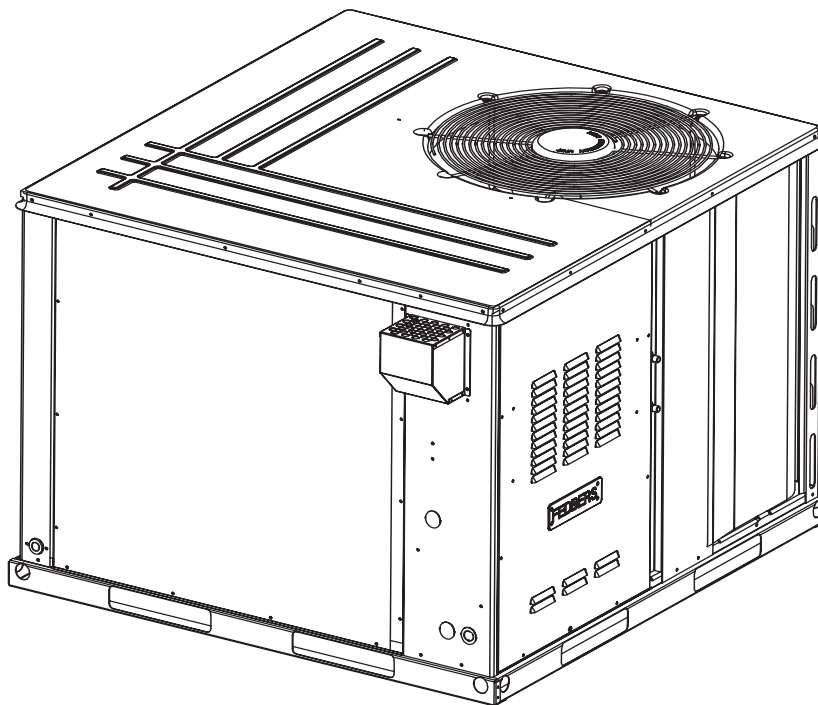


FEDDERS[®]

Gas Packaged Unit

Installation, Operation & Maintenance Manual



THESE INSTRUCTIONS ARE INTENDED AS AN AID TO QUALIFIED SERVICE PERSONNEL FOR PROPER INSTALLATION, ADJUSTMENT AND OPERATION OF THIS EQUIPMENT. READ THE ENTIRE INSTRUCTION MANUAL THOROUGHLY BEFORE ATTEMPTING INSTALLATION OR OPERATION.

THIS UNIT USES:

R-410A Refrigerant



WARNING



DO NOT USE R-22 SERVICE EQUIPMENT OR COMPONENTS ON 410-A REFRIGERANT EQUIPMENT. FAILURE TO FOLLOW THIS WARNING COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

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Safety Warnings

Recognize safety symbols, words and labels

What You Need To Know About Safety Instructions

Warnings and Important Safety Instructions appearing in this manual are not meant to cover all possible conditions and situations that may occur. Common sense, caution and care must be exercised when operating or cleaning tools and equipment.

Always contact your dealer, distributor, service agent or manufacturer about problems or conditions you do not understand.

 This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

DANGER

FIRE OR EXPLOSION HAZARD

IF THE INFORMATION IN THESE INSTRUCTIONS IS NOT FOLLOWED EXACTLY, A FIRE OR EXPLOSION MAY RESULT, CAUSING PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

WARNING

THE EXHAUST GASES FROM THIS FURNACE CONTAIN CHEMICALS, WHICH ON SOME OCCASIONS MAY INCLUDE CARBON MONOXIDE (CO). CARBON MONOXIDE IS AN ODORLESS, TASTELESS, CLEAR COLORLESS GAS, WHICH IS HIGHLY TOXIC. EVEN LOW CONCENTRATIONS ARE SUSPECTED OF CAUSING BIRTH DEFECTS AND OTHER REPRODUCTIVE HARM.

UL AND CUL RECOGNIZED CARBON MONOXIDE DETECTORS ARE RECOMMENDED FOR ALL BUILDINGS EQUIPPED WITH FOSSIL FUEL BURNING APPLIANCES. ALL CARBON MONOXIDE DETECTORS SHOULD BE INSTALLED IN ACCORDANCE WITH THEIR MANUFACTURER'S INSTRUCTIONS AND APPLICABLE LOCAL BUILDING CODES.

WARNING

IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE INJURY, PROPERTY DAMAGE OR DEATH. READ THIS MANUAL COMPLETELY BEFORE BEGINNING ANY WORK AND FOLLOW ALL SAFETY PRECAUTIONS.

DO NOT DESTROY THIS MANUAL. PLEASE READ CAREFULLY AND KEEP IN A SAFE PLACE FOR FUTURE REFERENCE BY A SERVICE TECHNICIAN.

THESE INSTRUCTIONS ARE INTENDED AS AN AID TO QUALIFIED SERVICE PERSONNEL FOR PROPER INSTALLATION, ADJUSTMENT AND OPERATION OF THIS UNIT. READ THESE INSTRUCTIONS THOROUGHLY BEFORE ATTEMPTING INSTALLATION OR OPERATION. A QUALIFIED INSTALLER MUST PERFORM INSTALLATION AND SERVICE. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN IMPROPER INSTALLATION, ADJUSTMENT, SERVICE OR MAINTENANCE, POSSIBLY RESULTING IN FIRE, ELECTRICAL SHOCK, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

BEFORE PERFORMING ANY WORK ON THIS EQUIPMENT, POWER SUPPLY MUST BE TURNED OFF AT THE DISCONNECT SWITCH TO AVOID THE POSSIBILITY OF SHOCK, INJURY, DAMAGE TO EQUIPMENT, OR DEATH.

DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS AND LIQUIDS, OR OTHER COMBUSTIBLE MATERIALS IN THE VICINITY OF THIS UNIT.

WARNING

THE FUEL SUPPLIER NORMALLY ODORIZES NATURAL GAS AND PROPANE. IN SOME CASES, THE ODORANT MAY NOT BE PERCEIVABLE. INSTALLATION OF UL AND CUL RECOGNIZED FUEL GAS DETECTORS INSTALLED IN ACCORDANCE WITH THEIR MANUFACTURER'S INSTRUCTIONS IS RECOMMENDED AS AN ADDITIONAL MARGIN OF SAFETY.

DANGER

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, OR A CELLULAR PHONE FROM A LOCATION WELL AWAY FROM THE BUILDING. FOLLOW THE GAS SUPPLIER'S INSTRUCTIONS.
- IF YOU CANNOT REACH YOUR GAS SUPPLIER, CALL THE FIRE DEPARTMENT
- DO NOT ENTER THE BUILDING OR GO NEAR THE UNIT UNTIL AUTHORIZED TO DO SO BY THE GAS SUPPLIER OR THE FIRE DEPARTMENT.

⚠ WARNING ⚠

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. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN A FIRE OR EXPLOSION CAUSING PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

⚠ WARNING ⚠

DO NOT, UNDER ANY CIRCUMSTANCES, CONNECT RETURN DUCTWORK TO ANY OTHER HEAT PRODUCING DEVICE SUCH AS FIREPLACE INSERT, STOVE, ETC. UNAUTHORIZED USE OF SUCH DEVICES MAY RESULT IN PROPERTY DAMAGE, FIRE, CARBON MONOXIDE POISONING, EXPLOSION, PERSONAL INJURY, OR DEATH.

⚠ WARNING ⚠

NEVER ALLOW PRODUCTS OF COMBUSTION OR FLUE PRODUCTS TO ENTER THE RETURN AIR DUCTWORK OR THE CIRCULATING AIR SUPPLY. ALL RETURN DUCTWORK MUST BE ADEQUATELY SEALED AND SECURED TO THE FURNACE WITH SHEET METAL SCREWS AND JOINTS TAPED. ALL OTHER DUCT JOINTS MUST BE SECURED WITH APPROVED CONNECTIONS AND SEALED AIRTIGHT.

FAILURE TO PREVENT PRODUCTS OF COMBUSTION FROM BEING CIRCULATED INTO THE LIVING SPACE CAN CREATE POTENTIALLY HAZARDOUS CONDITIONS, INCLUDING CARBON MONOXIDE POISONING THAT COULD RESULT IN PERSONAL INJURY OR DEATH.

⚠ WARNING ⚠

THIS UNIT IS EQUIPPED AT THE FACTORY FOR USE WITH NATURAL GAS ONLY. CONVERSION TO LP GAS REQUIRES A SPECIAL KIT SUPPLIED BY THE DISTRIBUTOR OR MANUFACTURER. FAILURE TO USE THE PROPER CONVERSION KIT CAN CAUSE FIRE, CARBON MONOXIDE POISONING, EXPLOSION, PERSONAL INJURY, PROPERTY DAMAGE OR DEATH.

⚠ WARNING ⚠

DO NOT ATTEMPT TO MANUALLY LIGHT THIS FURNACE WITH A MATCH OR ANY OPEN FLAME. ATTEMPTING TO DO SO CAN CAUSE AN EXPLOSION OR FIRE RESULTING IN PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

⚠ WARNING ⚠

THE SPARK IGNITOR AND IGNITION LEAD FROM THE IGNITION CONTROL ARE HIGH VOLTAGE. KEEP HANDS OR TOOLS AWAY TO PREVENT ELECTRICAL SHOCK. SHUT OFF ELECTRICAL POWER BEFORE SERVICING ANY OF THE CONTROLS. FAILURE TO ADHERE TO THIS WARNING CAN RESULT IN PERSONAL INJURY OR DEATH.

⚠ WARNING ⚠

IF SHOULD OVERHEATING OCCUR OR THE GAS SUPPLY FAIL TO SHUT OFF, SHUT OFF THE MANUAL GAS VALVE TO THE APPLIANCE BEFORE SHUTTING OFF THE ELECTRICAL SUPPLY. FAILURE TO DO SO CAN RESULT IN AN EXPLOSION OR FIRE CAUSING AN EXPLOSION OR FIRE CAUSING PROPERTY DAMAGE, SEVERE PERSONAL INJURY OR DEATH.

⚠ WARNING ⚠

LABEL ALL WIRES PRIOR TO DISCONNECTION WHEN SERVICING CONTROLS. WIRING ERRORS CAN CAUSE IMPROPER AND DANGEROUS OPERATION RESULTING IN FIRE, ELECTRICAL SHOCK, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

⚠ WARNING ⚠

HOLES IN THE EXHAUST TRANSITION OR HEAT EXCHANGER CAN CAUSE TOXIC FUMES TO ENTER THE HOME. THE EXHAUST TRANSITION OR HEAT EXCHANGER MUST BE REPLACED IF THEY HAVE HOLES OR CRACKS IN THEM. FAILURE TO DO SO CAN CAUSE CARBON MONOXIDE POISONING RESULTING IN PERSONAL INJURY OR DEATH.

⚠ WARNING ⚠

THE FURNACE CONTAINS FOIL COVERED FIBERGLASS INSULATION. RESPIRABLE PARTICLES OF FIBERGLASS ARE KNOWN TO THE STATE OF CALIFORNIA TO BE ASSOCIATED WITH RESPIRATORY DISEASE INCLUDING CANCER. WEAR APPROPRIATE MASK DURING INSTALLATION.

⚠ WARNING ⚠

THIS UNIT IS DESIGNED FOR OUTDOOR INSTALLATION ONLY. INSTALLATION INSIDE ANY PART OF A STRUCTURE CAN RESULT IN INADEQUATE UNIT PERFORMANCE AS WELL AS PROPERTY DAMAGE AND CARBON MONOXIDE POISONING RESULTING IN PERSONAL INJURY OR DEATH.

