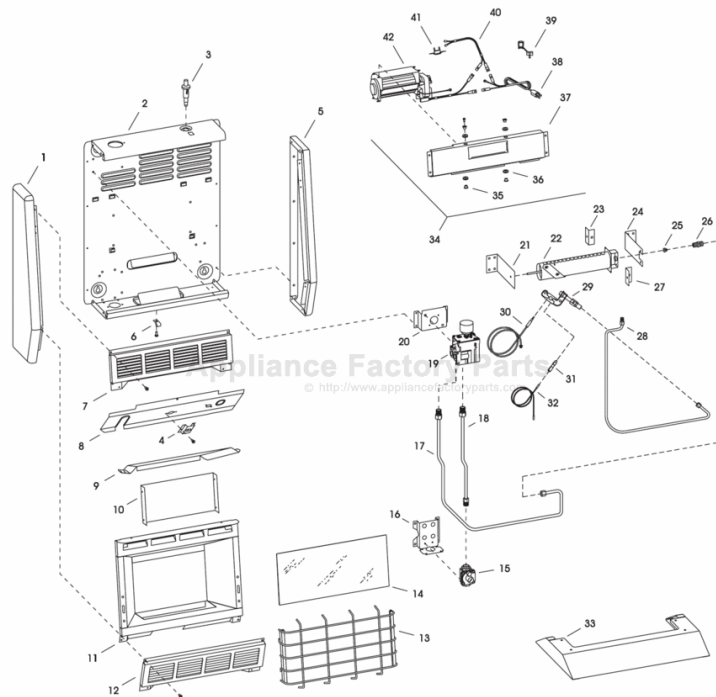


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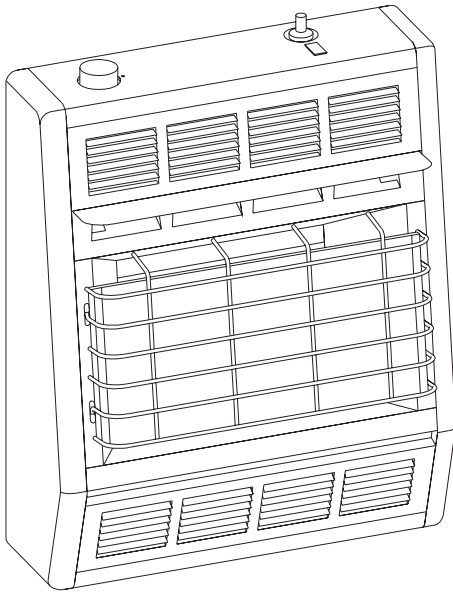


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# INSTALLATION INSTRUCTIONS AND OWNER'S MANUAL



## UNVENTED ROOM HEATER MODELS BF-10-2 BF-20-2 BF-30-2



**Installer:** Leave this manual with the appliance.  
**Consumer:** Retain this manual for future reference.

**WARNING:** If the information in these instructions are not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- **WHAT TO DO IF YOU SMELL GAS**
  - Do not try to light any appliance.
  - Do not touch any electrical switch; do not use any phone in your building.
  - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
  - If you cannot reach your gas supplier, call the fire department.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.

This appliance may be installed in an after-market, permanently located, manufactured (mobile) home, where not prohibited by local codes.

This appliance is only for use with the type of gas indicated on the rating plate. This appliance is not convertible for use with other gases.

This is an unvented gas-fired heater. It uses air (oxygen) from the room in which it is installed. Provisions for adequate combustion and ventilation air must be provided. Refer to page 6.

**WARNING:** If not installed, operated and maintained in accordance with the manufacturer's instructions, this product could expose you to substances in fuel or from fuel combustion which can cause death or serious illness.

**WATER VAPOR: A BY-PRODUCT OF UNVENTED ROOM HEATERS**  
Water vapor is a by-product of gas combustion. An unvented room heater produces approximately one (1) ounce (30ml) of water for every 1,000 Btu (.3KW's) of gas input per hour. Refer to page 6.

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# IMPORTANT SAFETY INFORMATION

THIS IS A HEATING APPLIANCE  
DO NOT OPERATE THIS APPLIANCE WITHOUT FRONT PANEL INSTALLED.

- An unvented room heater having an input rating of more than 6,000 Btu per hour shall not be installed in a bathroom.
- An unvented room heater having an input rating of more than 10,000 Btu per hour shall not be installed in a bedroom or bathroom.
- Due to high temperatures, the appliance should be located out of traffic and away from furniture and draperies.
- Children and adults should be alerted to the hazard of high surface temperature and should stay away to avoid burns or clothing ignition.
- Young children should be carefully supervised when they are in the same room with the appliance.
- Do not place clothing or other flammable material on or near the appliance.
- Due to high surface temperatures, keep children, clothing and furniture away.
- **WARNING: Do not use a blower insert, heat exchanger insert or other accessory not approved for use with heater.**
- **Installation and repair should be done by a QUALIFIED SERVICE PERSON.** The appliance should be inspected before use and at least annually by a professional service person. More frequent cleaning may be required due to excessive lint from carpeting, bedding materials, etc. It is imperative that control compartments, burners and circulating air passageways of the appliance be kept clean.
- **DO NOT use this room heater if any part has been under water. Immediately call a qualified service technician to inspect the room heater and to replace any part of the control system and any gas control which has been under water.**
- **Keep appliance area clear and free from combustible materials, gasoline and other flammable vapors and liquids.**
- **WARNING: ANY CHANGE TO THIS HEATER OR ITS CONTROLS CAN BE DANGEROUS.**  
Any safety screen or guard removed for servicing an appliance must be replaced prior to operating the heater.
- **WARNING: Failure to keep the primary air opening(s) of the burner(s) clean may result in sooting and property damage.**

## WARNING

When used without adequate combustion and ventilation air, heater may give off CARBON MONOXIDE, an odorless, poisonous gas.

Do not install heater until all necessary provisions are made for combustion and ventilation air. Consult the written instructions provided with the heater for information concerning combustion and ventilation air. In the absence of instructions, refer to the National Fuel Gas Code, ANSI Z223.1/NFPA 54, Air for Combustion and Ventilation, or applicable local codes.

This heater is equipped with a PILOT LIGHT SAFETY SYSTEM designed to turn off the heater if not enough fresh air is available.

**DO NOT TAMPER WITH PILOT LIGHT SAFETY SYSTEM!**

If heater shuts off, do not relight until you provide fresh air.  
If heater keeps shutting off, have it serviced. Keep burner and control compartment clean.

**CARBON MONOXIDE POISONING MAY LEAD TO DEATH.**

Early signs of carbon monoxide poisoning resemble the flu, with headache, dizziness and/or nausea. If you have these signs, heater may not be working properly. Get fresh air at once! Have heater serviced.

Some people — pregnant women, persons with heart or lung disease, anemia, those under the influence of alcohol, those at high altitudes — are more affected by carbon monoxide than others.

The pilot light safety system senses the depletion of oxygen at its location. If this heater is installed in a structure having a high vertical dimension, the possibility exists that the oxygen supply at the higher levels will be less than that at the heater. In this type of application, a fan to circulate the structure air will minimize this effect. The use of this fan will also improve the comfort level in the structure. When a fan is used to circulate air, it should be located so that the air flow is not directed at the burner.

# SAFETY INFORMATION FOR USERS OF LP-GAS

Propane (LP-Gas) is a flammable gas which can cause fires and explosions. In its natural state, propane is odorless and colorless. You may not know all the following safety precautions which can protect both you and your family from an accident. Read them carefully now, then review them point

by point with the members of your household. Someday when there may not be a minute to lose, everyone's safety will depend on knowing exactly what to do. If, after reading the following information, you feel you still need more information, please contact your gas supplier.

## LP-GAS WARNING ODOR

If a gas leak happens, you should be able to smell the gas because of the odorant put in the LP-Gas. That's your signal to go into immediate action!

- Do not operate electric switches, light matches, use your phone. Do not do anything that could ignite the gas.
- Get everyone out of the building, vehicle, trailer, or area. Do that IMMEDIATELY.
- Close all gas tank or cylinder supply valves.
- LP-Gas is heavier than air and may settle in low areas such as basements. When you have reason to suspect a gas leak, keep out of basements and other low areas. Stay out until firefighters declare them to be safe.
- Use your neighbor's phone and call a trained LP-Gas service person and the fire department. Even though you may not continue to smell gas, do not turn on the gas again. Do not re-enter the building, vehicle, trailer, or area.
- **Finally**, let the service man and firefighters check for escaped gas. Have them air out the area before you return. Properly trained LP-Gas service people should repair the leak, then check and relight the gas appliance for you.

