

# R6GP - 072/090/120 Series, A Revision

## Installation Instructions

Single Package Gas Heating / Electric Cooling Rooftop Units



R6GP-090 Shown

### ⚠ WARNING:

#### FIRE OR EXPLOSION HAZARD

- Failure to follow safety warnings exactly could result in serious injury or property damage.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.
- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

#### WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Leave the building immediately.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

### ⚠ AVERTISSEMENT

#### RISQUE D'INCENDIE OU D'EXPLOSION

- Le non-respect des avertissements de sécurité pourrait entraîner des blessures graves, la mort ou des dommages matériels.
- L'installation et l'entretien doivent être effectués par un installateur qualifié, un organisme de service ou le fournisseur de gaz.
- Ne pas entreposer ni utiliser de l'essence ni d'autres vapeurs ou liquides inflammables dans le voisinage de cet appareil, ni de tout autre appareil.

#### QUE FAIRE S'IL Y A UNE ODEUR DE GAZ

- Ne pas tenter d'allumer aucun appareil.
- Ne toucher à aucun interrupteur électrique; n'utiliser aucun téléphone dans le bâtiment.
- Évacuer l'immeuble immédiatement.
- Appeler immédiatement le fournisseur de gaz en employant le téléphone d'un voisin. Respecter à la lettre les instructions du fournisseur de gaz.
- Si personne ne répond, appeler le service des incendies.

DO NOT DESTROY THIS MANUAL. KEEP IN A SAFE PLACE FOR FUTURE REFERENCE.

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## IMPORTANT SAFETY INFORMATION

Please read all instructions before servicing this equipment. Pay attention to all safety warnings and any other special notes highlighted in the manual. Safety markings are used frequently throughout this manual to designate a degree or level of seriousness and should not be ignored.

**WARNING** indicates a potentially hazardous situation that if not avoided, could result in personal injury or death.

**CAUTION** indicates a potentially hazardous situation that if not avoided, may result in minor or moderate injury or property damage.

**ATTENTION INSTALLERS:** It is your responsibility to know this product better than your customer. This includes being able to install the product according to strict safety guidelines and instructing the customer on how to operate and maintain the equipment for the life of the product. Safety should always be the deciding factor when installing this product and using common sense plays an important role as well. Pay attention to all safety warnings and any other special notes highlighted in the manual. Improper installation of the unit or failure to follow safety warnings could result in serious injury, death, or property damage. These instructions are primarily intended to assist qualified individuals experienced in the proper installation of this appliance. Local codes may require licensed installation/service personnel for this type of equipment. After completing the installation, return these instructions to the customer's package for future reference.

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### **WARNING:**

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**Improper installation, service, adjustment, or maintenance may cause explosion, fire, electrical shock or other hazardous conditions which may result in personal injury or property damage. Unless otherwise noted in these instructions, only factory authorized kits or accessories may be used with this product.**

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### **WARNING:**

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**Do not place combustible material on or against the unit cabinet. Do not place combustible materials, including gasoline and any other flammable vapors and liquids, in the vicinity of the unit.**

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### **WARNING:**

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**PROPOSITION 65 WARNING: This product contains fiberglass wool, a product known to the state of California to cause cancer. Disturbing the insulation of this product during installation, maintenance, or repair will expose you to fiberglass wool.**

- **Breathing this material may cause respiratory irritations or may cause lung cancer.**
  - **Fiberglass wool may also cause eye irritation, skin sensitization, or other allergic responses in susceptible individuals.**
  - **Always wear goggles, disposable gloves, long sleeved shirt, and appropriate breathing protection when working near this insulation. If contact with skin occurs, wash immediately with soap and water. In case of contact with eyes, flush immediately with water for at least 15 minutes. Contact a physician if needed.**
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### **WARNING:**

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**The information listed below and must be followed during the installation, service, and operation of this unit. Unqualified individuals should not attempt to interpret these instructions or install this equipment. Failure to follow safety recommendations could result in possible damage to the equipment, serious personal injury or death.**

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- This equipment contains liquid and gaseous refrigerant under high pressure. Installation or servicing should only be performed by qualified trained personnel thoroughly familiar with this type equipment.
- Before beginning the installation, verify that the unit model is correct for the job. The unit model number is printed on the data label. Follow all precautions in the literature, on tags, and on labels provided with the equipment. Read and thoroughly understand the instructions provided with the equipment prior to performing the installation and operational checkout of the equipment.
- Never test for gas leaks with an open flame. Use a commercially available soap solution to check all connections See page 11.
- Follow all precautions in the literature, on tags, and on labels provided with the equipment. Read and thoroughly understand the instructions provided with the equipment prior to performing the installation and operational checkout of the equipment.
- This unit is designed only for outdoor installations and should be located with consideration of minimizing the length of the supply and return ducts. Consideration

should also be given to the accessibility of fuel, electric power, service access, noise, and shade.

- The installer should become familiar with the units wiring diagram before making any electrical connections to the unit. See the unit wiring label or Figures 15 & 16 (pages 38 & 39).
- Use caution when handling this appliance or removing components. Personal injury can occur from sharp metal edges present in all sheet metal constructed equipment.

## REQUIREMENTS & CODES

- **This equipment must be installed in accordance with instructions outlined in this manual, all applicable local building codes, and the current revision of the National Fuel Gas Code (NFPA54/ANSI Z223.1) or the Natural Gas and Propane Installation Code, CAN/CGA B149.1.**
- All electrical wiring must be completed in accordance with local, state and national codes and regulations and with the National Electric Code (ANSI/NFPA 70) or in Canada the Canadian Electric Code Part 1 CSA C.22.1.
- The installer must comply with all local codes and regulations which govern the installation of this type of equipment. Local codes and regulations take precedence over any recommendations contained in these instructions. Consult local building codes and the National Electrical Code (ANSI C1) for special installation requirements.
- Air Ducts must be installed in accordance with the standards of the National Fire Protection Association “Standards for Installation of Air Conditioning and Ventilation Systems” (NFPA 90A), “Standard for Installation of Residence Type Warm Air Heating and Air Conditioning Systems” (NFPA 90B), these instructions, and all applicable local codes.
- Consult Table 16 (page 40), and the rating plate for the proper circulating air flow and temperature rise. It is important that the duct system be designed to provide the correct flow rates and external pressure rise. An improperly designed duct system can result in nuisance shutdowns, and comfort or noise issues.
- This unit is designed for outdoor installations only and should be located as described on page 5.
- Use only with the type of gas approved for this unit. Refer to the unit rating plate.
- Provide adequate combustion and ventilation air to the unit. See pages 6 & 7.
- Provide adequate clearances around the air vent intake terminal as specified on page 6.
- Combustion products must be discharged outdoors. Connect this unit to an approved vent system only, as specified on page 6.
- Additional codes listed below are for reference purposes only and do not necessarily have jurisdiction over local or state codes. Local codes and regulations take precedence over any recommendations contained in these instructions. Always consult with local authorities before installing any gas appliance.

## Combustion & Ventilation Air

- US: National Fuel Gas Code (NFGC), Air for Combustion and Ventilation
- CANADA: Natural Gas and Propane Installation Codes (NSCNGPIC), Venting Systems and Air Supply for Appliances

## Duct Systems

- US and CANADA: Air Conditioning Contractors Association (ACCA) Manual Q, Sheet Metal and Air Conditioning Contractors National Association (SMACNA), or American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) Fundamentals Handbook

## Electrical Connections

- US: National Electrical Code (NEC) ANSI/NFPA 70
- CANADA: Canadian Electrical Code CSA C22.1

## Gas Piping & Gas Pipe Pressure Testing

- US: NFGC and National Plumbing Codes
- CANADA: NSCNGPIC

## General Installation

- US: Current edition of the NFGC and the NFPA 90B. For copies, contact the National Fire Protection Association Inc., Batterymarch Park, Quincy, MA 02269; or American Gas Association, 400 N. Capitol, N.W., Washington DC 20001 or [www.NFPA.org](http://www.NFPA.org).
- CANADA: NSCNGPIC. For a copy, contact Standard Sales, CSA International, 178 Rexdale Boulevard, Etobicoke (Toronto), Ontario, M9W 1R3 Canada

## Safety

- US: (NFGC) NFPA 54–1999/ANSI Z223.1 and the Installation Standards, Warm Air Heating and Air Conditioning Systems ANSI/NFPA 90B.
- CANADA: CAN/CGA-B149.1—and .2–M00 National Standard of Canada. (NSCNGPIC)

## GENERAL INFORMATION

### About the Rooftop Unit

Single Package Gas Heating / Electric Cooling Rooftop Units are designed only for outdoor rooftop or ground level installations and can be readily connected to the duct system of a building. This unit has been tested for capacity and efficiency in accordance with AHRI Standards and will provide many years of safe and dependable comfort, providing it is properly installed and maintained. With regular maintenance, this unit will operate satisfactorily year after year. Abuse, improper use, and/or improper maintenance can shorten the life of the appliance and create unsafe hazards.

To achieve optimum performance and minimize equipment failure, it is recommended that periodic maintenance be performed on this unit. The ability to properly perform maintenance on this equipment requires certain tools and mechanical skills.

### Before You Install this Equipment

- √ The cooling load of the area to be conditioned must be calculated and a system of the proper capacity selected. It is recommended that the area to be conditioned be completely insulated and vapor sealed.
- √ Check the electrical supply and verify the power supply is adequate for unit operation. Consideration should be given to availability of electric power, service access, noise, and shade. If there is any question concerning the power supply, contact the local power company.
- √ All units are securely packed at the time of shipment and upon arrival should be carefully inspected for damage prior to installing the equipment at the job site. Verify coil fins are straight. If necessary, comb fins to remove flattened or bent fins. Claims for damage (apparent or concealed) should be filed immediately with the carrier.
- √ Please consult your dealer for maintenance information and availability of maintenance contracts. Read all instructions before installing the unit.

### Locating the Unit

- Survey the job site to determine the best location for the packaged unit. The unit should be located with consideration of minimizing the length of the supply and return ducts. If practical, place the equipment and its ducts in an area where they will be shaded from the afternoon sun, when the heat load is greatest. Consideration should also be given to the accessibility of fuel, electric power, service access, noise, and shade.
- Select a solid, level position, preferably on a concrete slab, slightly above the grade level, and parallel to the building.
- Overhead obstructions, poorly ventilated areas, and areas subject to accumulation of debris should be avoided. Do not place the unit in a confined space or recessed area where discharge air from the unit could re-circulate back through the condenser coil.
- Sufficient clearance for unobstructed airflow through the louvered control access panel and outdoor coil must be maintained in order to achieve rated performance. See pages 8 - 9 for minimum clearance requirements.
- **Where accessibility to combustibles clearances are greater than minimum clearances, accessibility clearances must take preference.**
- If practical, place the air conditioner and its ducts in an area where they will be shaded from the afternoon sun, when the heat load is greatest.

### Heating Load

This unit should be sized to provide the design heating load requirement. Heating load estimates can be made using approved methods available from Air Conditioning Contractors of America (Manual N); American Society of Heating, Refrigerating, and Air Conditioning Engineers; or other approved engineering methods. For installations above 2,000 ft., the unit should have a sea level input rating large enough that it will meet the heating load after deration for the installed elevation.

## COMBUSTION AIR & VENTING

### **⚠ WARNING:**

**Installation methods other than those described in the following sections must comply with the National Fuel Gas Code and all applicable local codes for providing sufficient combustion air to the furnace.**

Provisions must be made during the installation of this unit that provide an adequate supply of air for combustion.

- Instructions for determining the adequacy of an installation can be found in the current revision of the NFGC (ANSI Z223.1 / NFPA54). **Consult local codes for special requirements.** These requirements are for US installations as found in the NFGC.
- The requirements in Canada (B149.1) are structured differently. Consult with B149.1 and local code officials for Canadian installations.

### **⚠ WARNING:**

**Combustion air must not be drawn from a contaminated atmosphere. Excessive exposure to contaminated combustion air will result in safety and performance related problems.**

To maximize heat exchanger life, the combustion air must be free of chemicals that can form corrosive acidic compounds in the combustion gases. The recommended source of combustion air is to use clean air from outside. **DO NOT place any chemicals with flammable or caustic vapors or these other corrosive chemicals near the vent termination:**

- Gasoline/Kerosene
- Permanent wave solutions
- Chlorinated waxes and cleaners
- Chlorine based swimming pool chemicals
- Water softening chemicals
- De-icing salts or chemicals
- Carbon tetrachloride
- Halogen type refrigerants
- Cleaning solvents
- Cements, glues, paint removers, varnishes, etc.
- Hydrochloric acid
- Masonry acid washing materials
- Plumbing Stack

Air openings in the door of the unit, warm air registers, and return air grilles must never be restricted. If the unit does not receive an adequate supply of air for combustion, the flame roll-out control located above the burners will open, turning off the gas supply to the burners. This safety device is a manually reset switch. **IMPORTANT NOTE: DO NOT install jumper wires across this control to defeat its function or reset the control without identifying and correcting the fault condition.**

If this control must be replaced, use only factory authorized replacement parts specified in the Replacement Parts List provided online.

### **Vent Termination**

This unit has been equipped with an integral venting system and designed to operate only with this venting system. If desired, an accessory venting kit is available. **Use only NORDYNE approved venting kit listed in the technical service literature.**

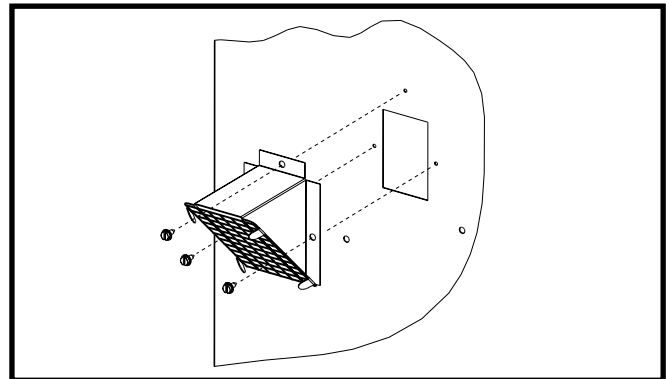
### **⚠ WARNING:**

**This unit is intended for outdoor installation only. Do not vent the unit through a conventional venting system.**

A vent cover assembly has been supplied with the unit and can be found secured to the gas controls within the burner area of this unit. Figure 1 displays the proper installation of the vent cover assembly over the vent outlet of the corner panel. The fasteners used to secure the vent cover assembly have been included on the unit end panel.

The list below summarizes the location requirements for the venting system termination:

- The location of the vent termination must be consistent with the National Fuel Gas Code (ANSI Z223.1) or CAN/CGA-B149 Installation Codes.
- Must be located at least 4 feet horizontally from any electric meters, gas meters, regulators, and relief equipment.
- Must be located at least 3 feet above any forced air inlet located within 10 feet of unit.
- Must be located at least 4 feet below, 4 feet horizontally from, or 1 foot above any door, window, or gravity air inlet into any building.
- Must be located at least 1 foot above grade and installed in such a manner as to prevent snow accumulation from obstructing the vent termination.
- The vent termination must not be located above any public walkways.
- The vent cover assembly must be installed to assure proper operation of the unit.



**Figure 1. Vent Cover Assembly**

- Make sure the exhaust gases will not impinge on windows or building surfaces, which may be compromised or damaged by condensation.
- Do not install the unit in a location where exhaust from the vent termination will be directed into windows, stairwells, under decks, or other recessed areas.

## CIRCULATING AIR SUPPLY

### **WARNING:**

**Do not allow combustion products to enter the return air ductwork or the circulating air supply. Failure to prevent the circulation of combustion products into the living space can create potentially hazardous conditions including carbon monoxide poisoning that could result in personal injury or death.**

**All return ductwork must be secured to the unit with sheet metal screws. All return ductwork must be adequately sealed and all joints must be taped. When return air is provided through the bottom of the unit, the joint between the unit and the return air plenum must be air tight.**

**The roof curb or cement pad on which the unit is mounted must provide sound physical support of the unit with no gaps, cracks, or sagging between the unit and the curb or pad.**

**Return air and circulating air ductwork must not be connected to any other heat producing device such as a fireplace insert, stove, etc. Doing so may result in fire, explosion, carbon monoxide poisoning, personal injury, or property damage.**

This unit is designed only for use with a supply and return duct. Air ducts should be installed in accordance with the standards of the National Fire Protection Association "Standard for Installation of Air Conditioning Systems" (NFPA 90A), "Standard for Installation of Residence Type Warm Air Heating and Air Conditioning Systems" (NFPA 90B), and all applicable local codes. NFPA publications are available by writing to: National Fire Protection Association, Batterymarch Park, Quincy, ME 02269 or visit [www.nfpa.org](http://www.nfpa.org) on the web.

- Design the duct work according to Manual Q by the Air Conditioning Contractors of America (ACCA) or similar commercial methods.
- If roof curb is installed, the ducts must be attached to the curb hangers, not the unit.
- Duct work should be attached directly to the unit flanges for horizontal applications.

- It is recommended that the outlet duct be equipped with a removable access panel. This opening should be accessible when the unit is installed in service and shall be of a size such that the smoke or reflected light may be observed inside the casing to indicate the presence of leaks in the heat exchanger. The cover for the opening shall be attached in such a manner as to prevent leaks.
- If outside air is utilized as return air to the unit for ventilation or to improve indoor air quality, the system must be designed so that the return air to the unit is not less than 50° F (10° C) during heating operation.
- If a combination of indoor and outdoor air is used, the ducts and damper system must be designed so that the return air supply to the furnace is equal to the return air supply under normal, indoor return air applications.
- This unit is shipped ready for downflow duct connections and is easily converted for horizontal duct connections with an optional accessory kit. See the unit Technical Sales Literature for factory and field installed accessory information and part numbers. This information can also be found online at [www.nordyne.com](http://www.nordyne.com).

### **Downflow to Horizontal Conversion**

The unit is shipped ready for downflow duct connections. If horizontal ducts are required, the unit must be converted according to the directions in the conversion kit for both the supply and return ducts.

Always review the horizontal kit instructions prior to changing the air temperature limits for horizontal operation of the gas heat exchanger.

### **Unconditioned Spaces**

All ductwork passing through unconditioned space must be properly insulated to prevent condensation and minimize duct losses. Use insulation with an outer vapor barrier. Refer to local codes for insulation material requirements.

### **Acoustical Ductwork**

Certain installations may require the use of acoustical lining inside the supply duct work.

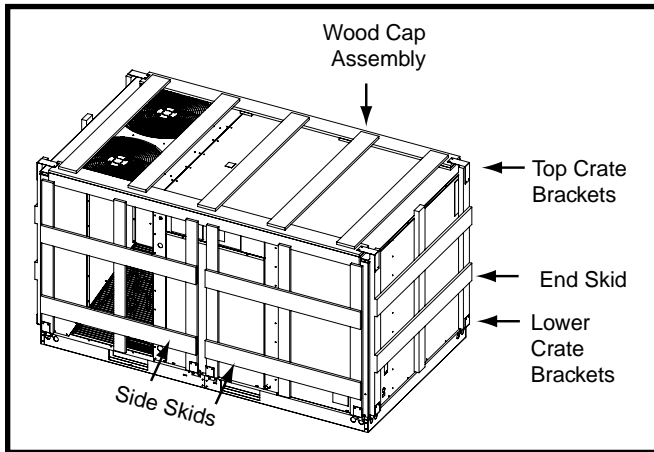
- Acoustical insulation must be in accordance with the current revision of the Sheet Metal and Air Conditioning Contractors National Association (SMACNA) application standard for duct liners.
- Duct lining must be UL classified batts or blankets with a fire hazard classification of FHC-25/50 or less.
- Fiber duct work may be used in place of internal duct liners if the fiber duct work is in accordance with the current revision of the SMACNA construction standard on fibrous glass ducts. Fibrous duct work and internal acoustical lining must be NFPA Class 1 air ducts when tested per UL Standard 181 for Class 1 ducts.

## Air Filter Requirements

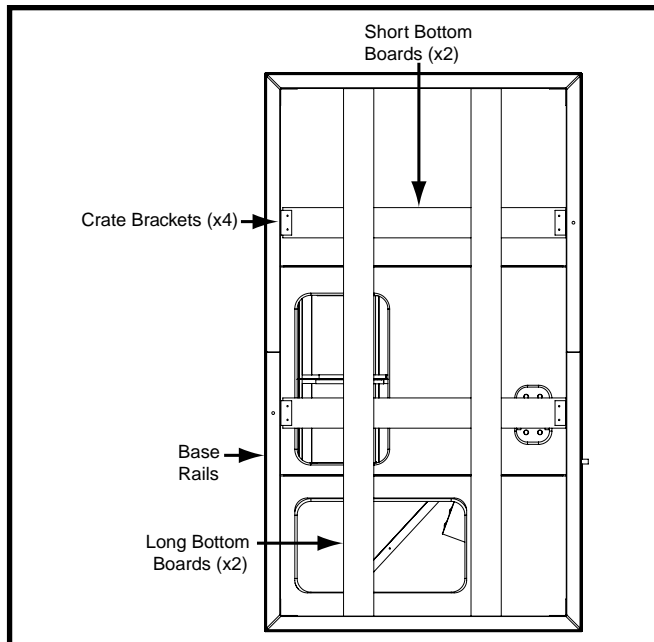
### **WARNING:**

**Never operate the unit without a filter in place. Dust and lint could accumulate on internal parts, resulting in loss of efficiency, equipment damage and possible fire.**

All return air must pass through the filters before entering the unit. It is important that all filters be kept clean and replaced frequently to ensure proper operation of unit. Dirty or clogged filters will reduce the efficiency of the unit and result in unit shutdowns. Air filter pressure drop must not exceed 0.08 inches WC. When replacing the air filters, a suitable air filter must be installed ahead of the evaporator coil of the return air system. Refer to Table 1 for recommended filter sizes.



**Figure 2. Side View**



**Figure 3. Bottom View**

UNIT	FACTORY FILTER SIZE	QTY
R6GP-072*-(100/166)C	16x20x2	4
R6GP-090*-200C	16x20x2	4
R6GP-120*-235C	16x25x2	4

**Table 1. Filter Sizes & Quantities**

## UNIT INSTALLATION

### Packaging Removal

All units have been securely packaged at the point of shipment. After unpacking the unit, carefully inspect for apparent and concealed damage. Claims for damage should be filed with the carrier by the consignee.

