

USER'S INFORMATION MANUAL

UPFLOW & DOWNFLOW/HORIZONTAL TWO-STAGE CONDENSING GAS FURNACES

SAFETY



Recognize this symbol as an indication of Important Safety Information!

▲ WARNING

IMPORTANT: All manufacturer products meet current Federal OSHA Guidelines for safety. California Proposition 65 warnings are required for certain products, which are not covered by the OSHA standards.

California's Proposition 65 requires warnings for products sold in California that contain, or produce, any of over 600 listed chemicals known to the State of California to cause cancer or birth defects such as fiberglass insulation, lead in brass, and combustion products from natural gas.

All "new equipment" shipped for sale in California will have labels stating that the product contains and/or produces Proposition 65 chemicals. Although we have not changed our processes, having the same label on all our products facilitates manufacturing and shipping. We cannot always know "when, or if" products will be sold in the California market.

You may receive inquiries from customers about chemicals found in, or produced by, some of our heating and air-conditioning equipment, or found in natural gas used with some of our products. Listed below are those chemicals and substances commonly associated with similar equipment in our industry and other manufacturers.

- Glass Wool (Fiberglass) Insulation
- Carbon Monoxide (CO)
- Formaldehyde
- Benzene

More details are available at the Websites for OSHA (Occupational Safety and Health Administration), at www.osha.gov and the State of California's OEHHA (Office of Environmental Health Hazard Assessment), at www.oehha.org. Consumer education is important since the chemicals and substances on the list are found in our daily lives. Most consumers are aware that products present safety and health risks, when improperly used, handled and maintained.

▲ WARNING

FIRE OR EXPLOSION HAZARD
Failure to follow safety warnings and the installation instructions could result in serious injury, death or property damage.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- **WHAT TO DO IF YOU SMELL GAS**
 - Do not try to light any appliance.
 - Do not touch any electrical switch; do not use any phone in your building.
 - Leave the building immediately.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department.
- **INSTALLATION AND SERVICE MUST BE PERFORMED BY A QUALIFIED INSTALLER, SERVICE AGENCY OR THE GAS SUPPLIER.**

▲ WARNING

THIS FURNACE IS NOT APPROVED FOR INSTALLATION IN A MOBILE HOME. DO NOT INSTALL THIS FURNACE IN A MOBILE HOME. INSTALLATION IN A MOBILE HOME COULD CAUSE FIRE, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

IMPORTANT: READ THESE INSTRUCTIONS THOROUGHLY BEFORE ATTEMPTING TO OPERATE THIS FURNACE.

This furnace has been designed to give you many years of efficient, dependable home comfort. With proper installation, correctly sized furnace and duct system, along with seasonal maintenance, this furnace will provide superior operation year after year. Please read this manual and installation instructions to familiarize yourself with installation, operation, maintenance, and safety procedures.

▲ WARNING

WE, THE MANUFACTURER, CANNOT AND WILL NOT BE RESPONSIBLE FOR INJURY OR DAMAGE CAUSED BY THE USE OF ANY UNTESTED AND/OR UNCERTIFIED DEVICES, ACCESSORIES OR COMPONENTS.

▲ WARNING

IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, SERVICE OR MAINTENANCE CAN CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH. FOR ASSISTANCE OR ADDITIONAL INFORMATION CONSULT A QUALIFIED INSTALLER, SERVICE AGENCY OR THE GAS SUPPLIER.

▲ WARNING

DO NOT USE THIS FURNACE IF ANY PART HAS BEEN UNDER WATER. A FLOOD-DAMAGED FURNACE IS EXTREMELY DANGEROUS. ATTEMPTS TO USE THE FURNACE CAN RESULT IN FIRE OR EXPLOSION. A QUALIFIED SERVICE AGENCY SHOULD BE CONTACTED TO INSPECT THE FURNACE. HVAC EQUIPMENT THAT HAS BEEN UNDER WATER SHOULD BE REPLACED TO AVOID ANY RISK OF INJURY OR HARM.

CAREFULLY FOLLOW THESE SAFETY RULES:

1. The area around the furnace must be kept clear and free of all combustible materials including gasoline and other flammable vapors and liquids.

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

2. A furnace installed in an attic or other insulated space must be kept free and clear of insulating material. Examine the furnace area when installing the furnace or adding more insulation. Some materials may be combustible.
3. To prevent carbon monoxide poisoning, all panels must be replaced in proper position after the furnace is serviced. Do not operate the unit without all panels securely in place.
4. Should overheating occur, or the gas valve fail to shut off the gas supply, turn off the manual gas stop to the furnace before turning off the electrical supply.
5. Any additions, changes or conversions required in order for the furnace to satisfactorily meet the application should be made by a HVAC professional, service agency or the gas supplier, using factory specified or approved parts. Read your WARRANTY. This

furnace was equipped at the factory for use on NATURAL GAS ONLY. Conversion to L.P. GAS requires a special kit available through your HVAC professional, from the local distributor.