## NO ODOR DETECTED - ODOR FADE

Some people cannot smell well. Some people cannot smell the odor of the chemical put into the gas. You must find out if you can smell the odorant in propane. Smoking can decrease your ability to smell. Being around an odor for a time can affect your sensitivity or ability to detect that odor. Sometimes other odors in the area mask the gas odor. People may not smell the gas odor or their minds are on something else. Thinking about smelling a gas odor can make it easier to smell.

The odorant in LP-gas is colorless, and it can fade under some circumstances. For example, if there is an underground leak, the movement of the gas through soil can filter the odorant. Odorants

in LP-Gas also are subject to oxidation. This fading can occur if there is rust inside the storage tank or in iron gas pipes.

The odorant in escaped gas can adsorb or absorb onto or into walls, masonry and other materials and fabrics in a room. That will take some of the odorant out of the gas, reducing its odor intensity.

LP-Gas may stratify in a closed area, and the odor intensity could vary at different levels. Since it is heavier than air, there may be more odor at lower levels. Always be sensitive to the slightest gas odor. If you detect any odor, treat it as a serious leak. Immediately go into action as instructed earlier.

## SOME POINTS TO REMEMBER

- Learn to recognize the odor of LP-gas. Your local LP-Gas Dealer can give you a "Scratch and Sniff" pamphlet. Use it to find out what the propane odor smells like. If you suspect that your LP-Gas has a weak or abnormal odor, call your LP-Gas Dealer.
- If you are not qualified, do not light pilot lights, perform service, or make adjustments to appliances on the LP-Gas system. If you are qualified, consciously think about the odor of LP-Gas prior to and while lighting pilot lights or performing service or making adjustments.
- Sometimes a basement or a closed-up house has a musty smell that can cover up the LP-Gas odor. Do not try to light pilot lights, perform service, or make adjustments in an area where the conditions are such that you may not detect the odor if there has been a leak of LP-Gas.
- Odor fade, due to oxidation by rust or adsorption on walls of new cylinders and tanks, is possible. Therefore, people should be particularly alert and careful when new tanks or cylinders are placed in service. Odor fade can occur in new tanks, or reinstalled old tanks, if they are filled and allowed to set too long before refilling. Cylinders and tanks which have been out of service for a time may develop internal rust which will cause odor fade. If such conditions are suspected to exist, a periodic sniff test of the gas is advisable. If you have any question about the gas odor, call your LP-gas dealer. A periodic sniff test of the LP-gas is a good safety measure under any condition.
- If, at any time, you do not smell the LP-Gas odorant and you think you should, assume you have a leak. Then take the same immediate action recommended above for the occasion when you do detect the odorized LP-Gas.
- If you experience a complete "gas out," (the container is under no vapor pressure), turn the tank valve off immediately. If the container valve is left on, the container may draw in some air through openings such as pilot light orifices. If this occurs, some new internal rusting could occur. If the valve is left open, then treat the container as a new tank. Always be sure your container is under vapor pressure by turning it off at the container before it goes completely empty or having it refilled before it is completely empty.

# INTRODUCTION

## Instructions to Installer

1. Installer must leave instruction manual with owner after installation.
2. Installer must have owner fill out and mail warranty card supplied with unvented room heater.
3. Installer should show owner how to start and operate unvented room heater.

Always consult your local Building Department regarding regulations, codes or ordinances which apply to the installation of an unvented room heater.

This appliance may be installed in an aftermarket\* permanently located, manufactured (mobile) home, where not prohibited by state or local codes.

\*Aftermarket: Completion of sale, not for purpose of resale, from the manufacturer.

This appliance is only for use with the type of gas indicated on the rating plate. This appliance is not convertible for use with other gases.

## General Information

This BF-10, BF-20 and BF-30 are design certified in accordance with American National Standards Institute Z21.11.2 by the Canadian Standards Association as an Unvented Room Heater and should be installed according to these instructions.

Any alteration of the original design, installed other than as shown in these instructions or use with a type of gas not shown on the rating plate is the responsibility of the person and company making the change.

**WARNING:** This appliance is equipped for (natural gas or propane) gas. Field conversion is not permitted.

## Important

All correspondence should refer to complete Model Number, Serial Number and type of gas.

## Qualified Installing Agency

Installation and replacement of gas piping, gas utilization equipment or accessories and repair and servicing of equipment shall be performed only by a qualified agency. The term "qualified agency" means any individual, firm, corporation, or company that either in person or through a representative is engaged in and is responsible for (a) the installation, testing, or replacement of gas piping or (b) the connection, installation, testing, repair, or servicing of equipment; that is experienced in such work; that is familiar with all precautions required, and that has complied with all the requirements of the authority having jurisdiction.

State of Massachusetts: The installation must be made by a licensed plumber or gas fitter in the Commonwealth of Massachusetts.

Sellers of unvented propane or natural gas-fired supplemental room heaters shall provide to each purchaser a copy of 527 CMR 30 upon sale of the unit.

In the State of Massachusetts, unvented propane and natural gas-fired space heaters shall be prohibited in bedrooms and bathrooms.

The installation must conform with local codes or, in the absence of local codes, with the National Fuel Gas Code, ANSI Z223.1/NFPA54.\*

\*Available from the American National Standards Institute, Inc., 11 West 42nd St., New York, N.Y. 10036.

## High Altitudes

For altitudes/elevations above 2,000 feet (610m), ratings should be reduced at the rate of 4 percent for each 1,000 (305m) feet above sea level. Contact the manufacturer or your gas company before changing spud/orifice size.

## Well Head Gas Installations

Some natural gas utilities use "well head" gas. This may affect the Btu output of the unit. Contact the gas company for the heating value. Contact the manufacturer or your gas company before changing spud/orifice size.

# SPECIFICATIONS

Model	BF-10	BF-20	BF-30
Input Btu/HR (KW/H)(LP)	10,000 (2.9)	20,000 (5.8)	30,000 (8.8)
Input Btu/HR (KW/H)(NAT)	10,000 (2.9)	18,000 (5.3)	30,000 (8.8)
Height	22" (559mm)	22" (559mm)	22" (559mm)
Width	18" (457mm)	18" (457mm)	24 1/8" (536mm)
Depth	6 1/2" (165mm)	6 1/2" (165mm)	6 1/2" (165mm)
Gas Inlet	3/8" (10mm)	3/8" (10mm)	3/8" (10mm)
Accessories			
Blower	SRB-18T	SRB-18T	SRB-30T
Floor Stand	SRS-18*	SRS-18	SRS-320

\*SRS-18 floor stand can not be used in a bedroom installation.

BF-10 must be wall mounted in a bedroom installation.

The bedroom must be an unconfined space. ANSI Z223.1/NFPA 54 defines an unconfined space as "a space whose volume is not less than 50 cubic feet per 1,000 Btu per hour (4.8m<sup>3</sup> per kw) of the aggregate input rating of all appliances installed in that space."

## WATER VAPOR: A BY-PRODUCT OF UNVENTED ROOM HEATERS

Water vapor is a by-product of gas combustion. An unvented room heater produces approximately one (1) ounce (30ml) of water for every 1,000 Btu (.3KW's) of gas input per hour.

Unvented room heaters must be used as supplemental heat (a room) rather than a primary heat source (an entire house). In most supplemental heat applications, the water vapor does not create a problem. In most applications, the water vapor enhances the low humidity atmosphere experienced during cold weather.

The following steps will help insure that water vapor does not become a problem.

1. Be sure the heater is sized properly for the application, including ample combustion air and circulation air.
2. If high humidity is experienced, a dehumidifier may be used to help lower the water vapor content of the air.
3. Do not use an unvented room heater as the primary heat source (an entire house).

## PROVISIONS FOR ADEQUATE COMBUSTION & VENTILATION AIR

This heater shall not be installed in a confined space or unusually tight construction unless provisions are provided for adequate combustion and ventilation air.

The National Fuel Gas Code, ANSI Z223.1 defines a confined space as a space whose volume is less than 50 cubic feet per 1,000 Btu per hour (4.8m<sup>3</sup> per kw) of the aggregate input rating of all appliances installed in that space and an unconfined space as a space whose volume is not less than 50 cubic feet per 1,000 Btu per hour (4.8m<sup>3</sup> per kw) of the aggregate input rating of all appliances installed in that space. Rooms communicating directly with the space in which the appliances are installed, through openings not furnished with doors, are considered a part of the unconfined space.

The following example is for determining the volume of a typical area in which the BF-20 may be located and for determining if this area fits the definition of an unconfined space.

