

INSTALLATION & OPERATING INSTRUCTIONS for GMP POWER VENTED MULTI-POSITION GAS - FIRED AIR HEATER

This appliance is suitable for use as II_{2H3P}, II_{2E (S) B3P} & II_{2E3P}.
These instructions are only valid if the following country code is on the appliance.

This appliance is suitable for use on gas groups 2H, 2L, 2E & 3P.

If this code is not present on the appliance, it is necessary to refer to the technical instructions that provide the necessary information concerning the modification of the appliance to the conditions for that country.

Before installation, check that the local distribution conditions, nature of gas and pressure, and the current state adjustments of the appliance are compatible.

FACTORY FITTED FOR NATURAL 2H @ 20 mbar
230V ~ 50Hz. <15A. <2kW.

GAS	SUPPLY PRESSURE	BURNER PRESSURE	COUNTRIES OF DESTINATION
2L G25	25Mbar	8.7 mbar	NL
2E G20	20/25Mbar	8.7 mbar	DE, LU, BE
2H G20	20Mbar	8.7 mbar	AT, DK, ES, FI, GB, IE, IT, PT, SE, GR
3P G31	37Mbar	26.7 mbar	ES, FR, GB, IE, PT, BE, NL, DE, LU

WARNING

IF THIS HEATER IS INSTALLED IN AN ENCLOSED AREA, SUCH AS A GARAGE OR UTILITY ROOM, WITH ANY OTHER **CARBON MONOXIDE** PRODUCING DEVICE (i.e. AUTOMOBILE, SPACE HEATER, ETC.) INSURE THAT THE ENCLOSED AREA IS PROPERLY VENTILATED.

WARNING

CARBON MONOXIDE (REFERRED TO AS CO) CAN CAUSE PERSONAL INJURY OR DEATH

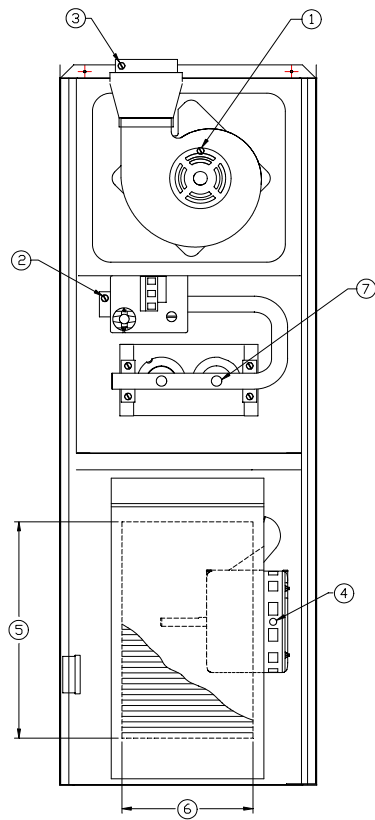
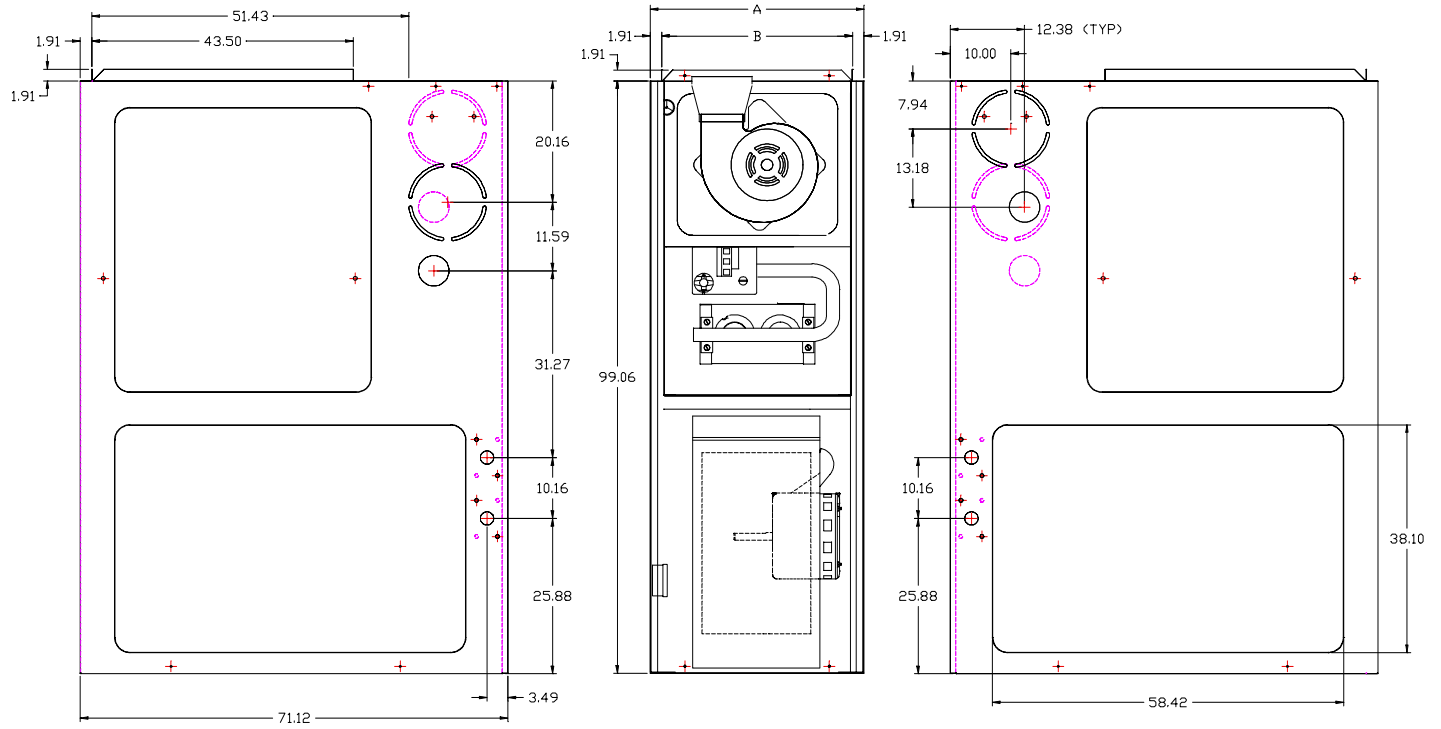
WARNING

THIS HEATER IS DESIGN CERTIFIED FOR INSTALLATION IN BUILDINGS CONSTRUCTED ON SITE ONLY.

