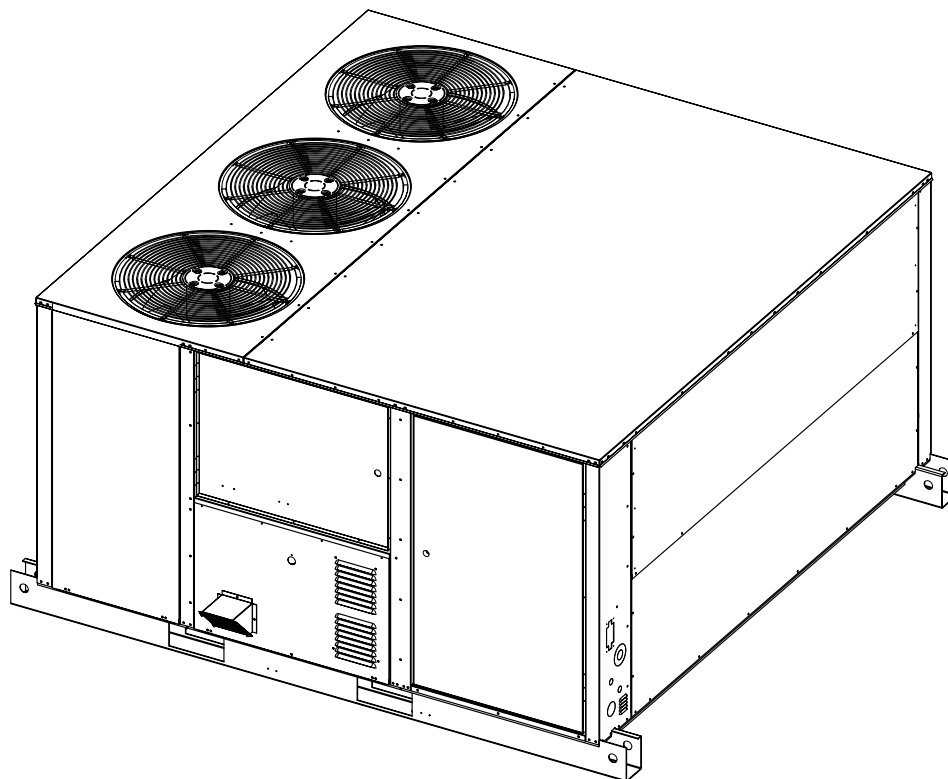


GR4GM - 150/180 Series High Efficiency

Installation Instructions

Single Package Gas Heating/Electric Cooling Rooftop Units



Model GR4GM-150/180 Shown

⚠ WARNING:

Improper installation, adjustment, alteration, service, or maintenance can cause injury or property damage. Refer to this manual. For assistance or additional information consult 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.
- 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.
- Extinguish any open flame.

DO NOT DESTROY. PLEASE READ CAREFULLY AND KEEP IN A SAFE PLACE FOR FUTURE REFERENCE.

These instructions are intended primarily to assist qualified individuals experienced in the proper installation of this appliance. Some local codes require licensed installation/service personnel for this type of equipment. Read all instructions carefully before starting the installation.

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GENERAL SPECIFICATIONS

GR4GM Series Single Package Gas Heating/Electric Cooling units are designed for outdoor rooftop or ground level slab installations. The units are shipped ready for downflow duct connections and are easily converted for horizontal flow connections.

All models are shipped from the factory with the following:

1. Adjustable Belt
2. Downflow duct connections
3. 24V circuit breaker protection.

Unit dimensions are shown on the Physical Data pages.

SAFETY CONSIDERATIONS

It is the responsibility of the installer to ensure that the installation is made in accordance with all applicable local and national codes.

WARNING:

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.

Literature, Labels, and Tags — When working with this equipment, follow all precautions in the literature, on tags, and on labels provided with the unit and/or approved field installed kits. The type of hazard and severity are described on each label or tag.

Pressures Within The System — 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.

INSTALLATION REQUIREMENTS

Equipment Application — Before beginning the installation, verify that the unit model is correct for the job. The unit model number is printed on the data label. This furnace is **NOT** to be used for temporary heating of buildings or structures under construction.

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

Requirements and Codes — The installer must comply with all local codes and regulations which govern this type equipment. Local codes and regulations take precedence over any recommendations contained in these instructions. In the absence of local codes, the installation must conform with the National Fuel Gas Code (ANSI 2223.1, NFPA-54), or Canadian installations must conform with CAN/CGA-B149 installation codes. All electrical wiring must be made in accordance with 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. 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), “Installation of combination heating/cooling units must also conform with current C.S.A. Standard B52 “Mechanical Refrigeration Code.”

The National Fuel Gas Code is available by writing:

American National Standards Institute, Inc.
1430 Broadway
New York, NY 10018

NFPA publications are available by writing:

National Fire Protection Association
Battery March Park
Quincy, ME 02269

Unit Location — The R4 series gas/electric unit is designed only for outdoor installations. Choosing the location of the unit should be based on minimizing the length of the supply and return ducts. Consideration should also be given to availability of fuel, electric power, service access, noise, and shade.

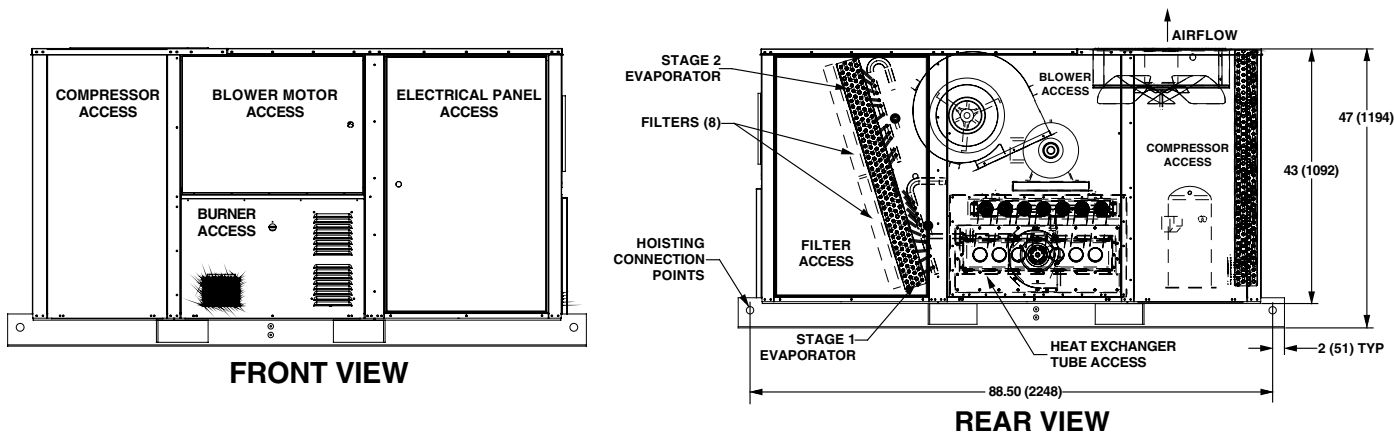
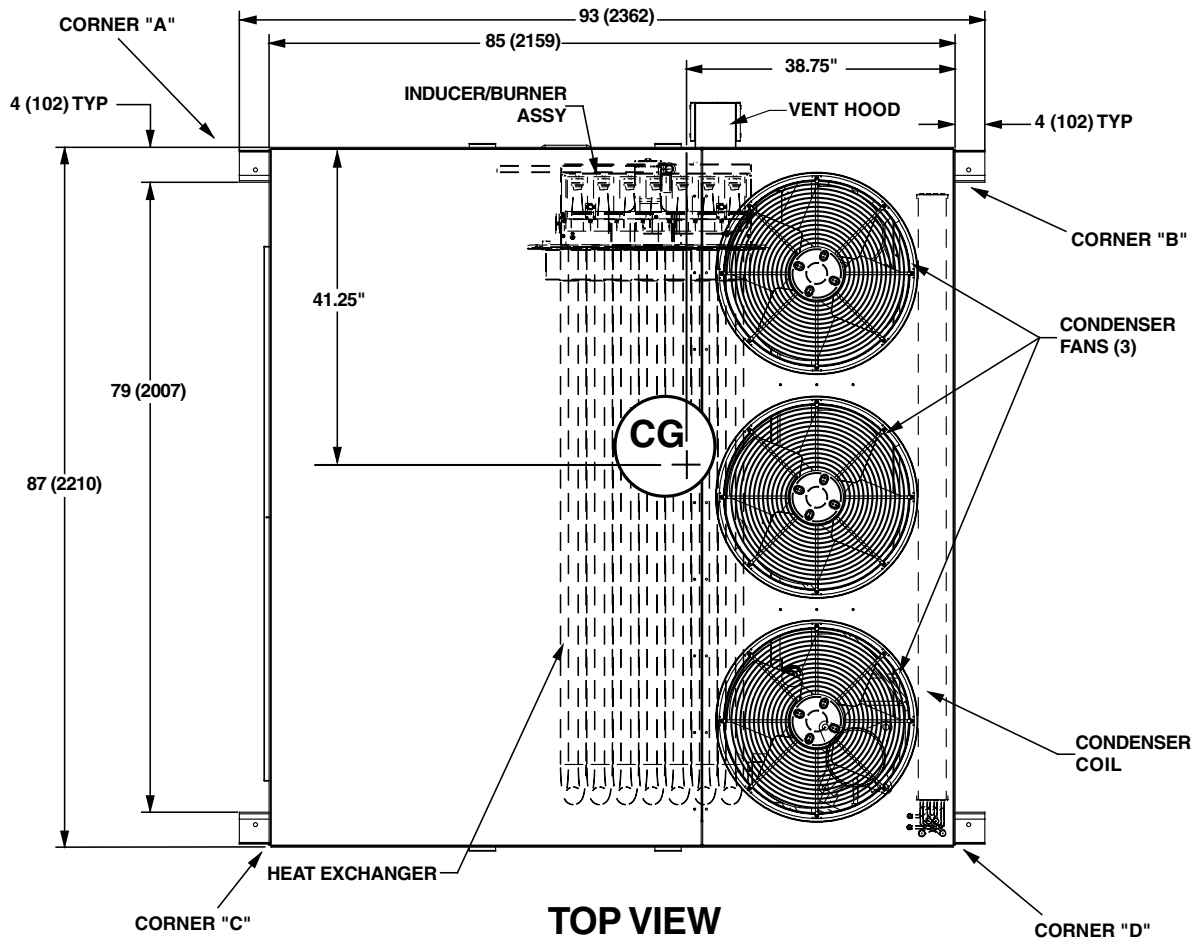
Venting Requirements — This unit has been equipped with an integral venting system and designed to operate only with this venting system. No additional venting shall be used. This unit must be vented to the outdoors.