The input of the BF-20 is 20,000 Btu per hour. Based on the 50 cubic feet per 1,000 Btu per hour formula, the minimum area that is an unconfined space for installation of the BF-20 is 1,000 cubic feet, 50 cubic feet x 20 = 1,000 cubic feet. To determine the cubic feet of the area in which the BF-20 is to be installed, measure the length, width and height of the area. Example: The area measures 16 feet in length, 8 feet in width and 8 feet in height, the area is 1,024 cubic feet. The BF-20 can be installed in this unconfined space with no requirement to provide additional combustion and ventilation air.

**Warning:** If the area in which the heater may be operated is smaller than that defined as an unconfined space or if the building is of unusually tight construction, provide adequate combustion and ventilation air by one of the methods described in the National Fuel Gas Code, ANSI Z223.1/NFPA 54, Air for Combustion and Ventilation, or applicable local codes.

### Unusually Tight Construction

The air that leaks around doors and windows may provide enough fresh air for combustion and ventilation. However, in buildings of unusually tight construction, you must provide additional fresh air.

Unusually tight construction is defined as construction where:

- a. Walls and ceilings exposed to the outside atmosphere have a continuous water vapor retarder with a rating of one perm or less with openings gasketed or sealed, and
- b. Weatherstripping has been added on openable windows and doors, and
- c. Caulking or sealants are applied to areas such as joints around window and door frames, between sole plates and floors, between wall-ceiling joints, between wall panels, at penetrations for plumbing, electrical, and gas lines, and at other openings.

If the heater is installed in a building of unusually tight construction, adequate air for combustion, ventilation and dilution of flue gases shall be provided in accordance with ANSI Z223.1/NFPA54.

# GAS SUPPLY

The gas line can be routed either through the floor or wall. The gas line opening should be made at this time. Location of the opening will be determined by the position of floor joists and the valve and union used for servicing.

## Gas Supply

Check all local codes for requirements, especially for the size and type of gas supply line required.

### Recommended Gas Pipe Diameter

Pipe Length	Schedule 40 Pipe Inside Diameter		Tubing, Type L Outside Diameter	
	Nat.	L.P.	Nat.	L.P.
0-10 feet 0-3 meters	1/2"	3/8"	1/2"	3/8"
10-40 feet 4-12 meters	1/2"	1/2"	5/8"	1/2"
40-100 feet 13-30 meters	1/2"	1/2"	3/4"	1/2"
100-150 feet 31-46 meters	3/4"	1/2"	7/8"	3/4"

**Note:** Never use plastic pipe. Check to confirm whether your local codes allow copper tubing or galvanized.

**Note:** Since some municipalities have additional local codes, it is always best to consult your local authority and installation code.

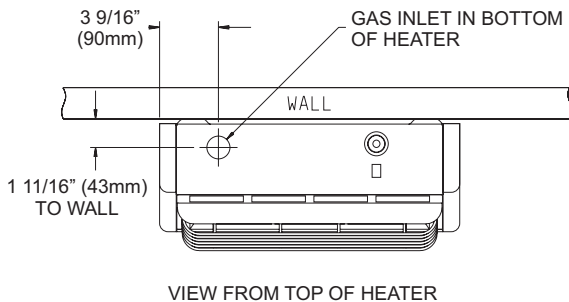


Figure 1

### Installing a New Main Gas Cock

Each appliance should have its own manual gas cock.

A manual main gas cock should be located in the vicinity of the unit. Where none exists, or where its size or location is not adequate, contact your local authorized installer for installation or relocation.

Compounds used on threaded joints of gas piping shall be resistant to the action of liquefied petroleum gases. The gas lines must be checked for leaks by the installer. This should be done with a soap solution watching for bubbles on all exposed connections, and if unexposed, a pressure test should be made.

**Never use an exposed flame to check for leaks. Appliance must be disconnected from piping at inlet of control valve and pipe capped or plugged for pressure test. Never pressure test with appliance connected; control valve will sustain damage!**

A gas valve and ground joint union should be installed in the gas line upstream of the gas control to aid in servicing. It is required

by the National Fuel Gas Code that a drip line be installed near the gas inlet. This should consist of a vertical length of pipe tee connected into the gas line that is capped on the bottom in which condensation and foreign particles may collect.

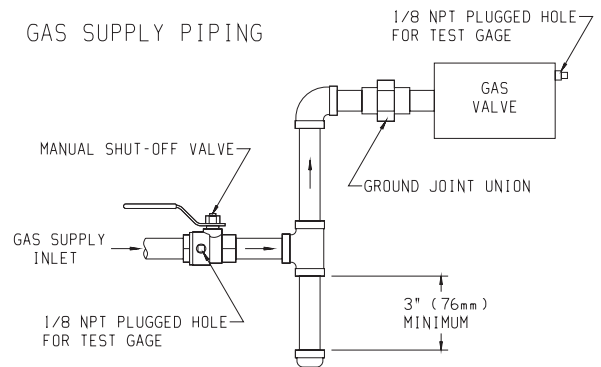


Figure 2

Method of Installing a Tee Fitting Sediment Trap (Figure 2)

The use of the following gas connectors is recommended:

- ANS Z21.24 Appliance Connectors of Corrugated Metal Tubing and Fittings
- ANS Z21.45 Assembled Flexible Appliance Connectors of Other Than All-Metal Construction

The above connectors may be used if acceptable by the authority having jurisdiction. The state of Massachusetts requires that a flexible appliance connector cannot exceed three feet in length.

### Pressure Testing of the Gas Supply System

1. To check the inlet pressure to the gas valve, a 1/8" (3mm) N.P.T. plugged tapping, accessible for test gauge connection, must be placed immediately upstream of the gas supply connection to the appliance.
2. The appliance and its appliance main gas valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psig (3.5 kPa).
3. The appliance must be isolated from the gas supply piping system by closing its equipment shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psig (3.5 kPa).

**Attention!** If one of the above procedures results in pressures in excess of 1/2 psig (14" w.c.) (3.5 kPa) on the appliance gas valve, it will result in a hazardous condition.

### Checking Manifold Pressure

Natural gas will have a manifold pressure of approximately 3.5" w.c. (.87kPa) at the pressure regulator outlet with the inlet pressure to the pressure regulator from a minimum of 5.0" w.c. (1.245kPa) for the purpose of input adjustment to a maximum of 10.5" w.c. (2.615kPa). Propane/LP gas will have a manifold pressure approximately 10.0" w.c. (2.49kPa) at the pressure regulator outlet with the inlet pressure to the pressure regulator from a minimum of 11.0" w.c. (2.739kPa) for the purpose of input adjustment to a maximum of 13.0" w.c. (3.237kPa).

A test gage connection is located downstream of the gas appliance pressure regulator for measuring gas pressure. The connection is a 1/8 inch (3mm) N.P.T. plugged tapping.

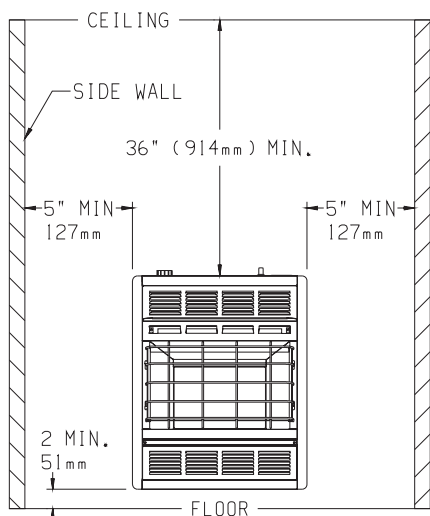
# CLEARANCES

When facing the front of the appliance the following minimum clearances to combustible construction must be maintained.  
Do not install in alcove or closet.

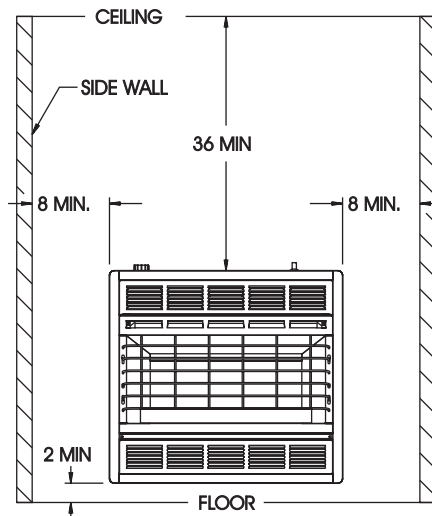
	BF-10/BF-20	BF-30
Left side	5" (127mm)	8" (203mm)
Right side	5" (127mm)	8" (203mm)
Rear wall	0" (0mm)	0" (0mm)
Ceiling	36" (914mm)	36" (914mm)
Minimum vertical clearance from a projections above the appliance (shelves, window sills, etc.)	36" (914mm)	36" (914mm)
Floor (top surface of carpeting, tile, etc.)	2" (51mm)	2" (51mm)

Provide adequate clearances around air openings.