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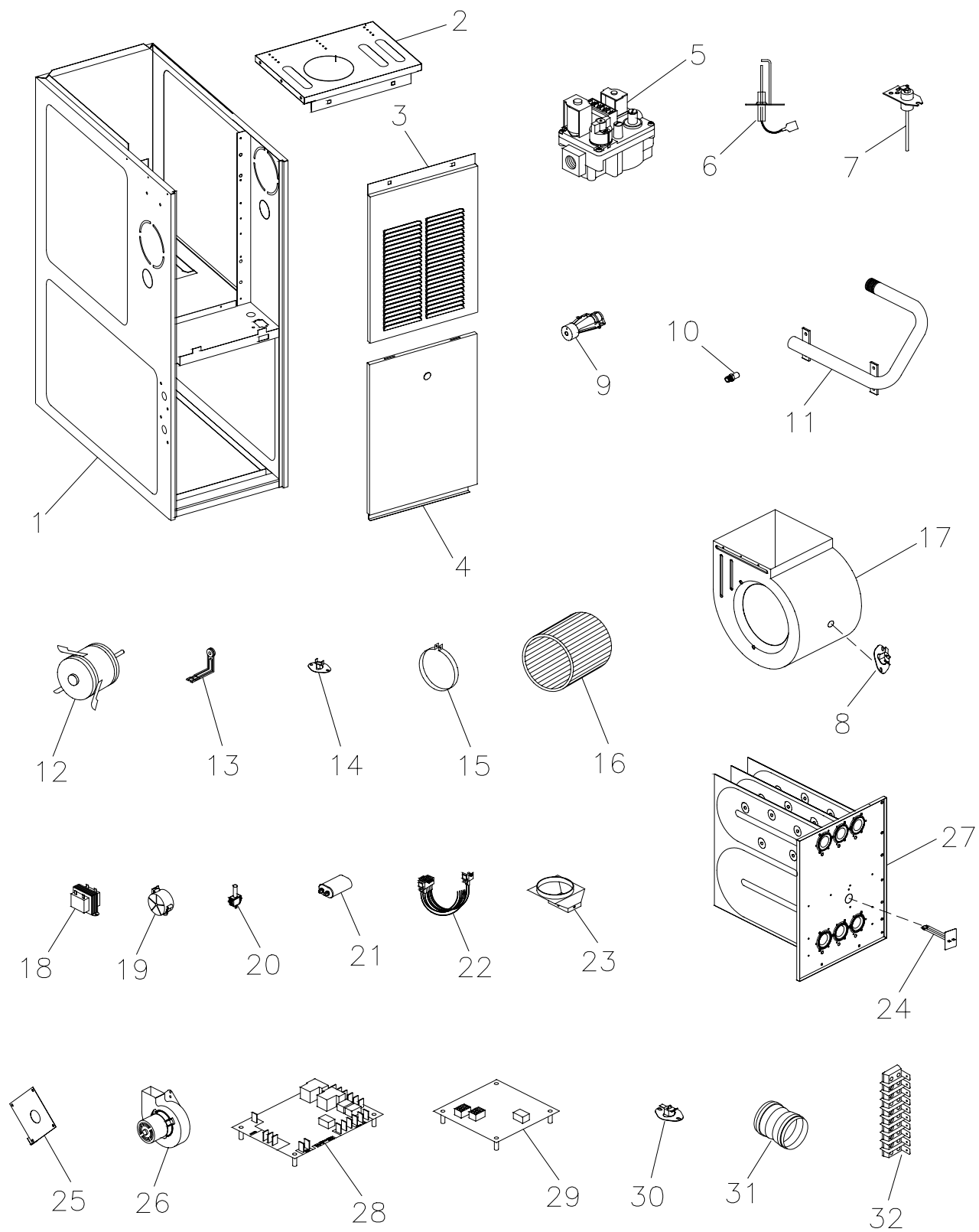
THIS HEATER CONTAINS ELECTRONIC COMPONENTS, WHICH REQUIRE A POSITIVE EARTH. PROVISIONS ARE MADE FOR THAT CONNECTION. A DEDICATED EARTH FROM THE MAIN POWER SUPPLY OR AN EARTH GROUND MUST BE PROVIDED.



GMP	1	2	3	4	5	6	7	A	B
050-32	35W	½ BSPT	106 MM	¼ hp. 1.40A	25.40 CM	15.24 CM	#43	356 MM	318 MM
075-32	35W	½ BSPT	106 MM	¼ hp. 1.40A	25.40 CM	15.24 CM	#43	356 MM	318 MM
100-42	35W	½ BSPT	106 MM	½ hp. 2.25A	25.40 CM	20.32 CM	#43	446 MM	408 MM
125-52	35W	½ BSPT	106 MM	¾ hp. 4.70A	27.94 CM	25.40 CM	#43	536 MM	498 MM
150-52	35W	½ BSPT	106 MM	¾ hp. 4.70A	25.40 CM	15.24 CM	#43	626 MM	588 MM