WARNING:

Do not vent furnace through a conventional venting system.

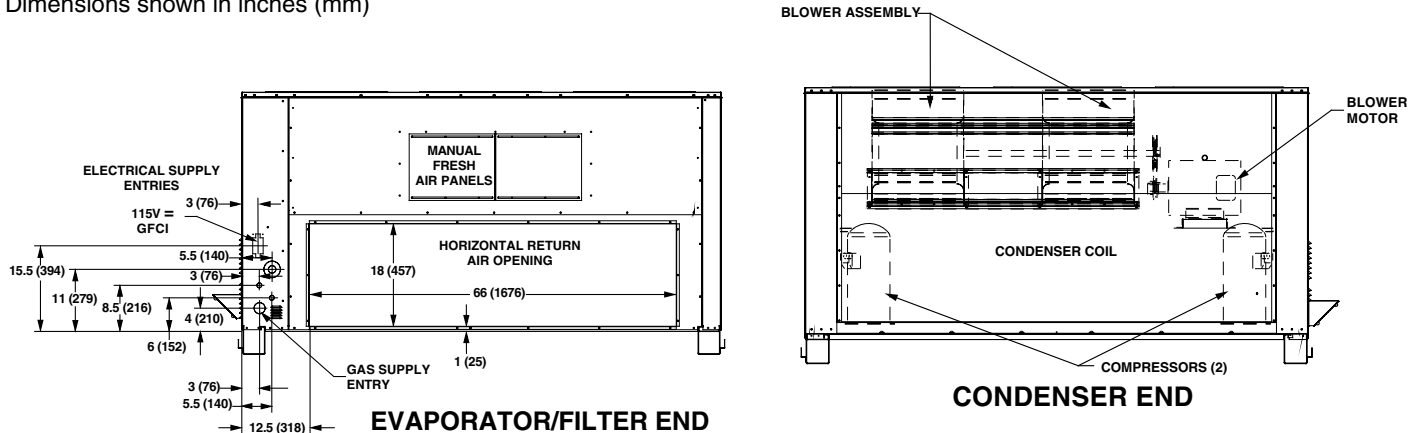
GR4GM-150/180 SERIES – PHYSICAL DATA

Dimensions shown in inches (mm)

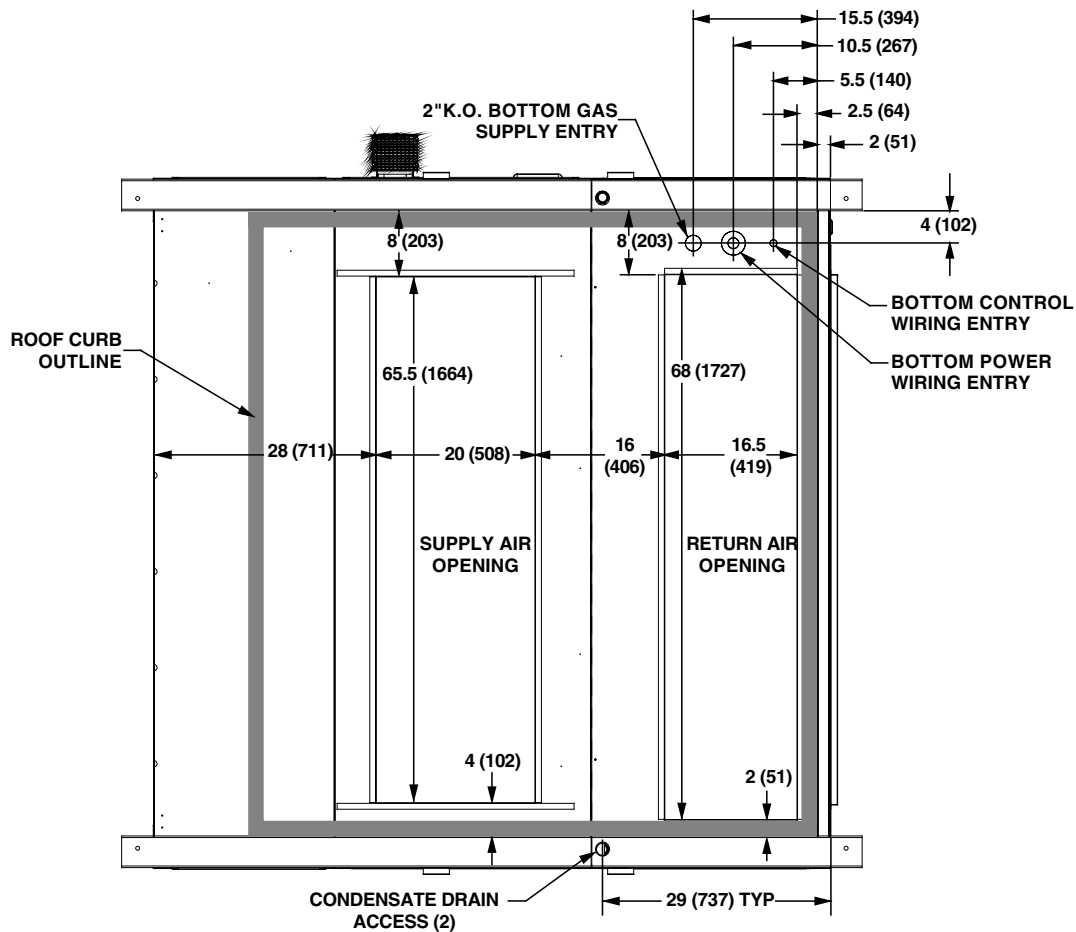


GR4GM-150/180 SERIES – PHYSICAL DATA

Dimensions shown in inches (mm)



† Factory Installed Option.
Field wiring required.



BOTTOM VIEW

Model No.	Weights				Center of Gravity		Corner Weights							
	Unit Wt.‡		Shipping Wt.				A		B		C		D	
	Lbs.	Kg.	Lbs.	Kg.	Inches(mm)	Inches(mm)	Lbs.	Kg	Lbs.	Kg	Lbs.	Kg	Lbs.	Kg
R4GM-150*-	1570	714	1770	805	38.75 (984)	41.25 (1048)	376	171	449	204	339	154	405	184
R4GM-180*-	1650	750	1850	841	38 (965)	41 (1041)	390	177	482	219	348	158	430	195

† Unit weight without packaging or field installed accessories.

A vent cover assembly has been supplied with the unit. It can be found secured to the gas controls within the control panel area of this unit. Figure 1 shows the proper installation of the vent cover assembly over the vent outlet on the exterior of the louvered combustion panel. The fasteners used to secure the vent cover assembly have been included on the unit panel.

WARNING:

The vent cover assembly must be installed to assure proper operation of the unit.

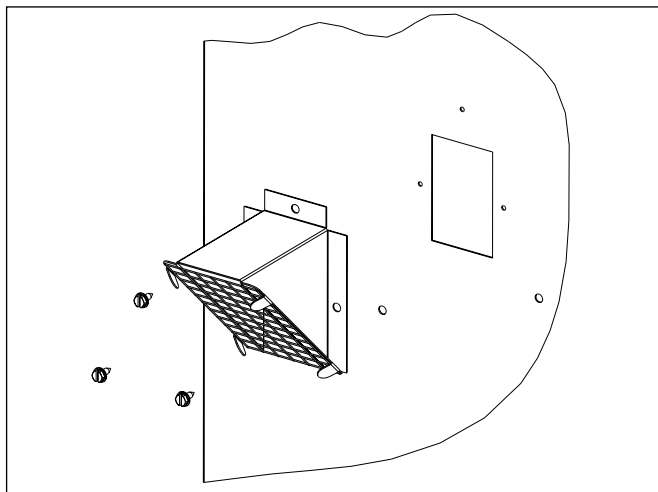


Figure 1. Vent Assembly

The following list is a summary of the requirements for the location of the termination of the venting system:

1. The location of the vent termination must be consistent with the National Fuel Gas Code (ANSI Z223.1) or CAN/CGA-B149 Installation Codes.
2. The vent termination must be located at least four (4) feet horizontally from any electric meters, gas meters, regulators, and relief equipment.
3. The vent termination must be located at least three (3) feet above any forced air inlet located within ten (10) feet.
4. The vent termination must be located at least four (4) feet below, four (4) feet horizontally from, or one (1) foot above any door, window, or gravity air inlet into any building.
5. The vent termination must be located at least one (1) foot above grade.
6. The unit should be installed in such a manner as to prevent snow accumulation from obstructing the vent termination.
7. The unit installation shall avoid areas where condensate drainage may cause problems. Ensure that the exhaust gases will not impinge on windows or building surfaces, which may be compromised or damaged by condensation. Do not install the unit such that exhaust from the vent termination is directed into window wells, stairwells, under decks, or in alcoves or similarly recessed areas. The vent termination must not be located above any public walkways.