1. Remove top crate brackets and wooden cap assembly from top of unit (Figure 2).
2. Remove lower crate brackets, 4 side skids, and 2 end skids from each side of unit. **NOTE: DO NOT remove base rails from unit.**
3. Rig unit and raise up approximately 4 feet off the ground.
4. Remove crate brackets (Figure 3) securing long and short bottom boards to underside of unit. **NOTE: Some screws are located in fork slots.**
5. Remove long & short bottom boards from beneath unit.
6. Inspect unit thoroughly for shipping damage.
7. Carefully lower and position unit to its permanent location.

### Rigging & Hoisting

### **WARNING:**

**To avoid the risk of property damage, personal injury, or death, it is the rigger's responsibility to ensure that whatever means are used to hoist the unit are safe and adequate:**

- The lifting equipment must be adequate for the load. Refer to Table 3 (page 27) for unit weights.
- The unit must be lifted from the holes in the base rails using cables or chains.
- Spreader bars are required to protect the unit and ensure even loading. See Figure 4.
- Keep the unit in an upright position at all times. The rigging must be located outside the units center of gravity. Refer to Figures 12 - 14 (pages 22 - 27) for locating the center of gravity.
- All panels must be securely in place during rigging and hoisting.

### Minimum Clearance Requirements

R6GP units are certified as combination heating and cooling equipment for outdoor installation only. Figure 5 (page 9) displays the minimum clearances to combustible materials for both Downflow and Horizontal discharge.

R6GP units may be installed on non-combustible surfaces when used with bottom supply and return air ducts. Units may be installed on wood flooring or on Class A,



B, or C roof covering material as long as the following requirements are met:

- If using side supply with return air ducts, the horizontal discharge kit must be installed prior to unit installation.
- If using bottom discharge with return air ducts a roof curb must be installed prior to unit installation. See Rigging and Hoisting section on page 8 for setting of the unit.

### Rooftop Mounting

Rooftop installations must be located according to local building codes or ordinances and these requirements:

- The roof must be capable of handling the weight of the unit. For unit weights, see Table 3 (page 27). Reinforce the roof if necessary.
  - The appropriate accessory roof curb (Figure 6) must be installed prior to unit installation. The roof curb must be square and level to ensure proper condensate drainage.
- Please follow all instructions provided with the kit.**

## WARNING:

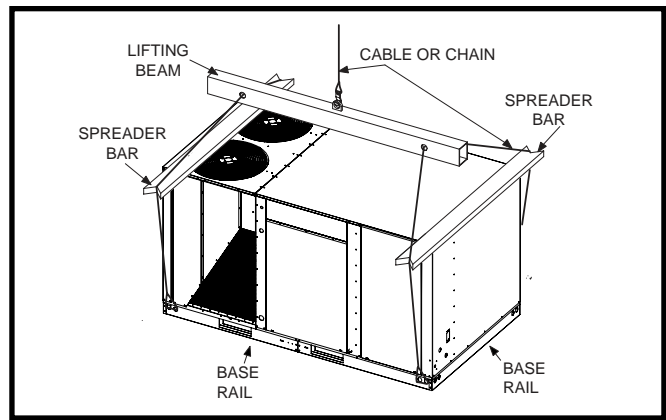
**Never drill or punch holes in unit base when installing downflow units. Leakage may occur if bottom pan is punctured.**

- On bottom discharge applications, the supply and return air ducts must be attached to the roof curb duct supports, not the unit. Install all ductwork before setting unit on curb or frame.
- Framesupportmustbeconstructedusingnoncombustible materials. Full perimeter support is required under the unit. Supports must be made of steel or weather resistant wooden materials. The unit must be square and level to ensure proper condensate drainage.
- The frame must be high enough to ensure prevention of any moisture from entering the unit. Recommended height to unit base is 8" (20cm) for both Downflow and Horizontal installations.
- Secure roof curb or frame to roof using acceptable mechanical methods per local codes.

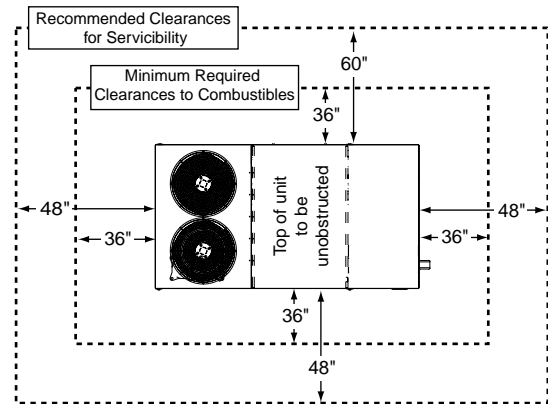
### Ground Level

Ground level installations must be located according to local building codes or ordinances and these requirements:

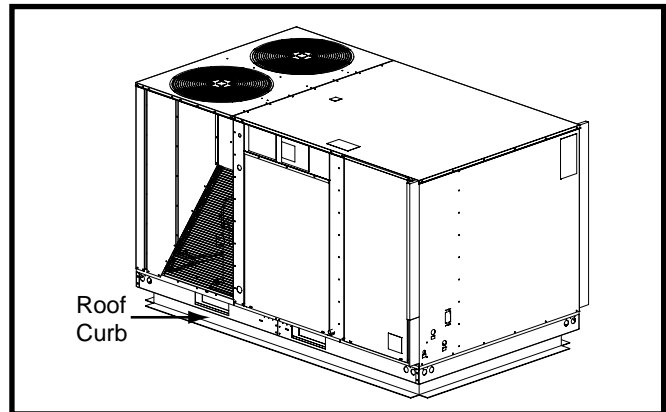
- Clearances must be in accordance with those shown in Figure 5.
- A concrete mounting pad (Figure 7) must be provided and separate from the building foundation. The pad must be level to ensure proper condensate disposal and strong enough to support the unit's weight. The slab height must be a minimum of 3" (8cm) above grade and with adequate drainage.
- Units require horizontal supply and return kit for horizontal installations.
- Ductwork should be attached directly to flanges on panels supplied in horizontal duct conversion kits.



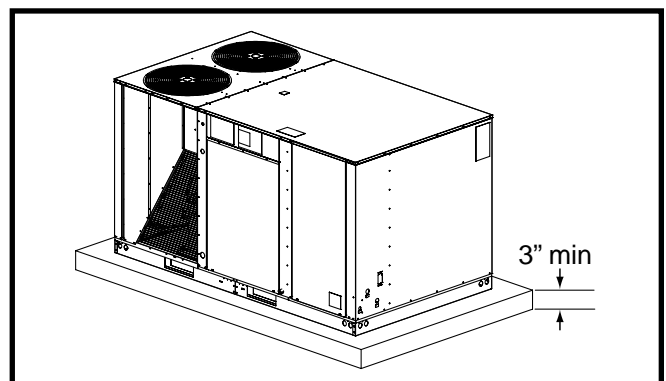
**Figure 4. Rigging & Hoisting**



**Figure 5. Unit Clearance Requirements**



**Figure 6. Roof Curb**



**Figure 7. Concrete Mounting Pad**

## Condensate Drain

The method for disposing of condensate varies according to local codes. Consult your local code or authority having jurisdiction.

Condensate is drained from the unit through a 3/4" (19mm) PVC pipe located on the front side of the unit (Figure 8). For proper drainage, install a 3" (8cm) Min. trap between the drain line and an open vent of the same size. Avoid areas where condensate drainage may cause problems.

The condensate drain line must be J-trapped using field supplied parts and may be combined with other drain lines when routed to the drain.

When connecting rigid drain line, hold any fittings with a wrench to prevent twisting. **Do not overtighten!**

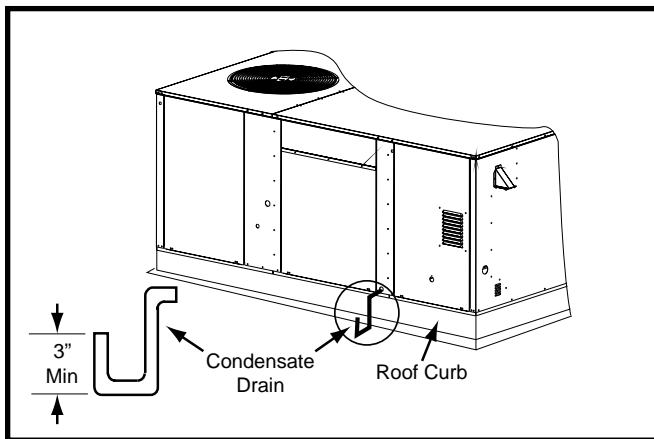


Figure 8. Condensate Drain

## GAS SUPPLY & PIPING

### **⚠ WARNING:**

#### **FIRE OR EXPLOSION HAZARD**

- **Failure to follow safety warnings exactly could result in serious injury or property damage.**
- **Installation and service must be performed by a qualified installer, service agency or the gas supplier.**
- **Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.**

#### **WHAT TO DO IF YOU SMELL GAS**

- **Do not try to light any appliance.**
- **Do not touch any electrical switch; do not use any phone in your building.**
- **Leave the building immediately.**
- **Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.**
- **If you cannot reach your gas supplier, call the fire department.**

### **⚠ AVERTISSEMENT:**

#### **RISQUE D'INCENDIE OU D'EXPLOSION**

- **Le non-respect des avertissements de sécurité pourrait entraîner des blessures graves, la mort ou des dommages matériels.**
- **L'installation et l'entretien doivent être effectués par un installateur qualifié, un organisme de service ou le fournisseur de gazstaller, service agency or the gas supplier.**
- **Ne pas entreposer ni utiliser de l'essence ni d'autres vapeurs ou liquides inflammables dans le voisinage de cet appareil, ni de tout autre appareil.**

#### **QUE FAIRE S'IL Y A UNE ODEUR DE GAZ**

- **Ne pas tenter d'allumer aucun appareil.**
- **Ne toucher à aucun interrupteur électrique; n'utiliser aucun téléphone dans le bâtiment.**
- **Évacuer l'immeuble immédiatement.**
- **Appeler immédiatement le fournisseur de gaz en employant le téléphone d'un voisin. Respecter à la lettre les instructions du fournisseur de gaz.**
- **Si personne ne répond, appeler le service des incendies.**

#### IMPORTANT NOTES:

- All gas piping must be installed in compliance with local codes and utility regulations. In the absence of local codes the gas line installation must comply with the latest edition of the National Fuel Gas Code ANSI Z223.1 or CAN/CGA B149 Installation Codes.
- Some local codes require the installation of a manual main shut-off valve and ground joint union external to the furnace. The shut-off valve should be readily accessible for service and/or emergency use See Figure 9 (page 12). Consult the local utility or gas supplier for additional requirements regarding placement of the manual main gas shut-off.
- Gas piping must never run in or through air ducts, chimneys, gas vents, or elevator shafts.
- Compounds used to seal joints on gas piping must be resistant to the actions of LP propane gas.
- The main gas valve and main power disconnect to the furnace must be properly labeled by the installer in case emergency shutdown is required.
- An 1/8 inch NPT plugged tap must be installed in the gas line immediately upstream of the gas supply connection to the furnace for use when measuring the gas supply pressure. The plug should be readily accessible for service use.
- A drip leg should be installed in the vertical pipe run to the unit (Figure 9).

This unit is shipped from the factory for natural gas operation at sea level elevation and is equipped with a #36 orifice at each burner. Table 14 (page 40), lists gas pipe capacities for standard pipe sizes as a function of length in typical applications based on nominal pressure drop in the line.

This unit only has right side gas entry. When connecting the gas, provide clearance between the gas supply line and the entry hole in the unit's casing to avoid unwanted noise and/or damage to the unit. A typical gas service hookup is shown in Figure 9 (page 12).

#### Leak Check

### **WARNING:**

#### **FIRE OR EXPLOSION HAZARD**

**Failure to follow safety warnings exactly could result in serious injury or property damage.**

**Never test for gas leaks with an open flame. Use a commercially available soap solution made specifically for the detection of leaks to check all connections. A fire or explosion may result causing property damage, personal injury or loss of life.**

### **AVERTISSEMENT:**

#### **RISQUE D'INDENNIE OU D'EXPLOSION**

**Le non-respect des avertissements de sécurité pourrait d'entraîner des blessures graves, la mort ou des dommages matériels.**

**Ne jamais utiliser une flamme nue pour vérifier la présence des fuites de gaz. Pour la vérification de tous les joints, utiliser plutôt une solution savonneuse commerciale fabriquée spécifiquement pour la détection des fuites de gaz. Un incendie ou une explosion peut entraîner des dommages matériels, des blessures ou la mort.**

After the gas piping to the unit is complete, all connections must be tested for gas leaks. This includes pipe connections at the main gas valve, emergency shutoff valve and other gas connectors.

The soap and water solution can be applied on each joint or union using a small paintbrush. If any bubbling is observed, the connection is not sealed adequately and must be retightened. Repeat the tightening and soap check process until bubbling ceases.

#### IMPORTANT NOTES:

- **If pressure testing the gas supply lines at pressures greater than 1/2 psig (14 inches WC), the unit must be disconnected from the gas supply piping system to prevent damage to the gas valve.**
- **If the test pressure is less than or equal to 1/2 psig (14 inches WC), the unit must be isolated from the gas supply line by closing the manual shut-off valve.**

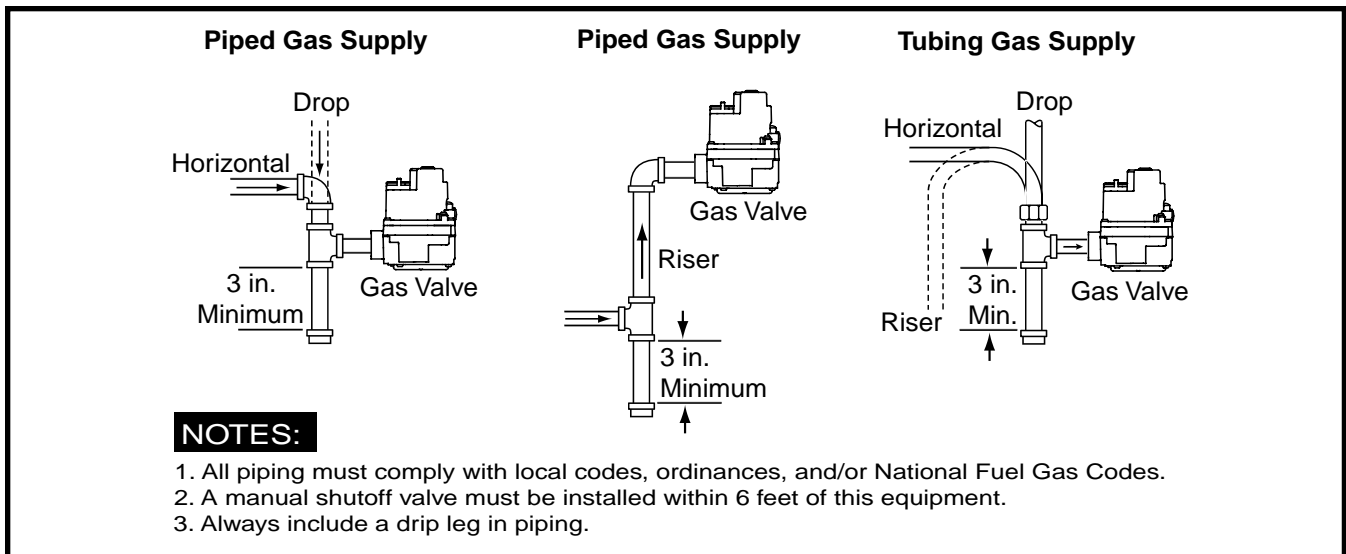
#### High Altitude Deration

High altitude application with this unit depends on the installation altitude and the heating value of the gas. At high altitudes, the heating value of natural gas is always lower than the heating value at sea level.

All installations of this equipment must be made in accordance with the National Fuel Gas Code or with local jurisdiction codes. For installations at exactly 2,000 feet in altitude or under, the installer does not need to derate the heat exchanger performance. For any installation that exceeds 2,000 feet, please see the following instructions and example:

### **WARNING:**

**The reduction of input rating necessary for high altitude installation may only be accomplished with factory supplied orifices. Do not attempt to drill out orifices in the field. Improperly drilled orifices may cause fire, explosion, carbon monoxide poisoning, personal injury or death.**



**Figure 9. Typical Gas Service Connection**

- If installing this unit above 2,000 feet, the input rate must be reduced 4% per 1,000 feet of altitude (Example: 12% at 3,000 feet, 16% at 4,000 feet, etc). Always round up to the next highest value of 1,000. So an installation at 3,120 feet is derated by 16% due to rounding up to 4,000. **NOTE:** This deration is necessary to compensate for low atmospheric pressure at high altitudes. Generally this will require obtaining the gas heating value from the local gas utility and replacing the burner orifices.
- Table 15 (page 40) lists the correct orifice size to use at different altitudes. To determine the unit rating and orifice size, see the installation example.
- After changing the orifices, it is required that you measure the gas input rate by clocking the gas meter and using the local gas heating value. See section on Verifying and Adjusting the Firing Rate on page 16.

**IMPORTANT NOTE: Observe the action of the burners to make sure there is no yellowing, lifting or flashback of the flame.**

### Conversion to LP/Propane

#### **WARNING:**

The furnace was shipped from the factory equipped to operate on natural gas. Conversion to LP/propane gas must be performed by qualified service personnel using a factory supplied conversion kit. Failure to use the proper conversion kit can cause fire, explosion, property damage, carbon monoxide poisoning, personal injury, or death.

In the U.S., if installing the unit above 2,000 ft., refer to Table 15 to determine the correct orifice size. When conversion is complete, verify the input rate is correct as listed in the tables. Approved conversion kit must be used. **Please follow the instructions provided with each kit.**

#### **INSTALLATION EXAMPLE:**

**Elevation:** .....3,890 feet  
**Type of Gas:** ..... Natural  
**Unit Model:** ..... R6GP-090C200C

At 4,000 feet, the unit needs to be derated by 4% for each 1,000 feet of elevation. This equates to 16% or less than the sea level rating of 200,000 Btu/h.

1. Determine unit input rating:  
 $[200k \times (100-16)\%] = 168,000 \text{ Btu/h}$ . The required heating rate for 3,890 feet is 168,000 Btu/h.
2. Determine orifice size:  
 From Table 15 (page 40), find the Unit Model Number. Follow across the row and stop at the 2,000-4,000 elevation column. For this example, the orifice size displayed is #38. Install one #38 orifice in every burner and check firing rate. In this example, the firing rate must not exceed 168,000 Btu/h.

## ELECTRICAL WIRING

### **WARNING:**

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

**Failure to follow safety warnings exactly could result in serious injury or property damage.**

**Improper servicing could result in dangerous operation, serious injury, death or property damage.**

- **Before servicing, disconnect all electrical power to furnace.**
- **When servicing controls, label all wires prior to disconnecting. Reconnect wires correctly.**
- **Verify proper operation after servicing.**

### **AVERTISSEMENT:**

#### **RISQUE DE CHOC ÉLECTRIQUE, D'INCENDIE OU D'EXPLOSION**

**Le non-respect des avertissements de sécurité pourrait entraîner un fonctionnement dangereux de l'appareil, des blessures graves, la mort ou des dommages matériels.**

**Un entretien incorrect pourrait entraîner un fonctionnement dangereux de l'appareil, des blessures graves, la mort ou des dommages matériels**

- **Couper toute alimentation électrique au générateur d'air chaud avant de prodéder aux travaux d'entretien.**
- **Au moment de l'entretien des commandes, étiquetez tous les fils avant de les débrancher. S'assurer de les raccorder correctement.**
- **S'assurer que l'appareil fonctionne adéquatement après l'entretien.**

### **Pre-Electrical Checklist**

- √ Verify that the voltage, frequency, and phase of the supply source match the specifications on the unit rating plate.
- √ Verify that the service provided by the utility is sufficient to handle the additional load imposed by this equipment. See Table 13 (page 37) or the unit wiring label for proper high and low voltage wiring.
- √ Verify factory wiring is in accordance with the unit wiring diagram. Inspect for loose connections.
- √ For 3 phase units always check the phase balance (page 14).

### **Line Voltage**

- Electrical connections must be in compliance with all applicable local codes and ordinances, and with the current revision of the National Electric Code (ANSI/NFPA 70). For Canadian installations the electrical connections and grounding shall comply with the current Canadian Electrical Code (CSA C22.1 and/or local codes).
- Provide power supply for the unit in accordance with the unit wiring diagram and the unit rating plate. The line voltage to the unit should be supplied from a dedicated branch circuit containing the correct fuse or circuit breaker for the unit.
- **An electrical disconnect must be located within sight of and readily accessible to the unit.** This switch shall be capable of electrically de-energizing the outdoor unit. See unit data label for proper incoming field wiring. Any other wiring methods must be acceptable to authority having jurisdiction.
- A wiring diagram is located on the inside cover of the control access panel of the outdoor unit. The installer should become familiar with the wiring diagram before making any electrical connections to the outdoor unit. See Figures 15 & 16 (pages 38 & 39).
- If any of the original wires supplied with the unit must be replaced, they must be replaced with material of the same voltage, gauge, and temperature rating.
- Connect the line-voltage leads to the terminals on the contactor inside the control compartment.
- Use only copper wire for the line voltage power supply to this unit. Use proper code agency listed conduit and connector for connecting the supply wires. Use of rain tight conduit is recommended.
- Units are shipped from the factory wired for 230 or 460 volt operation. On 208-230V units being placed into 208 volt operation, remove the lead from the transformer terminal marked 240V and connect it to the terminal marked 208V.
- Overcurrent protection must be provided at the branch circuit distribution panel and sized as shown on the unit rating label and according to the National Electric Code and applicable local codes. **NOTE:** See the unit rating plate for maximum circuit ampacity and maximum overcurrent protection limits.

### **Grounding**

#### **WARNING:**

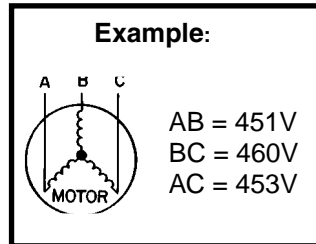
**The unit cabinet must have an uninterrupted or unbroken electrical ground to minimize personal injury if an electrical fault should occur. Do not use gas piping as an electrical ground!**

This unit must be electrically grounded in accordance with local codes or, in the absence of local codes, with the National Electrical Code (ANSI/NFPA 70) or the CSA C22.1 Electrical Code. Use the grounding lug provided in the control box for grounding the unit.