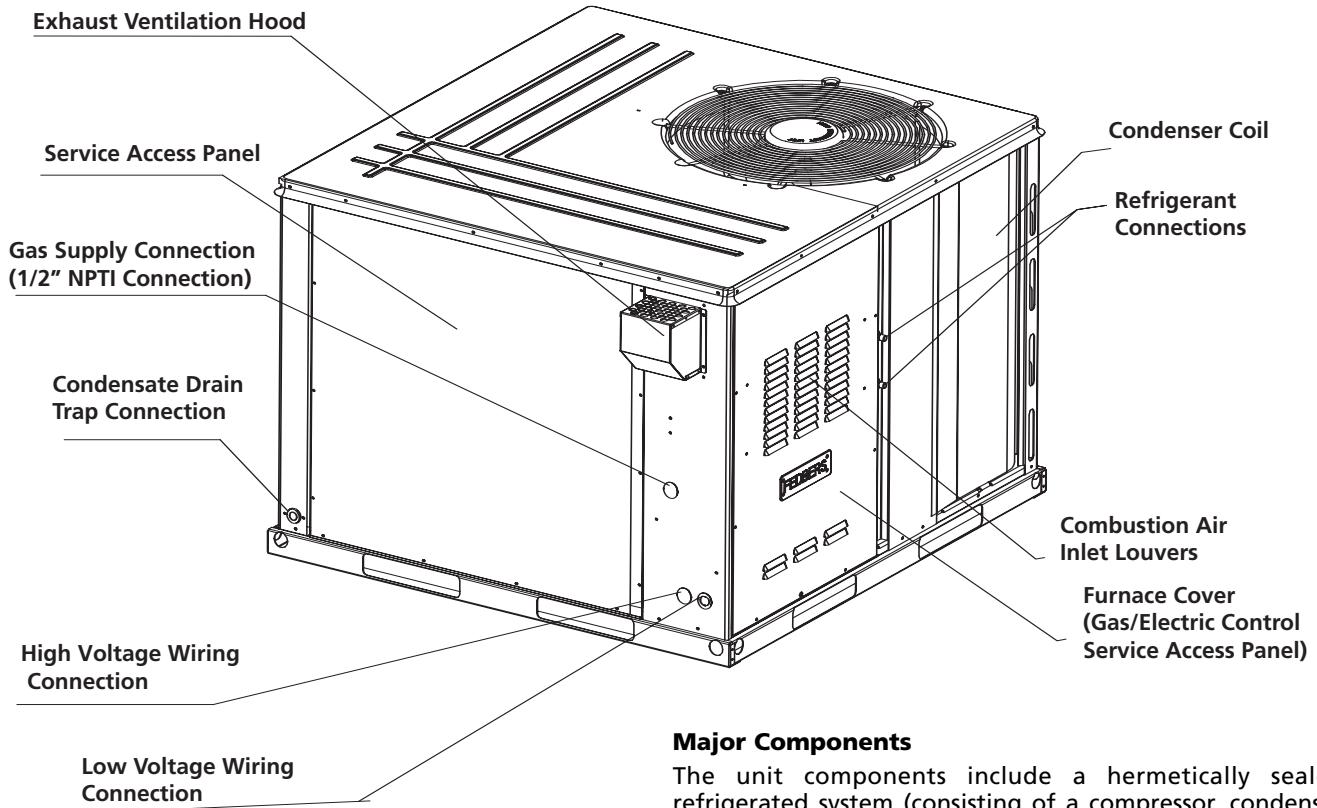
⚠ CAUTION ⚠

Always install furnace to operate within its intended temperature rise range with a duct system, which has an external static pressure within the allowable range, as specified on the unit rating plate.

⚠ WARNING ⚠

DO NOT USE R-22 SERVICE EQUIPMENT OR COMPONENTS ON 410-A REFRIGERANT EQUIPMENT. FAILURE TO FOLLOW THIS WARNING COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

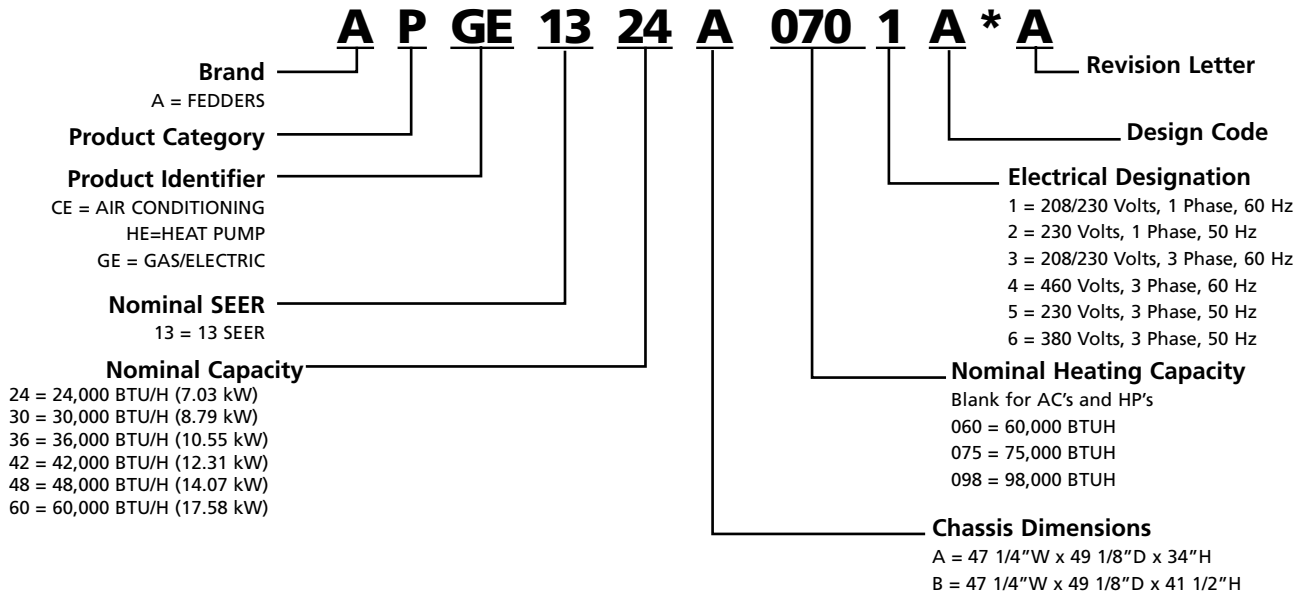
Components



Major Components

The unit components include a hermetically sealed refrigerated system (consisting of a compressor, condenser coil with TXV valve), a circulation air blower, a condenser fan, a heat exchanger assembly, gas burner and control assembly, combustion air motor and fan, and all necessary internal electrical wiring. The cooling system is factory evacuated and charged with R-410A refrigerant.

Series Nomenclature



Notes to installer

The words "SHALL" and "MUST" indicate a requirement which is essential to satisfactory and safe product performance. The words "SHOULD" and "MAY" indicate a recommendation or advice which is not essential and not required but which may be useful or helpful.

The instructions are for the use of qualified individuals specially trained and experienced in the installation of this type equipment and related system components.

Only licensed service personnel shall perform installation of the unit. Persons not qualified shall not install this equipment nor interpret these instructions.

Codes

The installer must comply with all local, state and federal codes and/or regulations pertaining to this type of equipment and its installation. Such codes and/or regulations shall take precedent over any recommendations contained herein. If there are no local codes on the subject, installations shall be made in accordance with the National Electrical Code (NEC) and recommendations made by the National Board of Fire Underwriters.

This unit must be installed:

- In accordance with all local codes, bylaws and regulations by those authorities having jurisdiction
- In the United States, this unit must be installed in accordance with the current ANSI Z223.1 (NFPA 54) National Fuel Gas Code
- In Canada, this unit must be installed in accordance with the current CAN/CGA -B149 Installation Code for Fuel Burning Appliances

Electrical connections must be made in accordance with:

- Any applicable local codes, bylaws and regulations
- United States: current edition of ANSI/NFPA 70, National Electrical Code
- Canada: current edition of CAN/CSA C22.1, Canadian Electrical Code (Part 1)

Codes and additional information may be obtained from:

- American Gas Association
1515 Wilson Boulevard
Arlington, VA, 22209
703-841-8400
- National Fire Protection Association
1 Batterymarch Park
Quincy, MA, 02269-9101
617-770-3000
- Canadian Gas Association
Suite 1, 243 Consumers Road
North York, ON, M2J 5E3
416-498-1994

Introduction

The Fedders Gas Packaged unit is a fully self contained combination gas heating/electric cooling unit designed for outdoor installation. All unit sizes have return and discharge openings for both horizontal and downflow configurations. Improper installation can result in unsatisfactory operation or dangerous conditions. Read this manual and any instructions packaged with separate equipment prior to installation. Give this booklet to the owner and explain its provisions. The owner should retain this booklet for future reference.

Inspection and Unpacking

A thorough inspection of the shipping container must be made immediately upon receiving your unit. Look for any punctures or openings, and if it appears damage has occurred, note it on the freight bill before signing. Contact delivering carrier immediately to inspect damage. Do not begin installation until this inspection is completed.

Do not unpack the unit until the unit is near the place of installation. When moving unit with a forklift, forks must pass completely through the slotted openings in the base of the unit. Care must be exercised when moving the unit. If unit must be hoisted to installation site see rigging and hoisting instructions under *Roof Installation* section.

⚠ CAUTION ⚠

MAKE SURE TO REMOVE FOAM BLOWER HOUSING SHIPPING SUPPORTS DURING UNPACKING AND BEFORE OPERATING.

SHIPPING SUPPORTS ARE LOCATED ON THE BOTTOM RIGHT AND BOTTOM LEFT SIDES OF BLOWER HOUSING.

Installation

General Considerations

Consider the following guidelines when selecting an installation location:

- Clearances and provisions for servicing
- Power supply and wiring
- Gas supply and piping
- Structural strength of supporting members (rooftop installation)
- Air duct connections and sizing
- Drain facilities and connections
- Location for minimum noise and vibration

⚠ WARNING ⚠

THIS UNIT IS DESIGNED FOR OUTDOOR INSTALLATION ONLY. INSTALLATION INSIDE ANY PART OF A STRUCTURE CAN RESULT IN INADEQUATE UNIT PERFORMANCE AS WELL AS PROPERTY DAMAGE AND CARBON MONOXIDE POISONING RESULTING IN PERSONAL INJURY OR DEATH.

Clearances

The air inlet should be located at least 12" from a wall or other obstruction for unrestricted air flow. The air inlet in the combustion blower access panel must have adequate clearance around the air opening into the combustion area.

Location of the unit should provide enough clearance around the unit to perform all service and maintenance work.