REPAIR PARTS LIST

	GMP050-32	GMP075-32	GMP100-42	GMP125-52	GMP150-52
1	25165-12S	25165-12S	25165-13S	25165-14S	25165-15S
2	25580-08	25580-08	25580-09	25580-10	25580-11
3	25125-08	25125-08	25125-09	25125-10	25125-11
4	25150-04S	25150-04S	25150-05S	25150-06S	25150-07S
5	B12826-22	B12826-22	B12826-22	B12826-22	B12826-22
6	B14010-14	B14010-14	B14010-14	B14010-14	B14010-14
7	B11726-06	B11726-06	B11726-06	B11726-06	B11726-06
8	B13701-55	B13701-55	B13701-55	B13701-55	B13701-55
9	25227-04S	25227-04S	25227-04S	25227-04S	25227-04S
10	B25893-43 (2)	B25893-43 (3)	B25893-43 (4)	B25893-43 (5)	B25893-43 (6)
11	B25260-05	B25260-06	B25260-07	B25260-08	B25260-09
12	B13400-502	B13400-502	B13400-503	B13400-523	B13400-522
13	-	-	-	-	B13768-57 /3
14	B13701-54 (4)	B13701-54 (4)	B13701-54 (4)	B13701-54 (4)	B13701-54 (4)
15	-	-	-	-	B13768-51
16	B13680-34 -	B13680-34 -	B13680-16 -	B13680-00 -	B13680-34 & B13680-46
17	25393-00 -	25393-00 -	25393-01 -	25393-03 -	18393-01 & 25393-00
18	B11416-64	B11416-64	B11416-64	B11416-64	B11416-64
19	B13701-26	B13701-33	B13701-26	B13701-26	B13701-42
20	B13708-19	B13708-19	B13708-19	B13708-19	B13708-19
21	B9456-51	B9456-51	B9456-52	B9456-53	B9456-53
22	25784-24	25784-24	25784-24	25784-24	25784-24
23	25535-00	25535-00	25535-00	25535-00	25535-00
24	13709-12S	13709-08S	13709-03S	13709-12S	13709-12S
25	25280-07S	25280-07S	25280-02S	25280-05S	25280-04S
26	B18590-505	B18590-505	B18590-505	B18590-505	B18590-505
27	25213-00S	25213-01S	25213-02S	25213-03S	25213-04S
28	B18099-21	B18099-21	B18099-21	B18099-21	B18099-21
29	B18099-22	B18099-22	B18099-22	B18099-22	B18099-22
30	B13701-68	B13701-67	B13701-70	B13701-71	B13701-69
31	B25235-01	B25235-01	B25235-01	B25235-01	B25235-01
32	B13682-67	B13682-67	B13682-67	B13682-67	B13682-67



WARNING

WHILE **CARBON MONOXIDE** DETECTORS DO PROVIDE ADDITIONAL PROTECTION, CURRENT LIMITATIONS TO THEIR EFFECTIVENESS REQUIRES THAT YOU OTHERWISE CONTINUE TO FOLLOW APPROPRIATE INSTRUCTIONS LOCATED IN THE "INSTALLATION & OPERATING INSTRUCTIONS" AND "USERS INFORMATION" MANUALS RELATING TO PROTECTING PERSONS FROM THE RISKS OF **CARBON MONOXIDE**. REVIEW EACH CO MANUFACTURERS' EXPLANATION OF THEIR UNIT'S CAPABILITIES AND FOLLOW THOSE INSTALLATION AND OPERATING MANUAL WHEN INSTALLING AND OPERATING THESE UNITS.

WARNING

THE CIRCULATING AIR DUCTS MUST BE COMPLETELY AND POSITIVELY SEALED TO PREVENT COMBUSTION PRODUCTS, INCLUDING **CARBON MONOXIDE**, FROM ENTERING THE AIR STREAM.

WARNING

TO ENSURE PROPER INSTALLATION AND OPERATION OF THIS PRODUCT, COMPLETELY READ AND UNDERSTAND THESE INSTRUCTIONS PRIOR TO ATTEMPTING TO ASSEMBLE, INSTALL, MAINTAIN, OR REPAIR. IF THESE INSTRUCTIONS ARE NOT FOLLOWED PRECISELY THERE EXISTS A POTENTIAL FOR **CARBON MONOXIDE** POISONING, WHICH CAN RESULT IN SERIOUS ILLNESS OR DEATH.

WARNING

DO NOT INSTALL A LIQUID PETROLEUM GAS BURNING APPLIANCE IN A PIT, BASEMENT OR SIMILAR LOCATION WHERE L.P., A HEAVIER THAN AIR GAS, CAN COLLECT IN LOW AREAS AND MAY NOT DISPERSE NATURALLY. UNLESS ALLOWED BY LOCAL CODE, APPLIANCES SO FUELED SHALL NOT BE INSTALLED IN AN ABOVE GRADE UNDER FLOOR SPACE OR BASEMENT UNLESS SUCH LOCATION IS PROVIDED WITH APPROVED MEANS FOR REMOVAL OF UNBURNED GAS.

These Installation and Operating Instructions are intended for use by fully qualified installation technicians. This appliance must be installed, adjusted, converted and/or repaired by a qualified installer.

LOCATION

DO NOT install this heater in a mobile home. This heater is designed only for installation in buildings constructed on site and must be connected to distribution ductwork.

When installed in a utility room or closet, the door opening must be wide enough to allow the largest part of the heater to enter, or to permit the replacement of another appliance, such as a water heater.

This appliance is designed to be installed indoors only. **DO NOT** install outdoors. This appliance should be installed in such a manner so that it is protected from water. If any components should become submerged, replace the affected parts. After replacing those parts, recommission the appliance to ensure proper operation. **DO NOT** use as a construction heater.

DO NOT install in a room used or designed to be used as a bedroom, bathroom or closet, or in any enclosed space with access only through such a room or space.

The heater and it's individual shut-off must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 50 mbar.

The heater must be isolated from the gas supply piping system by closing it's individual manual shut-off valve during any pressure testing of the gas supply piping system at pressures equal to or less than 50mBAR.

If this heater is installed in conjunction with an air conditioning coil, the coil must be downstream of the heat exchanger.

A gas-fired heater for installation in a residential garage must be installed in a definite purpose sealed enclosure with all air for combustion and ventilation originating outdoors.

When installed in a commercial garage the ignition source must be above the level where petrol vapors or any other flammable vapors may accumulate. The circulating ductwork must be above the level where recirculation of vapors may occur. The heater must be protected from damage, especially from vehicles.

WARNING

COMBUSTIBLE MATERIAL MUST NOT BE PLACED ON OR AGAINST THE HEATER CASING. THE AREA AROUND THE HEATER MUST BE KEPT FREE OF ALL COMBUSTIBLE MATERIAL INCLUDING PETROL AND OTHER FLAMMABLE VAPORS AND LIQUIDS. THE HEATER ROOM MUST NOT BE USED AS A BROOM CLOSET OR FOR ANY OTHER STORAGE PURPOSE.