Adequate accessibility clearances for purposes of servicing and proper operation must be provided.



**BF-10 and BF-20**  
**Figure 3**



**BF-30**  
**Figure 4**

## OPTIONAL FLOOR STAND INSTALLATION

### SRS-18\* and SRS-30 Floor Stand Installation

1. Align clearance holes on floor stand with screw holes on bottom of heater, as shown in Figure 5.
2. Attach floor stand to heater with (4) screws provided with floor stand.
3. Connect the gas line.

\* SRS-18 floor stand can not be used in a bedroom installation.

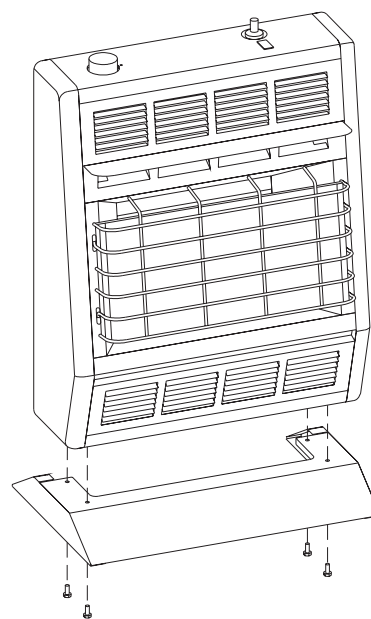
BF-10 must be wall mounted in a bedroom installation.

### Installation on Rugs and Tile

If this appliance is installed directly on carpeting, tile or other combustible material, other than wood flooring, the appliance shall be installed on a metal or wood panel extending the full width and depth of the appliance.

**Attention:** Optional SRS-18 and SRS-30 Floor Stand meets requirement.

The base referred to in this section does not mean the fire-proof base as used on wood stoves. The protection is for rugs that are extremely thick and light colored tile.



**Figure 5**

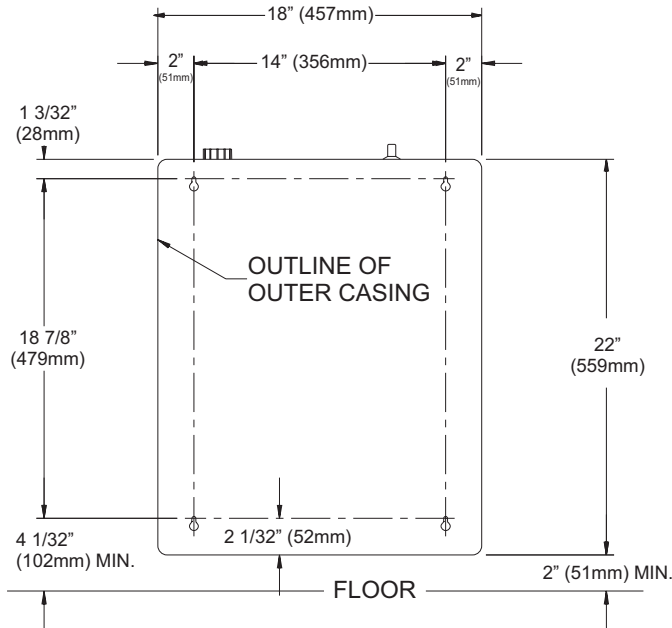
# WALL MOUNT INSTALLATION

Refer to Figures 6 and 7 for measurements in order to locate (4) mounting holes on wall. Figures 6 and 7 are the front views of the heater.

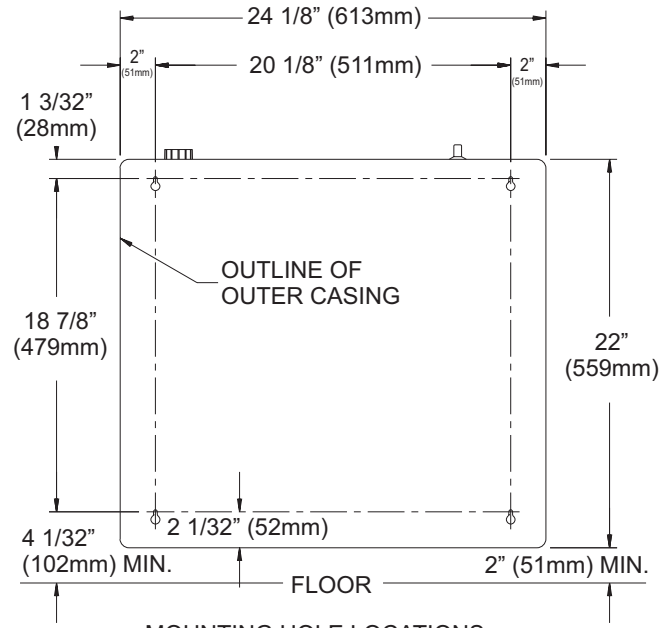
1. Remove lower louver from casing assembly (2 screws).
2. Remove reflector from casing assembly (2 screws).
3. Remove upper louver from casing assembly (2 screws).

## On Solid Wall

1. After locating mounting holes, attach (4) #10 x 1" (25mm) screws provided into the wall. Do not completely tighten screwheads to the wall, leave a 1/8" (3mm) gap between screwheads and wall.
2. Mount heater onto the (4) screwheads and complete tightening screwheads into the wall.  
Attention! Use the following steps to properly align the upper louver and the reflector with the heat shield.
  - a. When replacing upper louver, be sure the bottom lip of upper louver goes behind the heat shield.
  - b. When replacing reflector, be sure the top lip of reflector goes in front of the heat shield.
3. Connect the gas line.



MOUNTING HOLE LOCATIONS  
VIEWED FROM FRONT OF HEATER  
**BF-10 and BF-20**  
Figure 6



MOUNTING HOLE LOCATIONS  
VIEWED FROM FRONT OF HEATER  
**BF-30**  
Figure 7

## On Sheet Rock Wall

1. After locating mounting holes, drill (4) 5/16" (8mm) diameter holes into the wall.
2. Insert (4) plastic expansion anchors provided into the holes.
3. Tighten (4) #10 x 1" (25mm) screws provided into the plastic expansion anchors. Do not completely tighten screwheads to the plastic expansion anchors, leave a 1/8" (3mm) gap between screwheads and plastic expansion anchors.
4. Mount heater onto the (4) screwheads and complete tightening the screwheads to the plastic expansion anchors.  
Attention! Use the following steps to properly align the upper louver and the reflector with the heat shield.
  - a. When replacing upper louver, be sure the bottom lip of upper louver goes behind the heat shield.
  - b. When replacing reflector, be sure the top lip of reflector goes in front of the heat shield.
5. Connect the gas line.

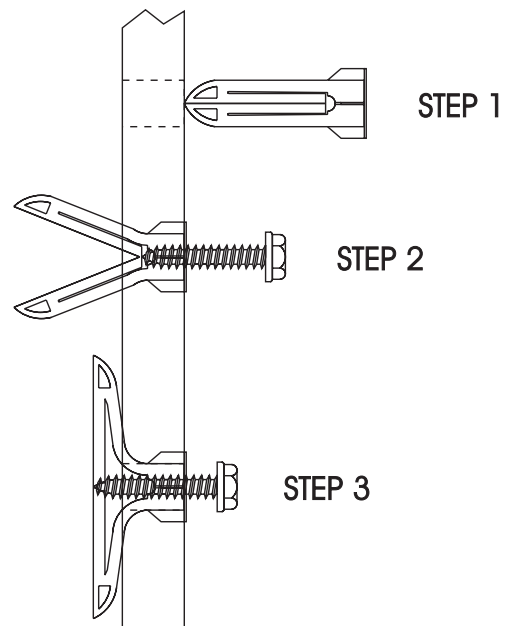


Figure 8

# LIGHTING INSTRUCTIONS

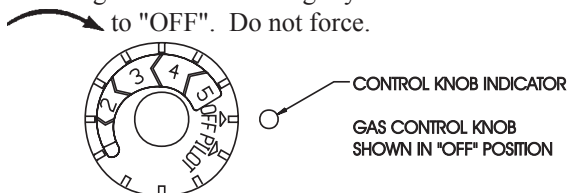
## FOR YOUR SAFETY READ BEFORE LIGHTING

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

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

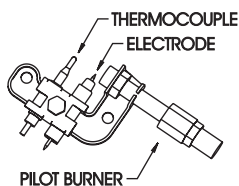
## LIGHTING INSTRUCTIONS

1. STOP! Read the safety information above.
2. Set thermostat (gas control knob) to lowest setting.
3. Turn off all electric power to the appliance (if applicable).
4. Push in gas control knob slightly and turn clockwise to "OFF". Do not force.