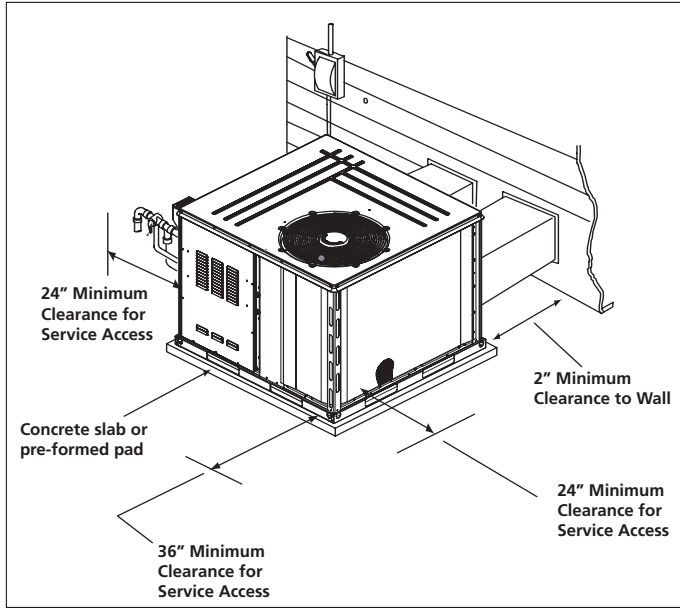


TABLE 2
CLEARANCES

Front	36"
Back	2"
Left Side (Filter Access)	24"
Right Side	12"
Below Unit	0"
Above Unit	36" (For condenser air discharge)

A 1" clearance must be provided between any combustible material and the supply air ductwork. The products of combustion must not be allowed to accumulate in a confined area and recirculate into the combustion air inlet louvers. Units must be installed outdoors. Over-hanging structure or shrubs must not block the condenser fan outlet.

Units may be installed on class A, B or C roof covering.

Power Supply Considerations

The installer shall check available power to make certain it matches the unit rating plate and that constant voltage can be maintained on the unit. Unsatisfactory performance or a possible hazard could otherwise result. The local power company should be contacted with questions concerning power supply.

Ground Level Installation

Location

If practical, unit should be located on the south side of the structure away from northerly winds to minimize the effects of blowing snow drifts and freezing rain. A wind screen or wind block can also be used.

Placement of the unit should be in a well-drained area, or the unit must be supported high enough so run-off will not enter the unit.

The air outlet should be located so as to direct discharged air away from the building. A minimum of six feet clearance above the unit is required to avoid recirculation. Avoid locating unit under low overhanging roofs.

Avoid installations under roof overhangs without guttering. Water draining from the roof onto the unit could produce excessive noise and may cause ice build-up during cold weather.

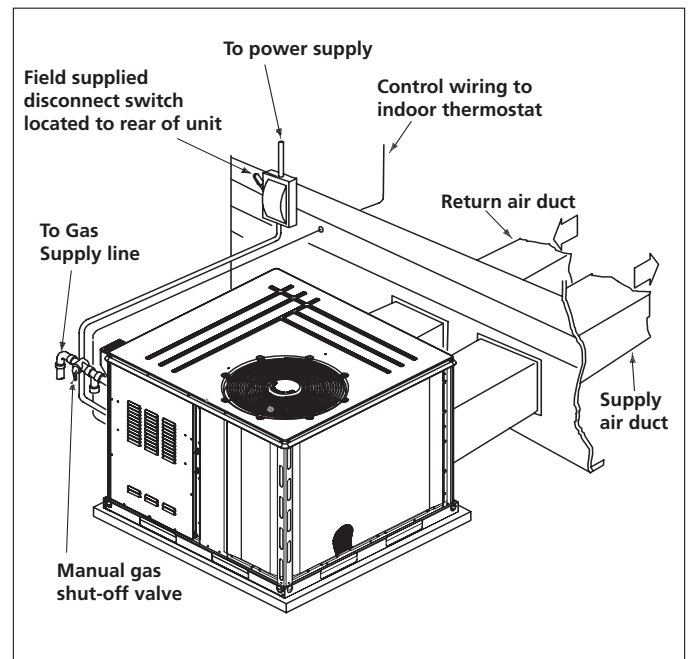
Locate unit away from windows, patios, decks, etc. where unit operation sound may disturb customer.

Do not locate where heat, lint or exhaust fumes will be discharged on the unit.

Side Mounted Supply and Return Air Openings

Units are shipped from the factory for side mounted installation supply and return air applications.

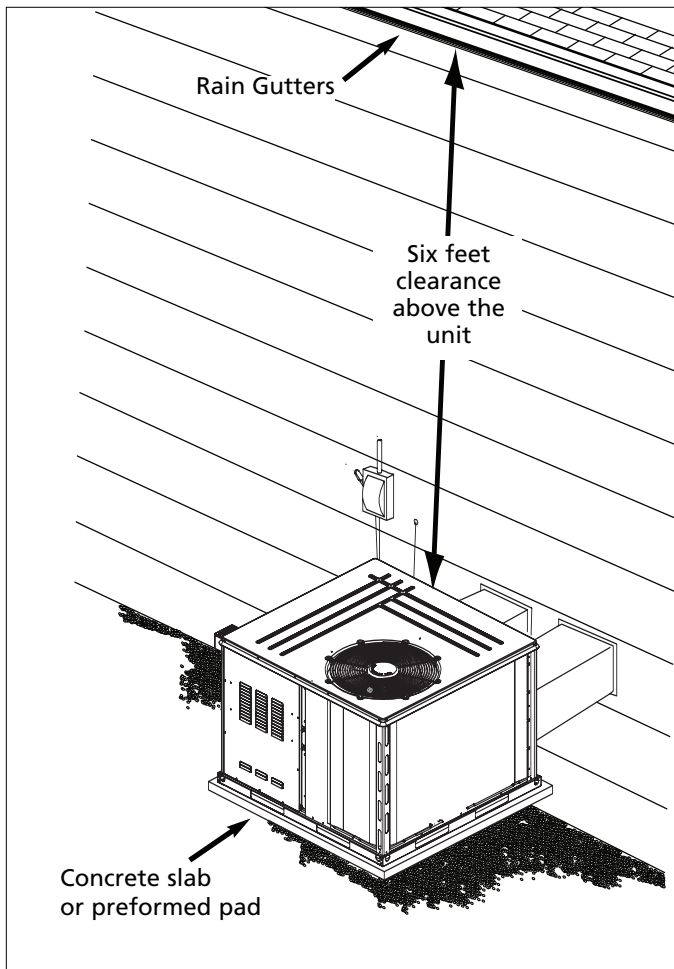
Be sure to note supply and return openings before installation.



Support

The unit should be mounted on a sturdy base. A concrete slab is recommended.

- The concrete slab should be the size of the unit or larger
- The unit must be level
- Concrete slab should not contact the building foundation to prevent possible sound or vibration transmission
- Be sure the outdoor portion of the supply and return ducts are as short as possible
- Slab should be approximately four to six inches above the ground. In areas known for snow accumulation, the unit should be elevated at least 18" above the ground.



CAUTION
UNIT MUST BE INSTALLED ON A LEVEL SURFACE.

ROOF TOP INSTALLATION

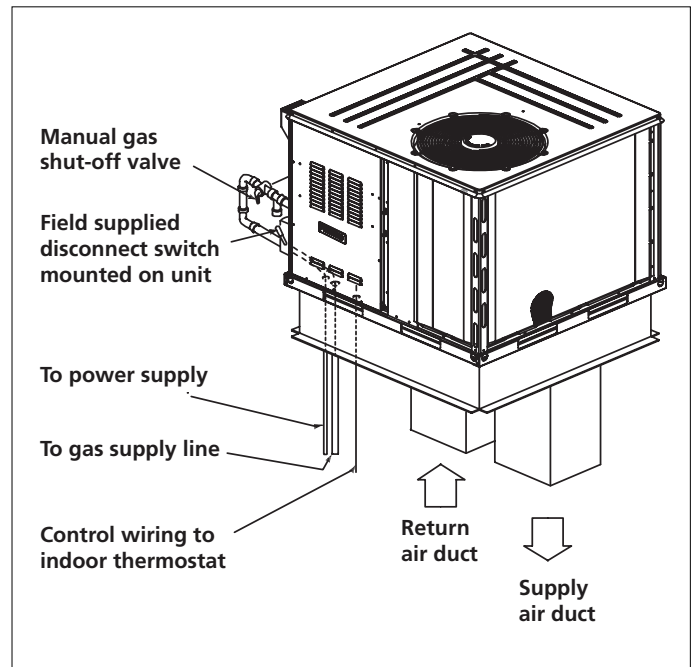
Location

Make sure the roof structure is adequate to support the weight of the unit.

Place unit as close to the conditioned space as possible. Run ducts as directly as possible to supply and return outlets.

The location of the unit on the roof should be such as to provide safe and proper access for inspection and servicing.

If unit will not be put into service immediately, block off supply and return air openings to prevent excessive condensation.

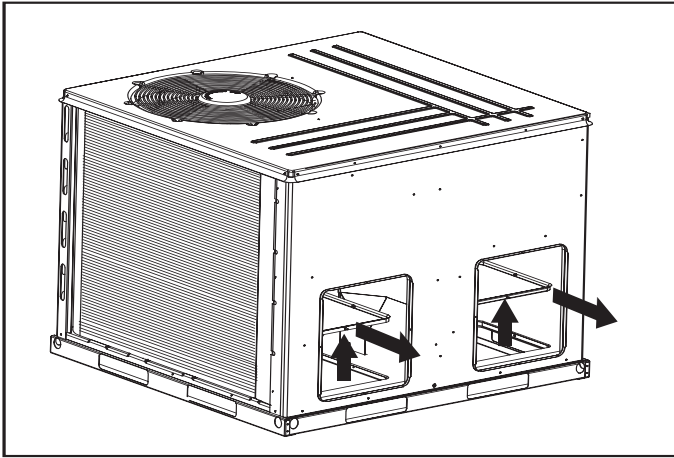


CAUTION
UNIT MUST BE INSTALLED ON A LEVEL SURFACE.

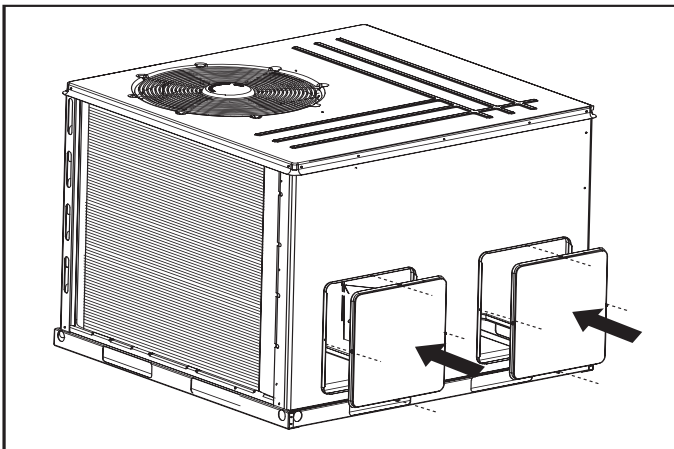
Configuring Supply and Return Openings for Downflow Applications

Units may be converted to be installed as downflow applications. To convert to downflow operation, use the following steps:

1. Remove the duct covers found in the bottom return and supply air duct openings. There are four screws securing each duct cover.



2. Install the duct covers to the side supply and return air duct openings. Secure with the four screws used in step one.