6. A furnace needs an adequate supply of combustion and ventilation air for proper and safe operation. Do not block, enclose or obstruct air openings on the furnace or air openings supplying the area where the furnace is installed. Do not store anything around the furnace that could block the flow of fresh air to the unit. Your installation may receive air from the inside heated space, from the outside, from the attic or crawl space as specified in the installation instruction. Whenever adding insulation, be sure the air supply openings are not covered.

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.

NOTE: Read and follow the Safety Information, Operating Instructions and Instructions To Turn Off Gas To Appliance are located on the furnace. This label will have specific information regarding the furnace and its gas controls.

GENERAL INFORMATION

▲ WARNING

DUCT LEAKS CAN CREATE AN UNBALANCED SYSTEM AND DRAW DIRT, DUST, FUMES AND ODORS INTO THE HOME CAUSING PROPERTY DAMAGE. FUMES AND ODORS FROM TOXIC, VOLATILE OR FLAMMABLE CHEMICALS, AS WELL AS AUTOMOBILE EXHAUST AND CARBON MONOXIDE (CO), CAN BE DRAWN INTO THE LIVING SPACE THROUGH LEAKING DUCTS AND UNBALANCED DUCT SYSTEMS CAUSING PERSONAL INJURY OR DEATH (SEE FIGURE 1).

- **IF AIR-MOVING EQUIPMENT OR DUCTWORK IS LOCATED IN GARAGES OR OFF-GARAGE STORAGE AREAS - ALL JOINTS, SEAMS, AND OPENINGS IN THE EQUIPMENT AND DUCT MUST BE SEALED TO LIMIT THE MIGRATION OF TOXIC FUMES AND ODORS INCLUDING CARBON MONOXIDE FROM MIGRATING INTO THE LIVING SPACE.**

- **IF AIR-MOVING EQUIPMENT OR DUCTWORK IS LOCATED IN SPACES CONTAINING FUEL BURNING APPLIANCES SUCH AS WATER HEATERS OR BOILERS - ALL JOINTS, SEAMS, AND OPENINGS IN THE EQUIPMENT AND DUCT MUST ALSO BE SEALED TO PREVENT DEPRESSURIZATION OF THE SPACE AND POSSIBLE MIGRATION OF COMBUSTION BYPRODUCTS INCLUDING CARBON MONOXIDE INTO THE LIVING SPACE.**

▲ NOTICE

IMPROPER INSTALLATION, OR INSTALLATION NOT MADE IN ACCORDANCE WITH THE CSA INTERNATIONAL (CSA) CERTIFICATION OR THESE INSTRUCTIONS, CAN RESULT IN UNSATISFACTORY OPERATION AND/OR DANGEROUS CONDITIONS AND ARE NOT COVERED BY THE UNIT WARRANTY.

▲ NOTICE

IN COMPLIANCE WITH RECOGNIZED CODES, IT IS RECOMMENDED THAT AN AUXILIARY DRAIN PAN BE INSTALLED UNDER ALL EVAPORATOR COILS OR UNITS CONTAINING EVAPORATOR COILS THAT ARE LOCATED IN ANY AREA OF A STRUCTURE WHERE DAMAGE TO THE BUILDING OR BUILDING CONTENTS MAY OCCUR AS A RESULT OF AN OVERFLOW OF THE COIL DRAIN PAN OR A STOPPAGE IN THE PRIMARY CONDENSATE DRAIN PIPING. SEE ACCESSORIES SECTION OF THESE INSTRUCTIONS FOR AUXILIARY HORIZONTAL OVERFLOW PAN INFORMATION (MODEL RXBM).

▲ WARNING

CARBON MONOXIDE (CO) IS A COLORLESS, ODORLESS, POISONOUS GAS THAT CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. CARBON MONOXIDE CAN BE PRODUCED BY ANY FUEL-BURNING DEVICE, INCLUDING BUT NOT LIMITED TO:

- **MOTOR VEHICLES**
- **GENERATORS AND OTHER GASOLINE POWERED TOOLS AND ENGINES**
- **GAS AND FUEL-OIL APPLIANCES**
- **CHARCOAL OR GAS GRILLS**
- **WOOD OR GAS FIREPLACES AND STOVES**
- **OUTDOOR CAMPING EQUIPMENT**