WARNING

THIS HEATER IS EQUIPPED WITH A SOLID BASE PLATE. IT MUST BE LEFT IN PLACE WHEN USING SIDE RETURN DUCTS. FAILURE TO LEAVE THIS BASE PLATE INSTALLED COULD CAUSE PRODUCTS OF COMBUSTION, INCLUDING **CARBON MONOXIDE**, TO BE CIRCULATED INTO THE LIVING SPACE. THIS CAN CREATE A POTENTIALLY HAZARDOUS CONDITION, INCLUDING **CARBON MONOXIDE** POISONING. REFER TO THE SECTION ON "CIRCULATING AIR SUPPLY" FOR RETURN DUCT INSTRUCTIONS.

VENTING

WARNING

THE VENT MUST TERMINATE OUTDOORS.

ANNUAL inspections of the heater and its vent system is strongly recommended. There should be no separation, corrosion, or perforation. It is also the contractor's responsibility to inform the user of this importance of the results of this inspection.

PROPER INSTALLATION OF THE VENTING SYSTEM IS CRITICAL TO SAFE OPERATION OF THIS APPLIANCE. CAREFULLY READ AND UNDERSTAND THE INSTRUCTIONS IN THIS SECTION.

CAUTION

Due to the possibility of CO poisoning -

This appliance **SHALL NOT** be connected to a vent servicing a solid fuel fireplace.

This appliance **SHALL NOT** be connected to a flue serving a factory built fireplace.

This appliance **SHALL NOT** be connected to an unlined masonry chimney.

THE USE OF NON-METALLIC FACTORY VENT MATERIAL IS PROHIBITED.

This appliance **CAN NOT BE HORIZONTALLY VENTED** unless using an optional power venter such as the SVB-80-5, if permitted by local code.

A vent adapter must be installed between the vent connection on the heater and the field installed vent system.

Accessories, which improve efficiency, such as flue dampers, shall be removed and discarded before installing this appliance.

Before installing this heater, inspect existing vent system for separation, corrosion or obstructions. Repair or replace questionable parts when deemed necessary.

Twin-walled vent pipe is recommended whenever possible, especially when passing through unheated areas.

Three corrosion resistant screws should be used to secure all joints.

Horizontal runs must incline 20mm per meter from the heater.

Horizontal runs can not be more than 75 percent of the vertical runs.

Support horizontal runs at least every meter to prevent sags and at every elbow.

Atmospherically vented appliances must enter the vent system downstream of the power-vented appliance. There should be at least a 100mm separation between these entries. The vent of a lower input appliance must enter the vent above the higher capacity appliance.

The vent terminal must be located not less than 600mm from any operable window or door, air vent or any ventilation opening, or fresh air intake.

CONSULT LOCAL CODES FOR SPECIAL ADDITIONAL REQUIREMENTS.

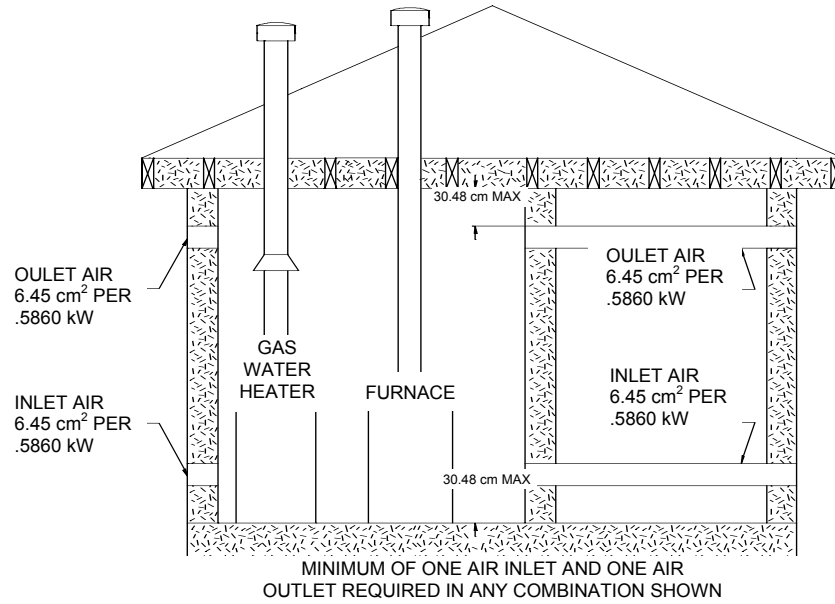
SETTING THE GAS PRESSURE

The supply pressure must be adjusted for the type of gas being utilized. This adjustment is usually completed by the supplying utility.

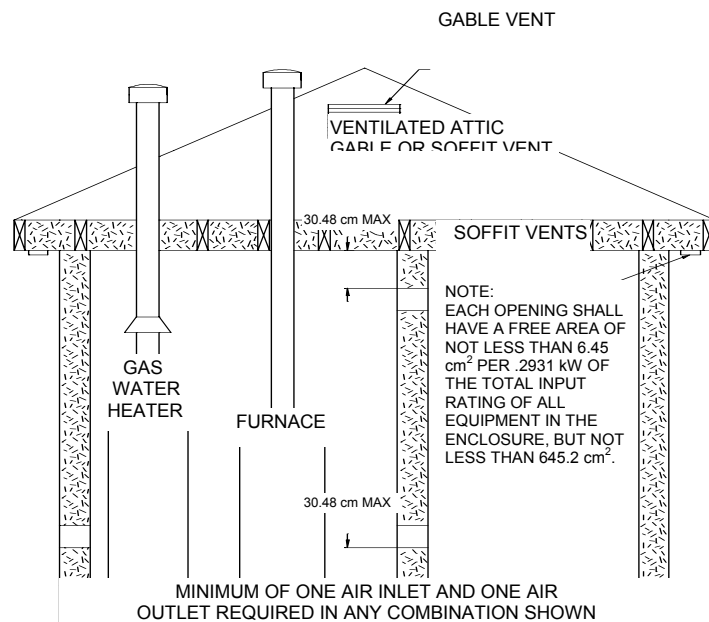
To adjust the manifold and service pressure use the following method

