



Owner's Manual and Instructions

Pilot Ignition Infraconic
Agricultural Building Radiant Heaters



MODELS	OUTPUT (Btuh)	FUEL
I34*	34,200	Propane Vapor Withdrawal or Natural Gas

Certification by:



* Models with InstaClear™ Pilot Clean Out are not CSA approved.

Congratulations!

You have purchased the finest radiant heater available for the heating of livestock in agricultural animal confinement buildings.

Your new L.B. White radiant heater incorporates the benefits from the most experienced manufacturer of heating products using state-of-the-art technology.

We, at L.B. White, **thank you** for your confidence in our products and welcome any suggestions or comments you may have...call us toll free at 1-800-345-7200.

ATTENTION ALL USERS

This heater* has been tested and approved by CSA International in accordance with AGA Requirements for Gas Fired Brooders No. 8-94 and Canadian Gas Association Requirements for Gas Fired Brooders, CAN1-2.20-M85, as a direct gas-fired radiant heater with intended use for the heating of livestock in agricultural animal confinement buildings. If you are considering using this product for any application other than its intended use, then please contact your fuel gas supplier, or the L.B. White Co., Inc.



Quality heaters you can count on.

W6636 L.B. White Rd., Onalaska, WI 54650 ■ (800) 345-7200 ■ (608) 783-5691 ■ (608) 783-6115, fax ■ info@lbwhite.com

150-23914

 **GENERAL HAZARD WARNING**

- Failure to comply with the precautions and instructions provided with this heater, can result in:
 - Death
 - Serious bodily injury or burns
 - Property damage or loss from fire or explosion
 - Asphyxiation due to lack of adequate air supply or carbon monoxide poisoning
 - Electrical shock
- Read this Owner's Manual before installing or using this heater.
- Only properly-trained service people should repair or install this heater.
- Save this Owner's Manual for future use and reference.
- Owner's Manuals and replacement labels are available at no charge. For assistance, contact L.B. White at 1-800-345-7200.

 **WARNING**

- Proper gas supply pressure must be provided to the inlet of the heater.
- Refer to rating plate for proper gas supply pressure.
- Gas pressure in excess of the maximum inlet pressure specified at the heater inlet can cause fires or explosions.
- Fires or explosions can lead to serious injury, death, building damage or loss of livestock.
- Gas pressure below the minimum inlet pressure specified at the heater inlet may cause improper combustion.
- Improper combustion can lead to asphyxiation or carbon monoxide poisoning and therefore serious injury or death to humans and livestock.



WARNING
Fire and Explosion Hazard

- Not for home or recreational vehicle use.
- Installation of this heater in a home or recreational vehicle may result in a fire or explosion.
- Fire or explosions can cause property damage or loss of life.

FOR YOUR SAFETY

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other heater.

FOR YOUR SAFETY

- If you smell gas:
1. Open windows.
 2. Don't touch electrical switches.
 3. Extinguish any open flame.
 4. Immediately call your gas supplier.



WARNING
Fire and Explosion Hazard

- Keep solid combustibles a safe distance away from the heater.
- Solid combustibles include wood or paper products, feathers, straw, and dust.
- Do not use the heater in spaces which contain or may contain volatile or airborne combustibles.
- Volatile or airborne combustibles include gasoline, solvents, paint thinner, dust particles or unknown chemicals.
- Failure to follow these instructions may result in a fire or explosion.
- Fire or explosions can lead to property damage, personal injury or loss of life.



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General Information

This owner's manual includes all options and accessories commonly used on or with this heater. However, depending on the configuration purchased, some options and accessories may not be included.

When calling for technical service assistance, or for other specific information, always have the model number and serial number available. These are on the dataplate.

This manual will instruct you in the operation and care of your radiant heater. Have your qualified installer review this manual with you so that you fully understand the heater and how it functions.

The gas supply line installation, and the repair, installation and servicing of the heater requires continuing expert training and knowledge of gas heaters and should not be attempted by anyone who is not so qualified. See page 6 for definition of the necessary qualifications.

Contact your local L. B. White distributor or the L. B. White Co., Inc. for assistance, or if you have any questions about the use of the heater or its application.

The L. B. White Co., Inc. has a policy of continuous product improvement. It reserves the right to change specifications and design without notice.