3. All ductwork must be in place and attached to the roof curb before the unit is set into place.

Roof Curb

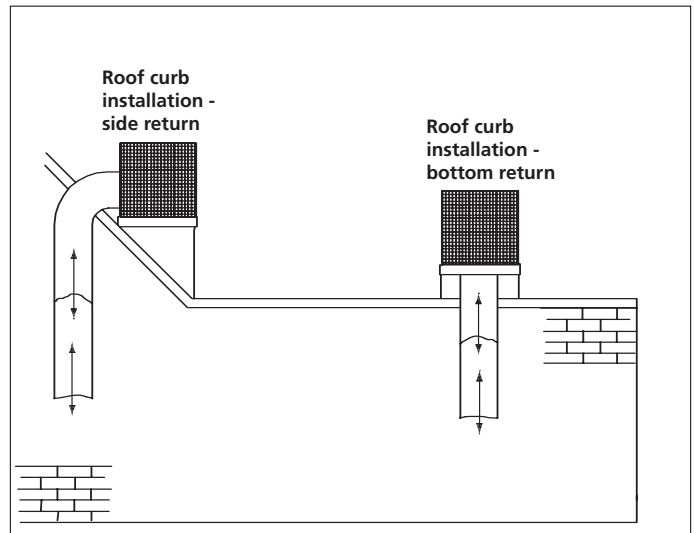
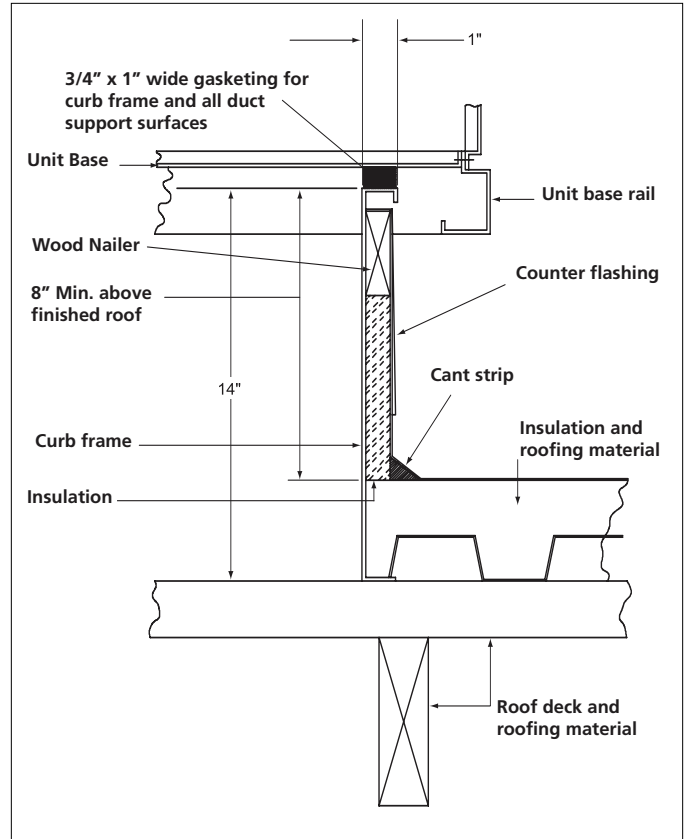
A field assembled or fabricated roof curb must be in place before the unit is hoisted to the roof top.

The roof curb must be installed on a flat level section of the roof (maximum of 1/4" per foot pitch) and provide a level mounting surface for the unit.

Be sure the roof curb spans structural members (trusses) of the roof providing sufficient support for the weight of the unit, the curb, the duct(s), and any factory or field installed accessories. Be sure the hole in the structure for the ducts is large enough to accommodate the fabricated ducts and the insulation surrounding them. See page 20 for roof curb dimensions.

Roof flashing must be installed to seal the roof curb cavity and must conform to local building codes.

Check the appropriate building codes for weight distribution requirements. Refer to the applicable roof curb mounting instruction. The unit may be installed on class A, B, or C roofing material.

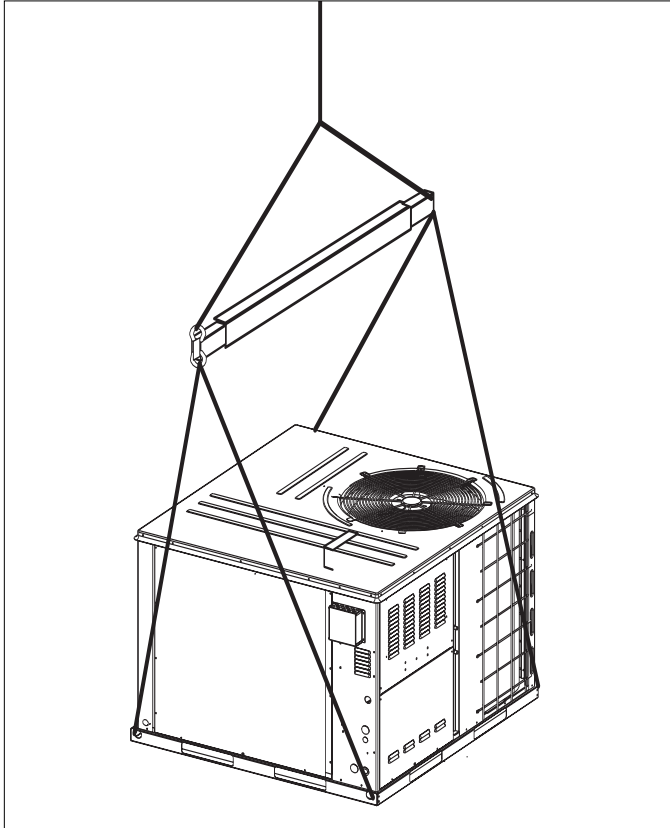


Rigging

1. Before hoisting, unit must be rigged with spreader bars of sufficient length across the top of the unit.
2. Spreader bars are required to keep the lift cables from damaging the cabinet once the unit has been lifted. Keep the tension equal.

⚠ WARNING ⚠

Be sure that the crane and lift material (bars, cable, chain or other lifting device) capacity is adequate for the unit weight.



Unit Weights and Center of Gravity

Model	Shipping Weight (lbs)	Operating Weight (lbs)	Corner Weights (lbs)				Center of Gravity	
			A	B	C	D	X	Y
APEG1324A0601A	429	419	91	88	89	92	24.97	23.75
APEG1330A0601A	440	429	98	95	96	99	24.94	23.74
APEG1336A0751A	462	451	100	96	98	101	25	23.8
APEG1342B0981A	543	528	131	129	101	103	24.77	20.77
APEG1348B0981A	554	539	133	130	102	104	24.82	20.75
APEG1360B0981A	576	561	136	133	105	107	24.81	20.83

Hoisting the Unit

1. Before preparing the unit for hoisting determine the center of gravity. Because of placement of internal components, the unit's weight may be unevenly distributed.
2. Always perform balance and rigging tests to determine the exact balance and stability before hoisting it to the installation location. Weight should be distributed equally on the cables so that it will lift evenly.
3. Roof curb and air ducts must be properly installed before the unit is to be hoisted to the roof and set in position.
4. Refer to instructions provided with roof curb for instructions on placing unit on a roof curb.

⚠ CAUTION ⚠

Improper lift tension can damage wiring, refrigeration lines, water seals and cabinet sheet metal.

Placing the Unit on Rooftop

While hoisting the unit, the center of gravity will cause condenser end to be lower than supply/return air end. Bring condenser end of unit into alignment with roof curb first. Then, with condenser end of unit resting on roof curb and using curb as fulcrum, lower front end of unit until entire unit is seated on curb. Lower unit carefully onto roof curb.

⚠ WARNING ⚠

DO NOT LIFT THE UNIT WITHOUT PERFORMING BALANCE AND RIGGING TESTS.

DO NOT LIFT THE UNIT IN WINDY CONDITIONS.

MAKE SURE THAT THE AREA BELOW THE LIFTING PATH HAS BEEN VACATED AND CLOSED TO TRAFFIC.

FAILURE TO FOLLOW THESE WARNINGS MAY RESULT IN PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

Rigging Removal

Remove spreader bars, lifting cables and other rigging equipment. Use caution not to dent scratch or otherwise damage cabinet or intake.

⚠ CAUTION ⚠

Do not allow crane hooks and spreader bars to rest on top of the unit.

DUCTWORK

- A closed return duct system must be used
- Ductwork should be flexible to prevent noise transmission from the unit to the structure.
- Ductwork should be insulated and weatherproofed in accordance with local codes. A minimum of two (2) inches of insulation is recommended to minimize heating and cooling losses.
- Ductwork should have a watertight vapor barrier to prevent moisture damage to the insulating material.
- Exposed ductwork must be weatherproofed between the unit and the building.
- Ductwork should conform to the methods of the Air Conditioning Contractors of America (ACCA), as set forth in their Manual D.
- Flexible duct connectors must be of a flame retardant material.

Flexible Duct Bends

- Use a minimum length of flexible duct to maximize efficiency and minimize energy loss.
- Any necessary bends should be made with a minimum diameter of one duct centerline radius.
- The duct should extend a few inches beyond the end of a sheet metal connection before you bend it.
- Avoid compressing ductwork when bending.

Flexible Duct Support

Flexible duct work should be supported by hangers or supports adequately attached to the structure.

Hangers must be wide enough to support the section of duct resting on the hanger without reducing the internal diameter of the duct.

The part of the hanger touching the duct should never be less than one inch wide. Narrower hanger material may be used in conjunction with a sheet metal saddle that meets this specification. This saddle must cover one-half the circumference of the outside of the flexible duct and fit neatly around the lower half of the duct.

Attaching Ductwork

Use sheet metal screws to attach flexible metal duct. These screws should be equally spaced around the duct's perimeter.

When fastening duct work to the side duct flanges on the unit, insert the screws through the duct flanges only. Do not insert the screws through the casing.

When installing ducts bigger than 12 inches use five evenly spaced #8 screws. The screws should be located at least 1/2 in. from the end of the duct.

Insulation and vapor barriers on factory-fabricated ducts should be fitted over the core connection and then also secured with a draw band.

⚠ CAUTION ⚠

The duct's vapor barrier can be subject to damage by sharp edges. Do not support the entire weight of the flexible duct on any one hanger during installation. Avoid contacting the flexible duct with sharp edges of the hanger material. You can repair damage to the vapor barrier using an approved tape. If you penetrate the interior of the duct, you should either replace that section, or treat the torn area as a connection.

Connecting two pieces of Duct

- Before installation the ends of the ducts should be trimmed so they're square
- Collars need to be a minimum of 2 inches long
- Collars and sleeves need to be inserted at least an inch into the duct before you fasten them
- The sleeves used for joining two sections of duct should be at least 4 inches wide
- When you're joining lengths of flexible duct or attaching duct to air supply or terminal equipment, make sure the adhesive is chemically compatible with the materials you're using
- To secure nonmetallic flexible duct to a sleeve or collar, use a draw band. If the duct is larger than 12 in. in diameter, the metal collar needs to have a bead put in it, and the draw band should be located behind that bead
- Tapes and sealants used on connections should be listed for UL 181B, *Closure Systems for Use with Flexible Air Ducts and Connectors*, a standard out in first edition in 1995

Filters

One of the most common causes of a problem in a forced air heating systems is a blocked or dirty filter. Air filters should be inspected monthly for dirt accumulation and replaced if necessary. Failure to maintain clean filters can cause premature heat exchanger failure.

This unit is not equipped with a filter or filter rack. A field provided filter must be installed in the return air ductwork and is required for the unit to operate properly. See table below for recommended filter sizes for units by cooling tonnage or heating input. The largest size filter must be selected for your heating input or cooling rating. A filter must be in place whenever the unit is running.

Recommended Air Filter Area (square inches), for Disposable and Permanent type filters.			
COOL (tons)	Air Flow (scfm)	Dispose	Permnt.
		Area (inch ²)	Area (inch ²)
2	810	389	194
2.5	1000	480	240
3	1150	552	276
3.5	1350	648	324
4	1550	744	372
5	1750	840	420
HEAT INPUT			
(Btu/hr)			
60,000	963	462	231
75,000	1204	578	289
98,000	1573	755	378

⚠ WARNING ⚠

DO NOT OPERATE UNIT WITHOUT AN AIR FILTER.