## Unbalanced 3-Phase Supply Voltage

Voltage unbalance occurs when the voltages of all phases of a 3-phase power supply are no longer equal. This unbalance reduces motor efficiency and performance. Some underlying causes of voltage unbalance may include: Lack of symmetry in transmission lines, large single-phase loads, and unbalanced or overloaded transformers. A motor should never be operated when a phase imbalance in supply is greater than 2%. Perform the following steps to determine the percentage of voltage imbalance:

1. Measure the line voltages of your 3-phase power supply where it enters the building and at a location that will only be dedicated to the unit installation (at the units circuit protection or disconnect).



2. Determine the average voltage in the power supply.

In this example, the measured line voltages were 451, 460, and 453. The average would be 454 volts ( $451 + 460 + 453 = 1,364 / 3 = 454$ ).

3. Determine the maximum deviation:

**Example:**

From the values given in step 1, the BC voltage (460V) is the greatest difference in value from the average:

$460 - 454 = \boxed{6}$  ← Highest Value  
 $454 - 451 = 3$   
 $454 - 453 = 1$

4. Determine percent of voltage imbalance by using the results from steps 2 & 3 in the following equation.

Example:

$$100 \times \frac{6}{454} = 1.32\%$$

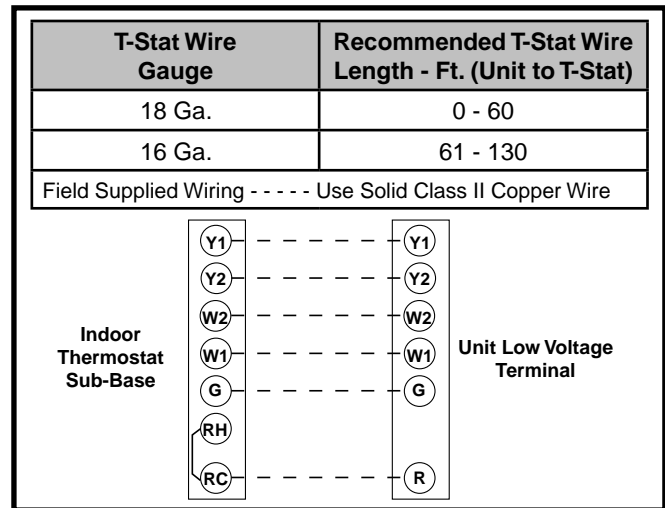
$$\% \text{ Voltage Imbalance} = 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

The amount of phase imbalance (1.32%) is satisfactory since the amount is lower than the maximum allowable 2%. Please contact your local electric utility company if your voltage imbalance is more than 2%.

## Thermostat / Low Voltage Connections

- Single Package Gas Heating / Electric Cooling Rooftop Units are designed to operate with a 24 VAC Class II control circuit. The control circuit wiring must comply with the current provisions of the NEC (ANSI/NFPA 70) and with applicable local codes having jurisdiction. Thermostat connections should be made in accordance with the instructions supplied with the thermostat.

- A two-stage heating/cooling thermostat is required for R6GP series units. Select a thermostat which operates in conjunction with the installed accessories. See Figure 10 for proper wire gauge and their recommended lengths for typical thermostat connections.
- The low voltage wires must be properly connected to the units low voltage terminal block. Route 24V control wires through the gas furnace side of the unit. Recommended wire gauge and wire lengths for typical thermostat connections are shown in Figure 10.
- The thermostat should be mounted about 5 feet above the floor on an inside wall. DO NOT install the thermostat on an outside wall or any other location where its operation may be adversely affected by radiant heat from fireplaces, sunlight, or lighting fixtures, and convective heat from warm air registers or electrical appliances. Refer to the thermostat manufacturer's instruction sheet for detailed mounting information.



**Figure 10. Typical 2 - Stage Heat/Cool Thermostat Connection**

## Heat Anticipator

Verify if the thermostat being used for the installation has a heat anticipator setting. This function allows the thermostat to anticipate the space heating rate and time the burner to shutoff accordingly. Always refer to the thermostat manufacturers instructions for the correct settings.

## Blower Speed

The blower speed is preset at the factory but must be verified at each installation. For optimum system performance and comfort, it may be necessary to change the factory set speed. Refer to Blower Performance Data (Tables 5 - 12, pages 29 - 36) for proper operating range. Always ensure drive belt is secure and tensioned properly. Also inspect variable pitch sheaves for proper tightness of the set screws

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## CAUTION

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To avoid personal injury or property damage, make certain that the motor leads do not make contact with any uninsulated metal components of the unit.

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To change the blower speed:

1. Disconnect all electrical power to the unit and remove the blower access panel.
2. Loosen the motor tension bars to allow removal of the blower belt from the motor sheave.
3. Loosen top set screw on motor sheave and turn clockwise to close (increases blower speed), or counterclockwise to open (decreases blower speed).
4. Replace belt on pulleys and position motor mounting plate to correct position for proper belt tension.
5. Tighten tension bar bolts.

## STARTUP & ADJUSTMENTS

### Pre-Start Check List

- √ Verify unit is properly supported.
- √ Verify unit is level for proper condensate drainage.
- √ Verify all clearance requirements are met. Airflow to and from the outdoor coil must be unrestricted.
- √ Verify the ductwork is adequately sealed to prevent air leakage. Insulate if necessary.
- √ Verify the line voltage power leads are securely connected and the unit is properly grounded.
- √ Verify low voltage wires are securely connected to the correct leads in the low voltage area of the control box.
- √ Verify gas line pressure. For natural gas, the line pressure must not exceed 10.0 inches WC (0.36 psig), or be less than 5.5 inches WC (0.20 psig). For LP gas, the line pressure must not exceed 14 inches WC (0.51 psig) and must not be less than 11.0 inches WC (0.40 psig).
- √ Verify the flame roll-out control is closed.

**IMPORTANT NOTE:** This safety device is a manually reset switch. If necessary, press the red button to reset the control. **DO NOT** install a jumper wire across the control to defeat its function. If the control reopens upon start-up, **DO NOT** reset the control without identifying and correcting the fault condition which caused the control to trip.

- √ Verify the gas line has been purged and all connections are adequately sealed. To check for gas leakage, see Leak Check section on page 11.
- √ Verify the indoor blower is properly set for the installation.
- √ Verify the outdoor fan turns freely.
- √ Verify the power supply branch circuit overcurrent protection is properly sized.
- √ Verify all exterior panels have been reinstalled and securely fastened.
- √ Verify the thermostat is wired correctly and preset for initial operation. Set the thermostat system switch to OFF and the fan switch to AUTO.

## Startup Procedures

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### WARNING:

This unit is equipped with crankcase heaters. Allow 24 hrs for heating of the refrigerant compressor crankcase prior to start up and anytime the power has been removed for more than 12 hrs. Failure to comply may result in damage or cause premature failure of the system.

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- Check all electrical wiring for loose connections and tighten as required.
- Check unit for return air filters and condensate trap.
- Close all electrical disconnects to energize the system.

### Air Circulation

1. Set thermostat system switch to OFF and the fan switch to ON.
2. Verify the blower motor runs continuously. Check for air delivery at the register(s). Ensure that there are no obstructions at the registers or in the ductwork.
3. Set thermostat fan switch to AUTO and verify the blower shuts down immediately.

**NOTE:** If blower is turning opposite of arrow direction, shut off main power to the unit and switch any two field wires at the disconnect. **DO NOT** alter unit wiring.

### System Cooling

1. Set the thermostat system switch to COOL and the fan switch to AUTO.
2. Lower the thermostat temperature switch below room temperature and observe that the blower, both compressors and fans) energize.
3. Verify blower is turning in direction indicated by arrow and air discharged at the register is cooler than room temperature.
4. Verify HI and LO refrigerant pressures.

**NOTE:** If refrigerant pressures are abnormal and blower is rotating in the opposite direction of the arrow, shut off main power to the unit and switch any two field wires at the disconnect. Ensure proper rotation of the blower. **DO NOT** alter unit wiring. Listen for any unusual noises. Locate the source and correct as needed.

5. Allow the unit to run for several minutes. Set the temperature selector above room temperature and verify that the fan, blower, and compressors cycle off with the thermostat.

### System Heating

1. Set the thermostat to the lowest setting.
2. Follow the startup procedures on this page or the operating instruction label inside the louvered control access panel.
3. Set the thermostat above room temperature and verify the Operating Sequence (page 17).
4. Verify that the compressor and outdoor fan motor are not energized.
5. Run the unit and after approximately five minutes, set the thermostat below room temperature. Verify the shutdown sequence (see Operating Sequence).

## Verifying & Adjusting Temperature Rise

Verify the temperature rise through the unit is within the range specified on the unit data label. Temperature rises outside the specified range could result in premature heat exchanger failure.

1. Place thermometers in the return and supply air stream as close to the unit as possible. The thermometer on the supply air side must be shielded against direct radiation from the heat exchanger to avoid false readings.
2. Adjust all registers and duct dampers to the desired position. Run the unit for 10 to 15 minutes before taking any temperature readings. The temperature rise is the difference between the supply and return air temperatures.

**NOTE:** For typical duct systems, the temperature rise will fall within the range specified on the data label (with the blower speed at the factory recommended setting) shown in Table 16, page 40. If the measured temperature rise falls outside the specified range, it may be necessary to change the blower speed. Lowering the blower speed increases the temperature rise and a higher speed decreases the temperature rise.

The unit is equipped with a belt driven blower and variable pitch motor sheave. The selection of a sheave setting should be based on the desired CFM and the duct system parameters. Refer to the ACCA's Manual Q for a complete description of how to determine these parameters and Manual N for determination of the commercial load requirements. The blower performance data can be found in Tables 5 - 12 (pages 29 - 36).

The integrated control is designed to start the circulating air blower 40 seconds after the gas valve opens and turn the blower motor off 150 seconds after the gas valve is closed.

## Verifying Burner Operation

### **WARNING:**

**Uninsulated live components are exposed when the louvered control access panel is removed.**

1. Remove the louvered control access panel to ensure there is power to the unit.
2. Set the thermostat above room temperature and observe the ignition sequence. The burner flame should carry over immediately between all burners and should extend from each burner without lifting off, curling, or floating. The flames should be blue, without yellow tips.
3. After verifying flame characteristics, set the thermostat below room temperature and verify that the burner flame extinguishes completely.

## Verifying Operation of Over-Temperature Limit Control

To verify operation of the over-temperature limit control, make sure the louvered control access panel is in place and that there is power to the unit.

1. Block the return airflow to the unit by installing a close-off plate in place of or upstream of the filter.
2. Set the thermostat above room temperature and verify

the unit operates with the correct sequence of operation (see Operating Sequence).

**NOTE:** The over-temperature limit control should function to turn off the gas valve within approximately four minutes (exact time depends on the efficiency of the close-off when blocking the return air). The circulating air and combustion blowers should continue to run when the over-temperature limit control switch opens.

3. Remove the close-off plate immediately after the over-temperature limit control opens. If the unit operates for more than four minutes with no return air, set the thermostat below room temperature, shut off power to the unit, and replace the over-temperature limit control.

## Verifying & Adjusting Firing Rate

The firing rate must be verified for both HIGH fire and LOW fire for each installation to prevent over-firing of the unit.

### **CAUTION:**

**Do not re-drill the burner orifices. If the orifice size must be changed, use only new orifices.**

**IMPORTANT NOTE:** The firing rate must not exceed the rate shown on the unit data label. At altitudes above 2,000 ft., it must not exceed that on the data label less 4% for each 1,000 ft.

Follow the steps below to determine the unit firing rate:

- For installations at 2,000 feet and less, the firing rate is the same as shown on the unit rating label.
  - For installations above 2,000 feet, compute the firing rate as shown in the installation example on page 12.
1. Obtain the gas heating value from the gas supplier (HHV).
  2. Shut off all other gas fired appliances.
  3. Turn ON the main gas supply at the manual valve.
  4. Start the unit in heating mode and allow it to run for at least three minutes in HIGH fire mode (Stage 1 & 2).
  5. Measure the time (in seconds) required for the gas meter to complete one revolution.
  6. Convert the time per revolution to cubic feet of gas per hour using Table 17 (page 41).
  7. Multiply the gas flow rate in cubic feet per hour by the heating value of the gas in Btu per cubic foot to obtain the firing rate in Btu per hour. See Example on page 17:
  8. Adjustments to the firing rate can be made by adjusting the gas manifold pressure. See the High Altitude Deration section (pages 11 & 12) for additional information of firing rate at elevations above 2000 ft.
  9. Low fire input (Stage 1) must also be verified by repeating all steps outlined for high fire input rate. Obtain low fire input values from Table 15 (Page 40). If necessary, follow the manifold pressure adjustment instructions for the low fire regulator spring to obtain the required input rate.



#### Example:

- Time for 1 revolution of a gas meter with a 1 cubic foot dial = 40 seconds.
- From Table 17 read 90 cubic feet gas per hour.
- Local heating value of the gas (obtained from gas supplier) = 1,040 Btu per cubic foot.
- Input rate = 1,040 x 90 = 93,600 Btuh.

## Manifold Pressure Adjustment

The manifold pressure for both HIGH and LOW firing rates must be set to the appropriate value for your installation. To adjust the manifold pressure for either high fire (Stage 1 & 2) or low fire (Stage 1 only) follow these instructions after identifying the correct regulator spring adjustment screw from Figure 21 or 22 (Page 45) for your particular gas valve:

1. Obtain the required input firing rate from Table 15 (page 40). **NOTE:** The values listed in the table is based on sea level values. At higher altitudes, the heating value of gas is lower than the sea level heating value. See High Altitude Deration section (pages 11 & 12).
2. Turn OFF the gas supply at the manual valve located on the outside of the unit.
3. Using a 3/16" Allen wrench, remove the plug from the OUTLET pressure tap (OUTLET side of gas valve). See Figure 23 (page 46)
4. Install an 1/8" NPT pipe thread fitting that is compatible with a manometer or similar pressure gauge.
5. Connect the manometer or pressure guage to the OUTLET pressure tap.
6. Turn ON the main gas supply at the manual valve.
7. Remove the regulator cap. Turn the regulator adjusting screw clockwise to increase the pressure or counterclockwise to reduce the pressure.
8. Replace the regulator cap after adjustments are complete.
9. Turn OFF the gas supply at the manual valve.
10. Disconnect the Manometer or pressure guage.
11. Remove the NPT fitting and reinstall the OUTLET pressure tap plug. Hand tighten the plug first to prevent cross-threading. Tighten with a 3/16" Allen wrench.

## Refrigerant Charging

### **WARNING:**

**If repairs make it necessary for evacuation and charging, it should only be done by qualified, trained personnel thoroughly familiar with this equipment. Some local codes require licensed installation/service personnel to service this type of equipment. Under no circumstances should the owner attempt to install and/or service this equipment.**

**Failure to comply with this warning could result in property damage, personal injury, or death.**

The R6 Series packaged gas/electric units are fully charged at the factory and when installed accordingly, no charging is required. The refrigerant charge can be checked and adjusted through the service ports provided on the units. Use only gauge lines which have a "Schrader" depression device present to actuate the valve. Refer to Figures 17 - 19 (pages 42 - 43)

Refrigerant charging must be done by qualified personnel familiar with safe and environmentally responsible refrigerant handling procedures. See Unit Rating Plate for the proper type and amount of refrigerant.

## OPERATING SEQUENCE

The operating sequences for the heating, cooling, and fan modes are described below. Refer to the wiring diagrams (Figures 15 & 16, pages 38 & 39).

### Cooling Mode

1. On a call for cooling the thermostat closes, applying 24 VAC to **Y1**, **G**, & **Y2** if Stage 2 cooling is calling.
2. **G** applies 24VAC to the main circulating blower circuit.
3. **Y1** & **Y2** apply 24VAC through all safety switches before energizing their respective contactors.
4. When the thermostat is satisfied the contactors are de-energized.
5. The circulating blower motor de-energizes immediately.

### Heating Mode

1. On a call for heat, the thermostat closes, applying 24 VAC to the **W1** terminal (and **W2** terminal if Stage 2 heat is required).
2. The integrated control monitors the safety circuit at all times. If either the roll-out switch or the over-temperature limit controls open, the gas valve will not energize. The main blower continues to operate until the over-temperature limits close, the flame roll-out switch is manually reset, or the thermostat is satisfied.
3. The integrated control checks all safety switches at the beginning of each heating cycle. If closed, the combustion blower performs a 10 second pre-purge.
4. The integrated control will then supply power to the direct spark ignitor and immediately energizes the gas valve.  
**NOTE:** Burner operation begins in high fire mode with both Stage 1 and Stage 2 gas valve energized, independent of the thermostat call for Stage 2 heat. If after 30 seconds of operation with no call for Stage 2 heat, the integrated control will resume heating operation in low fire mode of operation and Stage 2 gas valve is de-energized.
5. The flame must be proven through the flame sensor in 10 seconds to hold the gas valve open. The integrated control will monitor the gas flame with the flame sensor for the entire time the gas valve is open. If for any reason the gas flame drops out, the gas valve will immediately close. After 30 second purge, the integrated control will try to ignite fourteen more times.
6. The main air blower will start and continue to run 40 seconds after the gas valve opens.
7. When the thermostat is satisfied, the integrated control is de-energized. The gas valve and combustion blower de-energize immediately while the main air blower continues

to run through the blower off delay of approximately 150 seconds.

8. If the unit fails to prove flame after fifteen ignition attempts, it will go into a soft lockout. The unit will re-attempt the start-up procedure every hour until the thermostat is satisfied or 24 VAC power is removed from the unit for a minimum period of 5 seconds. **NOTE:** See Troubleshooting section (page 21) for a complete list of heating operation fault codes.

### Blower Mode

1. On a call for fan operation, the thermostat applies 24 VAC directly to the blower contactor.
2. The circulating blower is energized immediately.

## UNIT MAINTENANCE

### **WARNING:**

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

Failure to follow safety warnings exactly could result in serious injury or property damage.

Improper servicing could result in dangerous operation, serious injury, death or property damage.

- Before servicing, disconnect all electrical power to furnace.
- When servicing controls, label all wires prior to disconnecting. Reconnect wires correctly.
- Verify proper operation after servicing.”

### **AVERTISSEMENT:**

#### **RISQUE DE CHOC ÉLECTRIQUE, D'INCENDIE OU D'EXPLOSION**

Le non-respect des avertissements de sécurité pourrait entraîner un fonctionnement dangereux de l'appareil, des blessures graves, la mort ou des dommages matériels.

Un entreteïn incorrect pourrait entraîner un fonctionnement dangereux de l'appareil, des blessures graves, la mort ou des dommages matériels

- Couper toute alimentation électrique au générateur d'air chaud avant de prodéder aux travaux d'entreteïn.
- Au moment de l'entreteïn des commandes, étiquetez tous les fils avant de les débrancher. S'assurez de les raccorder correctement.
- S'assurez que l'appareil fonctionne adéquatement après l'entreteïn.

**NOTE:** These maintenance instructions are primarily intended to assist qualified technicians experienced in the proper maintenance and operation of this appliance.

To achieve optimum performance from the air conditioner and minimize equipment failure, it is recommended that periodic maintenance be performed on this unit. The ability to properly perform maintenance on this equipment requires certain mechanical skills and tools. Please consult your dealer for maintenance information and availability of maintenance contracts.

### Routine Maintenance

Please consult your dealer for maintenance information and availability of maintenance contracts. At a minimum, routine maintenance should include the following items:

### **CAUTION:**

**Use care when removing parts from this unit. Personal injury can result from sharp metal edges present in all equipment of sheet metal construction.**

#### Air Filters

### **WARNING:**

**Never operate the unit without filters in place. Dust and lint in the return air can build up on internal components, resulting in loss of efficiency, equipment damage, and possible fire.**

It is recommended that the air filters be inspected and cleaned or replaced every three to four weeks using filters of like size and kind. Table 1 (page 8) lists the factory installed filter sizes and quantities for each unit.

**IMPORTANT NOTE: R6GP units are equipped with 2” pleated disposable filters. Filter rack is adjustable for 1” permanent type filters. DO NOT use 1” disposable filters.**

#### Blower Compartment

Build up of dirt and lint on the blower and motor can create excessive loads on the motor resulting in higher than normal operating temperatures and possible shortened service life. It is recommended that the blower compartment be cleaned monthly during heating and cooling seasons to remove any dirt and lint that may have accumulated in the compartment or on the blower and motor. Inspect the blower drive belt for cracks, excessive wear and proper tension after cleaning the compartment.

#### Condensate Drain & Outdoor Coil

Inspect the condensate drain and outdoor coil at the beginning of each cooling season. Remove any debris. Clean the outdoor coil and hail guard louvers (optional) as necessary using a mild detergent and water. Rinse thoroughly with water.

## Electrical

---

### **WARNING:**

**This unit may have more than one electrical supply. To avoid risk of electrical shock, personal injury, or death, disconnect all electrical power to the unit before performing any maintenance or service.**

---

### **CAUTION:**

**Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.**

---

Inspect the electrical connections for tightness at the beginning of each heating and cooling season. Service as necessary.

## Motor / Bearing Lubrication

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### **WARNING:**

**Lubrication of the motors in this unit is not required. Do not lubricate any motor in this product.**

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- The blower assembly in this unit is equipped with two support bearings. The support bearings are sealed cartridge units and require no further lubrication.
- The indoor blower motor is pre-lubricated at the factory and does not require additional lubrication.
- The combustion air blower motor and outdoor fan motors are equipped with pre-lubricated sealed ball bearings. No further oiling is required for the life of this product

## Heat Exchanger & Burner Maintenance

---

### **WARNING:**

**Holes in the heat exchanger can cause products of combustion to enter the structure. Replace the heat exchanger if leaks are found. Failure to prevent products of combustion from being circulated into the occupied space can create potentially hazardous conditions including carbon monoxide poisoning that could result in personal injury or death.**

---

The unit should operate for many years without excessive scale buildup in the heat exchanger, however, the heat exchanger, the vent system, and the burners should be inspected and cleaned (if required) by a qualified technician

annually to ensure continued safe operation. Particular attention must be given to identify deterioration from corrosion or other sources.

## Vent Cover Assembly

Inspect and clean the screen of the vent cover assembly at the beginning of each heating and cooling seasons.