- 1) Shut off the manual valve located in the service pressure piping
- 2) Open the pressure taps located on the combination gas valve & install a manometer on each pressure tap
- 3) Restore the supply gas
- 4) Ignite the unit and allow for 5 mins. Running time
- 5) Check the pressures and adjust, if necessary. The supply pressure should be adjusted with all gas fired equipment in the running condition
- 6) Should the manifold pressure need adjustment – remove the gas valve regulator cover, turn the adjusting screw clockwise to increase pressure and anti clockwise to reduce the pressure
- 7) Shut off the main gas, remove the manometers, close the pressure taps & replace the gas valve regulator cover
- 8) Restore the main gas

OUTSIDE AIR USING HORIZONTAL INLET AND OUTLET

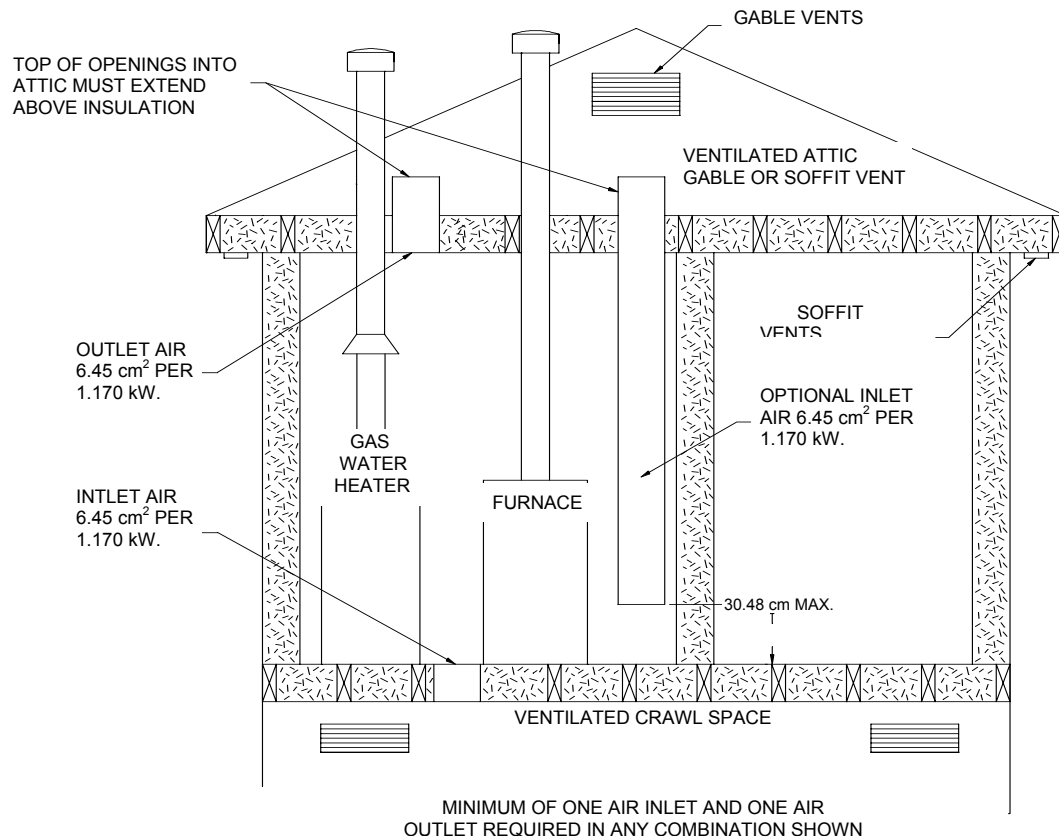


AIR FROM HEATED SPACE



U.S.	S.I.
12"	30.48 CM
1 sq. in.	6.45 CM ²
100 sq. in.	645.2 CM ²
1,000 BTU	.2931 kW
2,000 BTU	.5860 kW
4,000 BTU	1.170 kW

AIR FROM ATTIC AND CRAWL SPACE



COMBUSTION / VENTILATION AIR

Provide adequate ventilation to the appliance in accordance with the rules in force in the country of installation. Where rules do not quote the minimum ventilation opening sizes use the sizes shown.

This appliance requires air for combustion and ventilation. Ideally, this air is obtained from outdoors, but under certain conditions may be obtained from within the dwelling.

If this combustion/ventilation air is not sufficient, a dangerous condition may exist such as fire, explosion, property damage, or personal injury, including death. Sufficient air for combustion of this and any other gas fired appliance must be considered, as well as the air evacuated by the use of exhaust fans, range hood ventilators, fireplaces, dryers, etc.

UNCONFINED SPACE

The consideration for the amount of necessary air is dependent upon whether the heater is installed in a confined or unconfined space or area.

An unconfined space is defined as - a space or area with a volume greater than 4.85m³ / 1kW of the combined input of all gas fired appliances in the space. This space includes communicating spaces not separated by a door.

CONFINED SPACE

A confined space is - an area with a volume of less than 4.85m³ per 1kW of the total input of all gas fired appliances contained in that space.

Some spaces may appear to be unconfined but the addition of energy conserving methods such as weather stripping, caulking, air-tight envelope or others items may reduce the infiltration to such a degree that the introduction of air from an adjacent location or the outdoors may become necessary.

When the heater is installed in a confined space the ductwork must be brought to a location outside that space. It must also be sealed airtight to the unit and / or mounting platform. The platform must be of airtight construction.

COMBUSTION AIR FROM INDOORS

The confined space shall be provided with two permanent openings communicating directly with an additional room(s) of sufficient volume so that the combined volume of all spaces meets the criteria for an unconfined space. The total input of all gas-fired appliances installed in the combined space shall be considered in making this determination. Each opening shall have a minimum free area of 22cm² per 1kW of the total input rating of all gas fired appliances in the confined space, but not less than 645cm². One opening shall be 305mm from the top of the space and the other shall be 305cm from the bottom. The minimum dimension of air openings shall be not less than 8cm.