5. Wait ten (10) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow "B" in the safety information above. If you don't smell gas, go to the next step.

6. Find pilot - the pilot is attached at the bottom of the burner assembly.
7. Turn gas control knob counterclockwise to "PILOT."
8. Push in gas control knob all the way and hold in. Repeatedly push the piezo ignitor button until pilot is lit (or use a match to light pilot). Continue to hold the control knob in for about one (1) minute after the pilot is lit. Release knob and it will pop back up. Pilot should remain



- lit. If it goes out, repeat steps 4 through 8.
  - If knob does not pop up when released, stop and immediately call your service technician or gas supplier.
  - If the pilot will not stay lit after several tries, turn the gas control knob to "OFF" and call your service technician or gas supplier.
9. Attention! Gas control has an INTERLOCK latching device. When the pilot is initially lit and the safety magnet is energized (pilot stays "ON") the INTERLOCK latching device becomes operative. If the gas control is turned to the "OFF" position or gas flow to the appliance is shut off, the pilot cannot be relighted until the safety magnet is de-energized (approximately 60 seconds). There will be an audible "click" when the safety magnet in the gas control is de-energized. Pilot can now be relighted. Repeat steps 4 through 8.
10. Turn gas control knob counterclockwise to "HI".
11. Turn on all electric power to appliance (if applicable).
12. Set thermostat (gas control knob) to desired setting from "HI" to "LO".

## TO TURN OFF GAS TO APPLIANCE

1. Set thermostat (gas control knob) to lowest setting.
2. Turn off all electric power to appliance if service is to be performed (if applicable).
3. Push in gas control knob slightly and turn clockwise to "OFF". Do not force.

# MAIN BURNER FLAME CHARACTERISTICS

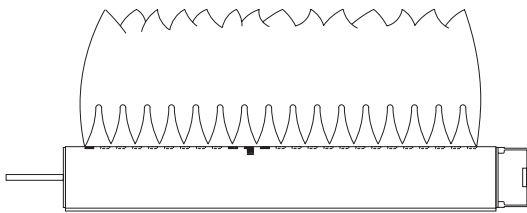
## Piezo Pilot Ignitor Instructions

Depressing the ignitor button completely causes a spark to occur at the pilot.

To light the pilot, it is important that the electrode be 1/8" (3mm) from the pilot. The spark must occur at the point the pilot flame hits the thermocouple.

On a new installation with air in the gas line, it is suggested that a match be used. The match will light the pilot faster than the piezo under this condition.

There will be a short blue inner flame with a much larger, lighter blue, secondary flame. The burner flame may have a small yellow tip when hot. Dust in the combustion air will produce an orange or red flame. Do not mistake the orange or red flame for an improper yellow flame. Clean main burner by applying compressed air into ports and throat of main burner.

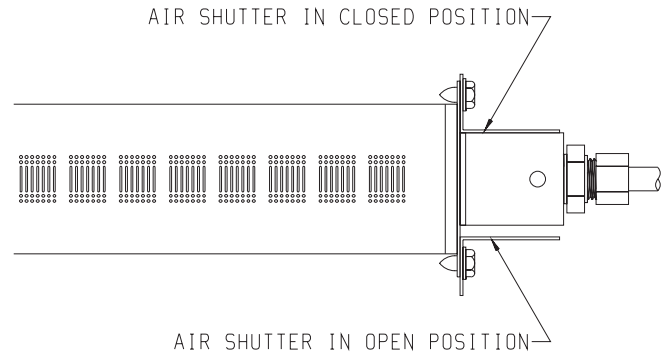


**Figure 9**

Attention: BF-10, Natural or Propane gas has a front and rear air shutter.  
BF-20, Propane gas only has a front air shutter.  
BF-30, Propane gas only has a front air shutter.

## Air Shutter Adjustment (Figure 10)

The air shutter on main burner is factory set at a 3/32" opening. If yellow flames occur on main burner loosen 1/4" screw on air shutter in order to increase air shutter opening. The slot on air shutter allows the air opening to be increased or decreased. Tighten 1/4" screw on air shutter after air shutter adjustment has been completed.



PARTIAL VIEW FROM TOP OF BURNER

**Figure 10**

## Cleaning Main Burner Orifice and Main Burner

1. Turn OFF gas supply to the heater.
2. Turn OFF electric supply to the heater if optional blower, SRB-18T or SRB-30T is installed in heater.
3. Remove lower louver from casing assembly (2 screws).
4. Remove reflector from casing assembly (2 screws).
5. Inspect interior of casing assembly for accumulation of dust, lint or spider webs. If necessary, clean interior of casing assembly with a vacuum cleaner or apply air pressure. Do not damage any components within casing assembly when you are cleaning.
6. Remove main burner orifice from orifice holder.
7. Apply air pressure through main burner orifice and orifice holder to remove dust, lint or spider webs.
8. Apply air pressure into main burner to remove dust, lint or spider webs.
9. As parts are being replaced in reverse order, check for gas leaks at all gas connections before lower louver is replaced onto casing assembly.

# PILOT FLAME CHARACTERISTICS

The correct flame will be blue and will extend beyond the thermocouple. The flame will surround the thermocouple just below the tip. A slight yellow flame may occur where the pilot flame and main burner flame meet.

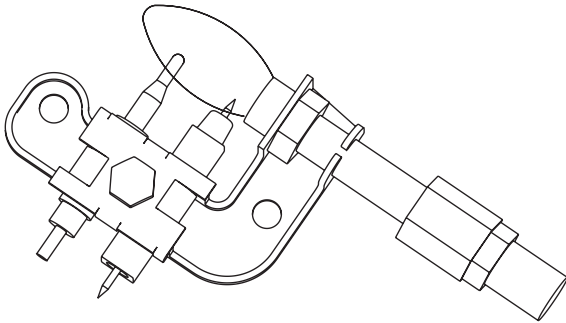


Figure 11

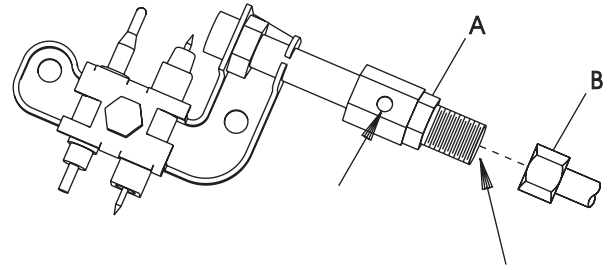


Figure 12

## Warning:

Never use needles, wires, or similar cylindrical objects to clean the pilot to avoid damaging the calibrated ruby that controls the gas flow.

## Oxygen Depletion Sensor Pilot (Figure 12)

When the pilot has a large yellow tip flame, clean the Oxygen Depletion Sensor as follows:

1. Remove pilot from main burner assembly, see "Appliance Maintenance", Page 13.
2. Apply air pressure through the holes in the pilot indicated by the arrows in Figure 12. This will blow out foreign materials such as dust, lint and spider webs.

# THERMOSTAT OPERATION

To ignite main burner, rotate gas control knob counterclockwise toward HI setting. To shut down main burner, rotate gas control knob clockwise toward LO setting.

## BF-10

The gas control has an input of 10,000 Btu/HR (2.9 KW/H). The hydraulic thermostat bulb is located at the casing assembly bottom.

## BF-20

The gas control modulates from a minimum input of 8,500 Btu/HR (2.5 KW/H) (LO setting) to a maximum input of 20,000 Btu/HR (5.9 KW/H) for LP gas (HI setting) or 18,000 Btu/HR (5.3 KW/H) for Natural Gas (HI setting). The hydraulic thermostat bulb which is located at the casing assembly bottom adjusts the main burner flame between minimum input and maximum input.

## BF-30

The gas control modulates from a minimum input of 8,500 Btu/HR (2.5 KW/H) (LO setting) to a maximum input of 30,000 Btu/HR (8.8 KW/H) (HI setting). The hydraulic thermostat bulb which is located at the casing assembly bottom adjusts the main burner flame between minimum input and maximum input.

Note: When the hydraulic thermostat bulb is "satisfied" the main burner flame will shut "OFF" with the pilot flame remaining "ON".

The LO and HI setting has temperature range of approximately 55°F (12.78°C) to 90°F (32.22°C), respectively. This is the temperature at the hydraulic thermostat bulb not the room temperature. The owner is advised to determine the particular heat setting that is desired for comfort, as heating requirements are different for every owner.

Attention: If the owner does not want the main burner to ignite and turns the gas control knob to the Lo setting, the main burner will still ignite if the temperature at the hydraulic thermostat bulb drops to 55°F (12.78°C).

If no heat is desired, turn the gas control knob to the PILOT position.