## Cleaning of Burners

It is recommended that the burners be inspected and cleaned periodically (if required) by a qualified technician annually to ensure continued safe operation. Particular attention must be given to identify deterioration from corrosion or other sources. If the burners must be cleaned, follow the steps below.

1. Shut off the gas supply to the unit either at the meter or at a manual valve in the supply piping.
  2. Turn off all power to the unit and set the thermostat to the lowest temperature setting.
  3. Remove the louvered access panel from the unit.
  4. Turn the gas control knob to the "OFF" position.
- 

### **CAUTION:**

**Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.**

---

5. Disconnect the wires from the gas valve, ignitor, and flame sensor.
6. Using two wrenches, separate the ground-joint union in the gas supply piping at the unit.
7. Remove the piping between the gas valve and the ground-joint union (if necessary).
8. Remove four screws securing the burner assembly to the unit.
9. Carefully remove the burner assembly from the unit. **DO NOT DAMAGE THE IGNITOR WHILE REMOVING THE BURNER ASSEMBLY.**
10. Inspect the burners for accumulated dust or debris. If necessary, carefully clean them with a soft wire brush and/or the nozzle of a vacuum cleaner. **DO NOT DAMAGE THE IGNITOR OR FLAME SENSOR WHILE CLEANING THE BURNER.**
11. Replace all the parts in reverse order from which they were removed.
12. Follow the lighting instructions found on the right side door to return the unit to operation. Verify proper operation after servicing.

## Cleaning of Heat Exchanger

If the heat exchanger must be cleaned due to soot or scale buildup, follow the steps below.

1. Shut off the gas supply to the unit either at the meter or at the manual valve in the gas supply piping.
2. Turn off all power to the unit and set the thermostat to the lowest temperature setting.

---

## **WARNING:**

---

**Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.**

---

3. Disconnect the wires from the gas valve, ignitor, and flame sensor.
4. Using two wrenches, separate the ground-joint union in the gas supply piping at the unit.
5. Remove the piping between the gas valve and the ground-joint union, if necessary.
6. Remove the four screws securing the burner assembly to the unit.
7. Carefully remove the burner assembly from the unit. **DO NOT DAMAGE THE IGNITOR OR FLAME SENSOR WHILE REMOVING THE BURNER ASSEMBLY.**
8. Remove three nuts securing the combustion blower to the collector pan.
9. Remove the complete combustion blower from the unit.
10. Remove the screws securing the collector box cover to the unit and remove cover plate.
11. Remove the screws securing the balance plate to the collector box and the balance plate.
12. Remove the turbulator from each heat exchanger tube.
13. Attach a round wire brush to a length of high grade stainless steel cable, such as drain cleanout cable. Attach the other end of the spring cable to a variable speed reversible drill. Slowly insert and rotate the cable into the top portion of the heat exchanger. Operate the drill alternating between forward and reverse, working the cable in and out several times to obtain sufficient cleaning. Repeat this sequence for each heat exchanger tube.
14. Remove all loosened debris from the heat exchanger tubes using a vacuum cleaner.
15. Using a light, check the condition of the upper and lower sections of the heat exchanger tube.
16. Inspect the burners and if necessary, clean them carefully with a soft wire brush and/or the nozzle of a vacuum cleaner. **DO NOT DAMAGE THE IGNITOR OR FLAME SENSOR WHILE CLEANING THE BURNER.**
17. Replace all the parts in reverse order from which they were removed. **NOTE:** If screws or other hardware are corroded, replace only with corrosion resistant stainless steel hardware of similar design.
18. Follow the operating instructions found on the right side door and the User's Information Manual to return the unit to operation.

## COMPONENT FUNCTIONS

The descriptions below are various functional components that affect the operation and shutting down of this unit. Some of these components and their locations are shown in Figure 11 (page 21). If any component on this unit must be replaced, use only factory authorized replacement parts specified in the Replacement Parts List provided online.

**Centrifugal Switch** - The centrifugal switch acts to verify that the inducer motor is running. Combustion gases are drawn through the heat exchanger tubes and vented through the vent system.

**Flame Roll-Out Control** - The flame roll-out control acts to verify that the burner flame is being drawn into the heat exchanger tubes. If the burner flame is not being drawn into the heat exchanger tubes, the roll-out control will open within several seconds. The combustion blower will continue to operate if the flame roll-out control opens until it is manually reset.

**Flame Sensor** - The flame sensor acts to prove that flame has carried over from the ignitor to the right-most burner. If no flame is sensed, the unit will be shut down automatically and attempt two additional ignition trials before going into lockout. Recovery from lockout requires a manual reset by either resetting the thermostat or removing 24 volts for a period of 5 seconds. If the thermostat is still calling for heat after one hour the control will automatically reset and attempt to ignite the burner again.

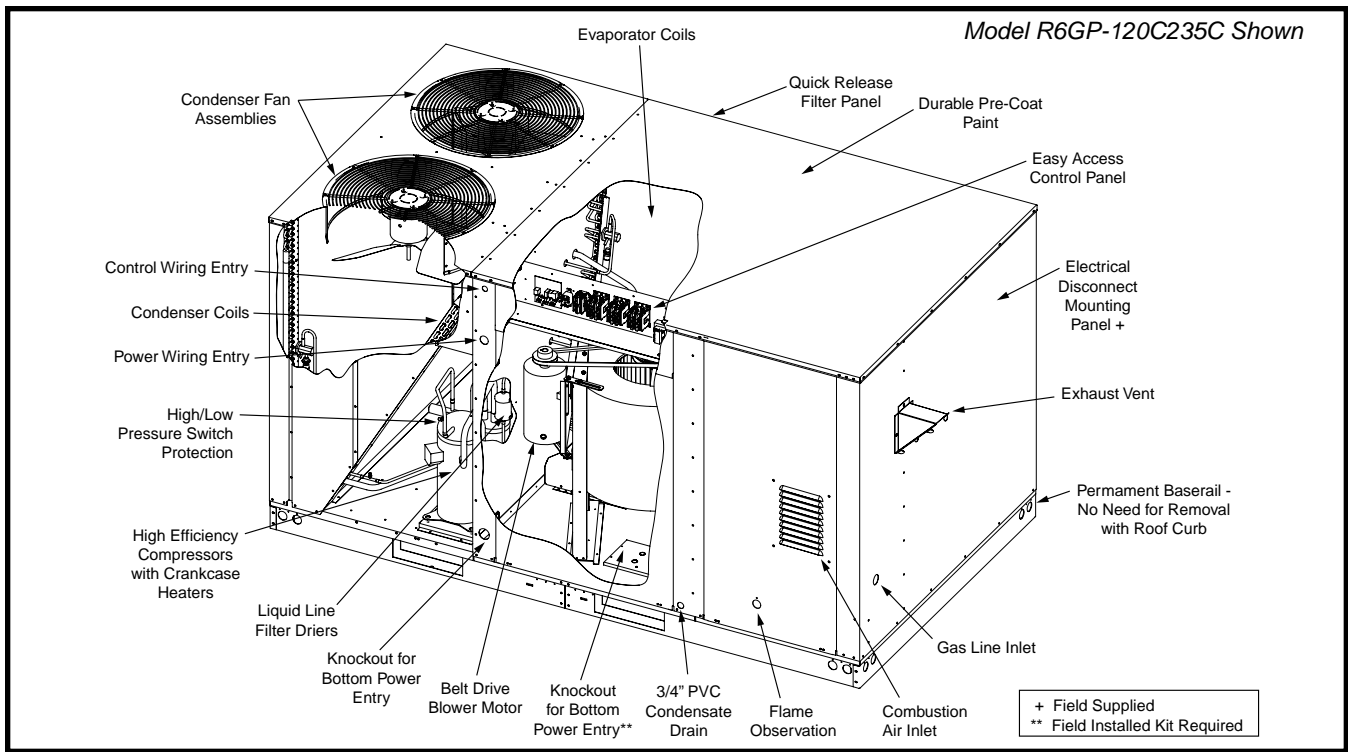
**Gas Valve** - The gas valve controls the flow of gas to the burners in both low and high fire. When the valve is energized, it automatically opens and regulates the gas pressure to the manifold.

**High Pressure Switch** - This factory installed switch is designed to de-energize the unit when excessive pressure occurs due to abnormal conditions. Under normal conditions, the switch is closed. If the discharge pressure rises above 650 psig, then the switch will open and de-energize the outdoor unit. The switch is a manually reset type and will remain open until the button on top of the switch is depressed.

**Indoor Coil Freeze Protection Thermostats** - The freeze protection switches are designed to protect the indoor coils from ice and frost accumulations in the event of a loss of airflow by preventing the liquid refrigerant from reaching the compressors. During normal operation, the switches are closed and will open if the coil temperature reaches 28° F (-2° C). The switches will close if the coil temperature reaches 57° F (12° C).

**Low Pressure Switch** - This factory installed switch is designed to protect the compressor from a loss of charge. Under normal conditions, the switch is closed. If the suction pressure falls below 5 psig, then the switch will open and de-energize the outdoor unit. The switch will close again once the suction pressure increases above 20 psig.

**Over-Temperature Limit Control** - The over-temperature limit control acts to prevent the air temperature leaving the unit from exceeding the maximum outlet air temperature. If the limit opens, the blower limit relay will energize. The circulating air blower and combustion blower will continue to operate if the over-temperature limit control opens.



**Figure 11. Location of Unit Components**

## TROUBLESHOOTING

If the unit does not operate properly in the cooling mode, check the following:

- The thermostat is operating properly.
- Electrical power to the unit is turned on.
- All safety switches are closed.
- The service doors are in place.
- Transformer circuit breaker is reset.

If the unit does not operate properly in the heating mode, check the following:

- The thermostat is operating properly.
- Electrical power to the unit is turned on.
- All safety switches are closed.
- The gas is on and shut-off valve is open.
- The service doors are in place.
- The flame roll-out control is closed.
- Refer to the diagnostic codes in Table 2 or the wiring diagram (Figure 15, page 38).
- Transformer circuit breaker is reset.

STATUS LIGHT (Red LED)	FAULT CONDITION
Continuous ON	Operation Normal
2 Flashes	Pressure / centrifugal switch open with inducer on
3 Flashes	Pressure / centrifugal switch closed with inducer off
4 Flashes	Lockout from too many failed ignition tries
5 Flashes	Lockout from too many flame losses
6 Flashes	High temperature switch open
7 Flashes	Rollout switch open
8 Flashes	Flame present with gas off
9 Flashes	Exceeded max limit trips (5) in one call for heat
10 Flashes	Gas valve fault

**Table 2. Diagnostic Codes For 6 - 10 Ton Units**

# FIGURES & TABLES

## PHYSICAL DIMENSIONS

Dimensions shown in inches (mm)

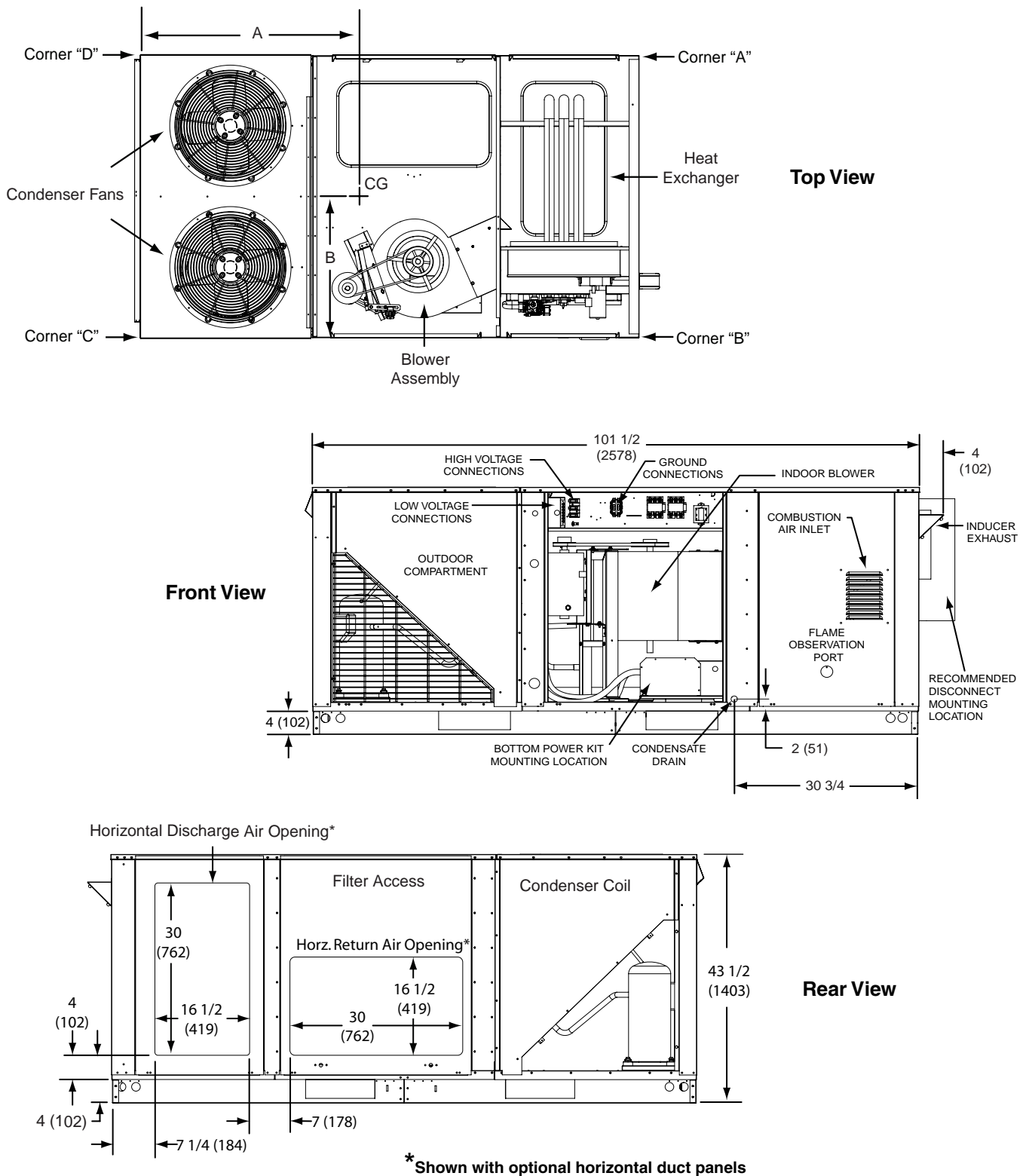


Figure 12. Physical Dimensions for R6GP-072 Series

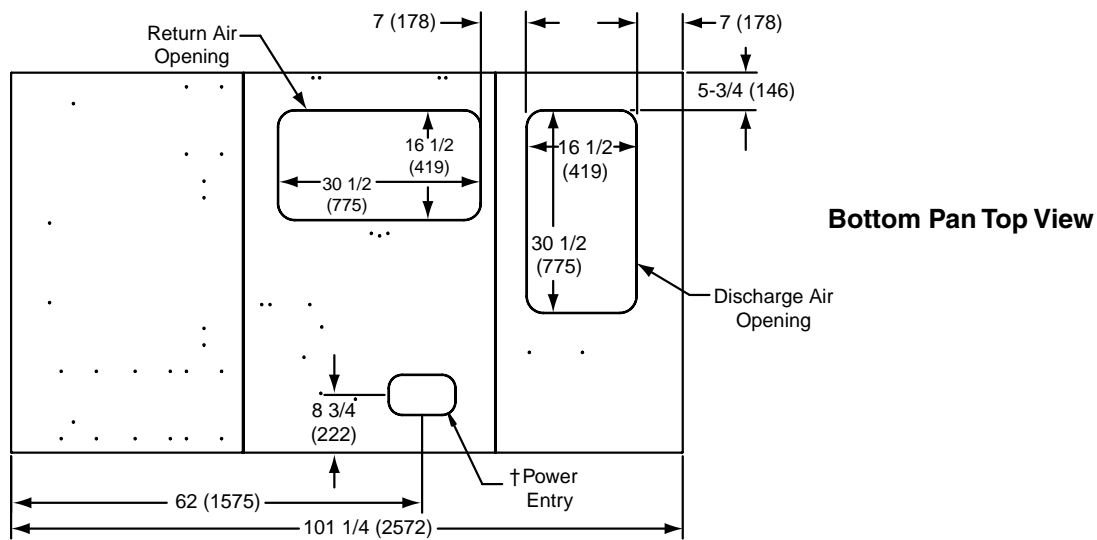
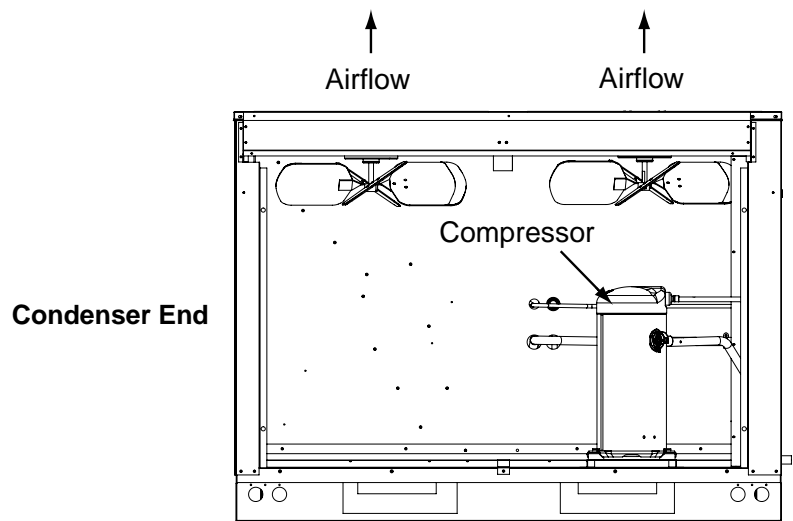
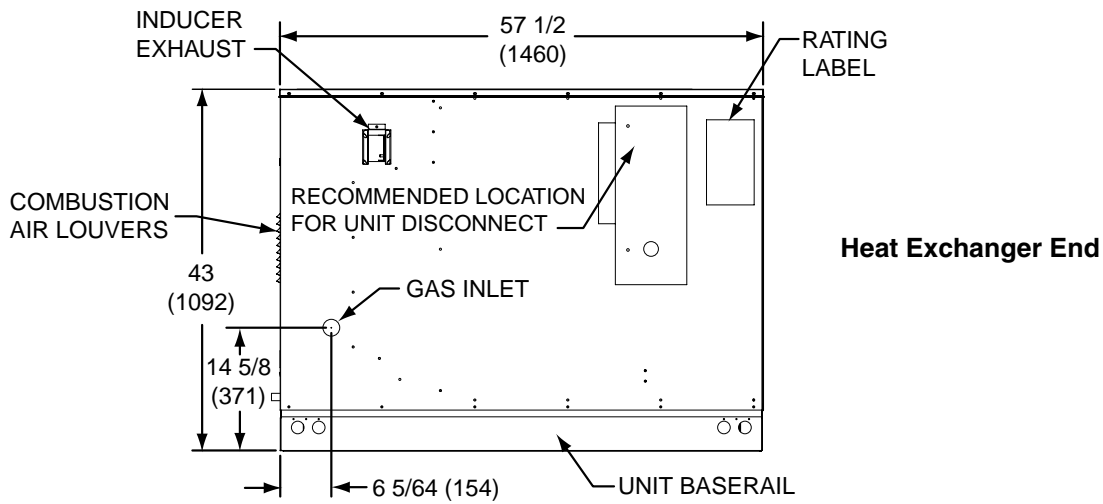


Figure 12 Continued

Dimensions shown in inches (mm)