CONDENSATE DRAIN PIPING

A condensate drain line (NPT) should be connected to the 3/4 inch drain connection provided on the evaporator access panel end of the unit.

Pitch condensate drain downward, 1/4" per foot, away from the unit to provide free drainage to convenient open drain system. Avoid long horizontal runs.

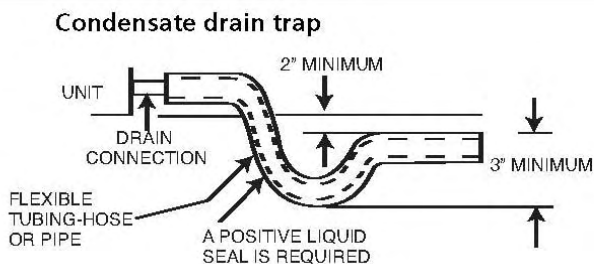
⚠ CAUTION ⚠

1. Do not connect the drain line to a closed drain system.
2. Never terminate a drain connection within the return air duct, platform or return plenum.
3. Pitch the drain line at least 1/4" per foot away from the drain pan.
4. If condensate drain connection is on the negative side of the blower, a trap must be installed to ensure positive drainage.
5. Condensate drain lines should not be reduced in size from the connection size supplied.
6. The drain line should be insulated where necessary, to prevent sweating and damage due to condensate forming on the outside surface of the line.
7. Test condensate drain line with water before operating system.

Condensate drain trap

The condensate drain must have a trap. Install condensate drain trap as close to the unit as possible. Use 3/4" drain or larger. Fill the trap with water before starting the unit to avoid air being drawn through.

Follow local codes and standard piping practices when running the drain line.



ELECTRICAL CONNECTIONS

⚠ WARNING ⚠

BEFORE PERFORMING ANY WORK ON THIS EQUIPMENT, POWER SUPPLY MUST BE TURNED OFF AT THE DISCONNECT SWITCH TO AVOID THE POSSIBILITY OF SHOCK, INJURY, DAMAGE TO EQUIPMENT OR DEATH.

⚠ WARNING ⚠

IMPROPER INSTALLATION OF THE ELECTRICAL WIRING OR THE HEAT ASSEMBLY MAY RESULT IN FIRE, SERIOUS PERSONAL INJURY, OR DEATH.

Electrical wiring and grounding must be installed in accordance with local codes or, in the absence of local codes, with the National Electrical Code ANSI/NFPA 70, Latest Revision.

It is important that proper electrical power be available for the unit. Voltage requirements are printed on the unit nameplate.

Disconnect Switch

Provide an approved weatherproof disconnect either on the side of the unit or within close proximity and within sight of the unit.

Over Current Protection

The branch circuit feeding the unit must be protected as shown on the unit rating plate.

Line Level Power Wiring

The power supply lines must be run in weathertight conduit to the disconnect and into the bottom of the unit control box. Provide strain relief for all conduit with suitable connectors.

Provide flexible conduit supports whenever vibration transmission may cause a noise problem within the building structure.

For branch circuit wiring (main power supply to unit disconnect), wire size for the length of run should be determined using the circuit ampacity found on the unit nameplate and the N.E.C.

For more than 3 conductors in a raceway or cable, see the N.E.C. for derating the ampacity of each conductor.

GROUNDING: THE UNIT MUST BE ELECTRICALLY GROUNDED IN ACCORDANCE WITH LOCAL CODES OR THE NATIONAL ELECTRIC CODE.

NOTE: Unit must be grounded for ignitor to operate properly. Gas pipe to unit is not an adequate ground. Ground the unit internally as provided. See wiring diagram for location.

Low Voltage Control Wiring

Low voltage control wiring should not be run in conduit with power wiring unless Class 1 wire of proper voltage rating is used. Route the thermostat cable or equivalent single leads of No. 18 AWG colored wire from the thermostat subbase terminals through the rubber grommet on the unit. See Figures 3 and 4 for the control entry location. Make connections as shown on the unit wiring diagram and in Figure 18.

Do not short thermostat wires since this will damage the control transformer.

Recommended wire sizes and lengths for installing the unit thermostat are provided in Table 5. The total resistance of these low voltage wires must not exceed one (1) ohm. Any resistance in excess of 1 ohm may cause the control to malfunction because of the excessive voltage drop.

Thermostat Heat Anticipator

The thermostat heat anticipators should be set to .4 amps on single or two stage thermostats.

IMPORTANT: Upon completion of wiring check all electrical connections, including factory wiring within the unit, make sure all connections are tight. Replace and secure all electrical box covers and access doors before leaving the unit or turning on the power to the unit.

Thermostat

The room thermostat should be located on an inside wall approximately 56" above the floor where it will not be subject to drafts, sun exposure or heat from electrical fixtures or appliances. Follow manufacturer's instructions enclosed with the thermostat for general installation procedure. Four color coded insulated wires (minimum #18 AWG) should be used to connect thermostat to unit.

Power and Control Wiring

Field wiring to the unit must conform to provisions of the current NEC ANSI/MFPA No. 70 or CEC and/or local ordinances. The unit must be electrically grounded in accordance with local codes or in their absence with the NEC/CEC voltage tolerances which must be maintained at the compressor terminals during starting and running conditions as indicated on the unit rating plate.

The wiring entering the cabinet must be provided with mechanical strain relief.

A fused disconnect switch should be field supplied

REFRIGERATION SYSTEM

R-410a Refrigerant Precautions

⚠ WARNING ⚠

DO NOT USE R-22 SERVICE EQUIPMENT OR COMPONENTS ON 410-A REFRIGERANT EQUIPMENT. FAILURE TO FOLLOW THIS WARNING COULD RESULT IN PERSONAL INJURY OR EQUIPMENT DAMAGE.

- R-410A refrigerant operates at much higher pressure than R-22 refrigerant
- Only use service equipment and replacement components designed to operate with R-410A refrigerant
- Recovery cylinder service pressure rating must be 400 psig, DOT 4BA400 or DOT BW400
- Hose pressure rating must be 700 psig
- Manifold set ratings should be 700 psig high side and 180 psig low side
- Leak detectors should be designed to detect R-410A refrigerant

- R-410A refrigerant systems should be charged ONLY with liquid refrigerant
- Only use liquid line filter driers with rated working pressures above 600 psig
- Do not expose oil to atmosphere.
- Use only TXV rated for use with R-410A refrigerant

Subcooling Charging

The unit comes from the factory charged with refrigerant. If the unit needs additional refrigerant follow standard procedures for charging systems that use R-410A refrigerant.

Coils with TXVs should be charged 15-17 degrees F (+ or - one degree) of sub-cooling. For proper sub-cooling readings, a standard high side gauge is required for pressure readings.

Use the chart below to determine the required sub-cooling value.

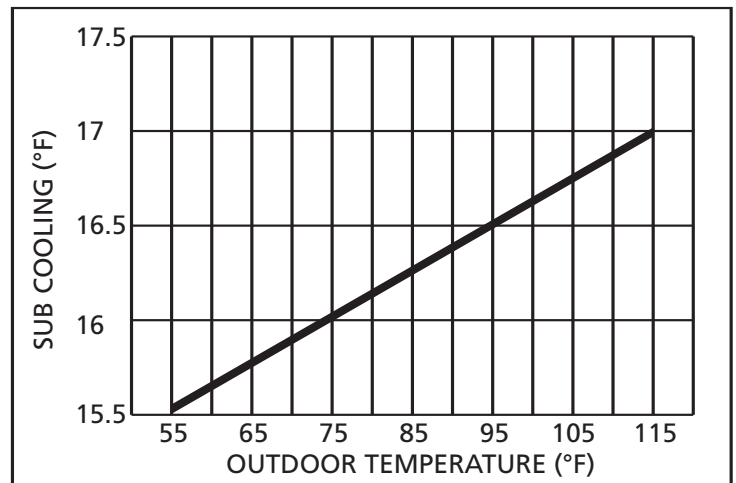
Instructions

1. Measure the outdoor air temperature. (T1)
2. Measure the discharge pressure at the service port provided and determine the liquid refrigerant temperature by the scale on the high side pressure gauge.
3. Measure the liquid line temperature at the TXV.
4. Subtract T3 from T2. (T2 - T3) This is the subcooling value. Compare this value and the outdoor temperature (T1), to the chart below. If the value is below the line, add refrigerant. If the value is above the line, remove refrigerant charge. When removing refrigerant, always use standard reclaim procedures.

NOTE: For the majority of installations no adjustment to the TXV setting is required. However, if the measured superheat at the evaporator is less than 4° or greater than 8° an adjustment is required. The adjustment stem is at the base of the valve under the flare nut. To increase superheat tighten the stem clockwise and to decrease superheat back-out the stem counter-clockwise. Use a 1/4" refrigeration service wrench for this function.

NOTE: When removing refrigerant, always use standard reclaim procedures.

SUBCOOLING CHART



Heating System

Gas Precautions

⚠ DANGER ⚠

WHAT TO DO IF YOU SMELL GAS:

- DO NOT TRY TO LIGHT ANY APPLIANCE
- IMMEDIATELY CALL YOUR GAS SUPPLIER FROM A LOCATION WELL AWAY FROM THE GAS SOURCE. FOLLOW THE GAS SUPPLIER'S INSTRUCTIONS.
- IF YOU CANNOT REACH YOUR GAS SUPPLIER, CALL THE FIRE DEPARTMENT
- DO NOT ENTER THE BUILDING UNTIL AUTHORIZED TO DO SO BY THE GAS SUPPLIER OR THE FIRE DEPARTMENT

IMPROPER INSTALLATION, OPERATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE INJURY, PROPERTY DAMAGE OR DEATH. REFER TO THIS MANUAL FOR PROPER INSTALLATION, OPERATION, SERVICE, AND MAINTENANCE INSTRUCTIONS.

A QUALIFIED INSTALLER, SERVICE AGENCY OR THE GAS SUPPLIER MUST PERFORM INSTALLATION AND SERVICE.

⚠ DANGER ⚠

BEFORE MAKING THE GAS PIPE CONNECTION GIVE SERIOUS CONSIDERATION TO PROVIDING THE REQUIRED CLEARANCE NECESSARY TO REMOVE THE ACCESS PANELS ON THE UNIT (E.G., ECONOMIZER AND FILTER ACCESS PANELS).

⚠ DANGER ⚠

In the absence of local codes, the installation must conform with American National Standard--Z223.1--National Fuel Gas Code, Latest Revision.

The available gas supply must agree with the required gas supply marked on the unit nameplate. Minimum permissible gas supply pressure for purpose of input adjustment must be at least 7.0 in. w. c. (inches water column) for natural gas and 11 in. w. c. for LP gas.

GAS SUPPLY LINE PRESSURE

Before connecting the unit to the gas supply line, be sure to determine the gas pressure in the line.

If the gas supply pressure is excessive (above 14 inches water column or 1/2 psig), install a pressure regulator either at the supply source or in the branch circuit serving the unit. Once the regulator is installed, set it to provide a pressure of 7 inches water column with the unit operating and no greater than 14 inches water column with the unit not firing.

NOTE: Gas pressure in excess of 14 inches water column (1/2 psig) may damage the regulator, while improper regulation may result at pressures lower than 5 inches water column at the unit inlet.