# APPLIANCE MAINTENANCE

## Glass Removal, Cleaning and Glass Replacement

1. Remove chrome grill from reflector.
2. Slide glass upward to remove glass from chrome grill.
3. Clean glass with a non-abrasive household glass cleaner and warm water. Gas fireplace glass cleaner can also be used.
4. Align glass with rails on chrome grill and slide glass downward into chrome grill.
5. Attach chrome grill onto reflector.  
Warning: Do not operate unvented room heater without glass/ chrome grill attached to reflector.

## To Remove Pilot From Main Burner Assembly

1. Turn OFF gas supply to the heater.
2. Turn OFF electrical supply to the heater if optional blower, SRB-18T or SRB-30T is installed in heater.
3. Remove lower louver from casing assembly (2 screws).
4. Remove reflector from casing assembly (2 screws).
5. Disconnect pilot tubing from pilot (see Figure 12, Page 12). Grasp nut A with a wrench when removing nut B with a second wrench.
6. Remove pilot from pilot bracket (2 nuts).
7. As parts are being replaced in reverse order, check for gas leaks at all gas connections before lower louver is replaced onto casing assembly.

## To Remove Main Burner Orifice From Main Burner Assembly

1. Turn off gas supply to the heater.
2. Turn off electrical supply to the heater if optional blower, SRB-18T or SRB-30T is installed in heater.
3. Remove lower louver from casing assembly (2 screws).
4. Remove reflector from casing assembly (2 screws).
5. Disconnect supply tubing from orifice holder.
6. Remove orifice holder from venturi of main burner assembly.
7. Remove main burner orifice from orifice holder.
8. As parts are being replaced in reverse order, check for gas leaks at all gas connections before lower louver is replaced onto casing assembly.

## To Remove Gas Valve From Casing Assembly

1. Turn OFF gas supply to the heater.
2. Turn OFF electrical supply to the heater if optional blower, SRB-18T or SRB-30T is installed in heater.
3. Remove lower louver from casing assembly (2 screws).
4. Remove reflector from casing assembly (2 screws).
5. Remove upper louver from casing assembly (2 screws).
6. If installed, remove optional blower assembly (4 screws).
7. Disconnect inlet supply tubing, outlet supply tubing, pilot supply tubing and thermocouple lead from gas valve.
8. If heater is attached to wall, disconnect gas supply line from inlet regulator.
9. Remove heater from wall.
10. Remove gas valve bracket from casing assembly (4 screws to be removed are located on casing assembly back).
11. Remove hydraulic thermostat bulb from thermostat bulb clip located at casing assembly bottom.
12. Remove gas valve from gas valve bracket.
13. As parts are being replaced in reverse order, check for gas leaks at all gas connections before upper louver, reflector and lower louver are replaced onto casing assembly.

## To Remove Main Burner From Casing Assembly

1. Turn OFF gas supply to the heater.
2. Turn OFF electrical supply to the heater if optional blower, SRB-18T or SRB-30T is installed in heater.
3. Remove lower louver from casing assembly (2 screws).
4. Remove reflector from casing assembly (2 screws).
5. Disconnect supply tubing from orifice holder.
6. Remove main burner assembly from casing assembly (2 screws).
7. Remove air shutter(s) from main burner. BF-10 Natural and LP has two (2) air shutters, BF-20 LP has one (1) air shutter and BF-30 LP has one (1) air shutter. Attach air shutter(s) to new main burner assembly.
8. As parts are being replaced in reverse order, check for gas leaks at all gas connections before lower louver is replaced onto casing assembly.

# TROUBLESHOOTING

## SYMPTOMS - POSSIBLE CAUSES AND CORRECTIONS

### 1. Spark electrode does not produce spark.

- a. Spark electrode broken - replace.
- b. Ignitor wire may not be attached to spark electrode - attach.
- c. Ignitor wire damaged - replace.
- d. Piezo ignitor defective - replace.

### 2. Spark electrode produces spark but pilot does not light.

- a. No gas to heater - turn on gas.
- b. PILOT position not properly aligned - turn gas control knob to PILOT position and depress.
- c. Pilot is blocked from spider web or dirt - clean pilot, see Figure 12, Page 12.

### 3. Pilot flame does not stay "ON" when control knob is released.

- a. Control knob in PILOT position not completely depressed or held in long enough.

- b. INTERLOCK latching device is operative - see "Lighting Instructions," Page 10, Step 9.
- c. Thermocouple lead not tightened into gas control - tighten thermocouple lead.
- d. Pilot flame not surrounding thermocouple - clean pilot, see Figure 12, Page 12.
- e. Inlet gas pressure too low, contact gas supplier.
- f. Thermocouple defective - replace pilot.
- g. Gas control defective - replace.

### 4. Main burner does not ignite.

- a. Main burner orifice is blocked - clean, see "Main Burner Flame Characteristics," Page 11.
- b. Inlet gas pressure too low, contact gas supplier.

### 5. Heater keeps shutting "OFF" during normal operation.

- a. Pilot is blocked - clean pilot, see Figure 12, Page 12.
- b. Inlet gas pressure too low, contact gas supplier

## HOW TO ORDER REPAIR PARTS

Parts can be ordered only through your service person or dealer. For best results, the service person or dealer should order parts through the distributor. Parts can be shipped directly to the service person/dealer.

All parts listed in the Parts List have a Part Number. When ordering parts, first obtain the Model Number from the name plate on your equipment. Then determine the Part Number (not the Index Number) and the Description of each part from the following appropriate illustration and list. Be sure to give all this information.

Unvented Heater Model Number \_\_\_\_\_ Part Description \_\_\_\_\_

Unvented Heater Serial Number \_\_\_\_\_ Part Number \_\_\_\_\_

Type of Gas (Propane or Natural) \_\_\_\_\_

Do not order bolts, screws, washers or nuts. They are standard hardware items and can be purchased at any local hardware store. Shipments contingent upon strikes, fires and all causes beyond our control.

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Empire Comfort Systems, Inc. Nine Eighteen Freeburg Ave. Belleville, IL 62220-2623

# PARTS LIST

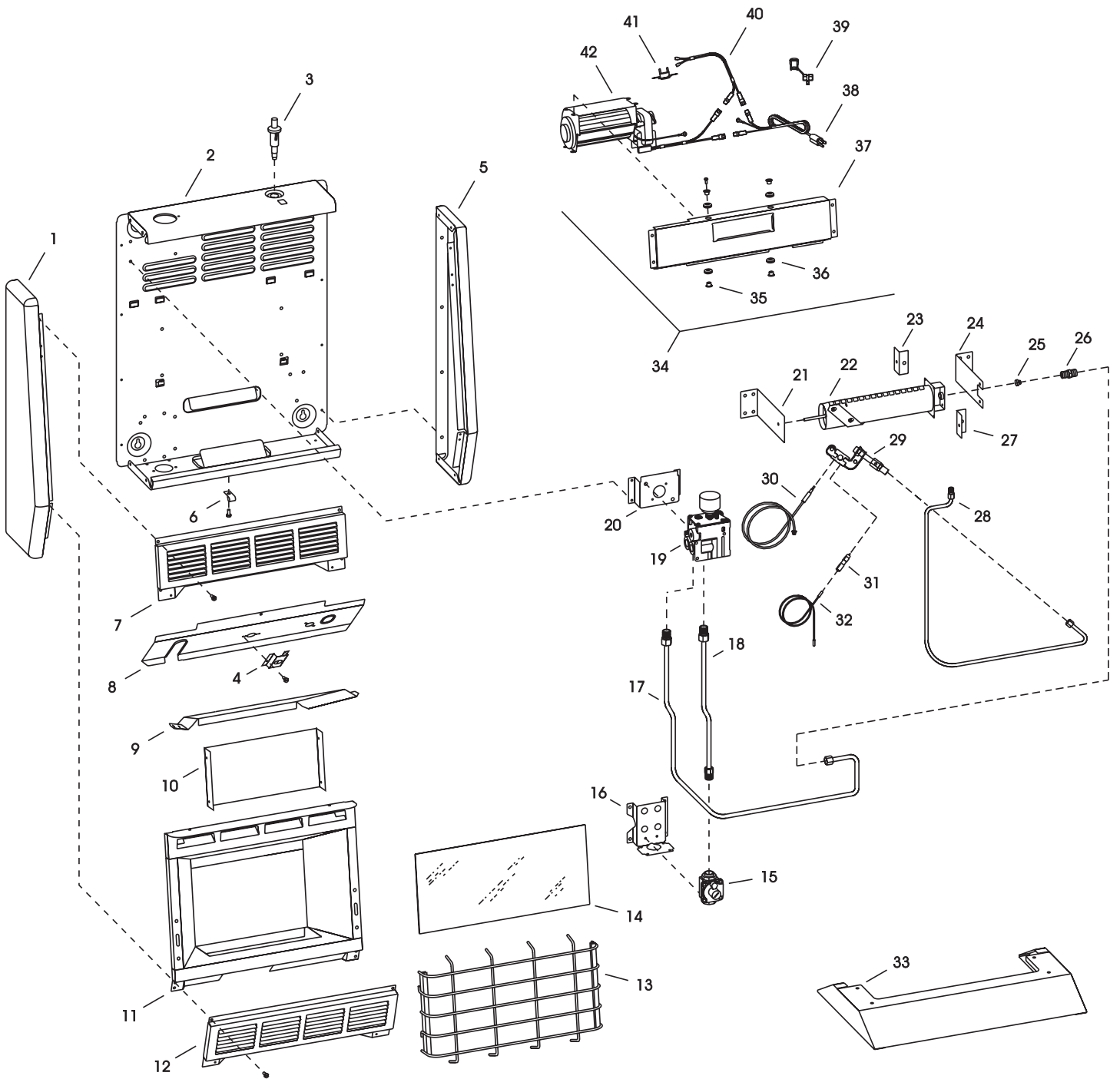
PLEASE NOTE: When ordering parts, it is very important that part number and description of part coincide.