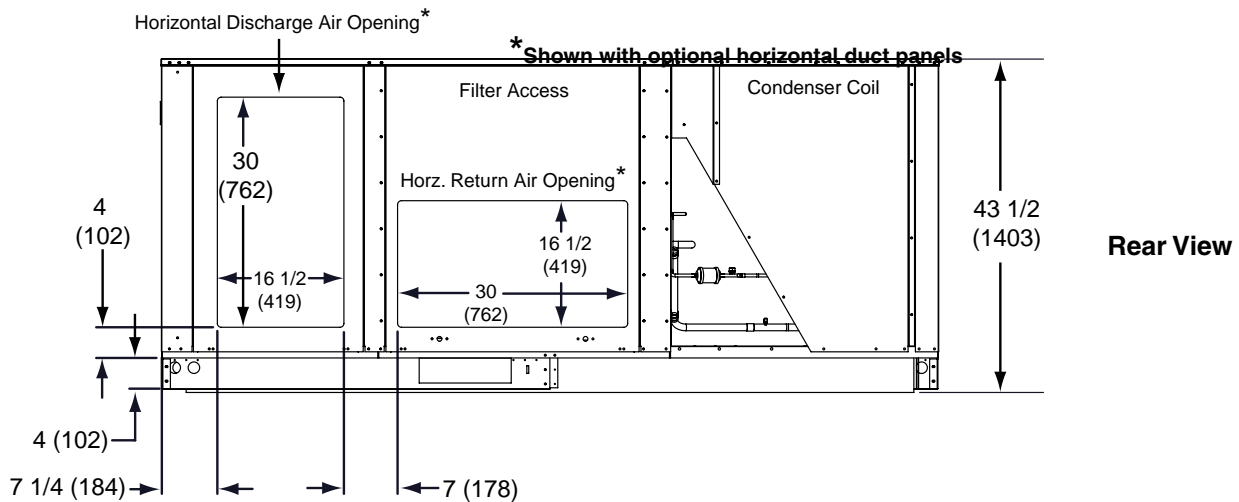
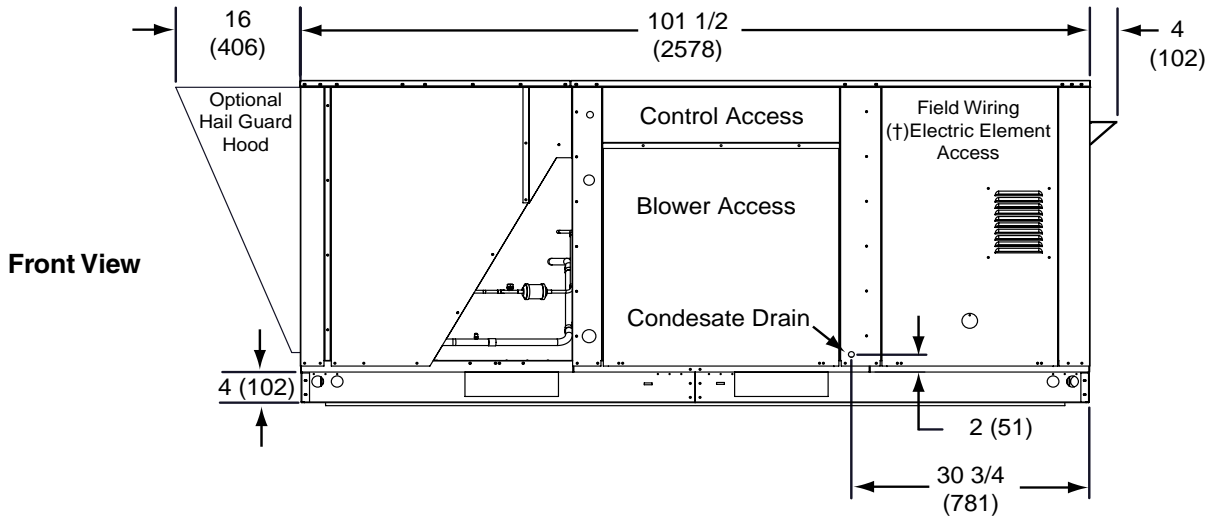
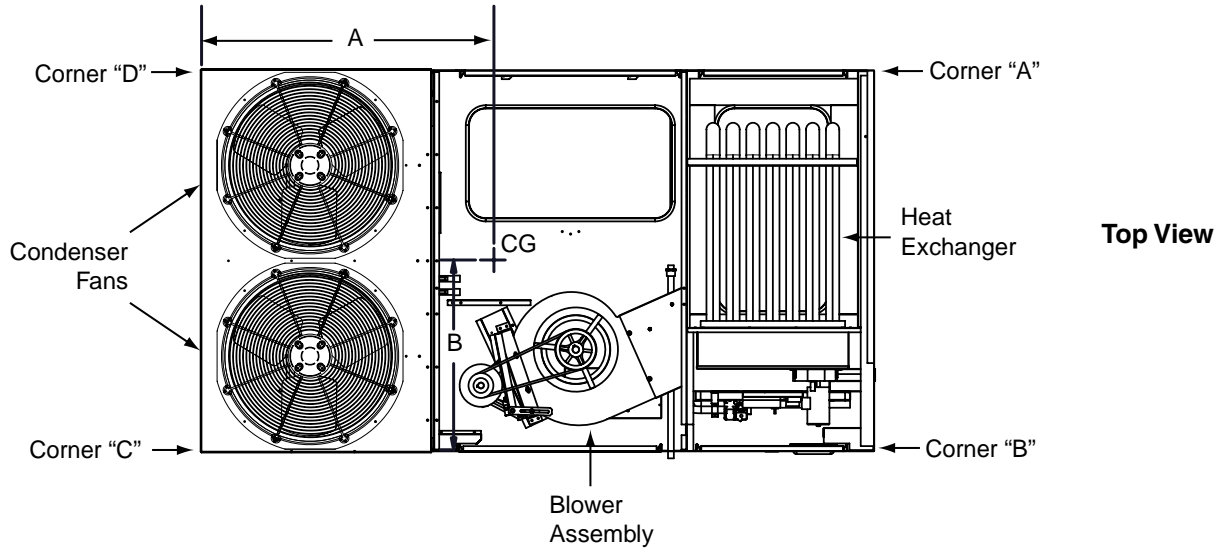
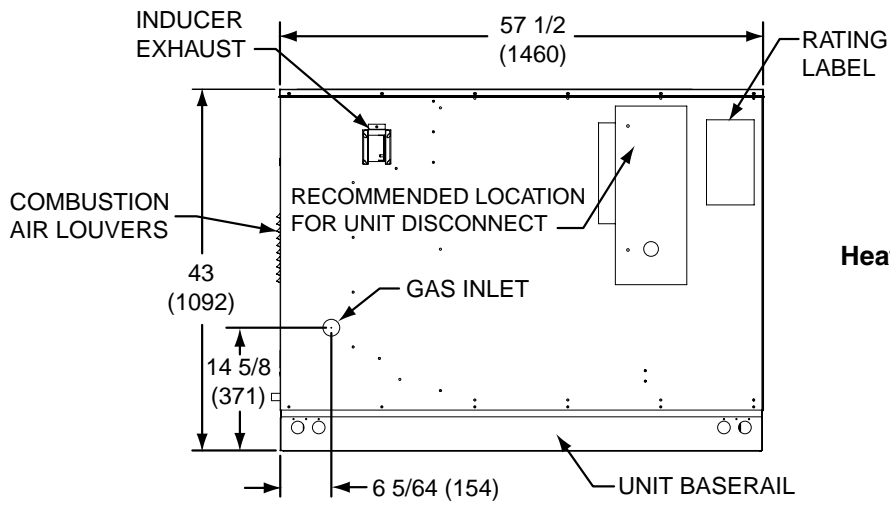


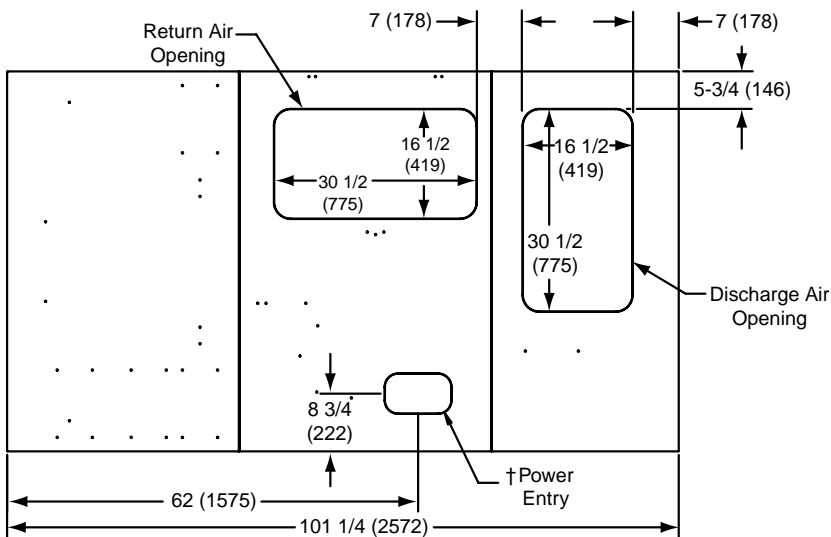
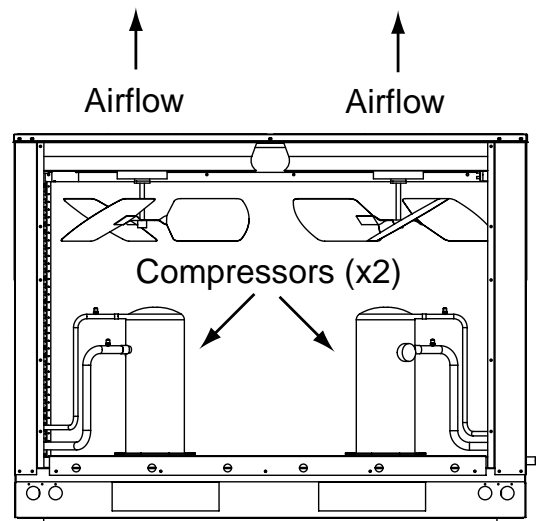
Figure 13. Physical Dimensions for R6GP-090 Series





**Heat Exchanger End**

**Condenser End**



**Bottom Pan Top View**

**Figure 13 Continued**

Dimensions shown in inches (mm)

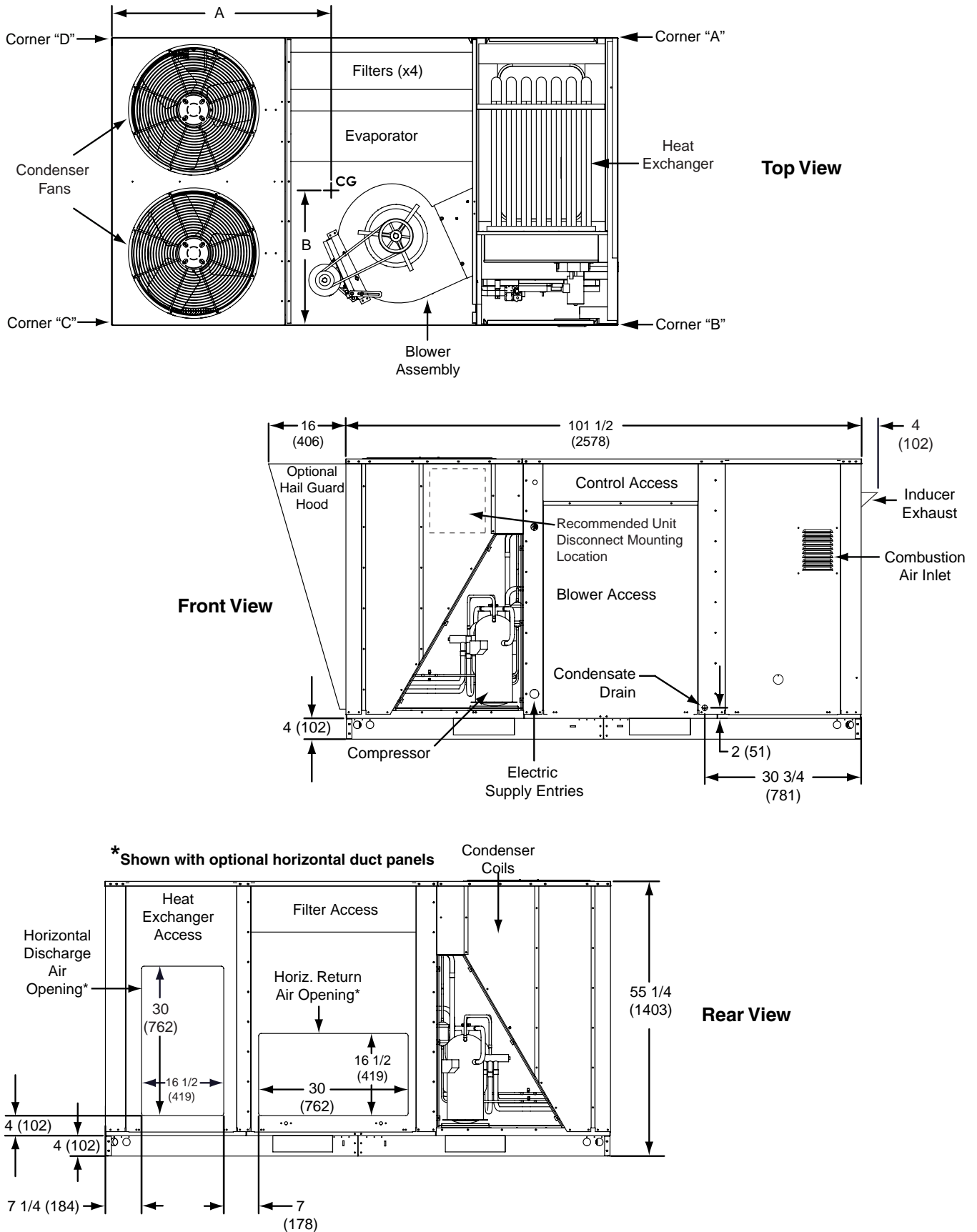


Figure 14. Physical Dimensions for R6GP-120 Series

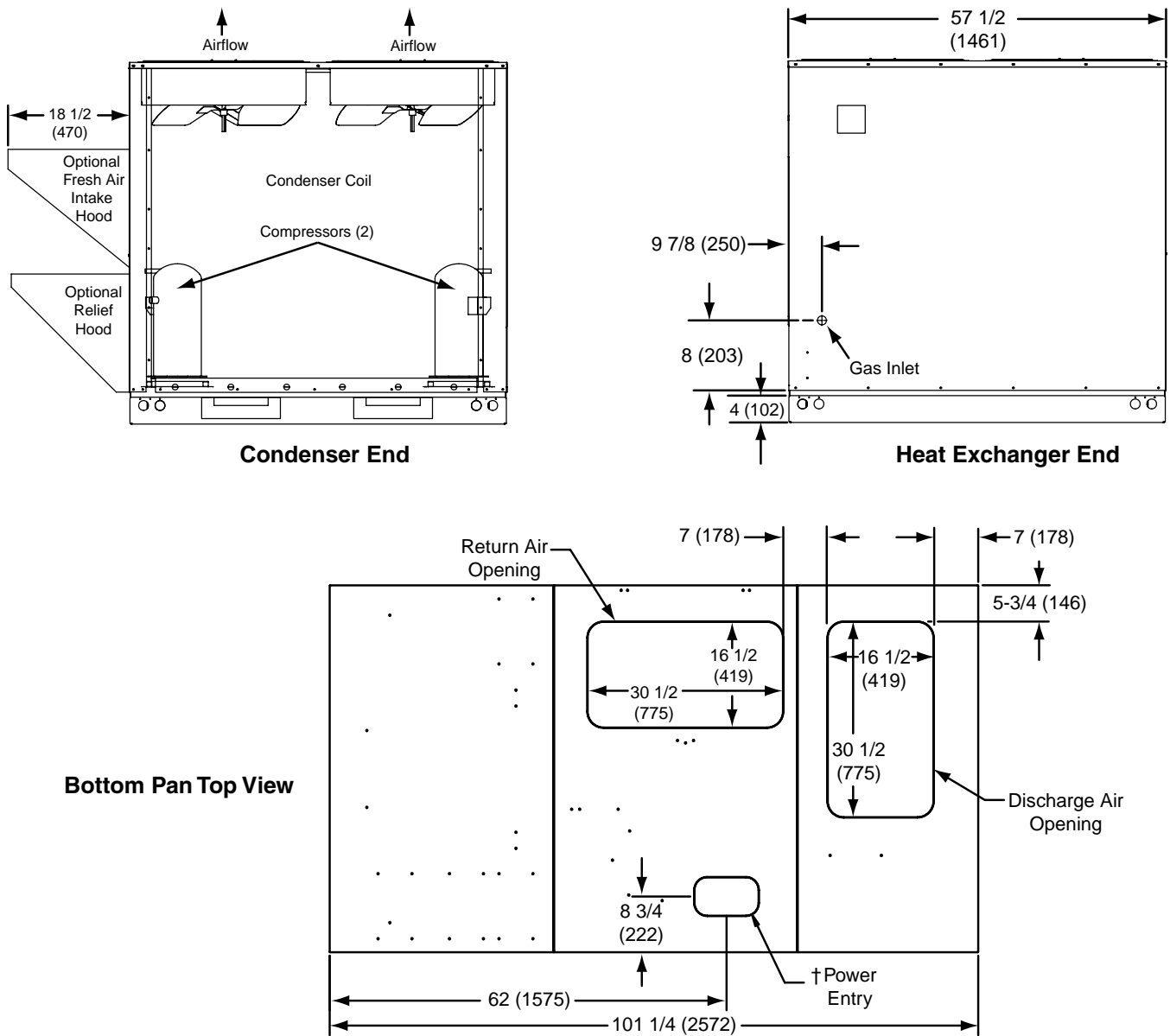


Figure 14 Continued

Model No.	Unit Weight ‡		Shipping Weight		Center of Gravity Inches (mm)		Corner Weights								Unit Height*	
	Lbs.	Kg.	Lbs.	Kg.	A	B	A		B		C		D		Horizontal Duct Applications	Vertical Duct Applications
							Lbs.	Kg.	Lbs.	Kg.	Lbs.	Kg.	Lbs.	Kg.		
R6GP-072*-100C	934	425	1069	486	48 (1219)	25 5/8 (651)	197	89	245	111	273	124	219	100	43 1/2 (1105)	38 1/4 (972)
R6GP-072*-166C	959	436	1094	497	49 (1245)	25 5/8 (651)	206	94	257	117	275	125	221	100	43 1/2 (1105)	38 1/4 (972)
R6GP-090*-200Ca	983	446	1118	507	55 3/8 (1407)	28 (711)	262	119	275	125	229	104	218	99	43 1/2 (1105)	38 1/4 (972)
R6GP-120*-235Ca	1301	590	1441	654	49 (1245)	30 (762)	300	136	328	149	351	159	322	146	55-1/4 (1409)	51 (1295)

\* Baserails are not intended to be removed. Information provided is total unit height for horizontal duct applications or height dimension added to selected roof curb height for vertical duct applications.

‡ Unit weight without packaging or field installed accessories.

Table 3. Center of Gravity & Unit Shipping Weights

## BLOWER PERFORMANCE DATA

This equipment is outfitted with a belt driven blower assembly in order to accommodate a large variety of duct configurations and airflow selections. The blower has been factory inspected for proper alignment, operation and rotational direction prior to the drive motor being situated in the shipping position. The blower drive belt is located with these instructions and must be installed by the service technician. For a more detailed explanation of belt driven blower drives and the operation of their components please refer to any of the installation instructions listed below for the high static drive kits.

The factory standard drive installed in these units has been set to deliver 400 Cfm/ton at an External Static Pressure (ESP) of 0.25-0.30 in-Wg. Tables 5-10 show the full blower curves of these drive configurations and can be utilized to easily set the adjustable motor sheave for alternate configurations. Refer to the Legend below for a description of the table information. Once a sheave setting has been made, always inspect the blower amp draw to ensure that it is less than the service factor amps listed on the motor. For systems that include a large number of accessories or have very restrictive duct systems, alternate drive kits are available, refer to Table 4 below for the applicable kits. The full blower curves for the HSD kits can be found in the applicable kit installation instructions or in the unit technical service literature.

For units being placed into service configured for horizontal flow operation, always use the applicable NORDYNE accessory kit for the conversion. Refer to the technical service literature for kit part numbers. These kits may require that the over-temperature limit controls be updated for this mode of operation.

<b>3862</b>
<b>1159</b>
<b>3.03</b>

Indicates a recommended unit operational point

3493
1017
2.07

Indicates an allowable setting that is not recommended for unit operation<sup>†</sup>

<sup>†</sup> These operational points should be carefully examined by the installer for proper unit setup and heater operation if used.



Indicates a setting that is not permitted for unit operation

Unit Model #	Motor Hp	E.S.P. Range (in-Wg)	Blower Rpm Range (DF)	Downflow Kit	Blower Rpm Range (HF)	Horizontal Kit
-072C-100C	1.5 Hp	0.7 - 1.6	916 - 1159	920609	915 - 1154	920609
-072C-166C			917 - 1186	920609	930 - 1223	920613
-072D-100C			916 - 1159	920560	915 - 1154	920560
-072D-166C			917 - 1186	920560	930 - 1223	920618
-090(C/D)-200Ca	2 Hp	0.1 - 1.9	878 - 1208	921481	928 - 1227	921655
-120(C/D)-235Ca	2 Hp	0.1 - 1.4	651 - 916	921645	653 - 917	921645

**NOTE:** Refer to R6GP TSL or Accessory Kit Installation Instructions for actual blower charts.

**Table 4. R6GP Series Alternate Accessory Blower Drives**

# R6GP-072(C/D)-100C

Factory Standard: 1Hp Down-flow Performance Chart

‡ Indicates Factory Sheave Setting

External Unit Static (in-Wg)	Operating @ 230 or 460 Volts	Adjustable Motor Sheave Setting													
		Fully Closed	1/2 Turn Open	1 Turn Open	1.5 Turns Open	2 Turns Open	2.5 Turns Open	3 Turns Open	3.5 Turns Open	4 Turns Open	4.5 Turns Open	5 Turns Open ‡	5.5 Turns Open	6 Turns Open	
0.1	CFM											2946	2793		
	RPM											741	715		
	kW											0.85	0.77		
0.2	CFM										2867	2728	<b>2588</b>		
	RPM										771	745	<b>719</b>		
	kW										0.85	0.78	<b>0.72</b>		
0.3	CFM							2975	2828	<b>2680</b>	<b>2528</b>	<b>2375</b>			
	RPM							824	800	<b>775</b>	<b>749</b>	<b>722</b>			
	kW							0.98	0.88	<b>0.79</b>	<b>0.72</b>	<b>0.65</b>			
0.4	CFM							2763	<b>2608</b>	<b>2453</b>	<b>2293</b>	<b>2110</b>			
	RPM							828	<b>804</b>	<b>780</b>	<b>746</b>	<b>726</b>			
	kW							0.95	<b>0.84</b>	<b>0.72</b>	<b>0.63</b>	<b>0.57</b>			
0.5	CFM							<b>2727</b>	<b>2582</b>	<b>2381</b>	<b>2180</b>	<b>1982</b>			
	RPM							854	831	808	784	750			
	kW							0.95	0.86	0.75	0.65	0.56			
0.6	CFM						<b>2680</b>	<b>2488</b>	<b>2295</b>	<b>2105</b>	1860				
	RPM						880	858	835	801	786				
	kW						0.97	0.86	0.76	0.63	0.54				
0.7	CFM					<b>2582</b>	<b>2399</b>	<b>2177</b>	1955						
	RPM					908	884	862	839						
	kW					0.98	0.86	0.76	0.66						
0.8	CFM			<b>2528</b>	<b>2301</b>	<b>2074</b>	1913								
	RPM			936	912	888	866								
	kW			0.97	0.86	0.76	0.68								
0.9	CFM		<b>2417</b>	<b>2220</b>	<b>2111</b>										
	RPM		960	940	908										
	kW		1.02	0.85	0.79										
1.0	CFM		2105	1854											
	RPM		964	944											
	kW		0.88	0.77											
1.1	CFM														
	RPM														
	kW														
1.2	CFM														
	RPM														
	kW														

Values includes losses for: Unit Casing, 2" Disposable (Pleated) Filters & Dry Evaporator Coil