If the supply line pressure is below the minimum supply pressure indicated on the unit nameplate, contact the gas supply company.

Follow these steps to complete the installation of the unit gas piping.

1. Install a tapped, Style A (1/8-inch NPT tap) shut-off gas cock at the end of the gas supply line near the unit. Be sure the tapped gas cock is downstream of the pressure regulator, if used, exceeding 1/2 psig (3.48 kPa).

The furnace must be isolated from the gas supply piping system by closing its individual manual shut-off valve during any pressure testing of the gas supply piping system at test pressures less than or equal to 1/2 psig (3.48 kPa).

NOTE: The shut-off gas cock must be installed outside of the unit and should meet the specifications of all applicable national and local codes.

2. Install a ground union joint downstream of the shut-off cock. This joint must also be installed outside of the unit.
3. Install a drip leg at least six (6) inches in depth next to the union. This drip leg is required to collect any sediment that may be deposited in the line.
4. Before connecting the piping circuit to the unit, bleed the air from the supply line. Then cap or plug the line and test the pressure at the tapped shut-off cock. The pressure reading should not exceed 14 inches water column.
5. Using an appropriate backup wrench on the gas valve inlet boss, connect the gas piping to the unit. Check the completed piping for leaks using a soap and water solution or the equivalent.
6. After installation of the gas pipe in the unit, the pipe chase opening should be closed with the filler/barrier plug provided.

Natural Gas Pipe Sizing Chart

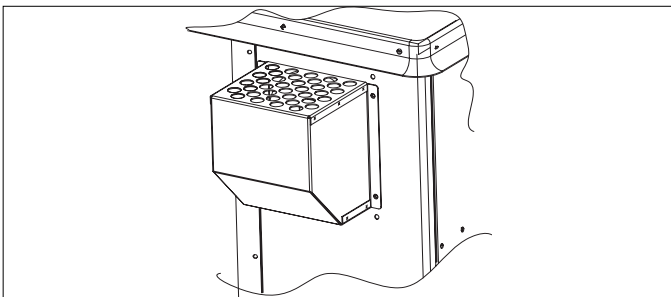
Length in Feet	Nominal Inches Iron Pipe Size			
	1/2"	3/4"	1"	1 1/4"
10	132	278	520	1,050
20	92	190	350	730
30	73	152	285	590
40	63	130	245	500
50	56	115	215	440
60	50	105	195	400
70	46	96	180	370
80	43	90	170	350
90	40	84	160	320
100	38	79	150	305

Propane (LP) Gas Pipe Sizing Chart

Length in Feet	Nominal Inches Iron Pipe Size			
	1/2"	3/4"	1"	1 1/4"
10	275	567	1,071	2,205
20	189	393	732	1,496
30	152	315	590	1,212
40	129	267	504	1,039
50	114	237	448	913
60	103	217	409	834
70	96	196	378	771
80	89	185	346	724
90	83	173	322	677
100	78	162	307	630

Flue Vent Hood

The flue vent hood with screen is shipped loose. This hood must be installed to assure proper unit operation. The hood must be fastened to the outside of the side gas control/electrical compartment with the screws provided in the bag attached to the inside of the gas control/electrical compartment.



⚠ WARNING ⚠

THE FLUE EXHAUST HOOD MUST BE PROPERLY INSTALLED AND WITHIN THE RECOMMENDED CLEARANCES. FURTHER COMMUNICATIONS AND ACTION MUST BE GIVEN TO THE HOME OR BUILDING OWNER TO ELIMINATE ANY UNAUTHORIZED HUMAN CONTACT AROUND THIS AREA DURING THE HEATING CYCLE. FLUE HOOD SURFACE AND THE IMMEDIATE AREA REACH HIGH TEMPERATURES DURING THE HEATING CYCLE.

CONVERSIONS

High Altitude

In the United States, the modifications for high altitude are based on a 4 percent reduction of input capacity for every 1000 feet above sea level. Table 5a on page 14 illustrates the impact of altitude for selected elevations. Ratings shown apply to the highest elevation in range.

Consult with local fuel suppliers or authorities to determine local regulations or customs.

In Canada, the furnace may be converted for high altitude (2000 - 4500 feet) by changing the burner orifices. Use Kit No. 30552. The kit contains both natural gas and L.P. gas orifices; see table on page 15.

Natural to L.P. Gas

This series furnace is manufactured as a natural gas (sea level) appliance. It may be converted to L.P. gas with the use of Kit No. 30482 (contact manufacturer for availability). The kit contains the orifices needed for all models, the regulator spring for the gas valve, and a label to affix adjacent to the appliance rating plate to alert subsequent service technicians of the conversion.

L.P. to Natural Gas

Although the furnace is manufactured initially as a natural gas appliance, if after an L.P. Gas conversion it becomes necessary to convert back to natural gas, and if the original parts are unavailable, Kit No. 30551 may be purchased. It is similar in nature and content to the L.P. Gas conversion kit.

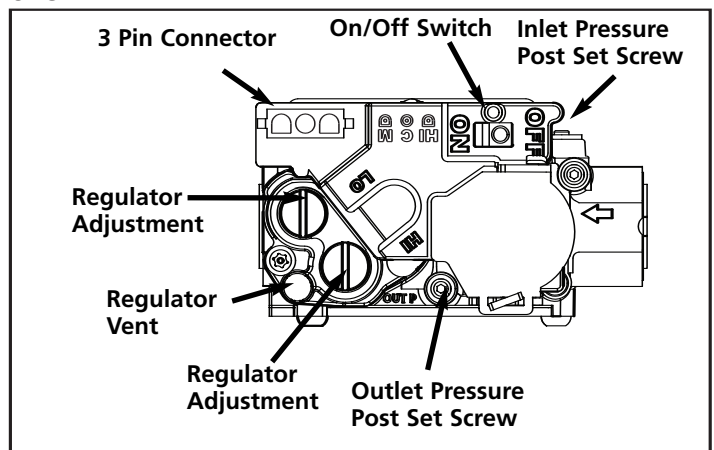
Conversion Steps

To convert from sea level to high altitude, from natural gas to L.P. gas, or from L.P. gas to natural gas, follow these steps:

Turn off gas supply to the furnace if applicable.

1. Shut off electrical power to the furnace if applicable.
2. Remove the upper front door to expose the gas train and burner assembly.
3. Unfasten the ground joint union between the gas valve and gas supply piping if applicable.
4. Unfasten the burner manifold pipe from the burner assembly. It is held in place by 2 screws on either end of the manifold pipe.
5. Remove the existing orifices with a 7/16 inch socket, box or open-end wrench. Install the replacement orifices. The orifice spuds are brass, and do not normally require pipe dope. A light grease may be used to lubricate the threads. The orifice spuds have tapered threads; do not over-tighten them.
If completing a fuel conversion, remove the protective screw cap from the gas valve regulator adjustment. Remove the regulator adjustment screw by turning it counterclockwise. Remove the existing regulator spring.
6. Install the new regulator spring. NOTE: If converting the gas valve, the regulator spring is tapered. The tapered end (small end) is inserted back into the gas valve regulator adjustment cavity.
Reinstall the adjustment. Give it 3 full clockwise turns initially. Do not reinstall the protective screw cap yet.
7. Reinstall the burner manifold pipe assembly following steps 4, 5, and 6 in reverse order.

**FIGURE 8
GAS VALVE**



High Altitude Chart LP/ Natural Gas Conversions

HIGH ALTITUDE SPECIFITION - USA

MODEL Input×1000	ALTITUDE	INPUT BTU/hr	NAT ORIFICE	LP ORIFICE	QTY.
60	0-2000	60000	1.90mm	1.15mm	4
	2000-3000	52800	1.80mm	1.10mm	
	3000-4000	50400	1.75mm	1.05mm	
	4000-5000	48000	1.70mm	1.00mm	
	5000-6000	45600	1.65mm	1.00mm	
75	0-2000	75000	1.90mm	1.15mm	5
	2000-3000	66000	1.80mm	1.10mm	
	3000-4000	63000	1.75mm	1.05mm	
	4000-5000	60000	1.70mm	1.00mm	
	5000-6000	57000	1.65mm	1.00mm	
91	0-2000	90000	1.85mm	1.10mm	7
	2000-3000	79200	1.80mm	1.05mm	
	3000-4000	75600	1.75mm	1.00mm	
	4000-5000	72000	1.70mm	1.00mm	
	5000-6000	68400	1.65mm	1.00mm	

HIGH ALTITUDE SPECIFICATIONS - CANADA

MODEL Input×1000	ALTITUDE	INPUT BTU/hr	NAT ORIFICE	LP ORIFICE	QTY.
60	0-2000	60000	1.90mm	1.15mm	4
	2000-4500	54000	1.85mm	1.10mm	
75	0-2000	75000	1.90mm	1.15mm	5
	2000-4500	67500	1.85mm	1.10mm	
91	0-2000	90000	1.85mm	1.10mm	7
	2000-4500	81000	1.80mm	1.05mm	

Sequence of Operation-Heating

When the room temperature drops below the setpoint, a call for first stage heat is initiated and the W1 contact closes. The inducer fan is energized and the control waits for the low pressure switch to close. Once the low pressure switch contact closes, a 15 second pre-purge is initiated. Upon completion of pre-purge, the ignitor is energized.

The 10 second ignitor warm up delay begins and, at the end of the ignitor warm up, the first stage of the two stage gas valve is energized. Flame must be detected within 4 seconds. If flame is detected, the 30 second main blower on-delay timer is initiated. Upon completion of the main blower on-delay timer, the inducer fan slows to low speed and the main blower is energized to start the air flow across the heat exchanger at low heating speed.

When a two stage thermostat is being used and the jumper on jumper post P5, located on the integrated ignition control, is in the NONE position, a call for second stage heat (W1 and W2) after a call for first stage heat will energize the inducer at high speed and the main blower will speed up to high heat speed. The second stage pressure switch contacts will close and energize the second stage of the gas valve (high fire). When the second stage of the thermostat is satisfied, the inducer motor is reduced to low speed and the second stage of the gas valve is de-energized. The main blower also slows to the low heat speed. When the first stage of the thermostat is satisfied, the first stage of the gas valve is de-energized and the blower off-delay timing begins. The inducer will post-purge for an additional 5 seconds. Upon completion of the blower off-delay timer, the main circulating fan will be de-energized, stopping the blower. The control now waits for subsequent calls for heat.

When a single stage thermostat is being used and the jumper on jumper post P5, located on the integrated ignition control, shall be in the 5 or 10 position. When a call for heat occurs (W1), a 5 or 10 minute second stage recognition timer will be activated as set by jumper post P5 being in the 5 or 10 position respectively. Following this delay, the second stage of heat is energized as previously described. When the thermostat is satisfied, the gas valve is completely de-energized, the same 5 second post-purge occurs, and the blower off-delay is initiated. Upon completion of the blower off-delay timer, the main circulating fan will be de-energized, stopping the blower. The control now waits for subsequent calls for heat.

Sequence if the furnace does not light up or detect flame:

If flame is not detected during the trial-for-ignition period, the gas valve is de-energized, the ignitor is turned off, and the control goes into the "retry" sequence.

The "retry" sequence provides a 30-second wait with the inducer interpurge following an unsuccessful ignition attempt (flame not detected). After this wait, the ignition attempt is restarted. Two retries will be attempted before the control goes into system lockout.