Clearances to Combustible Materials — See Figure 3 for required clearances to combustible materials. Refer to the unit data label for the model number.

The GR4GM series gas/electric unit is suitable for installation on combustible flooring or class A, B, or C roofing materials. A clearance of at least 72 inches from the blower access panel and from the louvered control access panel is recommended to allow for servicing and maintenance. **Where accessibility to combustibles clearances are greater than minimum clearances, accessibility clearances must take preference.** Sufficient clearance for unobstructed airflow through the louvered control access panel and through the outdoor coil must be maintained in order to achieve rated performance. See Figure 3 for minimum clearances to obstructions.

Thermostat — A two stage cooling/two stage heating 24VAC thermostat should be used with these units.

Air Filter Requirements — A suitable air filter must be installed in the unit or in the return air system. Refer to Specification & Electrical Data Table for recommended filter sizes. Air filter pressure drop must not exceed 0.08 inches WC.

This unit is supplied with air filters. Air filter(s) must be installed ahead of the evaporator coil of this unit. All return air to this unit must pass through the filters before entering this unit.

WARNING:

Never operate unit without a filter. A failure to follow this warning could result in a fire, personal injury, or death.

Condensate Drain—Condensate can be removed from the unit through one of two 3/4" (19mm) PVC female threaded fittings located on each side of the unit. One inside the bottom of the filter access area and one at the bottom of the control panel area. Both are accessible up

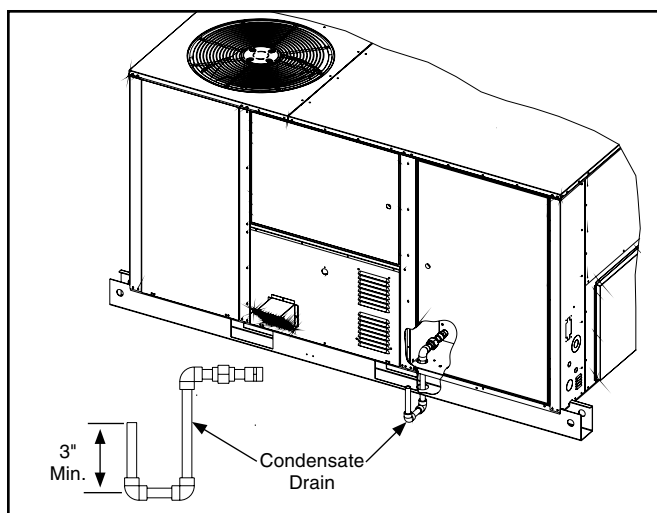


Figure 2. Condensate Drain

through the base rail using a straight length of 3/4" pipe equipped with a 3/4" threaded male fitting. Once installed the drain must be equipped with a 3" (8 cm) Min. trap between the drain line and an open vent of the same size for proper condensate removal. (See Figure 2) Refer to local codes and restrictions for proper condensate disposal requirements. Ensure drain plug is installed in unused drain fitting.

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

UNIT INSTALLATION

Notice to Installer: Minimum Clearance requirements shown are for clearance to combustible materials only. Special consideration of unit location should be given to all sides for application of accessory items such as Hooded Hail Guards, Heat Exchanger Removal, Economizer Power Exhaust, Blower and Filter access.

Minimum Clearance Requirements – GR4GM units are certified as combination Heating and Cooling equipment for outdoor installation only at the minimum clearances to combustible materials shown. Clearances shown are for both Downflow and Horizontal discharge. (See Figure 3)

GR4GM units may be installed on wood flooring or on Class A, B, or C roof covering material when used with horizontal supply and return air ducts. (Horizontal roof curb is required.)

GR4GM units may be installed on wood flooring or on Class A, B, or C roof covering material when used with bottom discharge and return air ducts in conjunction with a roof curb.

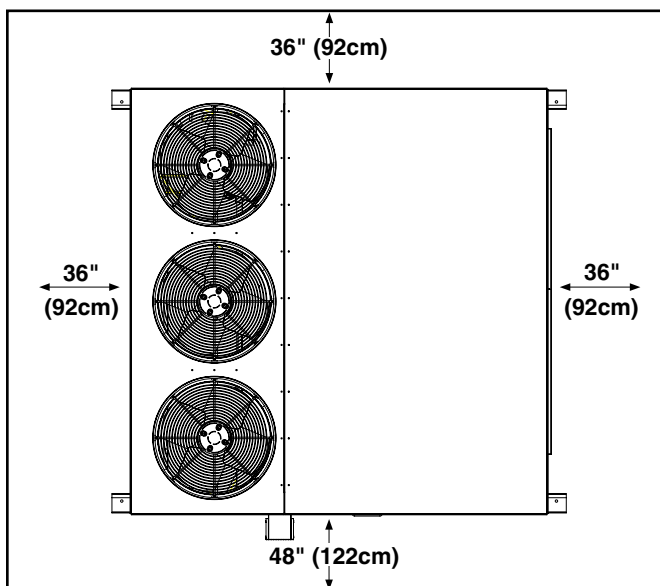


Figure 3. Minimum Clearances to Combustibles

! WARNING!

This product contains fiberglass wool. Disturbing the insulation of this product during installation, maintenance, or repair will expose you to fiberglass wool. Breathing this may cause lung cancer. (Fiberglass wool is known to the State of California to cause cancer.)

Fiberglass wool may also cause respiratory, skin, and eye irritation.

Notice to Installer: If installing GR4GM units with downflow discharge, an 8" minimum roof curb is required.

Rooftop Mounting – For rooftop installations use the appropriate accessory roof curb and follow all instructions included with it. Locate the unit according to local building codes and ordinances. The roof curb must be square and level to ensure proper condensate drainage.

On bottom discharge applications, supply and return air ducts must be attached to the roof curb duct supports, not the unit. Install all ductwork before setting unit to curb or frame.

Notice to Installer: In downflow applications never drill or punch holes in unit base. Leakage may occur if unit bottom pan is punctured.

If any brand other than a NORDYNE Roof Curb is to be used the frame support must be constructed using non-combustible materials. Units require full perimeter support under the unit and a minimum height of 8". Supports must be made of steel or suitably treated wood materials. The unit must be square and level to ensure proper condensate drainage.

The roof must be capable of handling the weight of the unit. See Physical Data pages for unit weights. Reinforce the roof if required.

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 applications.

Secure roof curb or frame to roof using acceptable mechanical methods per local codes.

Ground Level – If installing the unit at ground level, provide a concrete mounting pad separate from the building foundation. The pad must be level to ensure proper condensate disposal and strong enough to support the unit's weight. Make sure the slab is a minimum of 3" (8cm) above grade and in an area that drains well.

! WARNING:

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.

GR4GM unit clearances must be in accordance with those shown in Figure 3.

Ductwork should be attached directly to flanges on rear unit panel and opening of horizontal roof curb.

Units require full perimeter support under the unit. Supports must be made of steel or suitably treated wood materials. The unit must be square and level to ensure proper condensate drainage.

Frame must be high enough to ensure prevention of any moisture from entering the unit. Minimum height to unit base is 8" (20cm).

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

! CAUTION

All panels must be securely in place when rigging and hoisting.

Rigging and Hoisting – Remove wooden top and side assembly and loosen two bottom boards located between fork lift openings.

The unit should be lifted by spreader bars using slings or chains attached to the four lifting holes supplied from the factory. Spreader bars are required to ensure even loading. Ensure the lifting equipment is adequate for the load. Refer to Physical Data pages for unit weights. Keep the unit in an upright position at all times. The rigging must be located outside the units center of gravity. Refer to Physical Data pages for center of gravity location.