For operation at 208V: Deduct approximately 0.5% from Cfm

**Table 5. R6GP-072C-100C Series - Downflow Configuration**

# R6GP-072(C/D)-100C

Factory Standard: 1Hp Horizontal Performance Chart

‡ Indicates Factory Sheave Setting for Pre-configured Units

External Unit Static (in-Wg)	Operating @ 230 or 460 Volts	Adjustable Motor Sheave Setting													
		Fully Closed	1/2 Turn Open	1 Turn Open	1.5 Turns Open	2 Turns Open	2.5 Turns Open	3 Turns Open	3.5 Turns Open	4 Turns Open	4.5 Turns Open	5 Turns Open ‡	5.5 Turns Open	6 Turns Open	
0.1	CFM											2999	2848		
	RPM											740	717		
	kW											0.86	0.76		
0.2	CFM										2955	2785	<b>2615</b>		
	RPM										764	742	<b>720</b>		
	kW										0.88	0.79	<b>0.69</b>		
0.3	CFM									2881	<b>2738</b>	<b>2558</b>	<b>2377</b>		
	RPM									792	<b>766</b>	<b>745</b>	<b>723</b>		
	kW									0.92	<b>0.81</b>	<b>0.72</b>	<b>0.64</b>		
0.4	CFM							2812	<b>2663</b>	<b>2514</b>	<b>2289</b>	<b>2085</b>			
	RPM							821	<b>795</b>	<b>769</b>	<b>745</b>	<b>727</b>			
	kW							0.96	<b>0.85</b>	<b>0.74</b>	<b>0.68</b>	<b>0.56</b>			
0.5	CFM							2729	<b>2590</b>	<b>2426</b>	<b>2261</b>	1995	1802		
	RPM							850	<b>826</b>	<b>799</b>	<b>772</b>	746	730		
	kW							0.97	<b>0.85</b>	<b>0.77</b>	<b>0.68</b>	0.60	0.46		
0.6	CFM								<b>2626</b>	<b>2462</b>	<b>2298</b>	<b>2026</b>	1957		
	RPM								<b>877</b>	<b>853</b>	<b>829</b>	<b>800</b>	775		
	kW								<b>0.99</b>	<b>0.87</b>	<b>0.76</b>	<b>0.64</b>	0.58		
0.7	CFM														
	RPM														
	kW														
0.8	CFM														
	RPM														
	kW														
0.9	CFM														
	RPM														
	kW														
1.0	CFM														
	RPM														
	kW														
1.1	CFM														
	RPM														
	kW														
1.2	CFM														
	RPM														
	kW														

Values includes losses for: Unit Casing, 2" Disposable (Pleated) Filters & Dry Evaporator Coil

For operation at 208V: Deduct approximately 0.5% from Cfm

**Table 6. R6GP-072C-100C Series - Horizontal Configuration**

# R6GP-072(C/D)-166C

Factory Standard: 1Hp Downflow Performance Chart

‡ Indicates Factory Sheave Setting

External Unit Static (in-Wg)	Operating @ 230 or 460 Volts	Adjustable Motor Sheave Setting												
		Fully Closed	1/2 Turn Open	1 Turn Open	1.5 Turns Open	2 Turns Open	2.5 Turns Open	3 Turns Open	3.5 Turns Open	4 Turns Open	4.5 Turns Open	5 Turns Open ‡	5.5 Turns Open	6 Turns Open
0.1	CFM										3025	2872		
	RPM										721	719		
	kW										0.88	0.80		
0.2	CFM									2989	2832	<b>2674</b>		
	RPM									775	749	<b>722</b>		
	kW									0.92	0.83	<b>0.74</b>		
0.3	CFM								2936	2788	<b>2613</b>	<b>2437</b>		
	RPM								802	776	<b>751</b>	<b>725</b>		
	kW								0.94	0.85	<b>0.76</b>	<b>0.68</b>		
0.4	CFM							2879	<b>2708</b>	<b>2537</b>	<b>2335</b>	<b>2132</b>		
	RPM							831	<b>804</b>	<b>777</b>	<b>753</b>	<b>728</b>		
	kW							0.96	<b>0.87</b>	<b>0.79</b>	<b>0.68</b>	<b>0.57</b>		
0.5	CFM							2826	<b>2647</b>	<b>2437</b>	<b>2227</b>	2016		
	RPM							857	<b>834</b>	<b>808</b>	<b>782</b>	756		
	kW							0.99	<b>0.87</b>	<b>0.78</b>	<b>0.68</b>	0.59		
0.6	CFM					2769	<b>2544</b>	<b>2318</b>	<b>2107</b>	1895				
	RPM					881	<b>860</b>	<b>838</b>	<b>811</b>	784				
	kW					1.04	<b>0.90</b>	<b>0.77</b>	<b>0.67</b>	0.57				
0.7	CFM				<b>2625</b>	<b>2395</b>	<b>2220</b>	2044						
	RPM				<b>909</b>	<b>887</b>	<b>864</b>	840						
	kW				<b>1.01</b>	<b>0.86</b>	<b>0.78</b>	0.70						
0.8	CFM			<b>2525</b>	<b>2323</b>	<b>2120</b>	1920							
	RPM			<b>937</b>	<b>915</b>	<b>892</b>	868							
	kW			<b>1.01</b>	<b>0.89</b>	<b>0.77</b>	0.68							
0.9	CFM		<b>2449</b>	<b>2216</b>	<b>2004</b>									
	RPM		<b>964</b>	<b>941</b>	<b>919</b>									
	kW		<b>1.01</b>	<b>0.88</b>	<b>0.79</b>									
1.0	CFM		<b>2160</b>	1928										
	RPM		<b>971</b>	946										
	kW		<b>0.92</b>	0.81										
1.1	CFM													
	RPM													
	kW													
1.2	CFM													
	RPM													
	kW													

Values includes losses for: Unit Casing, 2" Disposable (Pleated) Filters & Dry Evaporator Coil

For operation at 208V: Deduct approximately 0.5% from Cfm

**Table 7. R6GP-072C-166C Series - Downflow Configuration**

# R6GP-072(C/D)-166C

Factory Standard: 1Hp Horizontal Performance Chart

‡ Indicates Factory Sheave Setting for Pre-configured Units

External Unit Static (in-Wg)	Operating @ 230 or 460 Volts	Adjustable Motor Sheave Setting												
		Fully Closed	1/2 Turn Open	1 Turn Open	1.5 Turns Open	2 Turns Open	2.5 Turns Open	3 Turns Open	3.5 Turns Open	4 Turns Open	4.5 Turns Open	5 Turns Open ‡	5.5 Turns Open	6 Turns Open
0.1	CFM													
	RPM													
	kW													
0.2	CFM													
	RPM													
	kW													
0.3	CFM													
	RPM													
	kW													
0.4	CFM													
	RPM													
	kW													
0.5	CFM													
	RPM													
	kW													
0.6	CFM													
	RPM													
	kW													
0.7	CFM													
	RPM													
	kW													
0.8	CFM													
	RPM													
	kW													
0.9	CFM													
	RPM													
	kW													
1.0	CFM													
	RPM													
	kW													
1.1	CFM													
	RPM													
	kW													
1.2	CFM													
	RPM													
	kW													

Values includes losses for: Unit Casing, 2" Disposable (Pleated) Filters & Dry Evaporator Coil

For operation at 208V: Deduct approximately 0.5% from Cfm

**Table 8. R6GP-072C-166C Series - Horizontal Configuration**



# R6GP-090(C/D)-200Ca

Factory Standard: 1.5Hp Down-flow Performance Chart

‡ Indicates Factory Sheave Setting

External Unit Static (in-Wg)	Operating @ 230 or 460 Volts	Adjustable Motor Sheave Setting													
		Fully Closed	1/2 Turn Open	1 Turn Open	1.5 Turns Open	2 Turns Open	2.5 Turns Open	3 Turns Open	3.5 Turns Open	4 Turns Open	4.5 Turns Open	5 Turns Open ‡	5.5 Turns Open	6 Turns Open	
0.1	CFM								3666	3549	3495	3441	3325	<b>3209</b>	
	RPM								867	843	832	820	799	<b>777</b>	
	kW								1.49	1.36	1.33	1.29	1.18	<b>1.07</b>	
0.2	CFM							3613	3496	<b>3378</b>	<b>3316</b>	<b>3253</b>	<b>3137</b>	<b>3021</b>	
	RPM							893	870	<b>846</b>	<b>834</b>	<b>822</b>	<b>800</b>	<b>778</b>	
	kW							1.52	1.40	<b>1.28</b>	<b>1.25</b>	<b>1.21</b>	<b>1.11</b>	<b>1.01</b>	
0.3	CFM							3439	<b>3315</b>	<b>3190</b>	<b>3135</b>	<b>3080</b>	<b>2946</b>	<b>2811</b>	
	RPM							895	<b>872</b>	<b>849</b>	<b>836</b>	<b>823</b>	<b>802</b>	<b>780</b>	
	kW							1.45	<b>1.33</b>	<b>1.20</b>	<b>1.17</b>	<b>1.13</b>	<b>1.03</b>	<b>0.94</b>	
0.4	CFM						<b>3384</b>	<b>3267</b>	<b>3139</b>	<b>3010</b>	<b>2945</b>	<b>2879</b>	<b>2736</b>	2592	
	RPM						<b>918</b>	<b>896</b>	<b>875</b>	<b>853</b>	<b>839</b>	<b>824</b>	<b>803</b>	782	
	kW						<b>1.48</b>	<b>1.37</b>	<b>1.25</b>	<b>1.12</b>	<b>1.09</b>	<b>1.06</b>	<b>0.96</b>	0.86	
0.5	CFM					<b>3332</b>	<b>3213</b>	<b>3094</b>	<b>2943</b>	<b>2791</b>	<b>2726</b>	2661	2503		
	RPM					<b>943</b>	<b>921</b>	<b>898</b>	<b>878</b>	<b>857</b>	<b>842</b>	826	805		
	kW					<b>1.49</b>	<b>1.38</b>	<b>1.28</b>	<b>1.16</b>	<b>1.05</b>	<b>1.01</b>	0.98	0.88		
0.6	CFM				<b>3312</b>	<b>3195</b>	<b>3039</b>	<b>2883</b>	<b>2727</b>	2571	2479				
	RPM				<b>968</b>	<b>946</b>	<b>924</b>	<b>902</b>	<b>881</b>	860	845				
	kW				<b>1.52</b>	<b>1.40</b>	<b>1.29</b>	<b>1.19</b>	<b>1.07</b>	0.95	0.92				
0.7	CFM			<b>3255</b>	<b>3128</b>	<b>3001</b>	<b>2825</b>	2648	2469						
	RPM			<b>993</b>	<b>971</b>	<b>949</b>	<b>927</b>	905	885						
	kW			<b>1.54</b>	<b>1.42</b>	<b>1.31</b>	<b>1.19</b>	1.08	0.97						
0.8	CFM		<b>3164</b>	<b>3059</b>	<b>2903</b>	<b>2747</b>	2574								
	RPM		<b>1010</b>	<b>996</b>	<b>974</b>	<b>952</b>	931								
	kW		<b>1.52</b>	<b>1.44</b>	<b>1.31</b>	<b>1.19</b>	1.09								
0.9	CFM		<b>2962</b>	<b>2830</b>	2669	2508									
	RPM		<b>1014</b>	<b>1001</b>	979	956									
	kW		<b>1.39</b>	<b>1.31</b>	1.20	1.08									
1.0	CFM	<b>2904</b>	<b>2754</b>	2572											
	RPM	<b>1039</b>	<b>1018</b>	1005											
	kW	<b>1.40</b>	<b>1.28</b>	1.19											
1.1	CFM	2693	2528												
	RPM	1043	1024												
	kW	1.30	1.17												
1.2	CFM														
	RPM														
	kW														
1.3	CFM														
	RPM														
	kW														

Values includes losses for: Unit Casing, 2" Disposable (Pleated) Filters & Dry Evaporator Coil

For operation at 208V: Deduct approximately 0.5% from Cfm

**Table 9. R6GP-090C-200Ca Series / 230V - Downflow Configuration**

# R6GP-090(C/D)-200Ca

Factory Standard: 1.5Hp Horizontal Performance Chart

‡ Indicates Factory Sheave Setting for Pre-configured Units

External Unit Static (in-Wg)	Operating @ 230 or 460 Volts	Adjustable Motor Sheave Setting													
		Fully Closed	1/2 Turn Open	1 Turn Open	1.5 Turns Open	2 Turns Open	2.5 Turns Open	3 Turns Open	3.5 Turns Open	4 Turns Open	4.5 Turns Open	5 Turns Open ‡	5.5 Turns Open	6 Turns Open	
0.1	CFM									3797	3676	3555	3443	<b>3330</b>	
	RPM									867	844	821	799	<b>777</b>	
	kW									1.48	1.36	1.24	1.17	<b>1.11</b>	
0.2	CFM								3750	3630	3505	<b>3380</b>	<b>3257</b>	<b>3134</b>	
	RPM								892	869	846	<b>823</b>	<b>801</b>	<b>779</b>	
	kW								1.53	1.40	1.28	<b>1.16</b>	<b>1.10</b>	<b>1.04</b>	
0.3	CFM							3711	3584	3456	<b>3324</b>	<b>3191</b>	<b>3072</b>	<b>2952</b>	
	RPM							917	894	871	<b>848</b>	<b>825</b>	<b>803</b>	<b>780</b>	
	kW							1.56	1.44	1.32	<b>1.21</b>	<b>1.10</b>	<b>1.04</b>	<b>0.98</b>	
0.4	CFM							3547	3416	<b>3285</b>	<b>3145</b>	<b>3004</b>	<b>2876</b>	<b>2748</b>	
	RPM							919	898	<b>876</b>	<b>852</b>	<b>827</b>	<b>805</b>	<b>783</b>	
	kW							1.49	1.37	<b>1.25</b>	<b>1.13</b>	<b>1.02</b>	<b>0.95</b>	<b>0.89</b>	
0.5	CFM						3495	<b>3377</b>	<b>3241</b>	<b>3105</b>	<b>2960</b>	<b>2815</b>	2661	2507	
	RPM						942	<b>921</b>	<b>901</b>	<b>881</b>	<b>855</b>	<b>829</b>	808	786	
	kW						1.52	<b>1.40</b>	<b>1.28</b>	<b>1.17</b>	<b>1.06</b>	<b>0.94</b>	0.88	0.82	
0.6	CFM					3456	<b>3326</b>	<b>3196</b>	<b>3060</b>	<b>2923</b>	<b>2757</b>	2591			
	RPM					966	<b>945</b>	<b>924</b>	<b>903</b>	<b>882</b>	<b>857</b>	832			
	kW					1.54	<b>1.43</b>	<b>1.31</b>	<b>1.20</b>	<b>1.09</b>	<b>0.98</b>	0.86			
0.7	CFM					<b>3279</b>	<b>3151</b>	<b>3023</b>	<b>2859</b>	2695	2505				
	RPM					<b>969</b>	<b>948</b>	<b>927</b>	<b>905</b>	883	859				
	kW					<b>1.46</b>	<b>1.34</b>	<b>1.23</b>	<b>1.11</b>	0.99	0.88				
0.8	CFM				<b>3237</b>	<b>3128</b>	<b>2969</b>	<b>2809</b>	2615						
	RPM				<b>991</b>	<b>973</b>	<b>951</b>	<b>930</b>	907						
	kW				<b>1.49</b>	<b>1.38</b>	<b>1.26</b>	<b>1.13</b>	1.01						
0.9	CFM			<b>3174</b>	<b>3049</b>	<b>2923</b>	<b>2738</b>	2552							
	RPM			<b>1012</b>	<b>994</b>	<b>977</b>	<b>955</b>	932							
	kW			<b>1.51</b>	<b>1.39</b>	<b>1.27</b>	<b>1.14</b>	1.02							
1.0	CFM		<b>3099</b>	<b>2975</b>	<b>2824</b>	2673									
	RPM		<b>1029</b>	<b>1015</b>	<b>998</b>	981									
	kW		<b>1.50</b>	<b>1.39</b>	<b>1.27</b>	1.15									
1.1	CFM	<b>2987</b>	<b>2879</b>	<b>2798</b>	2597										
	RPM	<b>1048</b>	<b>1033</b>	<b>1019</b>	1002										
	kW	<b>1.53</b>	<b>1.38</b>	<b>1.32</b>	1.17										
1.2	CFM	<b>2793</b>	2679	2516											
	RPM	<b>1050</b>	1042	1024											
	kW	<b>1.41</b>	1.30	1.17											
1.3	CFM	2616													
	RPM	1060													
	kW	1.30													

Values includes losses for: Unit Casing, 2" Disposable (Pleated) Filters & Dry Evaporator Coil

For operation at 208V: Deduct approximately 0.5% from Cfm

**Table 10. R6GP-090C-200Ca Series / 230V - Horizontal Configuration**

# R6GP-120(C/D)-235Ca

Factory Standard: 1.5Hp Down-flow Performance Chart

‡ Indicates Factory Sheave Setting

External Unit Static (in-Wg)	Operating @ 230 or 460 Volts	Adjustable Motor Sheave Setting													
		Fully Closed	1/2 Turn Open	1 Turn Open	1.5 Turns Open	2 Turns Open	2.5 Turns Open	3 Turns Open	3.5 Turn Open ‡	4 Turns Open	4.5 Turns Open	5 Turns Open	5.5 Turns Open	6 Turns Open	
0.1	CFM									4484	4336	4187	4037	3886	
	RPM									668	650	631	614	596	
	kW									1.40	1.29	1.19	1.10	1.00	
0.2	CFM								4409	4252	4096	3939	3778	3616	
	RPM								689	671	653	635	616	598	
	kW								1.43	1.31	1.21	1.10	1.01	0.92	
0.3	CFM							4317	4158	3998	3819	3639	3474	3309	
	RPM							709	692	674	656	638	619	600	
	kW							1.44	1.32	1.20	1.11	1.01	0.92	0.83	
0.4	CFM						4201	4050	3881	3712	3529	3345			
	RPM						727	711	694	677	658	640			
	kW						1.46	1.34	1.22	1.10	1.01	0.91			
0.5	CFM				4092	3937	3782	3597	3411	3192					
	RPM				746	729	712	696	679	660					
	kW				1.47	1.35	1.24	1.12	1.01	0.91					
0.6	CFM			4000	3837	3647	3457	3250							
	RPM			764	749	732	716	698							
	kW			1.48	1.35	1.23	1.11	1.00							
0.7	CFM			3890	3701	3511	3301								
	RPM			783	768	752	736								
	kW			1.49	1.36	1.23	1.11								
0.8	CFM		3760	3575	3365										
	RPM		796	786	770										
	kW		1.47	1.34	1.22										
0.9	CFM	3551	3376	3215											
	RPM	814	802	788											
	kW	1.41	1.31	1.19											
1.0	CFM	3204													
	RPM	818													
	kW	1.28													
1.1	CFM														
	RPM														
	kW														
1.2	CFM														
	RPM														
	kW														

Values includes losses for: Unit Casing, 2" Disposable (Pleated) Filters & Dry Evaporator Coil

For operation at 208V: Deduct approximately 0.5% from Cfm

**Table 11. R6GP-120C-235Ca Series / 230V - Downflow Configuration**

# R6GP-120(C/D)-235Ca

Factory Standard: 1.5Hp Horizontal Performance Chart

‡ Indicates Factory Sheave Setting for Pre-configured Units

External Unit Static (in-Wg)	Operating @ 230 or 460 Volts	Adjustable Motor Sheave Setting													
		Fully Closed	1/2 Turn Open	1 Turn Open	1.5 Turns Open	2 Turns Open	2.5 Turns Open	3 Turns Open	3.5 Turns Open ‡	4 Turns Open	4.5 Turns Open	5 Turns Open	5.5 Turns Open	6 Turns Open	
0.1	CFM								4589	<b>4402</b>	<b>4304</b>	<b>4205</b>	<b>4055</b>	<b>3904</b>	
	RPM								689	<b>671</b>	<b>654</b>	<b>636</b>	<b>618</b>	<b>600</b>	
	kW								1.52	<b>1.39</b>	<b>1.29</b>	<b>1.19</b>	<b>1.10</b>	<b>1.02</b>	
0.2	CFM							<b>4514</b>	<b>4327</b>	<b>4139</b>	<b>4021</b>	<b>3903</b>	<b>3765</b>	<b>3627</b>	
	RPM							<b>709</b>	<b>691</b>	<b>673</b>	<b>655</b>	<b>638</b>	<b>620</b>	<b>603</b>	
	kW							<b>1.56</b>	<b>1.43</b>	<b>1.31</b>	<b>1.21</b>	<b>1.11</b>	<b>1.02</b>	<b>0.94</b>	
0.3	CFM						<b>4429</b>	<b>4299</b>	<b>4093</b>	<b>3887</b>	<b>3762</b>	<b>3636</b>	3459	3281	
	RPM						<b>727</b>	<b>711</b>	<b>693</b>	<b>674</b>	<b>657</b>	<b>640</b>	623	605	
	kW						<b>1.59</b>	<b>1.47</b>	<b>1.34</b>	<b>1.21</b>	<b>1.11</b>	<b>1.02</b>	0.94	0.86	
0.4	CFM						<b>4184</b>	<b>4050</b>	<b>3831</b>	<b>3611</b>	3471	3331			
	RPM						<b>730</b>	<b>715</b>	<b>695</b>	<b>676</b>	659	642			
	kW						<b>1.49</b>	<b>1.37</b>	<b>1.24</b>	<b>1.12</b>	1.02	0.92			
0.5	CFM					<b>4085</b>	<b>3924</b>	<b>3763</b>	<b>3559</b>	3354					
	RPM					<b>749</b>	<b>734</b>	<b>718</b>	<b>698</b>	678					
	kW					<b>1.52</b>	<b>1.39</b>	<b>1.26</b>	<b>1.15</b>	1.03					
0.6	CFM				<b>3964</b>	<b>3822</b>	<b>3639</b>	3456	3230						
	RPM				<b>767</b>	<b>752</b>	<b>736</b>	720	700						
	kW				<b>1.51</b>	<b>1.40</b>	<b>1.27</b>	1.15	1.04						
0.7	CFM			<b>3871</b>	<b>3686</b>	<b>3500</b>	3315								
	RPM			<b>785</b>	<b>769</b>	<b>754</b>	738								
	kW			<b>1.48</b>	<b>1.38</b>	<b>1.28</b>	1.16								
0.8	CFM	<b>3849</b>	<b>3687</b>	<b>3584</b>	3380	3175									
	RPM	<b>815</b>	<b>801</b>	<b>787</b>	772	756									
	kW	<b>1.58</b>	<b>1.48</b>	<b>1.38</b>	1.26	1.15									
0.9	CFM	<b>3580</b>	3363	3247											
	RPM	<b>817</b>	804	791											
	kW	<b>1.45</b>	1.33	1.25											
1.0	CFM	3251													
	RPM	821													
	kW	1.32													
1.1	CFM														
	RPM														
	kW														
1.2	CFM														
	RPM														
	kW														

Values includes losses for: Unit Casing, 2" Disposable (Pleated) Filters & Dry Evaporator Coil

For operation at 208V: Deduct approximately 0.5% from Cfm

**Table 12. R6GP-120C-235Ca Series / 230V - Horizontal Configuration**

## ELECTRICAL INFORMATION

Model Number <sup>2,3</sup> R6GP-	Nominal Unit Voltage <sup>1</sup>	High Static Kit #	Compressors			Outdoor Motors (2) ea.	Indoor Motor <sup>4</sup>		Inducer Motor			Total Unit RLA	Unit Only Circuit	
			Qty	RLA	LRA	FLA	Hp	FLA	Hp	FLA	LRA	RLA	MCA	MOP
<b>Factory Unit Electrical Data:</b>														
-072C-(100/166)C	208 - 230 V	Factory Std.	1 ea.	19	123	1.5	1	3.2 - 3.1	1/12	0.5	0.76	25.2	30 - 30	45 - 45
-072D-(100/166)C	460 V		1 ea.	9.7	62	0.8		1.5				12.8	16	20
-090C-200Ca	208 - 230 V		2 ea.	13.1	83.1	2.3	1.5	4.4 - 4.2	1/12	0.5	0.76	35.2	39 - 39	50 - 50
-090D-200Ca	460 V		2 ea.	6.1	41	1.2		2.1				16.7	19	20
-120C-235Ca	208 - 230 V		2 ea.	16.0	110	2.3	1.5	4.4 - 4.2	1/12	0.5	0.76	41.0	45 - 45	60 - 60
-120D-235Ca	460 V		2 ea.	7.8	52	1.2		2.1				20.1	22	25
<b>Medium &amp; High Static Drive Electrical Data:</b>														
-072C-(100/166)C	208 - 230 V	920609	1 ea.	19	123	1.5	1.5	4.4 - 4.2	1/12	0.5	0.76	26.4	32 - 31	50 - 45
-072D-(100/166)C	460 V	920560	1 ea.	9.7	62	0.8		2.1				13.4	16	25
-072C-166C	208 - 230 V	920613	1 ea.	19	123	1.5	2	5.9 - 5.5	1/12	0.5	0.76	27.9	33 - 33	50 - 50
-072D-166C	460 V	920618	1 ea.	9.7	62	0.8		2.8				14.1	17	25
-090C-200Ca	208 - 230 V	921481	2 ea.	13.1	83.1	2.3	2	6.0 - 5.8	1/12	0.5	0.76	36.8	40 - 40	50 - 50
-090D-200Ca	460 V		2 ea.	6.1	41	1.2		2.9				17.5	19	25
-090C-200Ca	208 - 230 V	921655	2 ea.	13.1	83.1	2.3	2	6.0 - 5.8	1/12	0.5	0.76	36.8	40 - 40	50 - 50
-090D-200Ca	460 V		2 ea.	6.1	41	1.2		2.9				17.5	19	25
-120C-235Ca	208 - 230 V	921645	2 ea.	16.0	110	2.3	2	6.0 - 5.8	1/12	0.5	0.76	42.6	47 - 47	60 - 60
-120D-235Ca	460 V		2 ea.	7.8	52	1.2		2.9				20.9	23	30

1) To achieve the rated unit performance, unit voltage should be within 2% of nominal.