Index No.	Part No.	Description
1	13347	CASING SIDE ASSEMBLY - LEFT (BF-10)
1	13348	CASING SIDE ASSEMBLY - LEFT (BF-20, BF-30)
2	SR-090	CASING BACK (BF-10 BF-20)
2	SR-041	CASING BACK (BF-30)
3	R-2313	PIEZO IGNITOR
4	11231	FAN CONTROL BRACKET (BF-10)
5	SR-008	CASING SIDE ASSEMBLY - RIGHT
6	R-1992	BULB CLIP
7	SR-076	CASING LOUVER-TOP (BF-10 BF-20)
7	SR-017	CASING LOUVER-TOP (BF-30)
8	SR-077	HEAT SHIELD (BF-10 BF-20)
8	SR-018	HEAT SHIELD (BF-30)
9	SR-075	REFLECTOR SHIELD REAR (BF-10, BF-20)
9	SR-016	REFLECTOR SHIELD REAR (BF-30)
10	10420	REAR SHIELD (BF-10, BF-20)
10	10420	REAR SHIELD (BF-30)
11	10417	REFLECTOR ASSEMBLY (BF-10, BF-20)
11	10475	REFLECTOR ASSEMBLY (BF-30)
12	10467	CASING LOUVER-BOTTOM ASSEMBLY (BF-10, BF-20)
12	10479	CASING LOUVER-BOTTOM ASSEMBLY (BF-30)
13	R-4979	CHROME GRILL (BF-10, BF-20)
13	R-4980	CHROME GRILL (BF-30)
14	R-4993	GLASS (BF-10 BF-20)
14	R-4994	GLASS (BF-30)
15	R-2784	INLET REGULATOR - NAT
15	R-2480	INLET REGULATOR - LPG
16	10753	INLET REGULATOR BRACKET
17	12442	TUBING - GAS VALVE TO BURNER (BF-10, BF-20)
17	12443	TUBING - GAS VALVE TO BURNER (BF-30)
18	12437	TUBING - INLET REGULATOR TO GAS VALVE
19	R-6563	GAS VALVE (NAT & LPG)
20	SR-113	VALVE BRACKET
21	10460	BURNER BRACKET - LEFT
22	10422	BURNER (BF-10, BF-20)
22	10481	BURNER (BF-30)
23	10424	AIR SHUTTER (BF-10 ONLY)
24	10461	BURNER BRACKET - RIGHT

Index No.	Part No.	Description
25	P-214	MAIN BURNER ORIFICE (BF-10 NAT)
25	P-193	MAIN BURNER ORIFICE (BF-10 LPG)
25	P-252	MAIN BURNER ORIFICE (BF-20 NAT)
25	P-182	MAIN BURNER ORIFICE (BF-20 LPG)
25	P-211	MAIN BURNER ORIFICE (BF-30 NAT)
25	P-185	MAIN BURNER ORIFICE (BF-30 LPG)
26	P-212	ORIFICE HOLDER
27	10424	AIR SHUTTER (BF-10 NAT & LPG) (BF-20 & BF-30 LPG ONLY)
28	10539	TUBING - GAS VALVE TO PILOT (BF-10 BF-20)
28	10540	TUBING - GAS VALVE TO PILOT (BF-30)
29	R-6306	PILOT ASSEMBLY (NAT ONLY) (INCLUDES 30 & 31)
29	R-6308	PILOT ASSEMBLY (LPG ONLY) (INCLUDES 30 & 31)
30	R-6310	PILOT THERMOCOUPLE
31	R-6309	SPARK IGNITOR
32	R-2390	IGNITOR WIRE
33	SR-120	OPTIONAL SRS-18 FLOOR STAND KIT (BF-10, BF-20)
33	SR-115	OPTIONAL SRS-30 FLOOR STAND KIT (BF-30)
34	SR-122	OPTIONAL SRB-18T BLOWER KIT (BF-10 BF-20) (INCLUDES 34 THROUGH 41)
34	SR-116	OPTIONAL SRB-30T BLOWER KIT (BF-30) (INCLUDES 34 THROUGH 41)
35	R-1454	BRASS BUSHING (4 REQUIRED)
36	R-1499	RUBBER GROMMET (4 REQUIRED)
37	SR-196	BLOWER PAN (BF-10 BF-20)
37	SR-198	BLOWER PAN (BF-30)
38	VF-068	CORD SET ASSEMBLY
39	R-1468	BUSHING - HEYCO #SR5KN4
40	R-2395	WIRE ASSEMBLY
41	R-2503	FAN CONTROL
42	R-2396	BLOWER (INCLUDES MOTOR, FAN, AND FAN HOUSING)
N/S	SR-219	BLOWER HARDWARE PACKAGE
N/S	SR-216	HARDWARE PACKAGE
N/S	R-1976	MIN. RATE SCREW NAT 1.60
N/S	R-1977	MIN. RATE SCREW LP 1.00

USE ONLY MANUFACTURER'S REPLACEMENT PARTS. USE OF ANY OTHER PARTS COULD CAUSE INJURY OR DEATH.

# PARTS VIEW



# OPTIONAL BLOWER INSTALLATION INSTRUCTIONS

## SRB-18T and SRB-30T

### for Unvented Room Heaters BF-10, BF-20 and BF-30

#### INSTALLING OPTIONAL BLOWER SRB-18T OR SRB-30T

If heater is installed onto the wall, in order to install the optional blower, the heater must be removed from the wall. If heater is installed on SRS-18 or SRS-30 optional floor stand there is adequate access area available to install the optional blower.

1. Turn "OFF" gas supply to the heater.
2. Remove lower louver from casing assembly (2 screws).
3. Remove reflector from casing assembly (2 screws).
4. Remove upper louver from casing assembly (2 screws).
5. Insert the fan control wires and the upper portion of the fan control through the 3/4" (19mm) diameter hole on the bottom side of the top heat shield. The fan control wires will enter into the top portion of the heater and the fan control disc will be facing the main burner. Attach fan control to the bottom side of the top heat shield with (2) screws provided with the optional blower.
6. Route cord set through 9/16" (14mm) diameter hole on casing assembly back. Insert approximately 3" (76mm) of cord set into casing assembly back.
7. When you are facing the front of the heater, position the optional blower assembly onto the top heat shield of the heater. The motor wire harness should be facing into the top, right portion of the heater.
8. Attach (1) pin terminal from black (hot) wire, smooth insulation on cord set to (1) socket terminal on fan control wire harness.
9. Attach (1) pin terminal from black (neutral) wire, ribbed insulation on cord set to (1) socket terminal from white (neutral) wire on motor wire harness.
10. Attach (1) pin terminal on fan control wire harness to (1) socket terminal from black (hot) wire on motor wire harness.
11. Attach the green ground wire from the motor wire harness and the green ground wire from the cord set to the bottom right side of the blower housing with (1) screw provided with the optional blower.
12. With the heater standing upright, position the air discharge opening of the blower housing downward. Place the bottom flange of the

blower housing over the top edge of the top heat shield. Insert the blower housing into the top portion of the heater by pivoting the blower housing upward 90°. Attach the blower housing to the casing assembly with (4) screws provided with the optional blower.

13. Grasp cord set at casing assembly back and pull excess cord set through casing assembly back. Secure cord set in casing assembly back with the strain relief provided with the optional blower.
14. Installation of optional blower SRB-18T or SRB-30T is completed.
15. If heater was removed from the wall, in order to install SRB-18T or SRB-30T optional blower, check for gas leaks at all gas connections before lower louver is replaced onto casing assembly.

