solenoid valves.

### **Unit Panels**

After performing any maintenance or service on the unit, be sure all panels are fastened securely in place to prevent rain from entering unit cabinet and to prevent disruption of the correct unit airflow pattern.

### **Regular Dealer Maintenance (Also refer to Table 2)**

In addition to the type of routine maintenance you might be willing to perform, your unit should be inspected regularly by a properly trained service technician. An inspection (preferably each year) should include the following:

1. Inspection and, if required, cleaning of the outdoor and indoor coils.
2. Inspection and, if required, cleaning of the indoor coil drain pan.
3. Inspection and cleaning of blower wheel housing and motor.
4. Inspection of all supply and return air ducts for leaks, obstructions, and insulation integrity. Any problems found should be resolved at this time.
5. Inspection of the unit base to ensure that no cracks, gaps, etc., exist which may cause a hazardous condition.
6. Inspection of the unit casing for signs of deterioration.
7. Inspection of all electrical wiring and components to assure proper connection.
8. Inspection for leaks in the refrigerant circuit. Pressure and temperature check to determine appropriate refrigerant charge.
9. Operational check of the unit to determine working conditions. Repair or adjustment should be made at this time.

Your servicing dealer may offer an economical service contract that covers seasonal inspections. Ask for further details.

Complete service instructions can be found in the unit Installation, Start-up and Service Instructions.

### **Warranty Certificate**

Your unit has a limited warranty. Be sure to read the warranty carefully to determine the coverage for your unit.

### **Before you call for service...**

...check for several easily solved problems.

If insufficient heating or cooling is suspected:

( ) Check for sufficient airflow. Check the air filter for dirt. Check for blocked return or supply air grilles. Be sure they are open and unobstructed. If these checks do not reveal the cause, call your servicing dealer.

If your unit is not operating at all, check the following list for easy solutions:

( ) Check to be sure that your thermostat temperature selector is set below the indoor temperature during the cooling season or above the indoor temperature during heating season. Be sure the SYSTEM switch or MODE control is in the COOL or HEAT and not OFF.

( ) If your unit still fails to operate, call your servicing dealer for troubleshooting and repairs. Specify the model and serial numbers of your unit. (Record them in this manual in the space provided.) If the dealer knows exactly which unit you have, he may be able to offer suggestions over the phone, or save valuable time through knowledgeable preparation for the service call.

### **In Case of Trouble**

If you perform the steps above and unit performance is still unsatisfactory, shut off the unit and call your dealer.

**Table 2 – Maintenance Checklist**

Monthly maintenance items and outdoor unit rinsing may be performed by the consumer. All other maintenance items and all service work must be performed by a qualified service technician. Read all Warning labels.

Description of Maintenance	Recommended Interval	
	Monthly	Annual
<b>Consumer specific:</b>		
Inspect, clean, or replace air filter if filter is located indoors in return air duct.	X	
Clear away debris and vegetation near unit.	X	
<b>Dealer specific:</b>		
Inspect cabinet and basepan for damage. Replace panels, gaskets, and other components that are damaged or severely rusted. Make sure precipitation has not entered indoor section of unit.		X
Inspect electrical disconnect for proper function. Repair or replace as necessary.		X
Inspect electrical wiring and connections. Tighten loose connections. Inspect and perform functional test of equipment as needed to ensure proper function. Repair or replace damaged or overheated components and wiring.		X
Inspect electric heater, if installed. Check for signs of overheating of elements, controls, and wiring. Make sure heater elements are not broken or electrically shorted.		X
Check refrigerant system subcooling and/or superheat (system dependent).		X
Inspect inside of unit. Clean if debris is present.		X
Inspect condenser coil. Clean if dust, dirt, or debris is present. Rinse unit with fresh water (see Note 2).		X
Inspect condenser motor and fan for damage. Make sure fan spins freely.		X
Inspect and clean blower assembly (includes blower housing, wheel, and motor).		X
Inspect evaporator coil. Clean if dust, dirt, or debris is present (see Note 2).		X
Clean condensate pan and drain lines (more frequent maintenance may be required in humid climates).		X
Inspect airflow system (ductwork). Check for leaks and repair as needed.		X

Notes:

1. The above list may not include all maintenance items. Inspection intervals may vary depending on climate and operating hours. Consult your HVAC dealer about a service contract for seasonal inspections.
2. Do not use harsh chemicals or high pressure water on coils. More frequent rinsing is required for units near a sea coast.