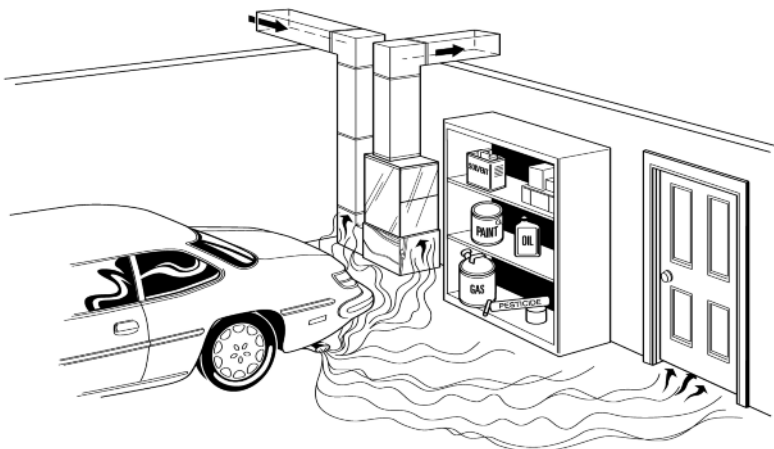
CARBON MONOXIDE FROM ANY ONE OF THESE DEVICES CAN BE INADVERTENTLY DRAWN INTO AND DISTRIBUTED THROUGH THE LIVING SPACE BY THE NORMAL OPERATION OF THE CENTRAL HEATING / AIR CONDITIONING SYSTEM (SEE FIGURE 1).

APPLIANCES AND FUEL BURNING DEVICES MUST BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

GASOLINE-POWERED TOOLS AND MOTOR VEHICLES MUST NOT BE OPERATED IN ENCLOSED SPACES, SUCH AS BASEMENTS, CRAWL-SPACES, OR GARAGES, EVEN WITH DOORS AND WINDOWS OR VENTS OPEN, AS EXHAUST FUMES INCLUDING CARBON MONOXIDE CAN BUILD UP AND SEEP INTO THE LIVING SPACE THROUGH CRACKS AND OPENINGS IN THE STRUCTURE. TOXIC FUMES, INCLUDING CARBON MONOXIDE, CAN ALSO BE DRAWN INTO THE LIVING SPACE THROUGH OPENINGS AND SEAMS IN THE CENTRAL HEATING AND AIR CONDITIONING EQUIPMENT AND / OR DUCTWORK.

FOR THESE REASONS, THE U.S. CONSUMER PRODUCT SAFETY COMMISSION (CPSC) RECOMMENDS THAT EVERY HOME HAVE AT LEAST ONE CARBON MONOXIDE ALARM INSTALLED IN THE HALLWAY NEAR THE BEDROOMS IN EACH SEPARATE SLEEPING AREA OF THE HOME. CARBON MONOXIDE ALARMS SHOULD BE CERTIFIED TO THE REQUIREMENTS OF THE MOST RECENT UL, IAS OR CSA STANDARD, AND SHOULD BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE ALARM MANUFACTURER'S INSTRUCTIONS.

FIGURE 1
MIGRATION OF DANGEROUS SUBSTANCES, FUMES, AND ODORS INTO LIVING SPACES



Adapted from Residential Duct Diagnostics and Repair, with permission of Air Conditioning Contractors of America (ACCA).

IMPORTANT INFORMATION ABOUT EFFICIENCY AND INDOOR AIR QUALITY

Central cooling and heating equipment is only as efficient as the duct system that carries the cooled or heated air. To maintain efficiency, comfort and good indoor air quality, it is important to have the proper balance between the air being supplied to each room and the air returning to the cooling and heating equipment.

Proper balance and sealing of the duct system improves the efficiency of the heating and air conditioning system and improves the indoor air quality of the home by reducing the amount of airborne pollutants that enter homes from spaces where the ductwork and / or equipment is located. The manufacturer and the U.S. Environmental Protection Agency's Energy Star Program recommend that central duct systems be checked by a qualified contractor for proper balance and sealing.

RECEIVING

Immediately upon receipt, all cartons and contents should be inspected for transit damage. Units with damaged cartons should be opened immediately. If damage is found, it should be noted on the delivery papers, and a damage claim filed with the last carrier.

- After unit has been delivered to job site, remove carton taking care not to damage unit.
- Check the unit rating plate for unit size, electric heat, coil, voltage, phase, etc. to be sure equipment matches what is required for the job specification.
- Read the entire instructions before starting the installation.
- Some building codes require extra cabinet insulation and gasketing when unit is installed in attic applications.
- If installed in an unconditioned space, apply caulking around the power wires, control wires, refrigerant tubing and condensate line where they enter the cabinet. Seal the power wires on the inside where they exit conduit opening. Caulking is required to prevent air leakage into and condensate from forming inside the unit, control box, and on electrical controls.