If the flame is established for more than ten seconds after ignition, the controller will clear the ignition attempt (or retry) counter. If flame is lost after 10 seconds, the control will restart the ignition sequence.

Filters

Filters must always be used and must be kept clean. When filters become dirt laden, insufficient air will be delivered by the blower, decreasing your units efficiency and increasing operating costs and wear and tear on the unit and controls.

Filters should be checked monthly; this is especially important since this unit is used for both heating and cooling.

⚠ WARNING ⚠

DO NOT OPERATE UNIT WITHOUT AN AIR FILTER.

⚠ WARNING ⚠

DISCONNECT THE ELECTRICAL POWER TO THE UNIT BEFORE ATTEMPTING ANY MAINTENANCE. FAILURE TO DO SO MAY CAUSE ELECTRICAL SHOCK RESULTING IN SEVERE PERSONAL INJURY OR DEATH.

Consult your installation contractor or service technician if you have any questions regarding filters.

Routine Examination

It is good practice to give a quick inspection each time you inspect or clean the air filter.

Things to check:

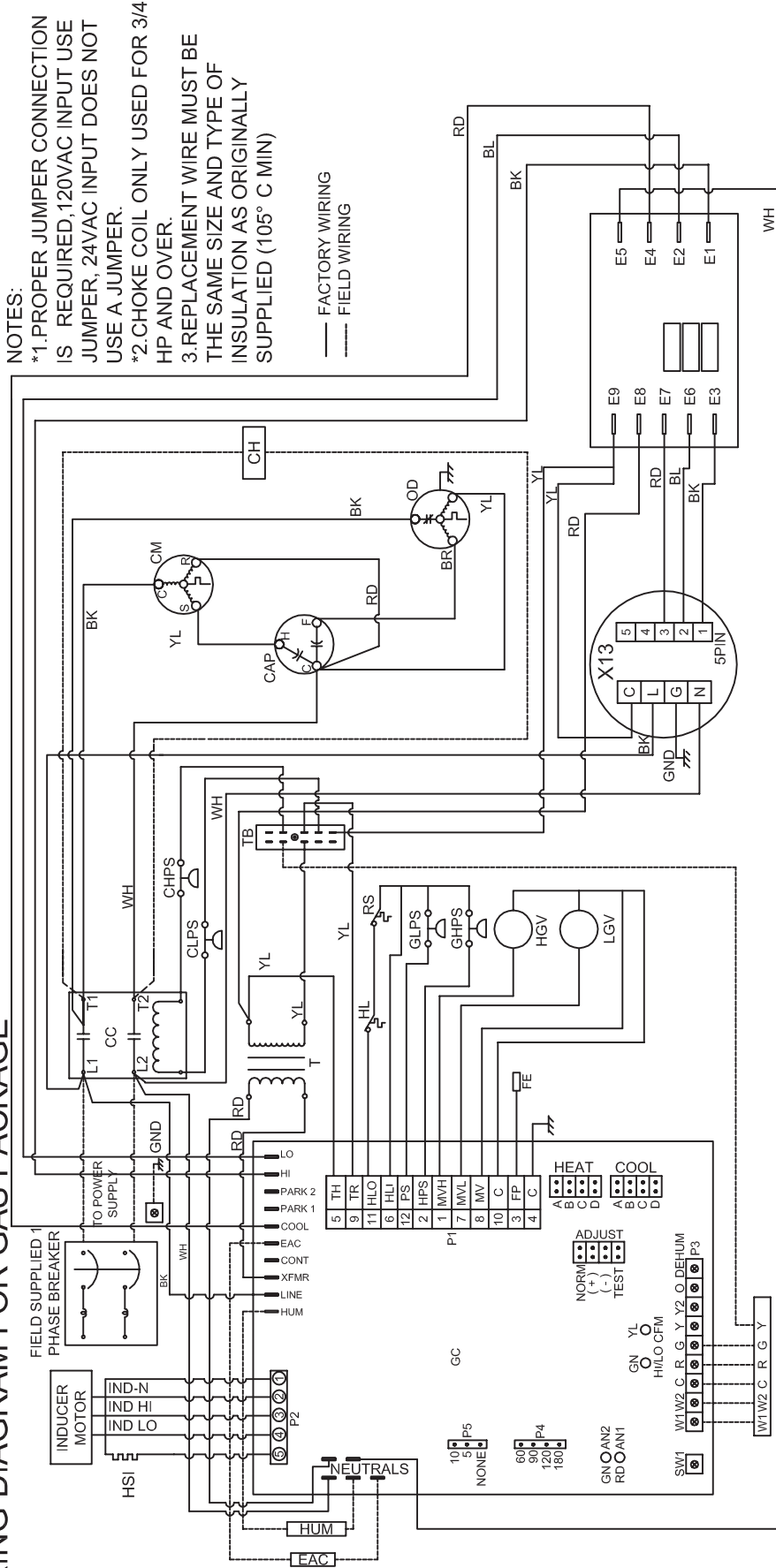
- All areas around the air openings should be clear and free of obstructions.
- Check the venting to ensure that it is still fastened to the unit. It should be physically sound, without holes or excessive corrosion.
- The return air duct connection must be sound and securely fastened.
- All ductwork should be secure, and all ductwork should be solidly supported throughout the heating system.
- The unit should be well supported. Base support should be physically sound without sagging, cracks, gaps, etc.
- Check for obvious signs of deterioration.
- The gas burner should be observed from time to time during the heating season to ensure that the flames are clean and blue. A bit of orange color in the flame is not likely to be a problem and is probably dust particles burning. If you observe lazy yellow flames, call your heating or service contractor immediately. The yellow flames inevitably lead to sootups.

Cleaning

It is advisable to keep dust buildup on warm surfaces to a minimum, since dust, in some cases, can be combustible.

Dust buildup in the circulating fan can impair blower performance; therefore, reduce efficiency. Because the blower wheel is fastened directly to the blower motor, we recommend that major cleaning be left to your service contractor.

WIRING DIAGRAM FOR GAS PACKAGE



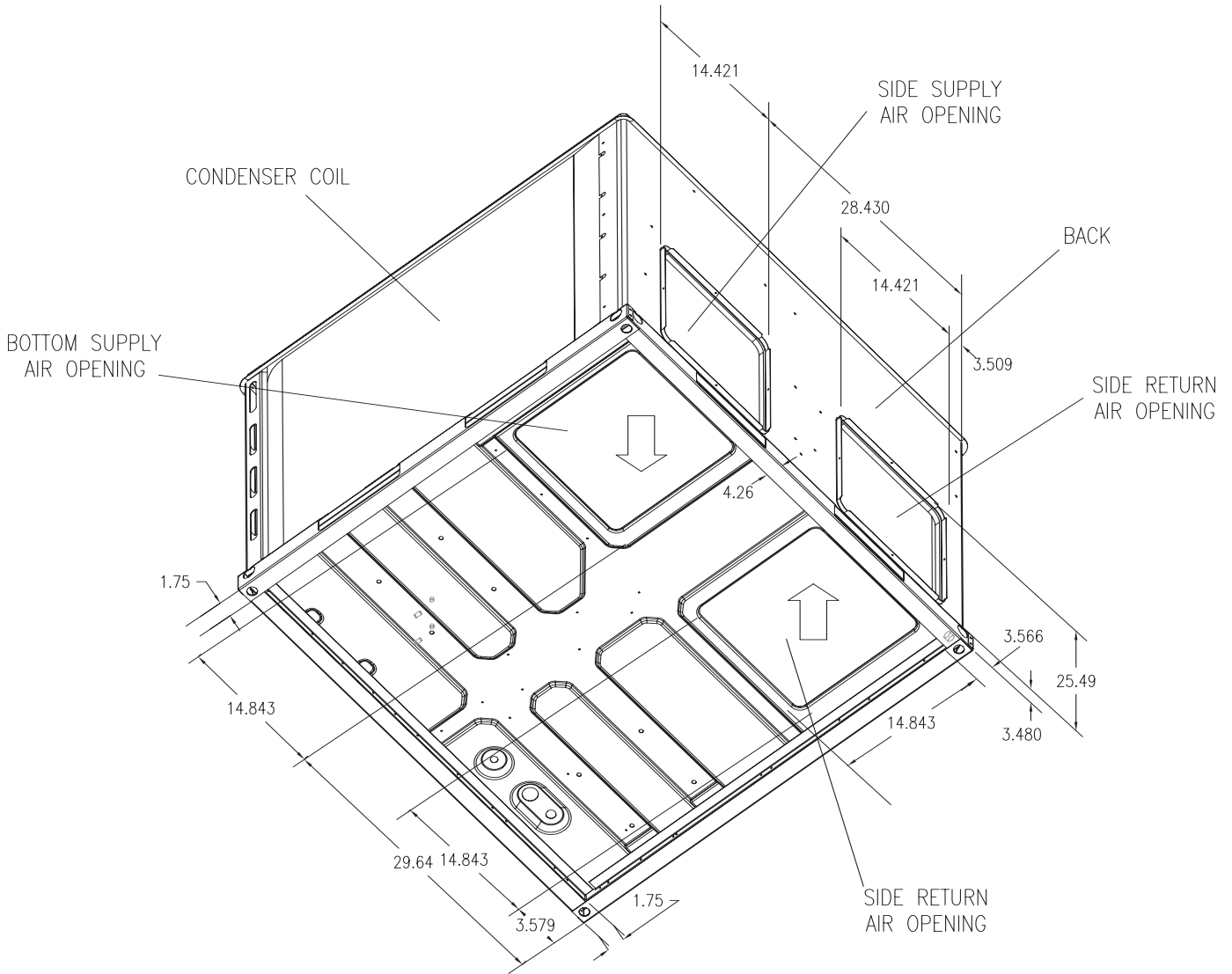
ABBREVIATION	COLOR
BK	BLACK
BL	BLUE
BR	BROWN
GR	GREEN
RD	RED
YL	YELLOW
WH	WHITE
OR	ORANGE
VI	VIOLET

FUNCTIONAL DESIGNATION	DESCRIPTION	FUNCTIONAL DESIGNATION	DESCRIPTION
CC	COMPRESSOR CONTACTOR	HSI	HOT SURFACE IGNITOR
CM	COMPRESSOR	FE	FLAME ELECTRODE
OD	OUTDOOR FAN	GC	GAS CONTROLLER
CLPS	CONDENSATE LOW PRESSURE SWITCH	EAC	ELECTRONIC AIR CLEANER
CHPS	CONDENSATE HIGH PRESSURE SWITCH	HUM	HUMIDIFIER
HL	HIGH LIMIT	CH	CRANKCASE HEATER
RS	ROLLOUT SWITCH	CAP	CAPACITOR
GLPS	GAS LOW PRESSURE SWITCH	XT3	INDOOR MOTOR
HGV	HIGH GAS VALVE	GND	GROUND
LGV	LOW GAS VALVE		
T	TRANSFORMER		
TB	TERMINAL BLOCK		