! WARNING:

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

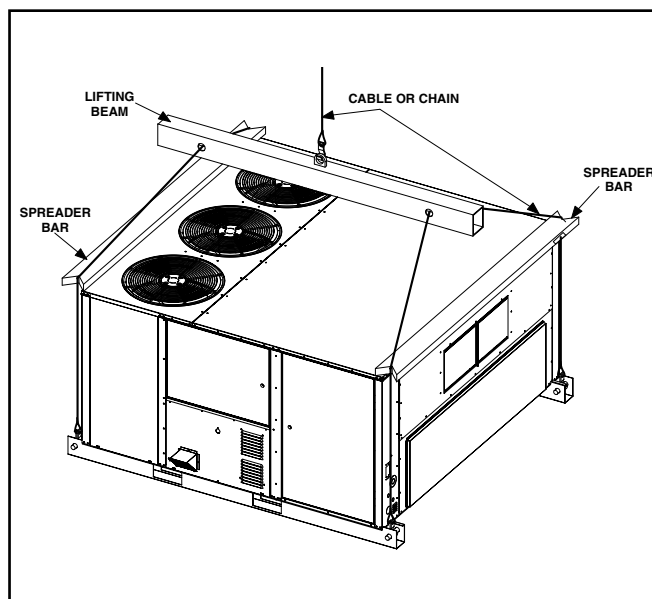


Figure 4. Rigging and Hoisting

AIR SUPPLY FOR COMBUSTION AND VENTILATION

Provisions must be made in the installation of this unit to provide an adequate supply of air for combustion. Detailed instructions for determining the adequacy of an installation can be found in the current revision of the National Fuel Gas Code (ANSI Z223.1) and NFPA 54, or in Canadian installation codes (CAN/CGA-B149), or in applicable local building codes. Consult local codes for special requirements.

! WARNING:

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

If the unit is operated with inadequate combustion air supply the flame roll-out control located above the burners will open, turning off the gas supply to the burners. The flame roll-out control is a manually re-settable device. **DO NOT** install a jumper wire across this control to defeat its function. **DO NOT** reset the control without identifying and correcting the fault condition which caused the control to trip. If this control must be replaced, use only the replacement part specified in the Replacement Parts List.

Air openings in the door of the unit, warm air registers, and return air grilles must not be restricted.

To maximize heat exchanger life, the combustion air must be free of chemical contaminants which form corrosive acidic compounds when combusted. Some examples of these chemical contaminants are chlorine, fluorine, and sulphur. Some common sources of these chemical contaminants are detergents, bleaches, aerosol sprays, cleaning solvents, and a wide variety of commercial and household products.

WARNING:

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

CIRCULATING AIR SUPPLY

WARNING:

Products of combustion must not be allowed to enter the return air ductwork or the circulating air supply. 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.

All return ductwork must be adequately sealed, all joints must be taped, and the ductwork must be secured to the unit with sheet metal screws. 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 framing 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 frame.

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. Any exterior ducts, joints, or openings in the building roof or walls must be weatherized with conventional flashing and sealing compounds. Air ducts should be installed in accordance with all applicable local codes and the standards of the National Fire Protection Association "Standard for Installation of Air Conditioning Systems" (NFPA 90A).

Design the ductwork according to methods described by the Air Conditioning Contractors of America (ACCA) Manual D. The ducts must be properly sized not to exceed 0.2 inches WC pressure drop at 400 scfm per nominal ton of cooling capacity.

It is recommended that the outlet duct be provided 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.

Unconditioned Spaces — All ductwork passing through unconditioned space must be properly insulated to minimize duct losses and prevent condensation. 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 ductwork. 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 ductwork may be used in place of internal duct liners if the fiber ductwork is in accordance with the current revision of the SMACNA construction standard on fibrous glass ducts. Fibrous ductwork and internal acoustical lining must be NFPA Class 1 air ducts when tested per UL Standard 181 for Class 1 ducts.

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 horizontal roof curb kit for both the supply and return ducts.

GAS SUPPLY AND PIPING

This unit has right side gas entry. A typical gas service hookup is shown in **Figure 5**. When making the gas connection, 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.

All gas piping must be installed in compliance with local codes and utility regulations. Some local regulations require the installation of a manual main shut-off valve and ground joint union external to the unit. The shut-off valve should be readily accessible for service and/or emergency use. Consult the local utility or gas supplier for additional requirements regarding placement of the manual main gas shut-off. 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.

CAUTION:

Do not use matches, lighters, candles or other sources of open flame to check for gas leaks.

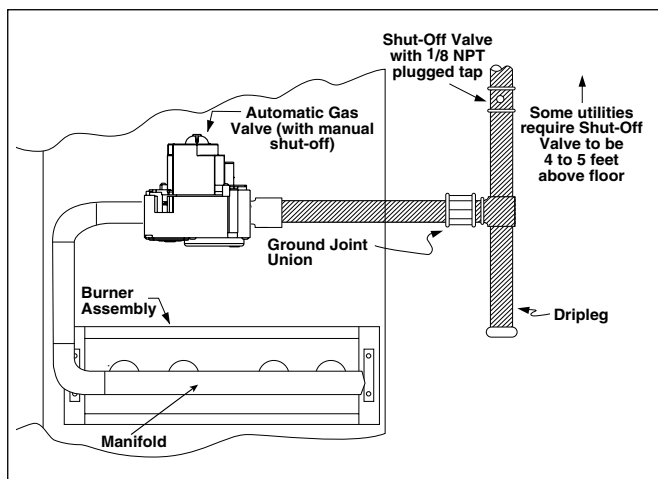


Figure 5. Typical Right Side Entry Gas Service Connection.

A 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 pipe run to the unit. Table 1 lists gas flow capacities for standard pipe sizes as a function of length in typical applications based on nominal pressure drop in the line.

IMPORTANT NOTES:

1. Gas piping must not be run in or through air ducts, chimneys, gas vents, elevator shafts, etc.
2. Compounds used on threaded joints of gas piping must be resistant to the actions of liquefied petroleum gases.
3. The main manual gas valve and main power disconnect to the furnace must be properly labeled by the installer in case emergency shutdown is required.

Leak Check— After the gas piping to the unit is complete, all connections must be tested for gas leaks. To check for leaks in gas piping systems, use only a soap and water solution or other approved method.

IMPORTANT NOTE: When 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 control 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.

GAS CONVERSION AND HIGH ALTITUDE DERATE

Conversion— Conversion of this unit to utilize LP/propane gas must be made by qualified service personnel, using only factory authorized or approved parts.

CAPACITY OF BLACK IRON GAS PIPE (CU. FT. PER HOUR) FOR NATURAL GAS (SPECIFIC GRAVITY - 0.60)								
NOMINAL BLACK IRON 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	1050	730	590	500	440	400	370	350
1 1/2	1600	1100	890	760	670	610	560	530

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 unit.

To determine the cubic feet per hour of gas flow required by the unit, divide the input rate of the unit by the heating value of the gas:

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

Table 1. Capacity of Black Iron Gas Pipe (cubic feet per hour) for Natural Gas (specific gravity = .60).

High Altitude De-Rate — The nameplate input rating for the units apply for elevations up to 2,000 feet (610m) above sea level. For elevations above 2,000 feet the input rating must derate by 4% per 1,000 feet. For example at an elevation of 5,000 feet the unit should be derated by 20%. This is necessary to compensate for changes in gas flow rate and burner operation.

Table 2 shows the approximate orifice size for reducing the input rate of an appliance installed at elevations of 2,000 feet and higher.

Verifying and Adjusting Firing Rate — The firing rate must be verified for each installation to prevent over-firing of the furnace.

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.

Example 1	
Elevation	3,890 feet
Type of gas	Natural
Unit model	GR4GM-150*270C
Factory Shipped with	1/8" Orifice/Drill Size
What burner orifices are needed? The required input for 3,890 feet is 227,000 Btu/h or 16% less than the sea level rating of 270,000 Btu/h.	
See Table 2 for natural gas, find the Unit Model Number and follow across the table for the elevation 2,000 - 4,000 column. From the table, choose a #31 orifice. Install a #31 orifice in every burner and check firing rate. The firing rate in this example must not exceed 227,000 Btu/h.	

WARNING:

This unit was equipped at the factory for use with natural gas only. A special kit, supplied by the manufacturer, is required to convert the unit to operate on LP/propane gas. Failure to use the proper conversion kit can cause fire, explosion, property damage, carbon monoxide poisoning, personal injury, or death.

WARNING:

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

ELECTRICAL WIRING

General — Electrical power wiring must be made in accordance with all applicable local codes and ordinances, and with the current revision of the National Electric Code NFPA 70 or in Canada CSA C.22.1 Canadian Electrical Code Part 1. If any of the original wire as supplied with the unit must be replaced, it must be replaced with material of the same gauge and temperature rating.

Line Voltage — Before proceeding with the electrical connections, make certain that the voltage, frequency and phase of the supply source are the same as those specified on the unit rating plate. Also verify that the service provided by the utility is sufficient to handle the additional load imposed by this equipment.

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.

See Table 3 or the unit wiring label for proper high and low voltage wiring. Make all electrical connections in accordance with all applicable codes and ordinances.

Use a separate branch electrical circuit for this unit. A means of electrical disconnect must be located within sight of and readily accessibility to the unit.

Units are shipped from the factory wired for 240, or 460 volt operation (See unit data label for proper incoming field wiring). For 208 volt operation, remove the lead from the transformer terminal marked 240V (on 208-230 models only) and connect it to the terminal marked 208V. For maximum circuit ampacity and maximum overcurrent protection, see the unit rating plate or Table 3.

CAUTION:

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

WARNING:

The unit cabinet must have an uninterrupted or unbroken electrical ground to minimize personal injury if an electrical fault should occur. This ground may consist of electrical wire or approved conduit when installed in accordance with existing national or local codes.

Overcurrent protection must be provided at the branch circuit distribution panel and sized as shown in Table 3 or on the unit rating label and according to the National Electric Code and applicable local codes.