2) For C series units:

Nominal Unit Input Voltage = 208-230 Volt, 60 Hertz, 3 Phase

Minimum allowed unit voltage = 187V

Maximum allowed voltage = 253V

3) For D series units:

Nominal Unit Input Voltage = 460 Volt, 60 Hertz, 3 Phase

Minimum allowed unit voltage = 414V

Maximum allowed voltage = 506V

**NOTES:**

4) Indoor Motors meet 2010 DOE requirements (Premium Efficient)

5) Refer to High Static Drive Kit Installation Instructions for additional information

FLA = Full Load Amps; MCA = Minimum Circuit Ampacity; RLA = Rated Load Amps;

MOP = Maximum Over-Current Protection; LRA = Locked Rotor Amps

**Table 13. Electrical Data**

# WIRING DIAGRAM

## R6GP Series 6-10T

- NOTES:**
1. Disconnect all power before servicing.
  2. For supply connections use copper conductors only.
  3. If any of the original wire as supplied with the furnace must be replaced, it must be replaced with wiring material having a temperature rating of at least 105C.

## 208-230/460 Volt

## 3 Phase 60 Hz.

1. Couper le courant avant de faire l'entretien.
2. Employez uniquement des conducteurs en cuivre.
4. For supply wire ampacities and overcurrent protection, see unit rating label.
5. On "C" Series Models only. For 208V operation remove wire from 230V tap and place on 208V tap.
6. This wire replaced by auto transformer when used.

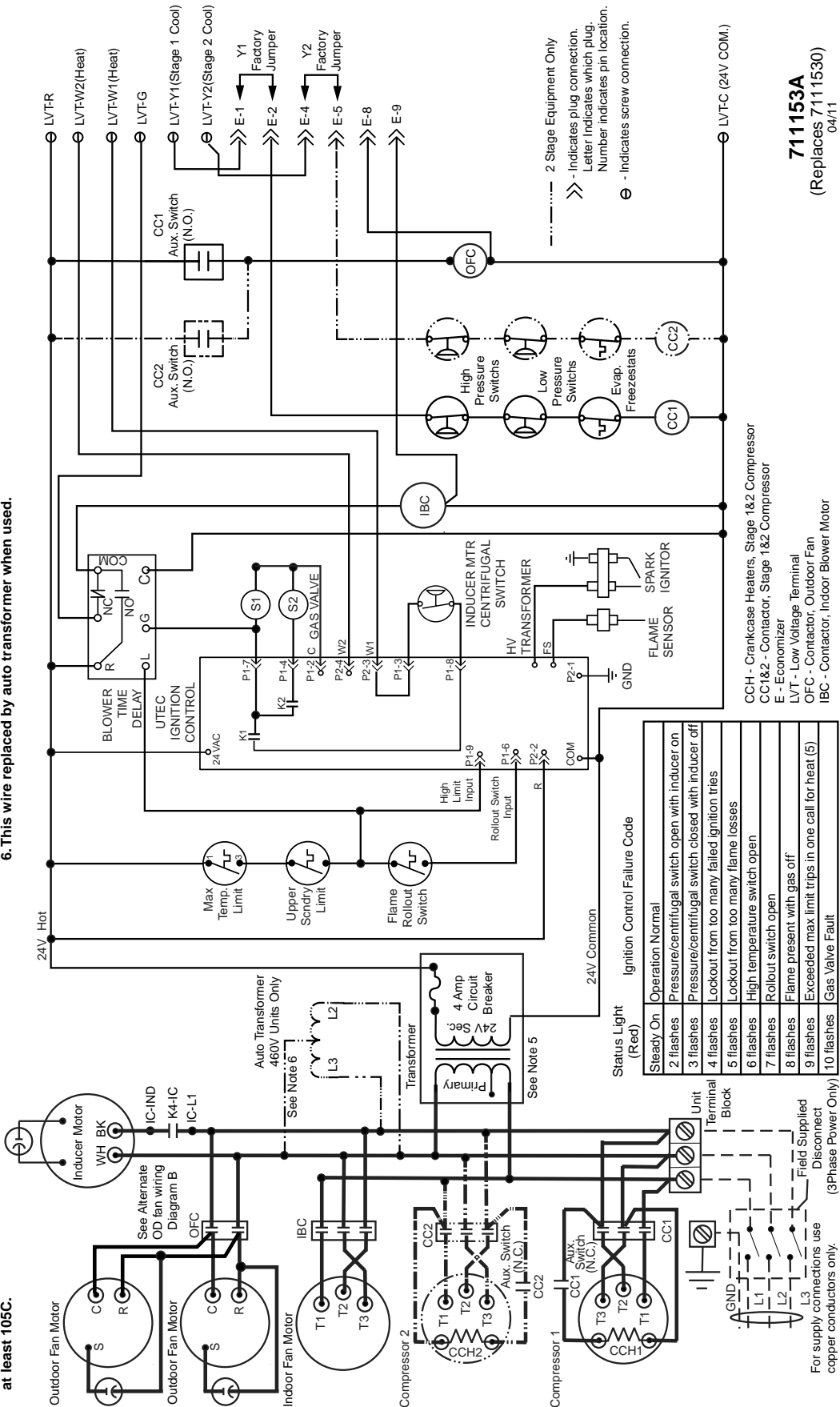


Figure 15. Ladder Diagram - 072 / 090 / 120 Series

CCH - Crankcase Heaters, Stage 1&2 Compressor  
 CC1&2 - Contactor, Stage 1&2 Compressor  
 E - Economizer  
 LVT - Low Voltage Terminal  
 OFC - Contactor, Outdoor Fan  
 IBC - Contactor, Indoor Blower Motor

**711153A**  
 (Replaces 7111530)  
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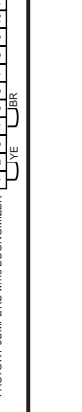
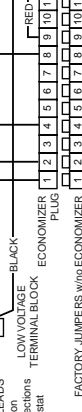
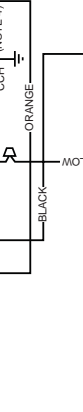
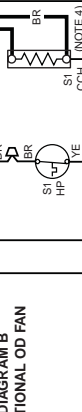
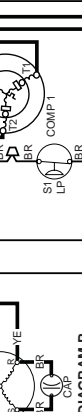
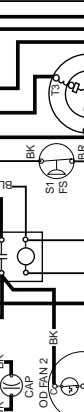
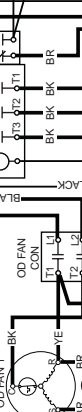
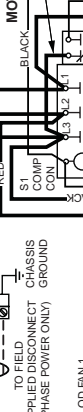
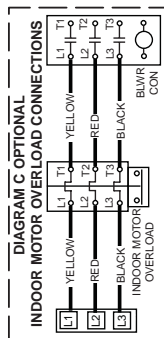
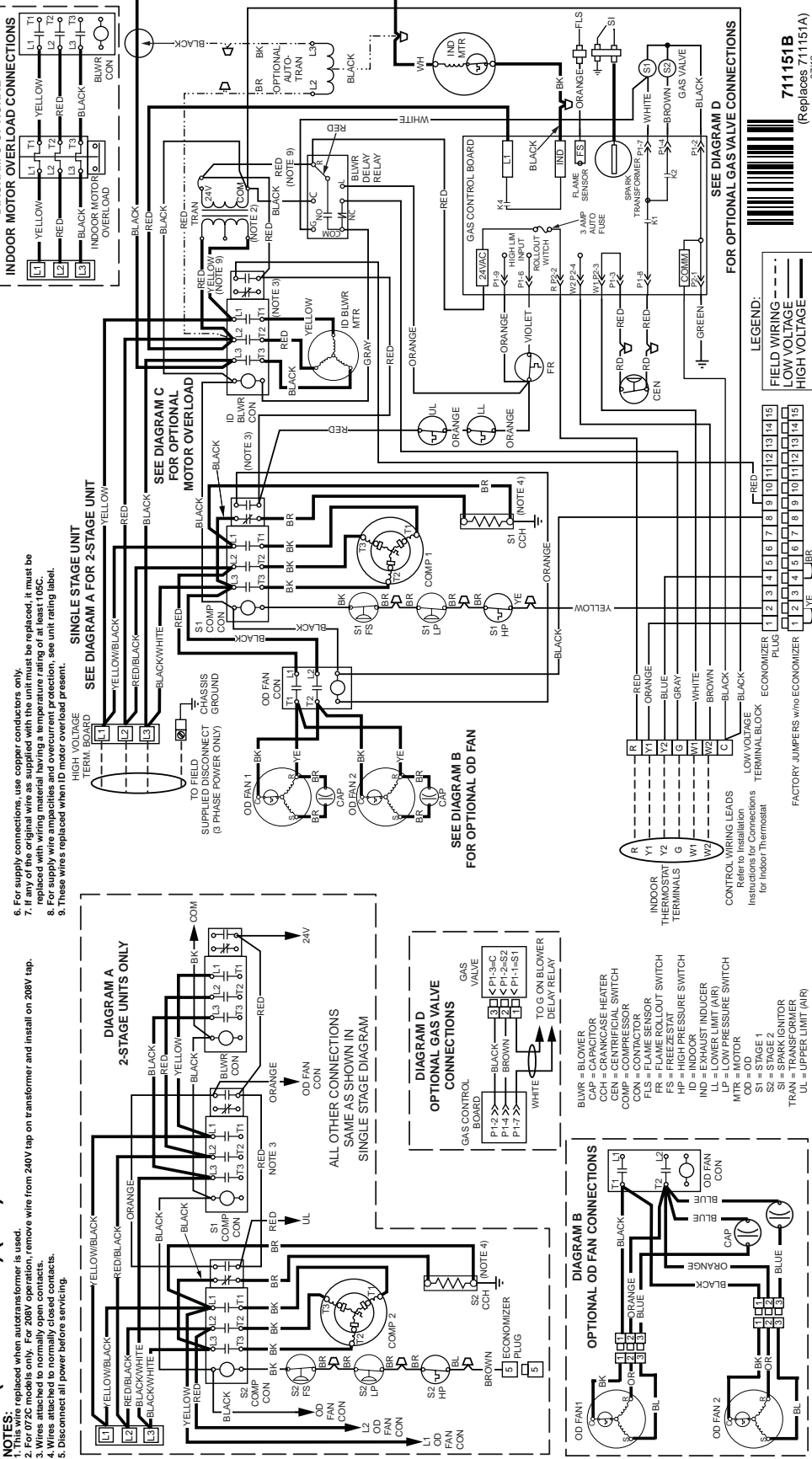
# WIRING DIAGRAM

R6GP-(072/090/120) (C/D) Series

- NOTES:**
- This wire replaced when autotransformer is used.
  - When autotransformer is used, remove wire from 240V tap on transformer and install on 208V tap.
  - Wires attached to normally open contacts.
  - Wires attached to normally closed contacts.
  - Disconnect all power before servicing.

208-230/460 VOLT

Three Phase / 60HZ.



INDOOR MOTOR OVERLOAD

INDOOR MOTOR OVERLOAD

INDOOR MOTOR OVERLOAD

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INDOOR MOTOR OVERLOAD

Figure 16. Wiring Diagram - 072 / 090 / 120 Series

## GAS INFORMATION

GAS PIPE CAPACITIES								
Nominal Pipe Diameter (IN.)	Length of Pipe Run (Feet)							
	10	20	30	40	50	60	70	80
1/2	130	90	75	65	55	50	45	40
3/4	280	190	150	130	115	105	95	90
1	520	350	285	245	215	195	180	170
1 1/4	1,050	730	590	500	440	400	370	350
1 1/2	1,600	1,100	890	760	670	610		

Cubic Feet Per Hour Required =  $\frac{\text{Input To Furnace (Btu/hr)}}{\text{Heating Value of Gas (Btu/Cu. Ft.)}}$

**NOTE:** The cubic feet per hour listed in the table above must be greater than the cubic feet per hour of gas flow required by the furnace. To determine the cubic feet per hour of gas flow required by the furnace, divide the input rate of the furnace by the heating value (from gas supplier) of the gas.

**Table 14. Capacity of Black Iron Gas Pipe (cu. ft. per hour)  
for Natural Gas w/ Specific Gravity = 0.60**

UNIT MODEL NUMBER	GAS TYPE	HEATING INPUT (BTU/HR)		NUMBER OF BURNERS	ALTITUDE ABOVE SEA LEVEL				
					0 to 2,000 FT	2,001 to 4,000 FT	4,001 to 6,000 FT	6,001 to 8,000 FT	8,001 to 10,000 FT
					ORIFICE SIZE				
R6GP-072*-100C	Natural	100,000	65,000	3	36	38	40	41	43
	Propane	85,000	55,250		53	54	54	55	55
R6GP-072*-166C	Natural	166,000	107,900	5	36	38	40	41	43
	Propane	141,000	91,650		53	54	54	55	55
R6GP-090*-200Ca	Natural	200,000	120,000	6	36	38	40	41	43
	Propane	175,000	105,000		51	52	52	52	53
R6GP-120*-235Ca	Natural	235,000	141,000	7	36	38	40	41	43
	Propane	205,000	123,000		51	52	52	52	53

\* Refer to Instructions for High Altitude Deration (pages 11 & 12) to determine heat exchanger capacity at increased elevations.

**Table 15. Orifice or Drill Size for Natural & Propane (LP) Gases**

MODEL	GAS TYPE	HEATING INPUT	HEATING OUTPUT	HEATING RISE RANGE (°F)	CFM RANGE						
					SCFM	1950	2100	2250	2400	2550	2700
R6GP-072*-100C	Natural	100,000	80,000	15 - 45	RISE (°F)*	38	35	33	31	29	27
	Propane	85,000	68,000			32	30	28	26	25	23
R6GP-072*-166C	Natural	166,000	133,000	35 - 65	RISE (°F)*	63	59	55	51	48	46
	Propane	141,000	112,800			54	50	46	44	41	39
R6GP-090*-200Ca	Natural	200,000	160,000	30 - 60	RISE (°F)*	61	56	53	49	46	44
	Propane	175,000	140,000			53	49	46	43	41	38
R6GP-120*-235Ca	Natural	235,000	188,000	25 - 55	RISE (°F)*	54	50	46	44	41	39
	Propane	205,000	164,000			47	43	40	38	36	34

\* At elevations of 2,000 feet or less.

**Table 16. Heating Rise / Range**



GAS FLOW RATES			
TIME FOR ONE REVOLUTION (SECONDS)	CUBIC FEET PER REVOLUTION OF GAS METER		
	1	5	10
10	360	1,800	3,600
12	300	1,500	3,000
14	257	1,286	2,571
16	225	1,125	2,250
18	200	1,000	2,000
20	180	900	1,800
22	164	818	1,636
24	150	750	1,500
26	138	692	1,385
28	129	643	1,286
30	120	600	1,200
32	113	563	1,125
34	106	529	1,059
36	100	500	1,000
38	95	474	947
40	90	450	900
42	86	429	857
44	82	409	818
46	78	391	783
48	75	375	750
50	72	360	720
52	69	346	692
54	67	333	667
56	64	321	643
58	62	310	621
60	60	300	600
62	58	290	581
64	56	281	563

GAS FLOW RATES			
TIME FOR ONE REVOLUTION (SECONDS)	CUBIC FEET PER REVOLUTION OF GAS METER		
	1	5	10
66	55	273	545
68	53	265	529
70	51	257	514
72	50	250	500
74	49	243	486
76	47	237	474
78	46	231	462
80	45	225	450
82	44	220	439
84	43	214	429
86	42	209	419
88	41	205	409
90	40	200	400
92	39	196	391
94	38	191	383
96	38	188	375
98	37	184	367
100	36	180	360
102	35	176	353
104	35	173	346
106	34	170	340
108	33	167	333
110	33	164	327
112	32	161	321
114	32	158	316
116	31	155	310
118	31	153	305
120	30	150	300

Table 17. Gas Flow Rates

## R6 CHARGING CHARTS

### APPLICATION NOTES ON THE USE OF CHARGING CHARTS:

This equipments cooling systems contain refrigerant under high pressure, always use safe practices when servicing the unit. Always review the factory literature and safety warnings prior to servicing.

All R6GP-072/090/120 units are shipped from the factory with the proper amount and type of refrigerant. Always inspect the unit rating label to determine the units information prior to working on the system. Do not mix different refrigerants or charge the unit with a refrigerant not listed on the unit rating label.

The charging charts below are valid for a variety of indoor, return air conditions and are most highly influenced by the outdoor ambient temperature, outdoor fan operation and the unit operating voltage. Before referencing the charts below, always ensure that all compressor circuits are energized and have stable operation. As can be seen in the charging charts, the ideal system sub-cooling can vary over the range of operation. Always reference the charts to determine the ideal amount of sub-cooling for a given liquid pressure. Units charged to other values will not perform at the rated unit efficiency (EER).

To inspect a systems operation, using quality instruments, match the measured liquid temperature to the units chart. The measured liquid pressure reading should be within 3% of the value shown for most installations. For two stage systems, the charts are valid for both compressor stages.

**Do not** utilize the charts for two stage systems operating only under a single stage call for cooling.

**Do not** utilize the charts in systems that do not have all the outdoor fans energized, or have the fans cycling under a low-ambient control. Refer to the low-ambient kit instructions for more information, if applicable.

For systems that are operating with more then a 5% deviation, inspect the unit for leaks. Always use safe and environmentally sound methods for refrigerant handling. When repairing system leakages, always utilize a nitrogen (inert) gas to protect the refrigerant system and pressure check the repair before re-charging. Always replace the filter-dryers when performing any repair to the refrigeration system. After completing the repairs, evacuate the system to 350-500 microns and weight in the refrigerant to the amount specified on the unit rating label.