COMBUSTION AIR FROM OUTDOORS

When combustion/ventilation air originates outdoors the confined space must have two permanent openings. One should be 305mm from the top of the space and the other 305mm from the bottom of the space.

These openings shall communicate directly, or by ducts, with the outdoors or spaces that freely communicate with the outdoors. The minimum dimension of air openings shall not be less than 8cm.

Where directly communicating with the outdoors, each opening shall have a minimum free area of 5.5 cm² per 1kW of total input of all equipment in the space.

Where communicating with the outdoors through vertical ducts, each opening shall have a minimum free area of 5.5 cm² per 1kW of total input rating of all equipment in the space.

Where communicating with the outdoors through horizontal ducts, each opening shall have a minimum free area of 11 cm² per 1kW of total input rating of all equipment in the space.

Where ducts are used, they shall be of the same cross-sectional area as the free area of the opening to which they connect.

Where screens are used, the mesh shall be not be smaller than 6.3 mm.

In calculating free area, consideration shall be given to the blocking effect of louvers or grilles. If the free area through a design of the louver or grille is known, it shall be used in calculating the size opening required to provide the free area specified. If the design area is not known, it shall be assumed that wood louvers will have 20 - 25 percent free area and metal louvers or grilles will have 60 - 75 percent free area. Louvers and grilles shall be fixed in the open position.

The recommended source of combustion air is the outdoors. However, the use of indoor air is acceptable in most applications except as follows;

If the heater is installed in a confined space it is recommended that the necessary air for combustion come from outdoors by way of attic, crawl space, combustion air ducts or direct openings.

The following installations may require OUTDOOR AIR for combustion due to chemical exposures;

Commercial buildings
Indoor pools or spas
Chemical storage areas

Hobby or craft rooms
Laundry rooms

Exposures to the following substances in the combustion air supply may also require OUTDOOR AIR for combustion;

Permanent wave solutions
Chlorinated waxes & cleaners
Chlorine base swimming
Pool chemicals
Carbon Tetrachloride
Halogen type refrigerants
Anti static fabric softeners for
Clothes dryers

Cleaning solvents (such as perchlorethylene)
Printing ink, paint removers, varnishes, etc.
Hydrochloric acid
De-icing salts or chemicals
Cements and glues
Masonry acid washing materials

GAS PIPING CONNECTION

Check the rating plate to make certain that the heater is equipped to burn the type of gas supplied. Care should be taken after the installation that the gas control valve is not subjected to high gas supply line pressure.

In making connections, avoid strains as they may cause noise and damage the controls. Always use a back-up wrench when tightening the gas supply pipe to the gas control valve.

Check for leaks in the gas supply using soap bubbles or other approved methods. Be sure to wash the joints after leak testing with soap. Some soaps may be injurious to gas pipes and fittings.

WARNING

NEVER USE AN OPEN FLAME TO CHECK FOR GAS LEAKS. THIS PRACTICE MAY CAUSE A FIRE, EXPLOSION, BODILY HARM INCLUDING DEATH OR PROPERTY DAMAGE.

Pipe joint compound must be resistant to the action of L.P. gas.

A union and listed manual shutoff must be installed exterior to the heater cabinet so the control assembly may be easily removed.

A plug on the supply pipe at the manual valve for the purpose of making pressure measurement must also be installed. The valve should be readily accessible for turning on or off. A capped sediment trap, sometimes referred to as a drip leg, should be installed in the gas supply pipe as close to the heater as possible. This trap must incorporate a change of direction of the gas flow.

Refer to local codes or other available publications for proper location of the manual shutoff and sediment trap lengths.

The gas pipe must be sized to eliminate undue pressure drop. See pipe capacity table or consult your local utility.

Both the supply and manifold pressure must be measured and adjusted, if necessary.

NOTE: Copper tubing must not be used for natural gas installations where more than .3 grains of hydrogen sulfide per 2.83 standard cubic meters of gas is present.

Capacity of gas pipe of different diameters and length in M³/HR with a pressure drop of 1.24 Mbar and a specific gravity of 0.60 (natural gas).

PIPE SIZE* LENGTH OF PIPE IN METERS

	3	6	9	12	15	18	21	24
1/2	4.29	3.40	2.74	2.32	2.06	1.87	1.72	1.61
3/4	10.20	7.08	5.66	4.81	4.27	3.91	3.54	3.34
1	19.27	13.17	10.62	9.06	8.07	7.36	6.80	6.23
1 1/4	39.67	26.92	21.82	18.70	16.43	15.02	13.88	13.03
1 1/2	59.51	41.37	33.43	28.05	25.50	22.95	21.25	19.55

* Nominal size of Iron Pipe in inches.

After the length of pipe has been determined, select the pipe size, which will provide the minimum gas flow for the required input of the appliance. In the case where more than one appliance utilizes the same supply pipe be sure to consider the sum of all appliances.

Gas pipe must not run through or inside circulating air ducts.

Do not use piping of a smaller size than the gas valve inlet size.

The gas input of the appliance is marked on the specification plate. The heating value of the gas may be determined by contacting the gas utility or gas supplier.

CIRCULATING AIR SUPPLY AND RETURN AIR

The circulating air supply may be taken from; 1) outside the building, 2) return ducts from several rooms, 3) central return, 4) any combination of the above.

It is recommended that the supply duct have an access panel so the heat exchanger can be viewed. This panel shall be of sufficient size to permit the entrance of a light or probe to assist in the observation of the heat exchanger integrity or sampling the air stream. It should be sealed to prevent air leakage during normal operation.

Return air from one dwelling unit shall not be discharged into another dwelling unit.

CAUTION

DO NOT take return air from bathrooms, kitchens, heater rooms, garages, utility or laundry rooms or cold areas. If outside air is utilized it should not be taken from within 2.54m of an appliance vent outlet, a vent opening or a plumbing drainage system or the discharge from an exhaust system unless the outlet is 1 meter above the outside air inlet. **DO NOT** take return air from areas where it can pick-up objectionable odors, fumes, or flammable vapors.