- Install the unit in such a way as to allow necessary access to the coil/filter rack and blower/control compartment.
- Install the unit in a level position to ensure proper condensate drainage. Make sure unit is level in both directions within 1/8".

- Install the unit in accordance with any local code which may apply and the national codes. Latest editions are available from: "National Fire Protection Association, Inc., Batterymarch Park, Quincy, MA 02269." These publications are:

- ANSI/NFPA No. 70-(Latest Edition) National Electrical Code.
- NFPA90A Installation of Air Conditioning and Ventilating Systems.
- NFPA90B Installation of warm air heating and air conditioning systems.
- The equipment has been evaluated in accordance with the Code of Federal Regulations, Chapter XX, Part 3280.

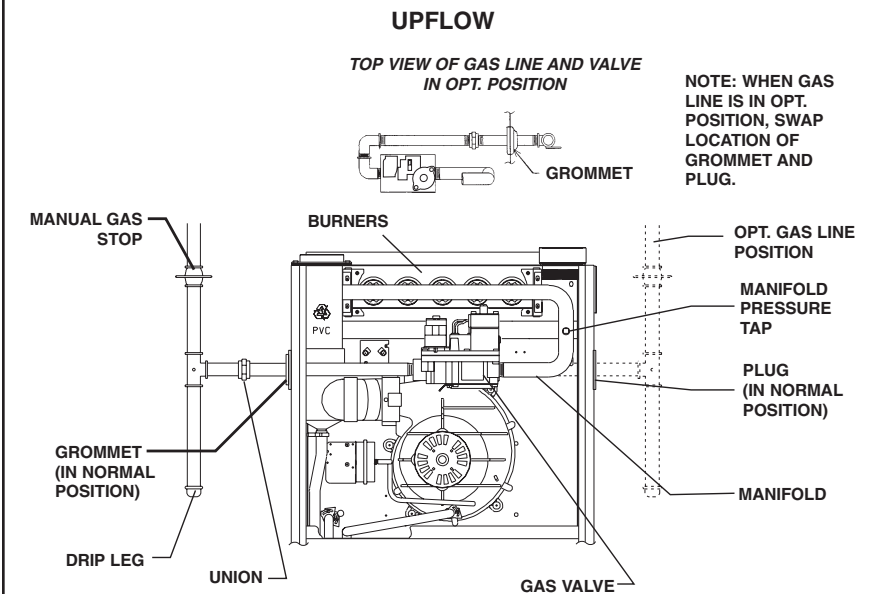
SYSTEM OPERATION INFORMATION

IMPORTANT: THIS FURNACE WAS DESIGNED TO OPERATE ON 110-125 VOLTS SUPPLIED BY A COMMERCIAL POWER UTILITY.

IMPORTANT: CONNECT THIS FURNACE ONLY TO GAS SUPPLIED BY A COMMERCIAL UTILITY.

1. Keep the air filters clean. Your heating system will operate more efficiently and provide better heating, more economically.
2. Arrange your furniture and drapes so that the supply air registers and the return air grilles are unobstructed.
3. Close doors and windows. This will reduce the heating load on your system.
4. Avoid excessive use of exhaust fans.
5. Do not permit the heat generated by appliances such as televisions, lamps, or radios to influence the thermostat operation.
6. If you desire to operate your system with constant air circulation, consult your thermostat manual or obtain advice from your HVAC professional, service agency or the gas supplier. When continuous fan is used, the indoor fan will shut-off on a call for heat. This allows the heat exchanger to warm up.
7. Do not close off any supply or return registers.

FIGURE 2
BURNER COMPARTMENT - SHOWING LOCATION OF GAS CONTROLS



IMPORTANT: DO NOT RUN A FLEXIBLE GAS CONNECTOR INSIDE THE UNIT. Extend the 1/2" black pipe from the gas valve to the union outside of the cabinet.

During the heating season the operation of the warm air furnace is automatic. Your HVAC professional, service agency or the gas supplier has provided a wall mounted thermostat which is sensitive to the change in temperature of the air moving around the thermostat. Your thermostat may have switches to select some or all of the following functions:

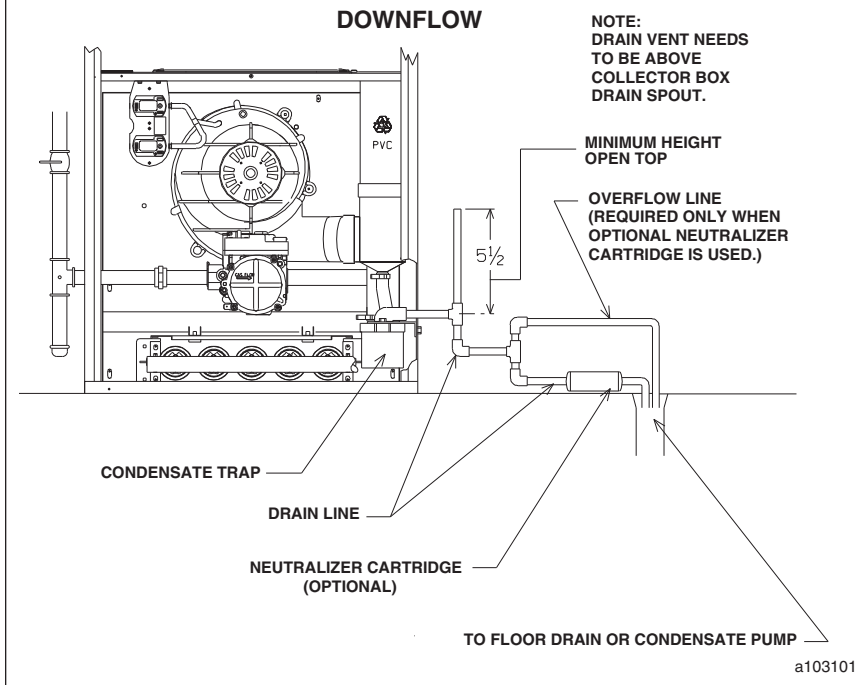
HEAT - Turns heating on when temperature drops below the desired temperature.

COOL - Turns cooling on when temperature rises above the desired temperature.

AUTO - Turns cooling or heating system on as required to maintain the desired temperature.

NOTE: Have your HVAC professional instruct you on the proper operation of your system and filter location.

FIGURE 3
BURNER COMPARTMENT – SHOWING LOCATION OF GAS CONTROLS



OFF - Turns heating and cooling modes off. (The blower may still circulate air in the FAN-ON position.)

FAN-ON - Turns the blower on for continuous operation.

FAN-AUTO - The blower cycles on and off with cooling or heating operation.

This furnace has a negative pressure switch that is a safety during a call for heat. The induced draft blower must pull a negative pressure on the heat exchanger to close the negative pressure switch. The induced draft blower must maintain at least the negative pressure switch set point for the furnace to operate. If the induced draft blower fails to close or maintain the closing of the negative pressure switch, a "no heat call" would result.

LIGHTING INSTRUCTIONS
DIRECT SPARK IGNITION

This appliance is equipped with a direct spark ignition device. This device lights the main burners each time the room thermostat (closes) calls for heat. See lighting instructions on the furnace.

▲ WARNING

TO START FURNACE

NOTE: DURING INITIAL START UP OF THE FURNACE, IT IS NOT UNUSUAL FOR ODOR OR SMOKE

TO COME OUT OF ANY ROOM REGISTERS. IT IS RECOMMENDED TO ENSURE PROPER VENTILATION BY OPENING WINDOWS AND DOORS BEFORE INITIAL FIRING.

1. BE SURE THAT THE MANUAL GAS STOP HAS BEEN IN THE "OFF" POSITION FOR AT LEAST FIVE MINUTES. DO NOT ATTEMPT TO MANUALLY LIGHT THE MAIN BURNERS. FAILURE TO FOLLOW THIS WARNING CAN CAUSE A FIRE OR AN EXPLOSION

RESULTING IN PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

2. Set the room thermostat to the lowest temperature setting.
3. Remove furnace panel.
4. Turn the gas control knob to the "On" position, or set the gas control switch to the "On" position.
5. Securely replace furnace panel.
6. Turn on the manual gas stop and the electrical power.
7. Set the room thermostat to "Heat" and adjust to desired room temperature.

TO SHUT DOWN FURNACE

1. Set the room thermostat to its lowest temperature setting. Turn the thermostat to "Off."
2. Shut off the gas to main burners by turning the gas control switch to the "Off" position, or turn the manual gas stop to the closed position.

▲ WARNING

SHOULD OVERHEATING OCCUR OR THE GAS SUPPLY FAIL TO SHUT OFF, SHUT OFF THE MANUAL GAS STOP TO THE APPLIANCE BEFORE SHUTTING OFF THE ELECTRICAL SUPPLY. FAILURE TO DO SO CAN CAUSE AN EXPLOSION OR FIRE RESULTING IN PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

NOTE: Sequence of operation can be located in the Installation instructions, in the start-up procedure section. This covers operation of the furnace with single-stage or two-stage thermostats.