#### R6GP-072\*-100/166C Charging Chart - Cooling Operation

Single Stage refrigeration system - See Application Notes for use

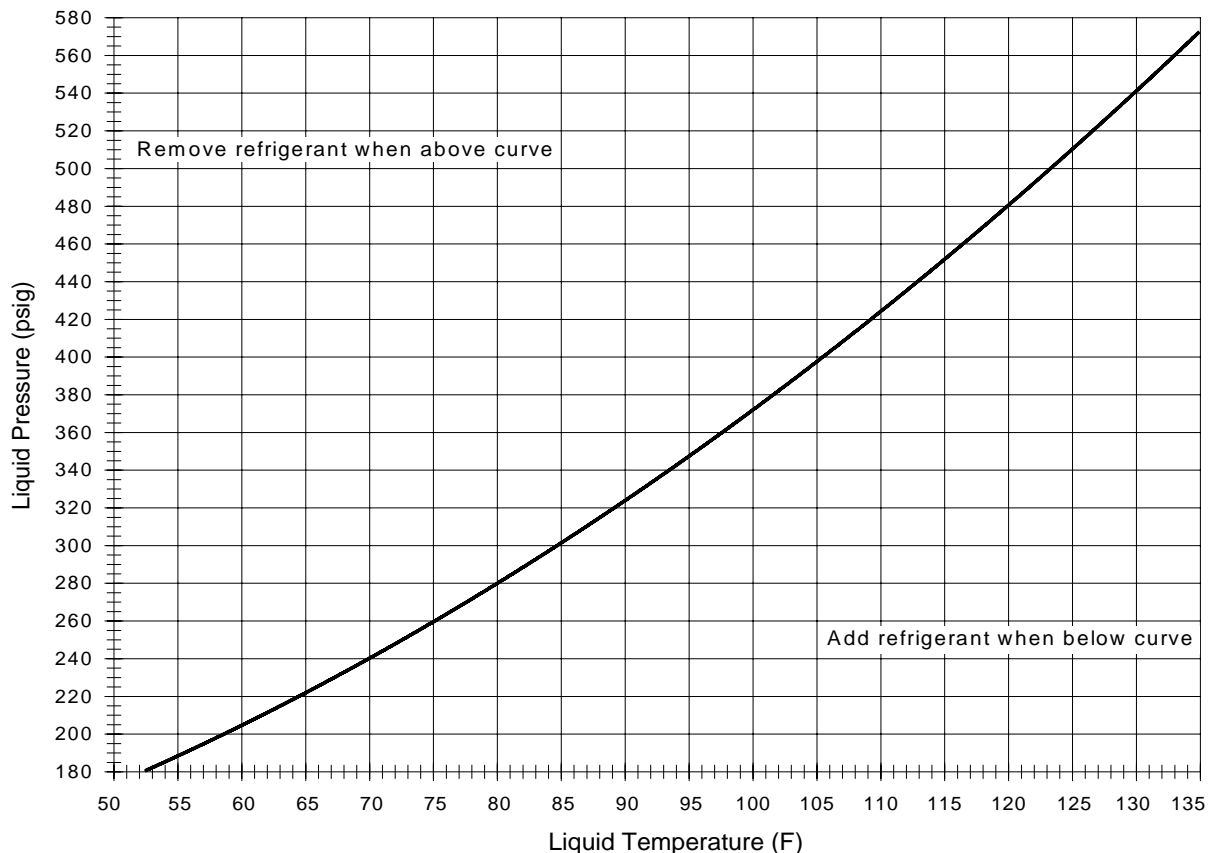


Figure 17. R6GP-072-100/166C Series

### R6GP-090\*-200C - Charging Chart - Cooling Operation

Two stage refrigeration system - See Application Notes for use

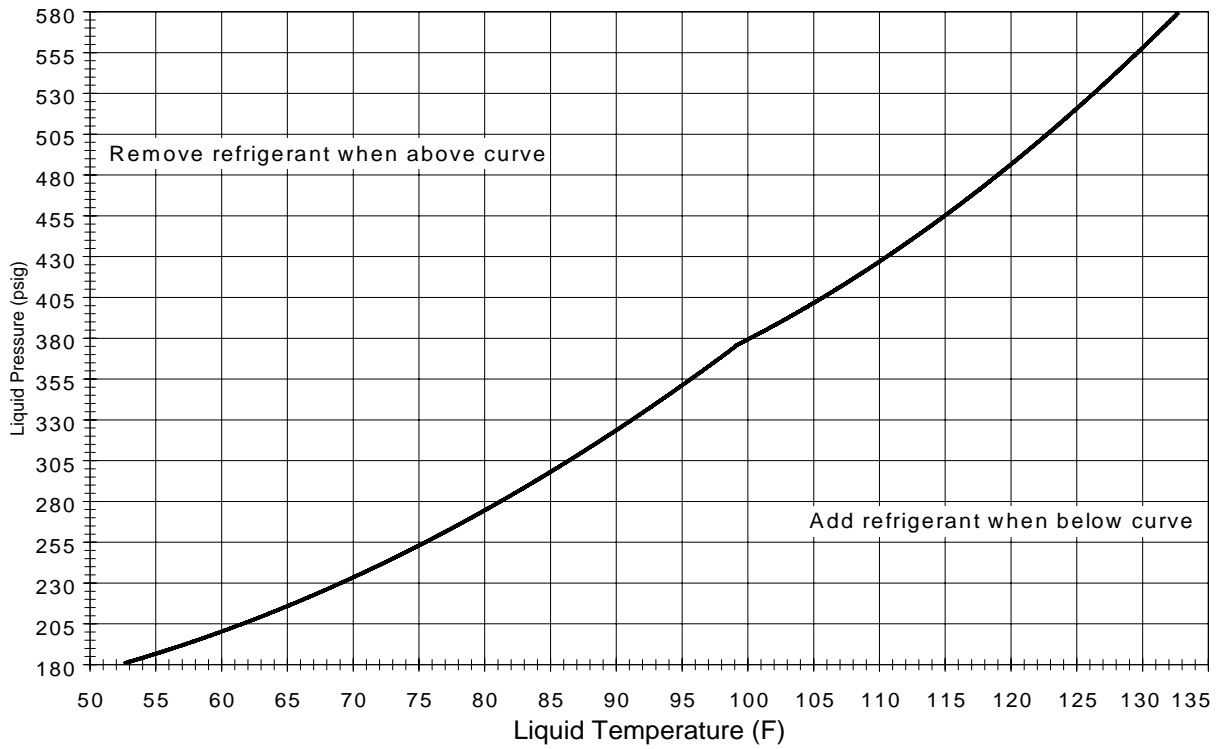


Figure 18. R6GP-090-200Ca Series

### R6GP-120\*-235C Charging Chart - Cooling Operation

Two stage refrigeration system - See Application Notes for use

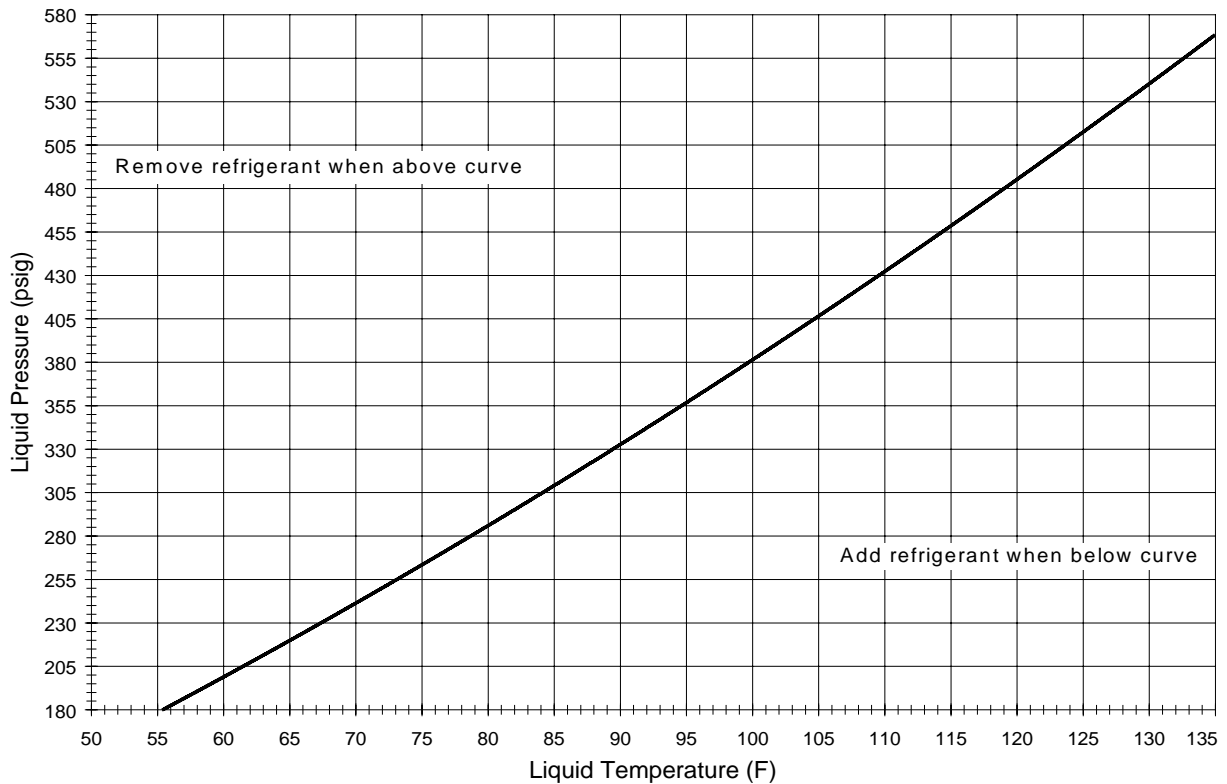


Figure 19. R6GP-120-235Ca

## R6 GAS VALVE INFORMATION

### FOR YOUR SAFETY READ BEFORE OPERATING

**WARNING:** If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury, or loss of life.

- A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do **not** try to light the burner by hand.
  - B. **BEFORE OPERATING** smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.
- WHAT TO DO IF YOU SMELL GAS**
- Do not try to light any appliance.
  - Do not touch any electrical switch; do not use any phone in your building.
  - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
  - If you cannot reach your gas supplier, call the fire department.
- C. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or move by hand, do not try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.
  - D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

### POUR VOTRE SÉCURITÉ. À LIRE AVANT L'EMPLOI

**ATTENTION!** L'inobservation de ces instructions peut entraîner un incendie ou une explosion pouvant causer des dommages à votre propriété à votre personne, ou la mort.

- A. Cet appareil ménager n'a pas de veilleuse. Il est doté d'un système d'allumage automatique. Ne pas essayer d'allumer le brûleur manuellement.
  - B. **AVANT L'USAGE.** Attention à une possible odeur de gaz surtout au niveau du plancher où les gaz les plus lourds ont la tendance de se concentrer.
- EN CAS D'ODEUR DE GAZ.**
- Ne mettre en marche aucun appareil électrique.
  - Ne toucher à aucun commutateur électrique, ne pas employer le téléphone.
  - Quitter le bâtiment immédiatement et avertir la compagnie du gaz en utilisant le téléphone d'un voisin.
  - A défaut de la compagnie du gaz, avertir le service des pompiers.
- C. Enfoncer ou faire tourner le robinet à gaz à la main seulement. Ne jamais utiliser d'outils. S'il n'est pas possible de faire tourner ou d'enfoncer le robinet à la main, ne pas essayer de le réparer. Faire appel à un spécialiste. Forcer ou tenter de réparer le robinet pourrait être à l'origine d'une explosion ou d'un incendie.
  - D. Il est déconseillé d'utiliser cet appareil en contact prolongé avec l'eau. Faire inspecter ou remplacer toute commande par un technicien qualifié si un des systèmes de contrôle du gaz s'est trouvé sous l'eau.

### OPERATING INSTRUCTIONS

1. **STOP!** Read the safety information above on this label.
2. Set the thermostat to the lowest setting.
3. Turn off all electrical power to the appliance.
4. The appliance's ignition device automatically lights the burner. Do not try to light burner by hand.
5. Remove the control access door/panel (upper door if two-door model).
6. Move the gas control switch to the "OFF" position. (See Figure 1)
7. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, **STOP!** Follow "B" in above information. If you don't smell gas, go to the next step.
8. Move the gas control switch to the "ON" position. (See Figure 1)
9. Replace the control access door/panel (upper door if two-door model).
10. Turn on all electrical power to the appliance.
11. Turn the thermostat to a desired setting.
12. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.

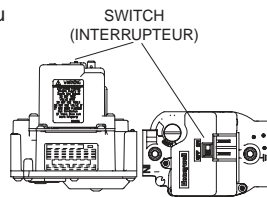


Figure 1

### MODE D'EMPLOI

1. **ATTENTION!** Lire d'abord la liste des mesures de sécurité ci-dessus.
2. Mettre le thermostat à la position minimale.
3. Couper le courant électrique qui mène à l'appareil.
4. Cet appareil ménager étant doté d'un système d'allumage automatique, ne pas essayer d'allumer le brûleur manuellement.
5. Retirer le panneau/volet d'accès de commande (panneau supérieur s'il s'agit d'un modèle à deux panneaux).
6. Régler l'interrupteur de commande du gaz à la position "OFF". (voir Figure 1).
7. Attendre cinq (5) minutes pour s'assurer de la dissipation du gaz. En cas d'odeur, **ARRÊTER LE PROCÉDÉ.** Suivre les instructions ci-dessus (Section B). En l'absence de toute odeur de gaz, avancer à l'étape suivante.
8. Régler l'interrupteur de commande du gaz à la position "ON". (voir Figure 1).
9. Remettre le panneau/volet d'accès de commande en place (panneau supérieur s'il s'agit d'un modèle à deux panneaux).
10. Rebrancher l'appareil sur le réseau électrique.
11. Ajuster le thermostat à la position désirée.
12. Si l'appareil ne fonctionne pas, suivre les "Directives d'arrêt" ci-dessous et appeler le technicien de service.

### TO TURN OFF GAS TO APPLIANCE

1. Set the thermostat to the lowest setting.
2. Turn off all electrical power to the appliance if service is to be performed.
3. Remove the control access door/panel (upper door if two-door model).
4. Move the gas control switch to the "OFF" position. Do not use force. (See Figure 1)
5. Replace the control access door/panel (upper door if two-door model).

### DIRECTIVES D'ARRÊT

1. Mettre le thermostat à la position minimale.
2. Débrancher l'appareil en prévision de la réparation.
3. Retirer le panneau/volet d'accès de commande (panneau supérieur s'il s'agit d'un modèle à deux panneaux).
4. Régler l'interrupteur de commande du gaz à la position "OFF". Ne forcez pas. (voir Figure 1).
5. Remettre le panneau/volet d'accès de commande en place (panneau supérieur s'il s'agit d'un modèle à deux panneaux).

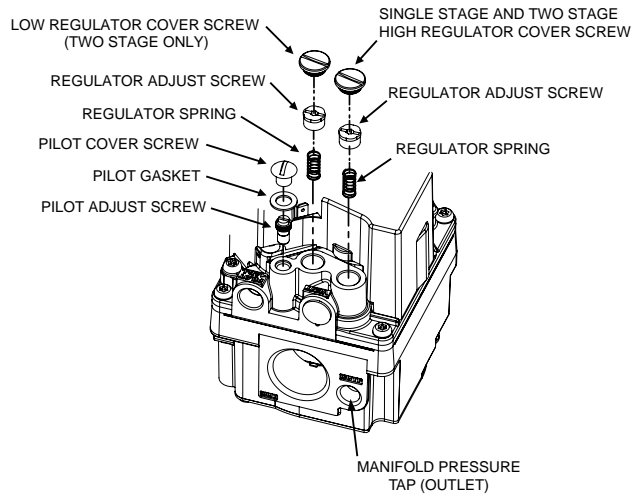
710674-0 (Replaces 7104030) (03/07)

Figure 20. Gas Valve Label - Operating Instructions

White Rogers - Model 36H64 - 10 Ton Units - (P/N 624695)

**IMPORTANT NOTE: When converting to LP/Propane gas from natural gas, both springs from the gas valve must be replaced by the white springs included in the kit. The LP Propane springs for HIGH and LOW fire are the same size, shape, and color.**

1. Remove both regulator cover screws. See Figure 21.
2. Remove both regulator adjustment screws from the gas valve (located beneath the cover screws).
3. Remove both Natural Gas regulator springs (color coded silver / Plain) from the regulator sleeves.
4. Install both L.P. regulator springs (provided in the conversion kit and color coded white) into the regulator sleeves.
5. Replace the HIGH regulator adjustment screw and adjust approximately 12 turns to the bottom stop.
6. Relace the LOW regulator adjustment screw and adjust approximately 8 turns.
7. Check and adjust both regulator settings (High and Low fire) to the firing rates listed in Table 1 for factory settings below 2,000 ft elevation or for reduced firing rates based on final high altitude calculations



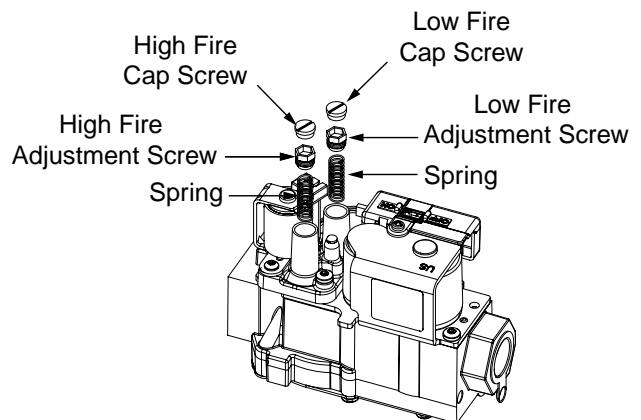
**Figure 21. Regulator Spring & Adjustment Screw Removal**

Honeywell - Model VR9205Q1127 - 6 & 7.5 Ton Units - (P/N 624787)

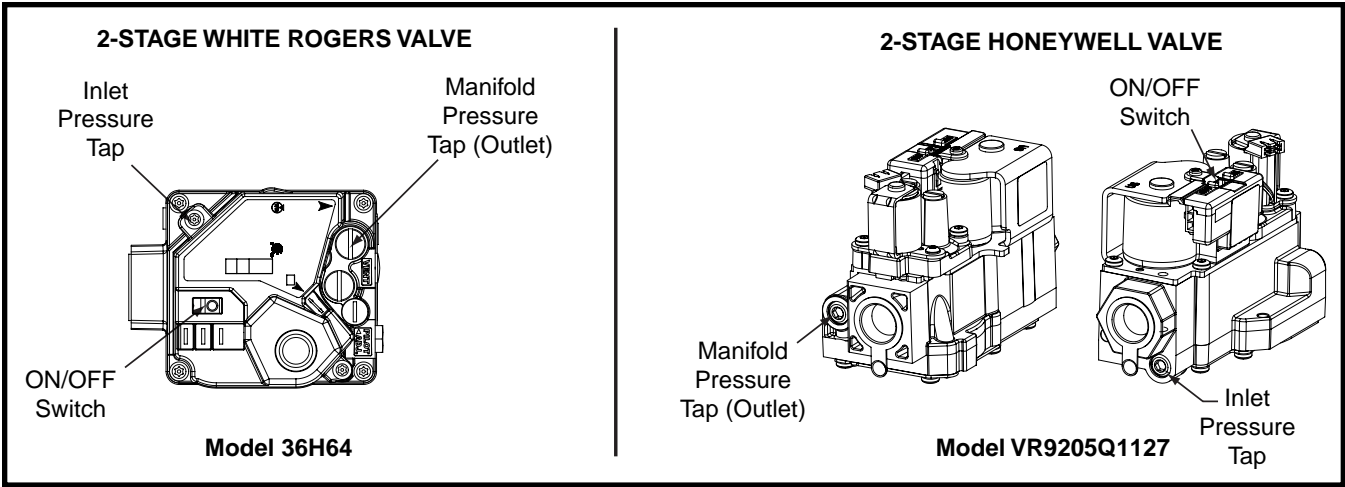
**IMPORTANT NOTES:**

- **When converting to LP/Propane gas from natural gas, the springs from gas valve must be replaced by the larger springs from the kit. The LP/Propane springs for both HIGH & LOW fire are the same size, shape and color.**
- **Use only a Torx-25 or 3/16" flathead screwdriver when removing adjustment screws or during pressure adjustment.**

1. Remove the HIGH fire cap screw. See Figure 22.
2. Remove and discard the HIGH fire adjustment screw from the gas valve.
3. Remove the spring from the gas valve and discard.
4. Install a larger spring from the conversion kit.
5. Install a new adjusting screw from the kit.
6. Repeat steps 1 - 5 for replacement of the LOW fire spring and adjustment screw.
7. Check and adjust the regulator setting. See Gas Pressure Adjustment Section.
8. Reinstall the cap screws on the HIGH and LOW regulators. Plastic replacement cap screws are provided in the conversion kit.
9. Affix the label from the conversion kit to the gas valve.



**Figure 22. Pressure Regulator Spring & Adjustment Screw Removal**



**Figure 23. Inlet & Manifold Pressure Tap Locations**



## INSTALLATION / PERFORMANCE CHECK LIST

<b>INSTALLATION ADDRESS:</b>		
CITY _____	STATE _____	
UNIT MODEL # _____		
UNIT SERIAL # _____		
Unit Installed within the Minimum clearances specified on page 10?	YES	NO
<b>INSTALLER NAME:</b>		
CITY _____	STATE _____	
Has the owner's information been reviewed with the customer?	YES	NO
Has the Literature Package been left with the unit?	YES	NO

ELECTRICAL SYSTEM		
Electrical connections tight?	YES	NO
Line voltage polarity correct?	YES	NO
Rated Voltage: _____ VOLTS		
L1-L2 Volts: _____ VOLTS		
L1-L3 Volts: _____ VOLTS		
L2-L3 Volts: _____ VOLTS		
Avg. Volts: _____ VOLTS		
Max. Deviation of Voltage From Avg Volts _____ VOLTS		
% Volt Imbalance: _____ VOLTS		
Blower Motor HP: _____ Sheave Setting _____ # Turns		
Has the thermostat been calibrated?	YES	NO
Is the thermostat level?	YES	NO
Is the heat anticipator setting correct?	YES	NO

GAS SYSTEM		
Gas Type: (circle one)	Natural Gas	Propane
Gas pipe connections leak-tested?	YES	NO
Gas Line Pressure: _____ (in - W.C.)		
Is there adequate fresh air supply for combustion & ventilation?	YES	NO
Installation Altitude: _____ (FT.)		
Deration Percentage: _____ (%)		
Furnace Input: _____ (Btuh)		
Supply Air Temperature: _____ (° F)		
Return Air Temperature: _____ (° F)		
Temperature Rise: _____ (° F)		
During Furnace Operation:		
Low fire manifold pressure: _____ (in - W.C.)		
High fire manifold pressure: _____ (in - W.C.)		

REFRIGERATION SYSTEM		
Was unit given 24 hr warm up period for crankcase heaters?	YES	NO
Did reversing valve energize?	YES	NO
Stage-1 Liquid Pressure (high side) _____		
Stage-1 Suction Pressure (low side) _____		
Stage-2 Liquid Pressure (high side) _____		
Stage-2 Suction Pressure (low side) _____		

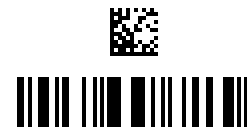
VENTING SYSTEM		
Is the vent hood installed?	YES	NO
Is vent hood free from restrictions	YES	NO
Filter(s) secured in place?	YES	NO
Filter(s) clean?	YES	NO



\* AHRI commercial furnace certification listing applies only to 3 phase units having an input rate 225,000 Btu/hr or greater

**NORDYNE**  
COMPLETE COMFORT. GENUINE VALUE.

Specifications & illustrations subject to change without notice or incurring obligations.  
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709288B (Replaces 709288A)