Provide power supply for the unit in accordance with the unit wiring diagram, and the unit rating plate. Connect the line-voltage leads to the corresponding terminals on the terminal block inside the control compartment. Use only copper wire for the line voltage power supply to this unit. Use proper code agency listed conduit and a conduit connector for connecting the supply wires to the unit and for obtaining proper grounding. Grounding may also be accomplished by using the grounding lug provided in the control box. Do not use gas piping as an electrical ground.

Blower Speed — The blower speed is preset at the factory. For optimum system performance and comfort, it may be necessary to change the factory set speed. Refer to Fan Performance Data page for proper operating range.

To change the blower speed:

1. Disconnect all electrical power to the unit and open the motor access panel.
2. Loosen the 4 motor mounting nuts and turn the belt tensioning nut until belt can be removed from the sheave or pulley.
3. Loosen front 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. Ensure pulley, belt, and motor sheave are properly aligned.
6. Tighten the 4 motor mounting nuts.

Check all factory wiring per the unit wiring diagram and inspect the factory wiring connections to be sure none loosened during shipping or installation.

Room Thermostat — A two stage heating/two stage cooling thermostat is required for GR4GM series units. Select a thermostat which operates in conjunction with the installed accessories. The thermostat should be mounted about five feet above the floor on an inside wall. The thermostat should be kept away from drafts, slamming doors, lamps, direct sunlight and the supply air flow.

To install the thermostat:

1. Position the subbase on an inside wall and mark the mounting holes and thermostat cable openings.
2. Cut out the cable opening and route the thermostat cable from the unit's low voltage compartment to the thermostat location. The thermostat cable is supplied by the installer.
3. Connect the cable leads to the subbase or thermostat terminals and to the unit's low voltage terminal block as shown in Figure 7. A system wiring diagram is also provided on the inside of the control access panel and in Figure 8a and 8b of these installation instructions.
4. Secure the subbase or thermostat to the wall using screws provided with the thermostat.
5. Install the correct thermostat housing to subbase.
6. Refer to thermostat instruction sheet for complete detailed mounting information.

To determine the heat anticipator setting, either:

1. Add the current draw of the system components or,
2. Measure the current flow on the thermostat R-W circuit after the circulating blower motor has started.

SYSTEM CHECK

Pre-Start Check List

- Verify that the unit is level to allow proper condensate drainage.
- Verify that there is free airflow to and from the outdoor coil and that all clearance requirements are met.
- Verify that the ductwork is sealed to prevent air leakage.
- Verify that the line voltage power leads are securely connected and the unit is properly grounded.
- Verify that the low voltage wires are securely connected to the correct leads in the low voltage area of the control box.
- Verify that the gas line service pressure does not exceed 10.0 inches WC (0.36 psig), and is not less than 5.5 inches WC (0.20 psig) for natural gas. For LP gas the line service pressure must not exceed 14 inches WC (0.51 psig) and must not be less than 11.0 inches WC (0.40 psig).
- Verify that the flame roll-out control is closed. 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 that the gas line has been purged and all connections are leak tight.
- Verify that all exterior panels are replaced and securely fastened.
- Verify that the outdoor fan turns freely.

Unit Model Number	Type Gas Fuel	Heating Input (BTU/HR.)	No. of Burners	Orifice Size			
				Elevation			
				0-2000	2000-4000	4000-6000	6000-7000
GR4GM-XXX* 180C	Nat.	180,000	4	1/8"	31	2.90 mm	34
	LP	153,000	4	49	50	51	51
GR4GM-XXX* 270C	Nat.	270,000	6	1/8"	31	2.90 mm	34
	LP	230,000	6	49	50	51	51
GR4GM-XXX* 315C	Nat.	315,000	7	1/8"	31	2.90 mm	34
	LP	268,000	7	49	50	51	51

Table 2. Approximate Orifice or Drill Size for Natural and Propane (LP) Gases.

Unit Model Number	Heating Input (BTU/Hr)		Nominal Electrical Supply	Voltage Range		Compressors (2) ea.		Outdoor Motor	Indoor Motor	Single Circuit			
	Nat.	LP		Min.	Max.	RLA	LRA	FLA	FLA	Min. Circuit Ampacity		Max. Overcurrent	
										No Pwr.Ex	w/ Pwr.Ex	No Pwr.Ex	w/ Pwr.Ex
GR4GM-150C-180C	180,000	153,000	208-230/3/60	187	253	20.7	156	2.8 ea.	8.8	63.8	73.8	80	90
GR4GM-150D-180C	180,000	153,000	460/3/60	414	506	10.0	75	1.4 ea.	4.4	31.1	36.1	40	50
GR4GM-150C-270C	270,000	230,000	208-230/3/60	187	253	20.7	156	2.8 ea.	8.8	63.8	73.8	80	90
GR4GM-150D-270C	270,000	230,000	460/3/60	414	506	10.0	75	1.4 ea.	4.4	31.1	36.1	40	50
GR4GM-180C-270C	270,000	230,000	208-230/3/60	187	253	28.6	196	2.8 ea.	14.0	86.8	96.8	110	120
GR4GM-180D-270C	270,000	230,000	460/3/60	414	506	14.2	100	1.4 ea.	6.7	42.9	47.9	50	60
GR4GM-180C-315C	315,000	268,000	208-230/3/60	187	253	28.6	196	2.8 ea.	14.0	86.8	96.8	110	120
GR4GM-180D-315C	315,000	268,000	460/3/60	414	506	14.2	100	1.4 ea.	6.7	42.9	47.9	50	60

NOTES: FLA = Full Load Amps; LRA = Locked Rotor Amps; RLA = Rated Load Amps; Pwr.Ex = Power Exhaust

Table 3. Electrical Data - Base Unit Models
(See Unit Rating Plate For Units With Installed Options)

- Verify that the power supply branch circuit overcurrent protection is sized properly.
- Verify that the thermostat is wired correctly. The thermostat function switch should be set to "Off" and the thermostat fan switch should be set to "Auto."

START-UP PROCEDURE

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

Air Circulation — Leave the thermostat system switch set to "Off" and set the thermostat fan switch to "On." The blower motor should run continuously. Check for air delivery

! WARNING:

The unit is equipped with crankcase heaters. Allow 24 hours prior to continuing the start up procedures to allow for heating of the refrigerant compressor crankcase. Failure to comply may result in damage and could cause premature failure of the system. This warning should be followed at initial start up and any time the power has been removed for 12 hours or longer.

at the register(s). Ensure that there are no obstructions at the registers or in the ductwork. Set thermostat fan switch to "Auto," the blower will shut 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.

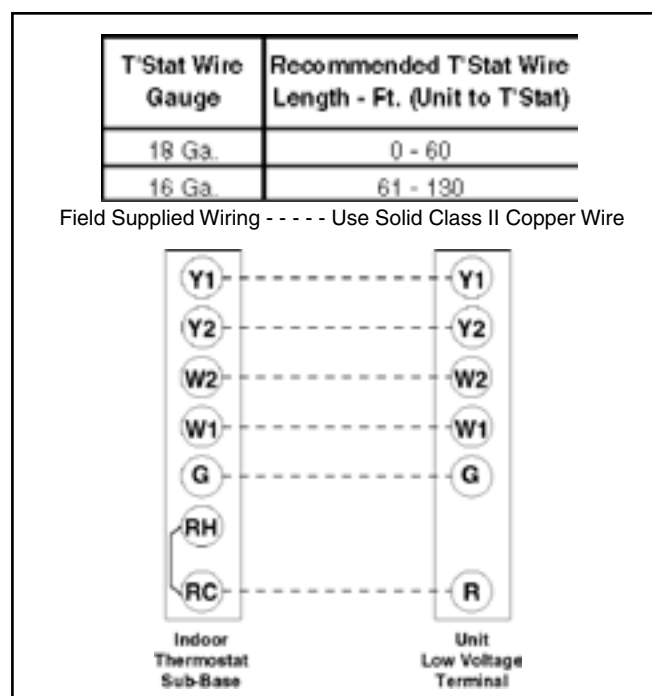


Figure 7. Typical Connections - 2 Stage Heat/Cool T-Stat

System Cooling

1. Set the thermostat system switch to “Cool” and the thermostat fan switch to “Auto.” Lower the thermostat temperature switch below room temperature and observe that the blower, both compressors and fan(s) energize. Check that air cooler than room temperature is being discharged at the register. Ensure unit refrigerant pressures are in order. Blower should be turning in direction indicated by arrow.
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 both compressors. DO NOT alter unit wiring. Listen for any unusual noises. Locate the source and correct as needed.
2. After allowing the unit to run for several minutes, set the temperature selector above room temperature, 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 procedures given on the operating instruction label, in this installation instructions or attached inside the control access panel.
3. Set the thermostat above room temperature and verify the sequence of operation (see Operating Sequence).
4. Verify that the compressor and outdoor fan motor are not energized.
5. After the unit has run for approximately five minutes, set the thermostat below room temperature and verify the shutdown sequence (see Operating Sequence).

Verifying and Adjusting Temperature Rise — Verify that 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.

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

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 (see Table 5). If the temperature rise measured is outside the range specified, it may be necessary to change the blower speed. Lower

blower speeds will increase the temperature rise and higher blower speeds will decrease the temperature rise.

The unit is equipped with an adjustable motor sheave. Refer to the Blower Speed Section of this installation instruction for details on speed selection.