FIGURE 4
BURNER COMPARTMENT - SHOWING LOCATION OF TYPICAL GAS CONTROLS

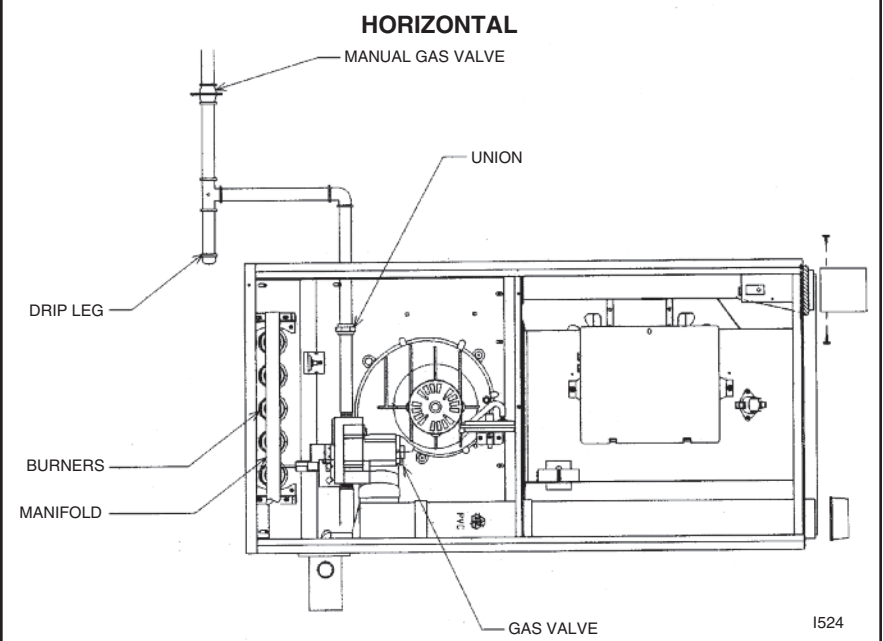
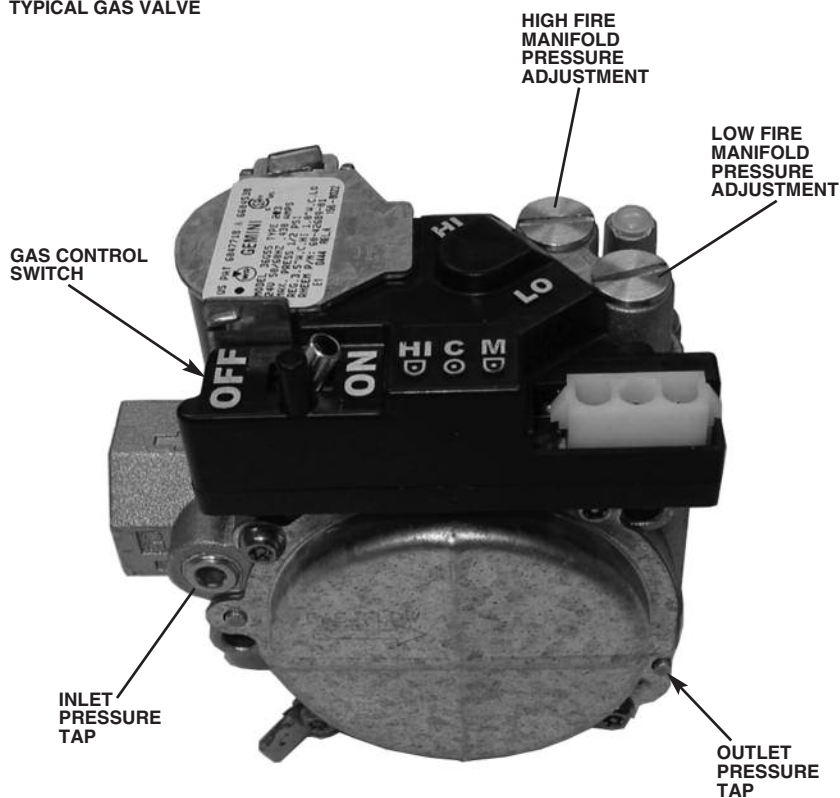


FIGURE 5
TYPICAL GAS VALVE



MAINTENANCE

It is recommended for safety and proper furnace operation that a seasonal inspection and start-up be performed. This should include your furnace, supply ducts, return ducts, electrical supply, gas supply, drain and vent system. This routine maintenance must be performed by a qualified HVAC professional, service agency or the gas supplier.

▲ WARNING

TURN OFF ELECTRICAL POWER TO THE FURNACE BEFORE REMOVING PANELS. FAILURE TO DO SO CAN RESULT IN ELECTRICAL SHOCK, SEVERE PERSONAL INJURY OR DEATH.

▲ WARNING

DO NOT OPERATE THE SYSTEM WITHOUT FILTERS. A PORTION OF THE DUST ENTRAINED IN THE AIR MAY TEMPORARILY LODGE IN THE DUCT RUNS AND AT THE SUPPLY REGISTERS. ANY CIRCULATED DUST PARTICLES COULD BE HEATED AND CHARRED BY CONTACT WITH THE FURNACE HEAT EXCHANGER. THIS RESIDUE COULD SOIL CEILINGS, WALLS, DRAPES, CARPETS AND OTHER ARTICLES IN THE HOUSE.