Note: When a combination of outdoor and indoor air is used the system should be designed and adjusted so that the temperature reaching the appliance will not drop below 11°C during heating operation. When this type of system is used the volume of air must not be reduced. If installed in parallel with a cooling unit the damper or other means used to control the flow of air must be adequate to prevent chilled air from entering the heater, and if manually operated must be equipped with means to prevent operation of the other unit unless the damper is in the full heat or cool position.

NOTE: UPON INITIAL START-UP SOME SMOKE OR AN ODOR MAY BE PRESENT. THIS IS NORMAL AND SHOULD DISAPPEAR IN A SHORT AMOUNT OF TIME. IT IS RECOMMENDED THAT THE DOORS AND WINDOWS BE OPENED UPON INITIAL START-UP TO VENT THE BUILDING OF THIS NON TOXIC, NON STAINING SMOKE.

CAUTION

One of the most common causes of problems, including premature heat exchanger failure, in heating systems is insufficient return air.

The return air duct system to the air heater should be approximately equal to or greater than the area of the warm air discharge. Embosses are provided on the sides to act as guides for this purpose.

Consult local codes for specific requirements.

The blower speed should be adjusted to maintain the temperature rise range.

The total static pressure should not exceed 1.24Mbar.

WARNING

NEVER ALLOW THE PRODUCTS OF COMBUSTION, INCLUDING **CARBON MONOXIDE**, TO ENTER THE RETURN DUCTWORK OR CIRCULATING AIR SUPPLY. FAILURE TO PREVENT PRODUCTS OF COMBUSTION FROM ENTERING THE RETURN AIR SUPPLY MAY CAUSE SEVERE ILLNESS INCLUDING **CARBON MONOXIDE** POISONING OR DEATH.

ALL CIRCULATING AIR DUCTS MUST BE ADEQUATELY SECURED TO THE HEATER AND SEALED AIRTIGHT USING APPROVED CONNECTIONS. THE VENT AND COMBUSTION AIR SUPPLY PIPES MUST BE PROPERLY INSTALLED AND SUPPORTED TO PREVENT LEAKAGE AS NOTED ELSEWHERE IN THESE INSTRUCTIONS. WHEN A HEATER IS MOUNTED ON A PLATFORM IT MUST BE SEALED AIRTIGHT BETWEEN THE HEATER AND RETURN DUCTWORK. THE FLOOR OR PLATFORM MUST PROVIDE SOUND PHYSICAL SUPPORT FOR THE HEATER WITHOUT CRACKING, GAPS, SAGGING

ETC. AROUND THE BASE AS TO PROVIDE A SEAL BETWEEN THE SUPPORT AND THE BASE. THE BASE OR PLATFORM MUST BE SEALED AIRTIGHT TO THE FLOOR.

Install the return air to terminate through the base under the heater. For installations where return air ducts cannot be run under the floor, the return air supply may be taken from the side(s). The solid bottom supplied must remain in place.

When installed in the downflow position, on combustible material, a special sub-base must be installed.

WHERE THE MAXIMUM REQUIRED AIR FLOW IS .8494 M3/S OR GREATER THE BOTTOM OR BOTH SIDES MUST BE UTILIZED FOR RETURN AIR SUPPLY. NEVER USE THE REAR OF THE HEATER FOR THE RETURN AIR CONNECTION. FULL SIZED RETURN AIR DUCT OPENINGS MUST BE UTILIZED. EMBOSES ON THE SIDE OF THE HEATER ARE PROVIDED TO ACT AS A GUIDE.

WARNING

A SOLID METAL BASEPLATE IS INSTALLED ON THIS HEATER. THIS BASEPLATE MUST BE IN PLACE WHEN THE HEATER IS INSTALLED WITH SIDE(S) RETURN AIR DUCTS. FAILURE TO DO SO MAY PERMIT COMBUSTION PRODUCTS, INCLUDING **CARBON MONOXIDE**, TO ENTER THE LIVING SPACE CREATING A POTENTIALLY HAZARDOUS CONDITION SUCH AS **CARBON MONOXIDE** POISONING OR DEATH.

ELECTRICAL SUPPLY CONNECTIONS

The electrical requirements are nominal 230v. 50Hz. A separate supply line with a current overload device and a manual switch, where required, must be installed. Wire with a minimum rating of 35°C temperature rise must be run directly from the main power supply to the heater. Copper conductors are preferred.

WARNING

NEVER RENDER THE DOOR SWITCH INOPERATIVE. DOING SO MAY ALLOW **CARBON MONOXIDE** TO ENTER THE DWELLING.

WARNING

THE GAS SUPPLY PIPE MUST NEVER USED FOR GROUNDING PURPOSES.

CONTROL VOLTAGE CONNECTIONS

THERMOSTAT INSTALLATION:

Install the thermostat according to the instructions accompanying the thermostat. Run the thermostat wires into the control compartment. Connect the thermostat wiring as shown on the wiring diagram. The thermostat wiring should be adequately sized to eliminate voltage drop. Adhere to recommended color code to facilitate future troubleshooting.

The thermostat should be located near the return air grille or opening. It should be approximately 1.27 m from the floor level.

Never locate the thermostat where it will be influenced by heat generated by hot water pipes, lamps, televisions, direct sunlight, supply air registers, etc.
Interconnecting wiring must be secured and protected from damage or disconnection.
The low voltage control wiring exiting the air heater is labeled "thermostat wiring."

WARNING

BEFORE ATTEMPTING ANY SERVICE OR ADJUSTMENTS - INSURE THAT THE GAS AND ELECTRICAL SUPPLIES ARE "OFF".

CHECKING GAS PRESSURES

Use the following method to determine the gas pressures of the heater. The supply pressure tap should be located on the field-installed piping or gas shut-off valve. The manifold pressure tap is located on the combination gas valve in the heater and labeled "OUTLET PRESSURE TAP".

- Install a manometer graduated on the supply pressure tap on the gas supply pipe.
- Remove plug at the "Manifold" pressure tap on the gas valve and install a second manometer.
- Shut off all other gas fired appliances with the exception of the pilots.
Place heater in operation.
- Check the supply pressure as shown the series and rating plate.
- Turn off gas and electrical supply, remove manometers and replace any plugs that were removed. Use a pipe joint compound that is suitable for use with L.P. gas.
- Restore any other appliances affected to their normal operating mode.