The integrated control is designed to start the circulating air blower 45 seconds after the gas valve is opened and designed to turn the blower motor off 150 seconds after the gas valve is closed.

WARNING:

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

Verifying Burner Operation — To verify operation of the burners remove the louvered control access panel to ensure there is power to the unit. Set the thermostat to a temperature above room temperature and observe the ignition sequence. The burner flame should carry over immediately between all burners. The flames should be blue, without yellow tips. Flames should extend from each burner without lifting off, curling, or floating. After verifying satisfactory flame characteristics, set the thermostat to a temperature below room temperature and verify that the burner flame extinguishes completely.

Verify Operation of Over-Temperature Limit Control — To verify operation of the over-temperature limit control, make sure that the louvered control access panel is in place and that there is power to the unit. Block the return airflow to the unit by installing a close-off plate in place of or upstream of the filter. Set the thermostat to a temperature above room temperature and verify the unit operates with the correct sequence of operation (see Operating Sequence). The over-temperature limit control should function to turn off the gas valve within approximately four minutes (the exact time depending on the efficiency of the close-off in blocking the return air to the unit). The circulating air and combustion blowers should continue to run when the over-temperature limit control switch opens. Remove the close-off immediately after the over-temperature limit control opens. If the unit operates for more than four minutes with no return air, set the thermostat to a temperature below room temperature, shut off the power to the unit, and replace the over-temperature limit control.

NOTE: On some low static/high airflow applications the Over-Temperature limit control may not function. To ensure the limit is functioning properly the outlet may also have to be slightly restricted to achieve higher outlet temperatures.

COMPONENT FUNCTIONS

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.

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.

Pressure Switch — The pressure 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.

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.

UNIT MAINTENANCE

WARNING:

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

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.

Refrigerant Charging — The R4 packaged gas/electric units are fully charged at the factory. The system refrigerant charge can be checked and adjusted through the service ports provided behind the service panel. Use only gauge lines which have a “Schrader” depression device present to actuate the valve. Refrigerant charging must be done by qualified personnel familiar with safe and environmentally responsible refrigerant handling procedures. See Unit Rating Plate for proper amount of charge.

WARNING:

The R4 units are shipped fully charged and ready for installation. When a system is installed according to these instructions, no refrigerant charging is required. 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.

Removal of Unit Top Pan

CAUTION: Routine maintenance of this equipment does not require unit top pan removal. If service is needed which requires removal of the unit top pan, only qualified service personnel should perform this procedure. If removed, all cleaning and inspections of blower drive, coils, condensate drain pan, etc., should be performed while the top is off. Refer to the following steps for top pan removal and replacement:

- 1. TURN OFF ALL ELECTRICAL POWER TO THE UNIT.**
2. Remove all water tight screws securing the top and save for later use.
3. Carefully lift top pan from unit and rest on end. Do not allow top to kink or bend during removal.
4. Upon completion of service, inspect the unit top pan to ensure the insulation has not been damaged and is secured in place. Also inspect the gaskets located on each front corner of the unit top for damage. Replace if necessary to ensure a water tight seal. Secure the top pan with “ALL” screws removed in Step 2 to seal out water. Replace any worn or damaged screws “ONLY” with water tight screws or rubber washers.

Routine Maintenance—Proper maintenance is important to achieve optimum performance from the air conditioner. The ability to properly perform maintenance on this equipment requires certain mechanical skills and tools. If you do not possess these skills, contact your dealer for maintenance. Consult your local dealer about the availability of maintenance contracts. At a minimum, routine maintenance should include the following:

Air Filters — It is recommended that you inspect and clean or replace the air filters every three to four weeks. GR4GM units are equipped with 2" pleated disposable filters. Replace using filters of like size and kind.

WARNING:

Never operate the unit without a filter 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 risk.

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

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

CAUTION:

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

Motor Lubrication — The motors for the circulating air blower, outdoor fan, and combustion blower are pre-lubricated at the factory. No further oiling is required for the life of this product.

WARNING:

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

Blower Bearing Lubrication — This blower unit is equipped with three support bearings and one pillow block drive bearing. The three ball bearings are sealed cartridge units and considered permanently lubed with no further lubrication required. The drive bearing has provisions for lubrication (field supplied fitting required) since it is capable of more severe duty. The drive bearing should be checked annually for lubrication requirements based on application and operating conditions or as maintenance experience dictates. Extreme care is important to prevent overfilling and introduction of dirt into the bearing.

Blower Compartment — The blower compartment should be cleaned monthly during the heating and cooling seasons to remove any dirt and lint that may have accumulated in the compartment or on the blower and motor. 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.

Heat Exchanger and Burner Maintenance — 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 serviceman annually to ensure continued safe operation. Particular attention must be given to identify deterioration from corrosion or other sources.

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.

Cleaning of Heat Exchanger — If the heat exchanger must be cleaned due to soot or scale build up, 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.
3. Disconnect the wires from the gas valve, ignitor, and flame sensor, and rollout switch.
4. Using wrenches, separate the ground-joint union in the gas supply piping at the unit.
5. Remove the piping between the gas valve and the burner assembly.

6. Remove the four screws that hold the burner assembly in place and remove the burner assembly. **BE EXTREMELY CAREFUL NOT TO DAMAGE THE IGNITOR OR FLAME SENSOR WHILE REMOVING THE BURNER ASSEMBLY.**
7. Remove nuts securing the inducer motor to collector pan.
8. Remove screws securing the collector pan to heat exchanger panel.
9. The unit heat exchanger tubes can now be cleaned by the use of a round wire brush attached to a length of high grade stainless steel cable, such as drain cleanout cable. Repeat this sequence for each heat exchanger tube.
10. When all heat exchanger tubes have been cleaned, any debris inside the tubes can be removed with the nozzle of a vacuum cleaner and high pressure air.
11. With a light, check the condition of the upper and lower sections of the heat exchanger tube.
12. Inspect the burners and clean them (if necessary) with a soft wire brush and/or the nozzle of a vacuum cleaner. **BE EXTREMELY CAREFUL NOT TO DAMAGE THE IGNITOR OR FLAME SENSOR WHILE CLEANING THE BURNER.**
13. Replace all the parts in reverse order from which they were removed.
14. Follow the operating instructions found on the right side door and the User's Information Manual to return the unit to operation.
10. Replace all the parts in reverse order from which they were removed.
11. Follow the lighting instructions found on the right side door to return the unit to operation.



CAUTION:

Verify proper operation after servicing.

OPERATING SEQUENCE

The operating sequences for the heating, cooling, and fan modes are described below. Refer to the wiring diagram for the unit.

Cooling Mode:

1. On a call for cooling the thermostat closes, applying 24 VAC to "Y1", "G", and "Y2" if Stage 2 cooling is required.
2. "G" applies 24VAC to the main circulating blower circuit.
3. "Y1" and "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 is de-energized immediately.

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.

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.
NOTE: There is a three minute time delay before Stage 2 heat is energized.
2. The integrated control monitors the safety circuit at all times. If either the roll-out switch or the over-temperature limit controls are open, the gas valve will not energize. The combustion blower will continue 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 will run through a 15 second pre-purge.
4. The integrated control will then supply power to the direct spark ignitor and immediately energize the gas valve.

Cleaning of Burners — 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 control access panel from the unit.
4. Turn the gas control knob to the "OFF" position.
5. Disconnect the wires from the gas valve, ignitor, and flame sensor, and rollout switch.
6. Using wrenches, separate the ground-joint union in the gas supply piping at the unit.
7. Remove the piping between the gas valve and the burner assembly.
8. Remove the four screws that hold the burner assembly in place and remove the burner assembly. **BE EXTREMELY CAREFUL NOT TO DAMAGE THE IGNITOR WHILE REMOVING THE BURNER ASSEMBLY.**
9. Inspect the burners and clean them (if necessary) with a soft wire brush and/or the nozzle of a vacuum cleaner. **BE EXTREMELY CAREFUL NOT TO DAMAGE THE IGNITOR OR FLAME SENSOR WHILE CLEANING THE BURNER.**

5. The flame must be proven through the flame sensor in seven 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.
6. 45 seconds after the gas valve opens, the main air blower starts and continues to run.
7. When the thermostat is satisfied, the integrated control is de-energized. The gas valve and combustion blower are de-energized immediately while the main air blower continues to run through the blower off delay of 150 seconds.
8. If the unit fails to prove flame after three 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.

Unit Fails to Operate

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

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

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

1. The thermostat is operating properly.
2. Electrical power to the unit is turned on.
3. All safety switches are closed.
4. The gas is on and shut-off valve is open.
6. The service doors are in place.
7. The flame roll-out control is closed.
8. Refer to the diagnostic code table on the wiring diagram or see Table 4.
9. Transformer circuit breaker is reset.

FAULT CONDITION	STATUS LIGHT (RED)
Internal Control Failure	Continuous On
Flame Sense Problem	2 Flashes
Ignition Lockout	3 Flashes

Table 4. Diagnostic Codes.