SOOT DAMAGE MAY OCCUR WITH FILTERS IN PLACE. WHEN CERTAIN TYPES OF CANDLES, OIL LAMPS OR STANDING PILOTS ARE BURNED.

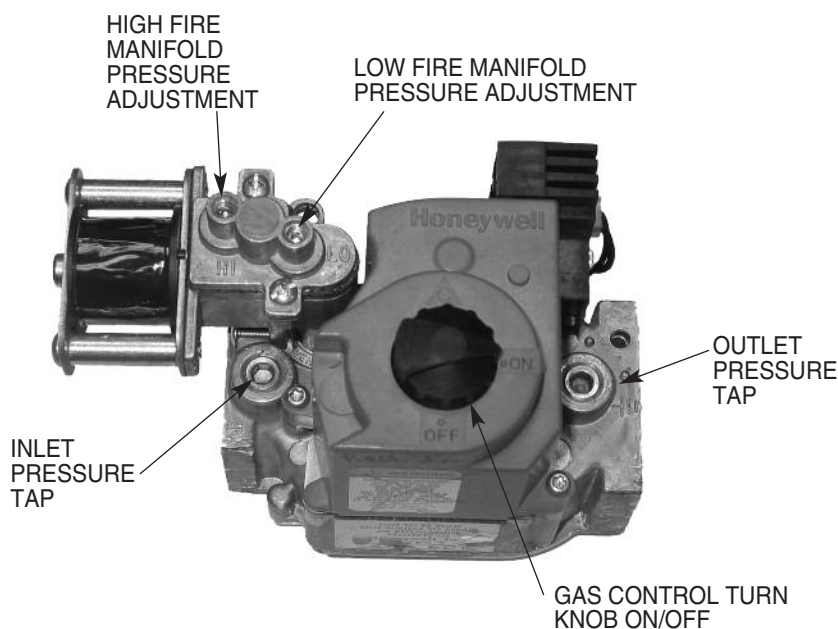
FILTER MAINTENANCE

Have your qualified installer, service agency or the gas supplier instruct you on how to access your filters for regular maintenance.

FILTERS

Filter application and placement are critical to airflow, which may affect the heating and cooling system performance. Reduced airflow can shorten the life of the system's major components, such as motor, limits, heat exchanger, evaporator coil or compressor. Consequently, we recommend that the return air duct system have only one filter location. The most common location will be inside the furnace or a filter base. For systems with a return air filter grill or multiple filter grills, can have a filter installed at each of the return air openings. Your HVAC professional can show you where they have installed the filter(s).

FIGURE 6
TYPICAL DIRECT SPARK IGNITION GAS VALVE



If high efficiency filters or electronic air cleaners are used in the system, it is important that the airflow is not reduced to maximize system performance and life. Always verify that the system's airflow is not impaired by the filtering system that has been installed, by performing a temperature rise and temperature drop test.

Keep the filter(s) clean at all times. Vacuum dirt from filter, wash with detergent and water, air dry thoroughly and reinstall.

DO NOT DOUBLE FILTER THE RETURN AIR DUCT SYSTEM. DO NOT FILTER THE SUPPLY AIR DUCT SYSTEM.

RECOMMENDED ROUTINE MAINTENANCE

1. It is recommended that an annual inspection of your furnace, supply, return drain, gas and vent systems be done by a qualified installer, service agency or the gas supplier.
2. Gas burners should be inspected for dirt, rust, or scale and cleaned or replaced as necessary.

LUBRICATION

The blower motor and induced draft motor are prelubricated by the component manufacturers and do not require further attention. Addition of lubricants can reduce the motor life and void the warranty.

CONDENSATE

Be sure the vented condensate drain line from the furnace is not connected to the evaporator drain line and does not become blocked or plugged. Visual inspection of condensate flow can be made after 10 minutes of furnace operation. Condensate from the furnace must flow freely.

If a neutralizer kit is required for the condensate water from the furnace by local codes it should be installed according to the I & O manual.

Thank you for purchasing our product.