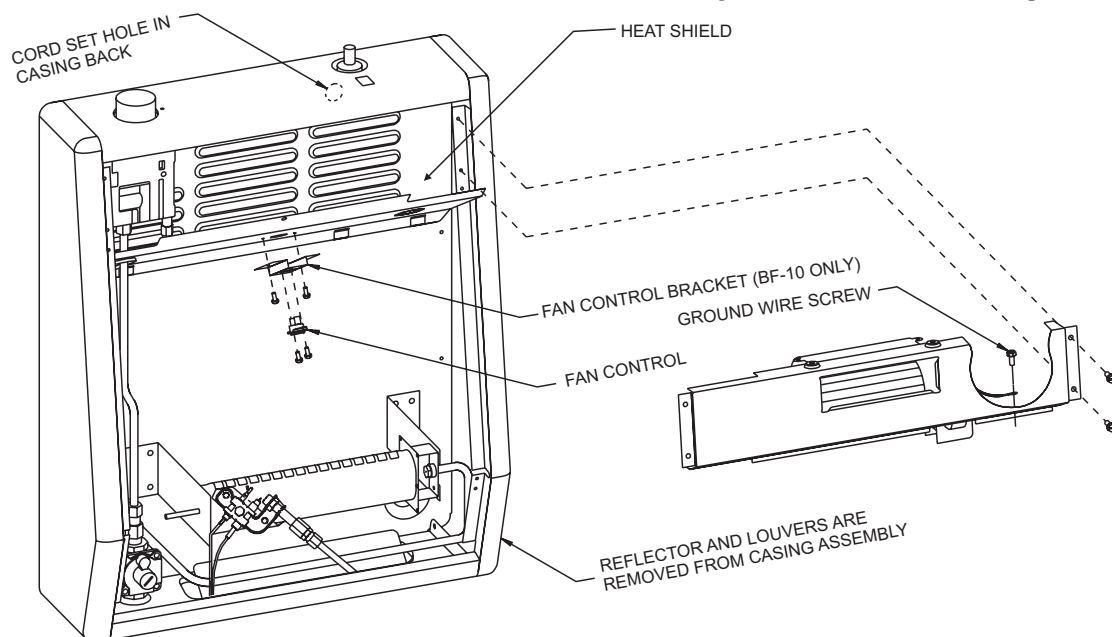
**Attention!** After optional blower has been installed use the following steps to properly align the upper louver and the reflector with the heat shield.

- A. When replacing upper louver, be sure the bottom lip of upper louver goes behind the heat shield.
- B. When replacing reflector, be sure the top lip of reflector goes in front of the heat shield.

#### Excessive Blower Wheel Noise

**ATTENTION!** If your blower assembly develops a squeal, hum or grinding noise, it indicates dirt or debris on shaft of blower wheel. Use the following steps to clean shaft of blower wheel.

1. Remove red rubber grommet with brass bushing or black rubber grommet with brass bushing from end of blower wheel shaft opposite motor.
2. Clean blower wheel shaft with cotton cloth.
3. Place 1 or 2 drops of all purpose oil on END of blower wheel shaft.
4. Replace red rubber grommet with brass bushing or black rubber grommet with brass bushing onto end of blower wheel shaft. Attention: The red rubber grommet with brass bushing or the black rubber grommet with brass bushing must "snap-back" into position.
5. Cleaning of blower wheel shaft is completed.



# OPTIONAL BLOWER INSTALLATION INSTRUCTIONS (continued)

## Wiring

The appliance, when installed, must be electrically grounded in accordance with local codes or, in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70, if an external electrical source is utilized. This appliance is equipped with a three-prong [grounding] plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle. Do not cut or remove the grounding prong from this plug. For an ungrounded receptacle, an adapter, which has two prongs and a wire for grounding, can be purchased, plugged into the ungrounded receptacle and its wire connected to the receptacle mounting screw. With this wire completing the ground, the appliance cord plug can be plugged into the adapter and be electrically grounded.

**CAUTION:** Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

## Blower Motor

The blower motor does not have oiling holes. Do not attempt to oil the blower motor.

## Blower Wheel

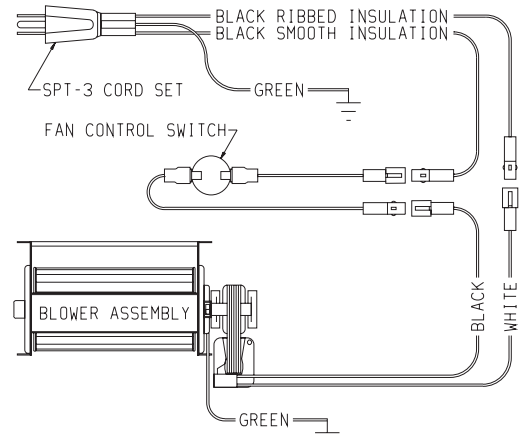
The blower wheel will collect lint and could require periodic cleaning. If the air output decreases or the noise level increases, it indicates a dirty blower wheel.

### To clean blower wheel:

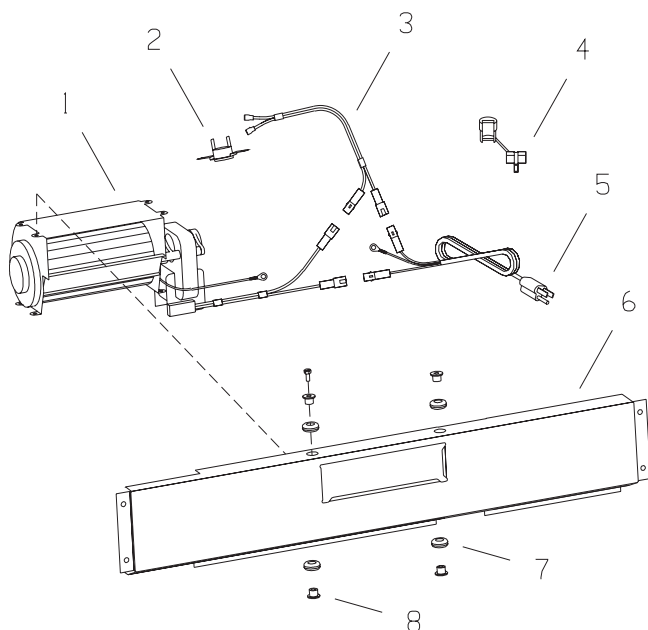
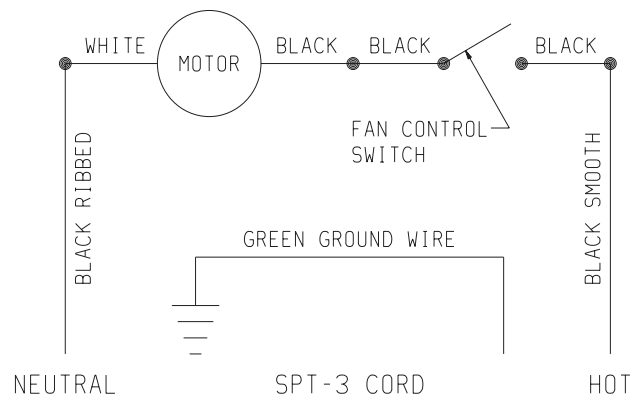
1. Turn OFF gas supply to the heater.
2. Turn OFF electrical supply to the heater.
3. Remove lower louver from casing assembly (2 screws).
4. Remove reflector from casing assembly (2 screws).
5. Remove upper louver from casing assembly (2 screws).
6. Clean blower wheel with a vacuum cleaner.
7. As parts are being replaced in reverse order, check for gas leaks at all gas connections before lower louver is replaced onto casing assembly.

### WARNING:

Unplugging of blower accessory will not stop the heater from cycling. To turn off gas to the unvented heater: Push in gas control knob slightly and turn clockwise to "OFF." Do not force.



If any of the original wire as supplied with the appliance must be replaced, it must be replaced with type 125°C wire or its equivalent.



## PARTS LIST

INDEX NO.	PART NO.	DESCRIPTION
1	R-2396	BLOWER (INCLUDES MOTOR, FAN, AND FAN HOUSING)
2	R-2503	FAN CONTROL
3	R-2395	WIRE ASSEMBLY
4	R-1465	BUSHING - HEYCO #SR5KN4
5	VF-068	CORD SET ASSEMBLY
6	SR-196	BLOWER PAN (BF-10, BF-20)
6	SR-198	BLOWER PAN (BF-30)
7	R-1499	RUBBER GROMMET (4 REQUIRED)
8	R-1454	BRASS BUSHING (4 REQUIRED)
N/S	SR-219	BLOWER HARDWARE PACKAGE

# SERVICE NOTES



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