Model	Heating Input	Heating Output	Heating Rise Range(°F)	CFM Range					
					4400	4600	4800	5000	5200
GR4GM-150*180C	180,000	144,000	20 - 50	Rise (°F)	30	29	28	27	26
GR4GM-150*270C	270,000	216,000	30 - 60	Rise (°F)	45	43	42	40	38
					5200	5400	5600	5800	6000
GR4GM-180*270C	270,000	216,000	30 - 60	Rise (°F)	38	37	36	34	33
GR4GM-180*315C	315,000	252,000	30 - 60	Rise (°F)	45	43	42	40	39

Table 5. Heating Rise/Range

SPECIFICATIONS AND ELECTRICAL DATA

Model R4GM-	150C180C	150D180C	150C270C	150D270C	180C270C	180D270C	180C315C	180D315C
Performance								
Heating Input BTUH (High)-Nat.	180,000	180,000	270,000	270,000	270,000	270,000	315,000	315,000
Heating Output BTUH (High)-Nat.	144,000	144,000	216,000	216,000	216,000	216,000	252,000	252,000
Heating Input BTUH (Low)-Nat.	117,000	117,000	175,000	175,000	175,000	175,000	205,000	205,000
Heating Output BTUH (Low)-Nat.	94,000	94,000	140,000	140,000	140,000	140,000	164,000	164,000
Heating Input BTUH (High)-L.P.	153,000	153,000	230,000	230,000	230,000	230,000	268,000	268,000
Heating Output BTUH (High)-L.P.	122,000	122,000	184,000	184,000	184,000	184,000	214,000	214,000
Heating Input BTUH (Low)-L.P.	100,000	100,000	149,000	149,000	149,000	149,000	174,000	174,000
Heating Output BTUH (Low)-L.P.	80,000	80,000	119,000	119,000	119,000	119,000	139,000	139,000
Capacity-Cooling BTUH (High)	138,000	138,000	138,000	138,000	172,000	172,000	172,000	172,000
Capacity-Cooling BTUH (Low)	69,000	69,000	69,000	69,000	86,000	86,000	86,000	86,000
Heating-Steady State Efficiency	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%	80.0%
Cooling-Efficiency EER	9.50	9.50	9.50	9.50	9.50	9.50	9.50	9.50
Electrical Rating - 60 Hz.								
Phase	3	3	3	3	3	3	3	3
Operating Voltage	187-253	414-506	187-253	414-506	187-253	414-506	187-253	414-506
Maximum Rated Ampacity	58.6	28.6	58.6	28.6	79.6	39.3	79.6	39.3
Max. Rated Amps w/Power Exhaust (Optional)	68.6	33.6	68.6	33.6	89.6	44.3	89.6	44.3
Minimum Circuit Ampacity (MCA)	63.8	31.1	63.8	31.1	86.8	42.9	86.8	42.9
MCA w/ Power Exhaust (Optional)	73.8	36.1	73.8	36.1	96.8	47.9	96.8	47.9
Max. Overcurrent Protection (MOP)	80	40	80	40	110	50	110	50
MOP w/ Power Exhaust (Optional)	90	50	90	50	120	60	120	60
Compressor Data	2 ea.	2 ea.	2 ea.	2 ea.	2 ea.	2 ea.	2 ea.	2 ea.
Compressors (Scrolls)	ZR68KC	ZR68KC	ZR68KC	ZR68KC	ZR84KC	ZR84KC	ZR84KC	ZR84KC
Volts	208/230	460	208/230	460	208/230	460	208/230	460
Rated Load Amps	20.7	10.0	20.7	10.0	28.6	14.2	28.6	14.2
Lock Rotor Amps	156	75	156	75	196	100	196	100
Indoor Blower - Belt Drive	Twin Blower Assembly							
Qty. - Wheel Diameter	2 - 12x12	2 - 12x12	2 - 12x12	2 - 12x12	2 - 12x12	2 - 12x12	2 - 12x12	2 - 12x12
Motor - HP/RPM	3 / 1725	3 / 1725	3 / 1725	3 / 1725	5 / 1725	5 / 1725	5 / 1725	5 / 1725
Motor Amps	8.8	4.4	8.8	4.4	14.0	6.7	14.0	6.7
Airflow Range	3750 - 5000				4500 - 6000			
Outdoor Fan(s)	3 ea.	3 ea.	3 ea.	3 ea.	3 ea.	3 ea.	3 ea.	3 ea.
Motor-HP/RPM	1/2-1075	1/2-1075	1/2-1075	1/2-1075	1/2-1075	1/2-1075	1/2-1075	1/2-1075
Motor Amps	2.8	1.4	2.8	1.4	2.8	1.4	2.8	1.4
Fan Diameter/CFM (High)	22"/9,000	22"/9,000	22"/9,000	22"/9,000	22"/10,000	22"/10,000	22"/10,000	22"/10,000
Refrigerant Charge - oz.								
Stage 1 Circuit	296	296	296	296	272	272	272	272
Stage 2 Circuit	240	240	240	240	208	208	208	208
High Pressure Switch (PSIG)	425 +/- 10 Manual Reset				425 +/- 10 Manual Reset			
Loss of Charge Switch (PSIG)	Cut Out: 5 +/- 5				Cut Out: 5 +/- 5			
	Cut In: 20 +/- 5				Cut In: 20 +/- 5			
Freeze Protection Thermostats	Opens (oF): 28 +/- 5				Opens (oF): 28 +/- 5			
	Closes (oF): 57 +/- 6				Closes (oF): 57 +/- 6			
Filters								
Style	Disposable - 2" Pleated				Disposable - 2" Pleated			
Size (Qty.)	16" x 20" x 2" (8)				16" x 20" x 2" (8)			
Gas Supply Size	3/4"				3/4"			

Table 6. Specifications and Electrical Data

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.

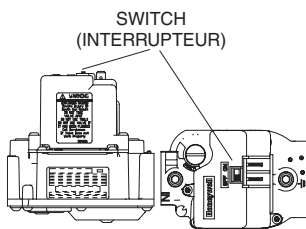


Figure 1

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).



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BLOWER PERFORMANCE R4GM-150 SERIES

Model	Motor Sheave Position	External Static Pressures (Inches Water Column)																	
		0.3			0.4			0.5			0.6			0.7			0.8		
		CFM	RPM	Kw	CFM	RPM	Kw	CFM	RPM	Kw	CFM	RPM	Kw	CFM	RPM	Kw	CFM	RPM	Kw
R4GM-150 (3 HP) Low Static Drive Kit	Fully Closed																5200	1104	2.73
	1 Turn Open																5200	1068	2.47
	2 Turns Open										5350	1028	2.43	5050	1029	2.35	4700	1030	2.16
	3 Turns Open										5400	990	2.26	4700	993	1.98	3900	995	1.85
	4 Turns Open										5350	952	2.12	4900	953	2.00	4600	954	1.87
	5 Turns Open	5300	914	1.95	5000	915	1.84	4650	916	1.73	4300	917	1.62	3700	918	1.43			

Model	Motor Sheave Position	External Static Pressures (Inches Water Column)																	
		1.1			1.2			1.3			1.4			1.5			1.6		
		CFM	RPM	Kw	CFM	RPM	Kw	CFM	RPM	Kw	CFM	RPM	Kw	CFM	RPM	Kw	CFM	RPM	Kw
R4GM-150 (5 HP) High Static Drive Kit	Fully Closed																5350	1355	4.00
	1 Turn Open																5400	1313	3.8
	2 Turns Open										5300	1271	3.55	4900	1273	3.30	4450	1275	3.10
	3 Turns Open										5100	1231	3.25	4400	1233	2.87	3900	1235	2.62
	4 Turns Open	5350	1188	3.2	5000	1189	3.00	4600	1190	2.75	4200	1191	2.60	3700	1192	2.3			
	5 Turns Open	4850	1148	2.75	4400	1148	2.50	3900	1149	2.30									