**TABLE 1
FILTER SIZES**

UPFLOW FILTER SIZES				
FURNACE WIDTH	INPUT MBTUH	BOTTOM SIZE	SIDE SIZE	QUANTITY
17 ¹ / ₂ "	45, 60, 75A	15 ³ / ₄ " X 25"	15 ³ / ₄ " X 25"	1
21"	75B, 90, 105	19 ¹ / ₄ " X 25"	15 ³ / ₄ " X 25"	1
24 ¹ / ₂ "	120	22 ³ / ₄ " X 25"	15 ³ / ₄ " X 25"	1

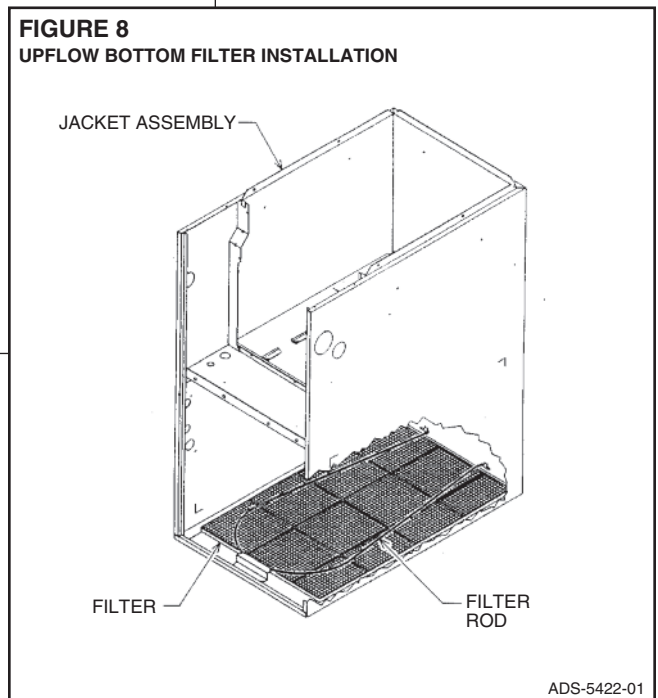
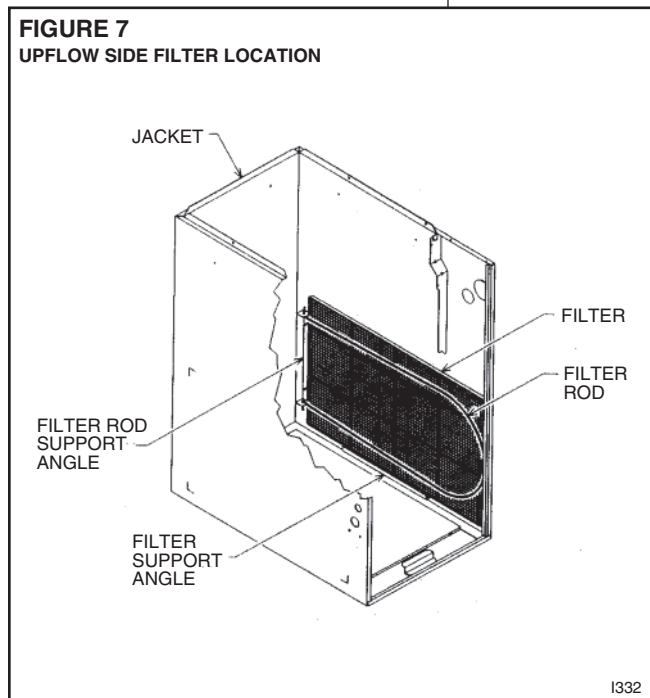
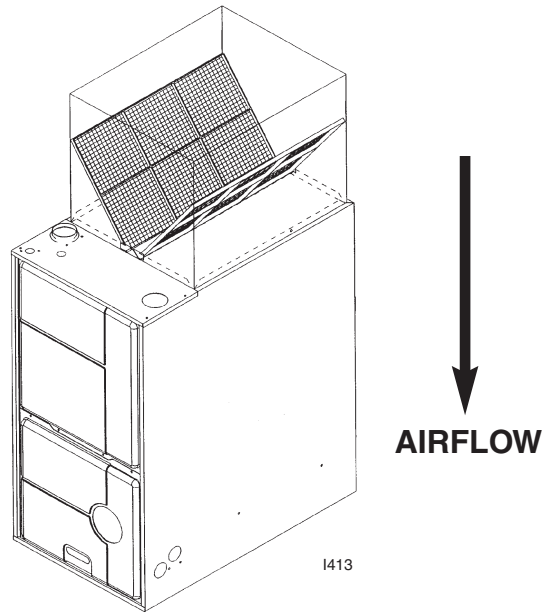


TABLE 2 FILTER SIZES			
DOWNFLOW/HORIZONTAL FILTER SIZES			
FURNACE WIDTH	INPUT MBTUH	SIZE	QUANTITY
17 1/2"	60, 75A	12" X 20"	2
21"	75B, 90, 105A	12" X 20"	2
24 1/2"	105B, 120	14" X 20"	2

FIGURE 9
FILTER LOCATIONS

DOWNFLOW



HORIZONTAL