STATUS LEADS
A 3 COLOR LED IS PROVIDED TO INDICATE SYSTEM FAILS.
LED CODES ARE AS FOLLOWS:
LED OFF - NO POWER TO CONTROL PUSHBUTTON SWITCH PRESSED, OR CONTROL FAULT
LED GREEN - CONTROL HARDWARE FAULT DETECTED
LED YELLOW - CALL FOR HEAT, NO ACTIVE ERRORS
LED AMBER FLASH - CALL FOR HEAT PRESENT, NO ACTIVE ERRORS
1 RED FLASH - FLAME PRESENT WITH GAS VALVE OFF
2 RED FLASHES - PRESSURE SWITCH CLOSED WITH INDUCER OFF
3 RED FLASHES - LIMIT SWITCH OPEN
4 RED FLASHES - LOCKOUT DUE TO NO IGNITION
5 RED FLASHES - LOCKOUT DUE TO TOO MANY FLAME DROPOUTS
6 RED FLASHES - INCORRECT LINE VOLTAGE POLARITY
7 RED FLASHES - GAS VALVE ENERGIZED WITH W OFF
8 RED FLASHES - INCORRECT 24 VAC PHASING/WINNING ERROR
9 RED FLASHES - INCORRECT 24 VAC PHASING/WINNING ERROR

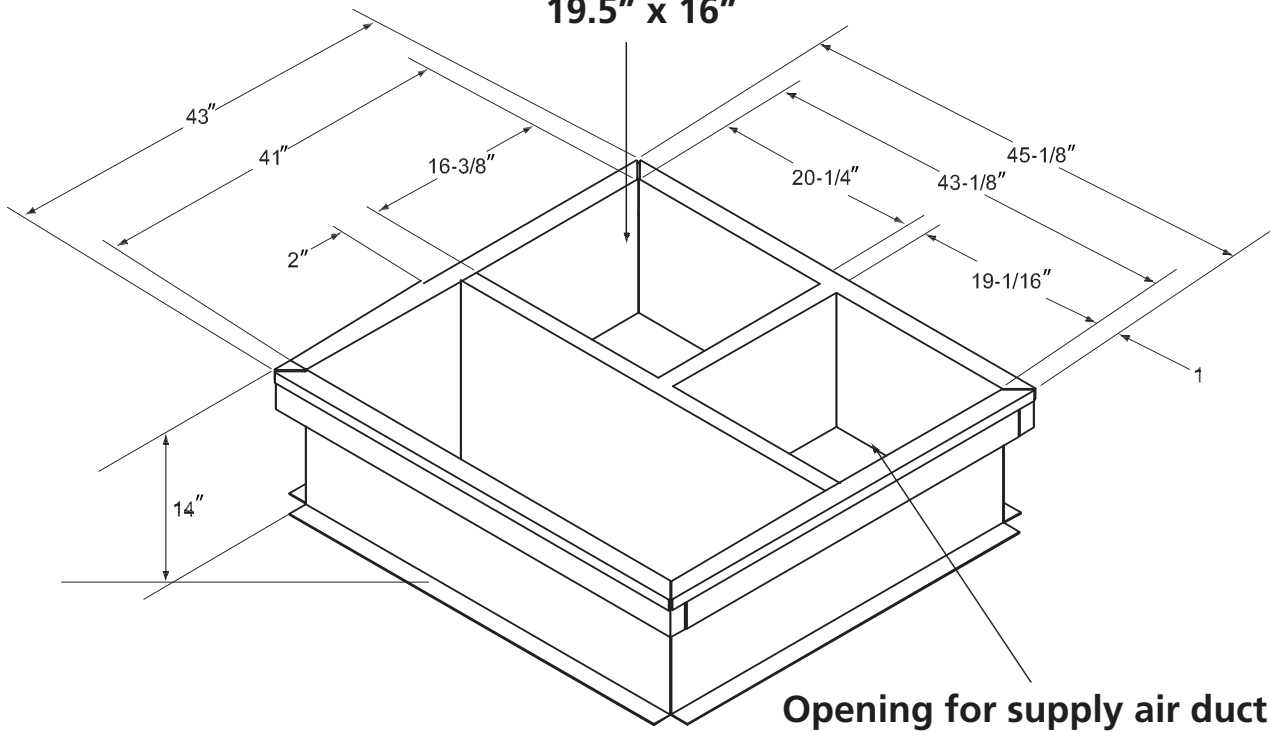
DIMENSIONS

DIMENSIONS



Opening for return air duct

**Recommended duct size:
19.5" x 16"**



Opening for supply air duct

**Recommended duct size:
18.5" x 16"**

APGE1324A0601A--APGE1360C0981A Physical Data

Component	Models					
	APGE1324	APGE1330	APGE1336	APGE1342	APGE1348	APGE1360
	A0601A	A0601A	A0751A	B0981A	B0981A	B0981A
Nominal Tonnage	2.0	2.5	3.0	3.5	4.0	5.0
ARI COOLING PERFORMANCE						
Gross Capacity@ ARI A point (Btu)						
ARI net capacity (Btu)	23	29	35	40	46	54
EER						
SEER	13	13	13	13	13	13
Nominal CFM	800	950	1050	1250	1450	1750
System power (KW)	2.0	2.6	3.2	3.6	4.4	5.6
Refrigerant type	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A
Refrigerant charge (OZ)	109	111	128	145	148	155
ARI HEATING PERFORMANCE						
Heating model	60	60	75	98	98	98
Heat input (K Btu)	42/60	42/60	52.5/75	68.6/98	68.6/98	68.6/98
Heat output (K Btu)	33.6/48	33.6/48	42/60	54.88/78.4	54.88/78.4	54.88/78.4
AFUE (%)	80	80	80	80	80	80
Steady state efficiency(%)	80	80	80	80	80	80
No.burners	4	4	5	7	7	7
No.stages	2	2	2	2	2	2
Temperature Rise Range (°F)						
Gas Limit Setting (°F)	170	170	180	180	180	180
Gas Piping Connection (in.)	1/2	1/2	1/2	1/2	1/2	1/2
DIMENSIONS (in.)						
Length	49 1/8	49 1/8	49 1/8	49 1/8	49 1/8	49 1/8
Width	47 1/4	47 1/4	47 1/4	47 1/4	47 1/4	47 1/4
Height	33 1/2	33 1/2	33 1/2	41 1/2	41 1/2	41 1/2
OPERATING WT.(lbs.)						
	419	429	451	528	539	561
COMPRESSORS						
Type	Scroll 1-spd	Scroll 1-spd	Scroll 1-spd	Scroll 1-spd	Scroll 1-spd	Scroll 1-spd
Quantity	1	1	1	1	1	1
EVAPORATOR COIL DATA						
Face area (Sq.Ft.)	11.7	11.7	11.7	14.7	14.7	14.7
Rows	1	2	2	2	2	2
Fins per inch	20	16	16	20	20	20
Tube diameter (in.)	3/8	3/8	3/8	3/8	3/8	3/8
Circuitry Type	Interlaced	Interlaced	Interlaced	Interlaced	Interlaced	Interlaced
CONDENSER COIL DATA						
Face area (Sq.Ft.)	3.4	3.4	3.4	4.4	4.4	4.4
Rows	2	3	3	3	3	3
Fins per inch	15	13	13	16	16	16
Tube diameter (in.)	3/8	3/8	3/8	3/8	3/8	3/8
Circuitry Type	Interlaced	Interlaced	Interlaced	Interlaced	Interlaced	Interlaced
Refrigerant control	Orifice	Orifice	Orifice	Orifice	TXV	TXV
Quantity	1	1	1	1	1	1
Fan diameter (in.)	22	22	22	22	22	22
Type	Axial	Axial	Axial	Axial	Axial	Axial
Drive type	Direct	Direct	Direct	Direct	Direct	Direct
No.speeds	1	1	1	1	1	1
Number of motors	1	1	1	1	1	1
Motor HP each	1/4	1/4	1/4	1/3	1/3	1/3
RPM	850	850	850	1100	1100	1100
Nominal total CFM	2200	2400	2400	3000	3000	3000
DIRECT DRIVE EVAP FAN DATA						
Quantity	1	1	1	1	1	1
Fan size (in.)	10 X 8	10 X 8	11 X 10	12 X 11	12 X 11	12 X 11
Type	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Motor HP each	1/2	3/4	3/4	1	1	1
RPM	Variable	Variable	Variable	Variable	Variable	Variable
Frame size	48	48	48	48	48	48
FILTERS						
Quantity - size	1- 20X20X1	1- 20X20X1	1- 20X20X1	2- 20X12X1	1- 20X12X1	1- 20X12X1

LIMITED FIVE YEAR WARRANTY:

CareCo will provide a replacement part or component that proves to be defective in material or workmanship.

WARRANTY LIMITATIONS:

- Limited Warranty does not include allowances for labor or travel expense connected with the installation of parts, so furnished in this Limited Warranty or for field repair, or servicing of the equipment, nor for refrigerant used
- For warranty purposes the purchase date is established by a proof of purchase. If a proof of purchase can not be verified, then warranty period will be measured from the date of manufacture plus 6 months.
- Cost of repair or replacement of consumable parts is not covered under the terms of this warranty
- Replacement parts are warranted only for the balance of the original warranty period
- Applies only to original installation and normal use and service within the 48 contiguous United States, District of Columbia and Canada
- Applies to service performed by an authorized servicer

WARRANTY IS VOID IF:

- Serial plate is defaced
- Product has defect or damage due to product alteration, connection to an improper electrical supply, shipping and handling, fire, flood, lightning or other conditions beyond the control of the manufacturer.
- Product is not installed according to instructions and specifications
- Product is operated in a corrosive environment containing concentrations of corrosive agents causing deterioration of components
- Product is operated with refrigerant control device or component that does not meet specifications
- Product is moved from original installation site
- Filters are not changed per manufacturer's recommendation

OWNER'S RESPONSIBILITIES:

- Provide proof of purchase (sales receipt)
- Provide normal care and maintenance as outlined in this manual
- Make product reasonably accessible for service
- Pay for freight, labor and travel expenses
- Pay for premium service costs for service outside servicer's normal business hours
- Pay for service calls related to product installation and maintenance

THIS WARRANTY DOES NOT COVER DAMAGE CAUSED BY:

- Improper installation
- Misuse of equipment
- Negligent servicing
- Improper applications
- Preventative maintenance
- Unauthorized modifications
- Improper electrical supply
- Failure to follow manufacturer's instructions and rating plate information
- Accidents or other events beyond manufacturer's control

ENTIRE WARRANTY:

THE ABOVE CONTAINS THE SOLE AND EXCLUSIVE STATEMENT OF THE EXPRESS WARRANTIES AND ASSOCIATED REMEDIES AVAILABLE WITH THE PRODUCTS DESCRIBED. NO OTHER EXPRESS WARRANTIES ARE MADE. ALL IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR IMPLIED WARRANTIES OTHERWISE ARISING FROM COURSE OF DEALING OR USAGE OF TRADE ARE LIMITED IN DURATION TO ONE YEAR FROM THE DATE OF ORIGINAL PURCHASE. IN NO EVENT SHALL MANUFACTURER BE LIABLE FOR ANY INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, EVEN IF ADVISED IN ADVANCE OF THE POSSIBILITY OF SUCH DAMAGES. NO WARRANTIES, EXPRESS OR IMPLIED, ARE MADE TO ANY BUYER UPON RESALE.

SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS OR DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS, WHICH MAY VARY FROM STATE TO STATE. NO WARRANTIES ARE MADE FOR UNITS SOLD OUTSIDE THE ABOVE STATED AREAS. YOUR DISTRIBUTOR OR FINAL SELLER MAY PROVIDE A WARRANTY ON UNITS SOLD OUTSIDE OF THESE AREAS.

The information in this manual supersedes and replaces the previous instruction/operation manual with regards to air handler products. Illustrations cover the general appearance of the units at the time of publication and the manufacturer reserves the right to make changes in design and construction at any time without notice.

For replacement parts, please consult the installing dealer or contractor.