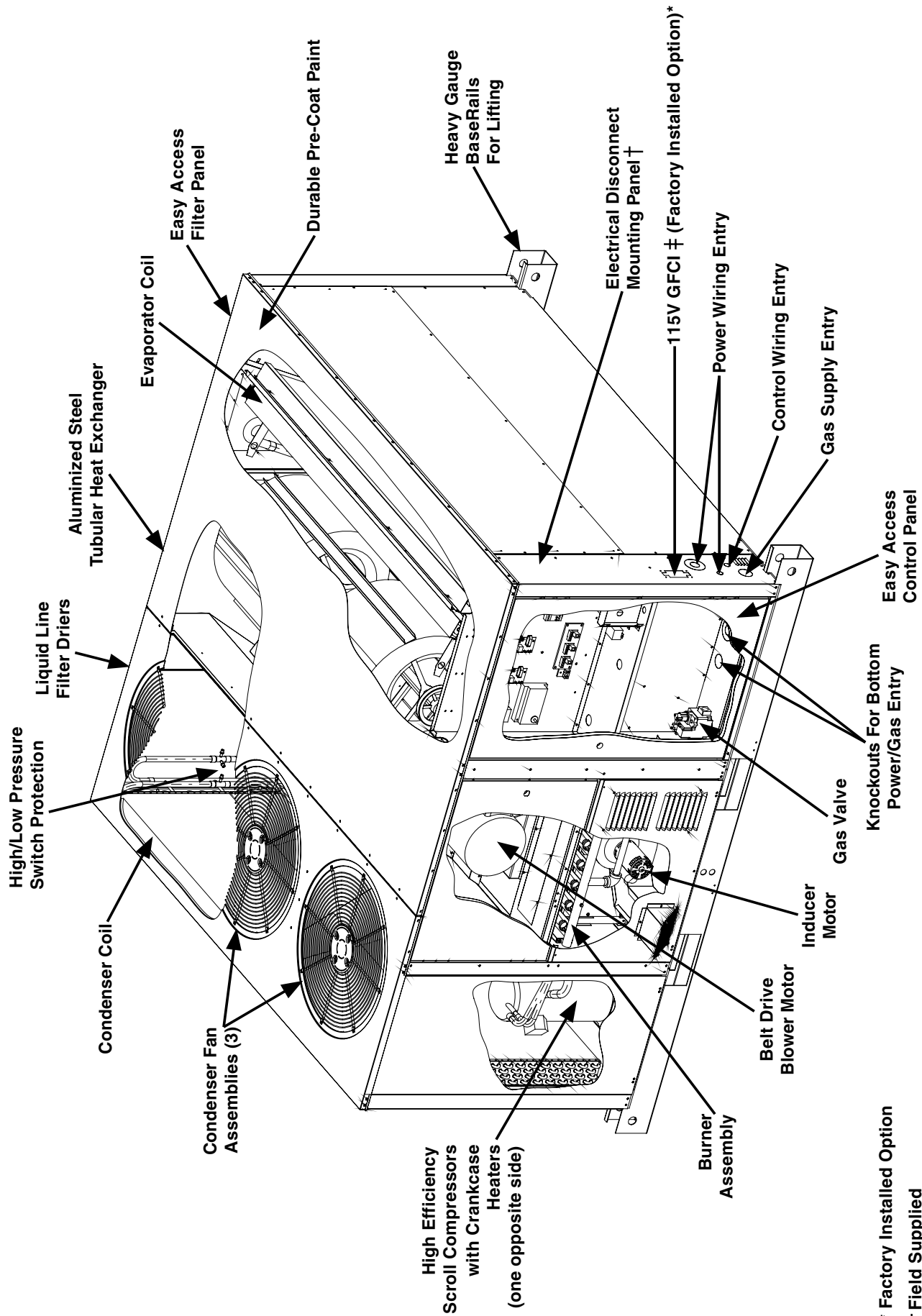
NOTES: Boldface type indicates factory recommended blower operating range.
Values include losses for air filters, unit casing, and dry evaporator coil.
See Accessory Performance Data table for additional static pressure information.

BLOWER PERFORMANCE R4GM-180 SERIES

Model	Motor Sheave Position	External Static Pressures (Inches Water Column)																	
		0.3		0.4		0.5		0.6		0.7		0.8		0.9		1.00		1.10	
		CFM	RPM	Kw	CFM	RPM	Kw	CFM	RPM	Kw	CFM	RPM	Kw	CFM	RPM	Kw	CFM	RPM	Kw
R4GM-180 (5 HP) Low Static Drive Kit	Fully Closed													6250	1218	3.79	6000	1219	3.63
	1 Turn Open										6400	1174	3.66	6100	1175	3.51	5850	1176	3.36
	2 Turns Open								6350	1139	3.52	6050	1140	3.38	5800	1140	3.23	5450	1141
	3 Turns Open					6300	1102	3.26	6050	1103	3.13	5700	1104	3.00	5450	1105	2.86	5000	1106
	4 Turns Open				6300	1066	3.10		6000	1067	2.88	5750	1068	2.64	5050	1069	2.50	4600	1070
	5 Turns Open	6200	1028	2.84	5900	1029	2.73	5600	1030	2.45	5100	1031	2.33	4600	1032	2.21			

Model	Motor Sheave Position	External Static Pressures (Inches Water Column)																	
		1.1		1.2		1.3		1.4		1.5		1.6		1.7		1.8		1.9	
		CFM	RPM	Kw	CFM	RPM	Kw	CFM	RPM	Kw	CFM	RPM	Kw	CFM	RPM	Kw	CFM	RPM	Kw
R4GM-180 (5 HP) High Static Drive Kit	Fully Closed										6000	1353	4.45	5650	1354	4.25	5350	1355	4.00
	1 Turn Open					6100	1309	4.25	5800	1310	4.00	5400	1312	3.80	5000	1314	3.60	4500	1316
	2 Turns Open				6200	1270	4.1		5600	1271	3.80	5300	1272		4900	1273	3.30	4450	1275
	3 Turns Open	5800	1228	3.65	5500	1230	3.5		5100	1231	3.30	4800	1232		4400	1233	2.87		
	4 Turns Open	5350	1188	3.2	5000	1189	3.00		4600	1190	2.75		4200	1191					
	5 Turns Open	4850	1148	2.75	4400	1148	2.5												

NOTES: Boldface type indicates factory recommended blower operating range.
Values include losses for air filters, unit casing, and dry evaporator coil.
See Accessory Performance Data table for additional static pressure information.



Model GR4GM-120C235C Shown

* Factory Installed Option

† Field Supplied

‡ Field Wiring Required

ACCESSORIES

NORDYNE Part#	Description	GR4GM -150	GR4GM -180
555617	Hinged Roof Curb 8" High - K/D	X	X
555618	Hinged Roof Curb 14" High - K/D	X	X
555619	Hinged Roof Curb 18" High - K/D (Special Order)	X	X
555620	Hinged Roof Curb 24" High - K/D (Special Order)	X	X
555621	Economizer - Modulating w/ Relief, Adapts Horizontal	X	X
555622	Power Exhaust - Prop (208-230v/3ph), Adapts Horizontal (Special Order)	X	X
555623	Power Exhaust - Prop (460v/3ph), Adapts Horizontal (Special Order)	X	X
555631	Horizontal Roof Curb - 24" High (Special Order)	X	X
555632	Horizontal Roof Curb w/ Supply Duct- 24" High (Special Order)	X	X
555633	0-35% Motorized Damper - Only (Special Order) (Requires Kit 919275)	X	X
555635	18" x 32" Supply & Return Transition (Special Order)	X	
555636	18" x 36" Supply & Return Transition (Special Order)		X
555637	18" x 32" Flush Mount Concentric Diffuser (Special Order)	X	
555638	18" x 36" Flush Mount Concentric Diffuser (Special Order)		X
555639	18" x 32" Step Down Concentric Diffuser (Special Order)	X	
555640	18" x 36" Step Down Concentric Diffuser (Special Order)		X
555641	Hooded Hail Guard (Special Order)	X	X
555642	2" Expanded Metal Coil Guard (Special Order)	X	X
547848	CO2 Sensor - 0-10V DC	X	X
547892	Duct Smoke Detect. Photo Elect.	X	X
547893	Multi-signal control SSK 451	X	X
547894	Sampling Tube ST3, 2-4 ft.	X	X
547895	Sampling Tube ST5, 4-8 ft.	X	X
917159	Thermostat-2 stage Heat/Cool	X	X
918725	Ultra-Violet Light Kit, IL60 (Requires Nordyne P/N-918801)	X	X
918726	Replacement UV Bulb , IL60	X	X
918797	Low Ambient Kit	X	X
918798	LP Gas / High Elevation Conversion Kit	X	X
918799	High Static Blower Drive Kit-12.5 Ton	X	
918800	High Static Blower Drive Kit-15 Ton		X
918801	U.V. Light Mounting Bracket Kit, 12.5/15T	X	X
919128	Current Sensing Compressor Lockout Kit	X	X
919129	Mesh Hail Guard Kit	X	X
919251	Horizontal Return Air Panel Kit	X	X
919275	Fresh Air Kit (Panel & Hood)	X	X

REPLACEMENT PARTS

Replacement parts are available through all NORDYNE distributors. When ordering, remember to have the complete Model and Serial number of the unit.

Electrical

Transformers
Time Delay Relays
Ignition Controls
Gas Valves

Contactors
Capacitors
Compressors
Relays

Thermostats
Pressure Switches
Temperature Limit Switches
Ignitors/Flame Sensors

Motors

Fan Motor

Blower Motor

Inducer Blower Motor

Components

Heat Exchanger
Cabinet Panels
Fan Grille

Expansion Valves
Blower Assembly
Gaskets

Burner Manifold
Burners/Orifices
Filter Driers

INSTALLATION/PERFORMANCE CHECK LIST

LOCATION _____ CITY _____ STATE _____

INSTALLER _____ CITY _____ STATE _____

UNIT MODEL NUMBER _____ UNIT SERIAL NUMBER _____

Minimum Clearances per Figure 3? _____ Is the vent hood installed? _____

Electrical Connections tight? _____ Is there Proper Draft? _____

Supply Voltage: _____ Volts Is vent hood free from restrictions? _____

Blower Motor H.P.: _____ Is the Filter(s) clean? _____

FUEL TYPE: _____ Has the Thermostat been calibrated? _____

Natural Gas _____ LP/Propane _____ Is the Thermostat level? _____

Gas Piping Connections leak-tested? _____ Is the Heat Anticipator Setting correct? _____

Gas Line Pressure: _____

(in. water column, with furnace operating) Has the Owner's Information been reviewed with the

Manifold Pressure: _____ owner? _____

(in. water column, with furnace operating)

Is there adequate fresh air supply for combustion and

ventilation? _____ Has the Literature Package been left with the

Furnace Input: _____ (Btu/hr)

Supply Air Temperature: _____ (°F)

Return Air Temperature: _____ (°F)

Temperature Rise: _____ (°F)

**INSTALLER: PLEASE LEAVE THESE
INSTALLATION INSTRUCTIONS WITH
THE HOMEOWNER**