SAFETY CONTROL FUNCTIONS AND CHECK-OUT PROCEDURE

GENERAL

In most cases the safety controls are wired in series with the "W" thermostat leg found on the control bar. It is imperative that these switches remain in the circuit. Never jumper, relocate (except the door switch) or bypass any control. The safety controls must be checked for proper operation at the time of start-up of the heater.

WARNING

SHOULD ANY SAFETY CONTROL BE ALTERED, JUMPERED OR BYPASSED, A HAZARDOUS CONDITION SUCH AS FIRE OR THE POSSIBILITY OF **CARBON MONOXIDE** ENTERING THE BUILDING MAY OCCUR.

MAIN LIMIT SWITCH

The main limit switch is a disc designed to shut off the burner gas should the supply air temperature exceed the maximum design temperature. This switch is not adjustable. To check the operation, block the return airflow through the unit temporarily. The limit switch should function and shut the burner gas off within a few minutes. Remove the blockage and allow the switch to cool sufficiently before reestablishing burner flames.

VENT PRESSURE SWITCH

This heater uses a vent pressure switch that prevents the heater from operating should any portion of the vent system become restricted or a venter failure occur. To check this switch, place the heater in operation and remove the hose from the switch. The gas burners will extinguish. Replacing the hose will allow the heater to operate normally.

FLAME ROLL-OUT SWITCH

This heater is equipped with a flame roll-out switch(s). This manually resettable switch is a disc type and is non-adjustable. This switch is designed to shut down the burner gas if there are flames outside the heat exchanger. Should this switch function, contact a qualified service person to determine the cause of function before resetting. To reset this switch press the button on top of the switch after the heater has cooled. To test the operation, place the heater in operation and place an open flame on the flat surface of the switch. The switch should function to shut down the burner gas. **Wait until the heater has cooled sufficiently before resetting the switch.**

FLAME SENSOR

The ignition is provided by an electronic ignition system. The burner flames will become extinguished if the flame sensor fails to detect the presence of flame. To test, disconnect the flame sensor wire before placing the heater in operation. The electronic ignition device should attempt the burners. However, the burners should shut off after a few seconds of operation. Disconnect the electrical supply to the heater, reinstall the disconnected sensor wire and reset the power supply to restore the heater to its normal operation.

BLOWER DOOR INTERLOCK SWITCH

The purpose of the switch is to disconnect electrical power to the heater should the blower door become dislodged, removed, or not properly reinstalled. **ALLOWING THE HEATER TO OPERATE WITHOUT THE BLOWER DOOR BEING SECURELY IN PLACE CAN CAUSE COMBUSTION PRODUCTS TO BECOME CIRCULATED THROUGHOUT THE LIVING AREA WHICH CAN CAUSE SERIOUS ILLNESS OR CARBON MONOXIDE POISONING.** To test the operation of this switch, place the heater in operation and remove the blower access door. The burner flames should become extinguished and the venter and circulating air blowers should both stop. To restore the unit to normal operation, shut off the electrical power to the unit, replace the blower access door and restore the electrical power.

INTEGRATED FAN / IGNITION CONTROL

This heater is equipped with a combination ignition module and fan control. The ignition source is an electronic device. This device ignites the burners upon a call for heat. It also controls the venter blower and the various speed selections and timings of the circulating air blower. This control is located in the circulating air blower compartment.

Upon a demand for heat the venter is energized. After a short purge, the electronic ignition device is energized. The burners are ignited, and after a slight delay, are proven.

The circulating air blower is energized approximately thirty (30) seconds after the burners are ignited. The circulating air blower is de-energized by a field selectable fan off timer.

THIS CONTROL IS NOT FIELD REPAIRABLE.

CIRCULATING AIR FILTERS

This heater does not have provisions for insertion of circulating air filters into the casing. However, it is recommended that a filter grille is installed or filters are installed in the return air duct(s). If filters are installed in the return air duct the filter access must be sealed airtight. One of the most common causes of a problem in a forced air heating system is a blocked or dirty filter. Circulating air filters must be inspected monthly for dirt accumulation and replaced if necessary. Failure to maintain clean filters can cause premature heat exchanger failure. A new home may require more frequent replacement until all construction dust and dirt is removed.

CAUTION

Before performing any service on this heater, including checking or replacing circulating air filters - disconnect the main power supply.

DO NOT operate the heater for extended periods of time without circulating air filters in place.

TEMPERATURE RISE

The temperature difference between the supply air and the return air of the heater is known as the temperature rise. This heater is designed to operate within the temperature rise displayed on the heater series and rating plate. To ensure satisfactory performance, the temperature rise of the heater must be measured and adjusted, if necessary. Use the following procedure to measure and adjust the temperature rise;

- Before starting the heater visually inspect all joints and seams in the supply and return air ducts for leaks. Repair them if necessary.
- Adjust the room thermostat to obtain constant operation.
- Allow the heater to operate for at least fifteen (15) minutes.
- With an accurate thermometer measure the temperature at the return air. If a combination indoor / outdoor system is used, the temperature must be measured downstream of the connection.
- Measure the outlet air at a point approximately 1/2 meter above the heater. It may be necessary to measure the outlet air at several places to obtain an accurate average. NOTE: IF AN AIR CONDITIONING COIL IS INSTALLED ABOVE THE HEATER TAKE CARE SO AS NOT TO DAMAGE THAT COIL.
- Adjust the temperature by changing circulating air blower speed tap.

MOTOR LUBRICATION AND MAINTENANCE

The circulating air blower is equipped with sleeve bearings that are permanently lubricated by the motor manufacturer and require no lubrication. At the time of the monthly filter inspection clean the exterior of the circulating air motor, especially around the perimeter air holes to prevent the possibility of overheating due to an accumulation of dust or dirt on the windings and motor casing. As suggested elsewhere in these instructions, the air filters must be kept clean. Dirty filters will restrict the airflow over the motor windings and possibly cause an overheating condition.

The venter motor bearings are prelubricated by the motor manufacturer and require no attention.