Radiant Heater Specifications

Model

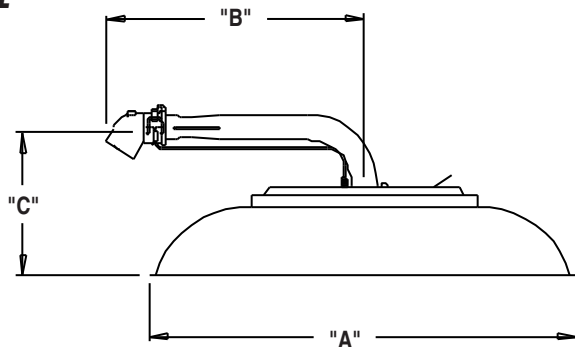
I34

SPECIFICATIONS

Maximum Input (Btuh)		34,200	
Ventilation Air to Support Combustion		400 CFM	
Zone Control Full Output Pressure	PROPANE VAPOR OR NATURAL GAS	5 PSIG	
Zone Control, Pilot System Pilot Pressure	PROPANE VAPOR OR NATURAL GAS	20 - 22 in. W.C.	
Heater Dimensions (See Fig. 1)	"A"	26 3/8 in.	
	"B"	20 1/4 in.	
	"C"	10 3/8 in.	
Net Weight		12 lbs 7 oz.	
Fuel Consumption Per Hour	PROPANE GAS	1.58 lbs./hr.	
	NATURAL GAS	34.2 CFH	
Animal Coverage Per Heater (1)	CHICKENS	2500-3800	
	TURKEYS	800-950	
	SWINE	300	
Recommended Height Installation For Livestock From Point of Combustion Cone to Floor	CHICKENS	6-7 ft.	
	TURKEYS	4.5 ft.	
	SWINE	4-5 ft.	
Minimum Safe Clearances to Combustible Materials	TOP OF HOOD TO CEILING	3 ft.	
	POINT OF COMBUSTION CONE TO FLOOR	4.5 ft.	
	SIDES	3 ft.	
Animal Occupied Zone Temperature Control Sensor Location (2)	POULTRY	VERTICAL FROM FLOOR	6-12 in.
		HORIZONTAL FROM BROODER	8-12 ft.
	SWINE	VERTICAL FROM FLOOR	Above Animal Height
		HORIZONTAL FROM BROODER	4-8 ft.

- (1) There are other factors that will affect the quantity of animals each heater can cover. These include building ventilation and control systems, building insulation, building size and population density, etc. Consult your L. B. White dealer or call L. B. White for specific recommendations for your application.
- (2) This is a typical sensor height range for poultry installations. The size and type of livestock being grown, heater spacing and height, etc. will dictate sensor height. Care should always be taken to ensure that the sensor is sufficiently high as to not be damaged by the animal during operation.

FIG. 1



Safety Precautions

WARNING

Asphyxiation Hazard

- Do not use this radiant heater for heating human living quarters.
- Do not use in unventilated areas.
- The flow of combustion and ventilation air must not be obstructed.
- Proper ventilation air must be provided to support the combustion air requirements of the heater being used.
- Refer to the specification section of the Owner's Manual, heater's dataplate, or contact the L.B. White Company to determine combustion air ventilation requirements of the heater.
- Lack of proper ventilation air will lead to improper combustion.
- Improper combustion can lead to carbon monoxide poisoning in humans leading to serious injury or death. Symptoms of carbon monoxide poisoning can include headaches, dizziness and difficulty in breathing.
- Symptoms of improper combustion affecting livestock can be disease, lower feed conversion, or death.

FUEL GAS ODOR

Propane gas and natural gas have man-made odorants added specifically for detection of fuel gas leaks. If a gas leak occurs, you should be able to smell the fuel gas. THAT'S YOUR SIGNAL TO GO INTO IMMEDIATE ACTION!

- Do not take any action that could ignite the fuel gas. Do not operate any electrical switches. Do not pull any power supply or extension cords. Do not light matches or any other source of flame. Do not use your telephone.
- Get everyone out of the building and away from the area immediately.
- Close all propane gas tank or cylinder fuel supply valves, or the main fuel supply valve located at the meter if you use natural gas.
- Propane gas is heavier than air and may settle in low areas. When you have reason to suspect a propane leak, keep out of all low areas.
- Natural gas is lighter than air and can collect around rafters or ceilings.
- Use your neighbor's phone and call your fuel gas supplier and your fire department. Do not re-enter the building or area.
- Stay out of the building and away from the area until declared safe by the firefighters and your fuel gas supplier.
- **FINALLY**, let the fuel gas service person and the firefighters check for escaped gas. Have them air out the building and area before you return. Properly trained service people must repair the leak, check for further leakages, and then relight the heater for you.

ODOR FADING – NO ODOR DETECTED

- **Some people cannot smell well. Some people cannot smell the odor of the man-made chemical added to propane or natural gas. You must determine if you can smell the odorant in these fuel gases.**
- Learn to recognize the odor of propane gas and natural gas. Local propane gas dealers and your local natural gas supplier (utility) will be more than happy to give you a "scratch and sniff" pamphlet. Use it to become familiar with the fuel gas odor.
- Smoking can decrease your ability to smell. Being around an odor for a period of time can affect your sensitivity to that particular odor. Odors present in animal confinement buildings can mask fuel gas odor.
- The odorant in propane gas and natural gas is colorless and the intensity of its odor can fade under some circumstances.
- If there is an underground leak, the movement of gas through the soil can filter the odorant.
- Propane gas odor may differ in intensity at different levels. Since propane gas is heavier than air, there may be more odor at lower levels.
- **Always be sensitive to the slightest gas odor.** If you continue to detect any gas odor, no matter how small, treat it as a serious leak. Immediately go into action as discussed previously.

ATTENTION – CRITICAL POINTS TO REMEMBER!

- Propane gas and natural gas have a distinctive odor. Learn to recognize these odors. (Reference "Fuel Gas Odor" and "Odor Fading" sections above.)
- If you have not been properly trained in repair and service of propane gas and natural gas fueled heaters, then do not attempt to light the heater, perform service or repairs, or make any adjustments to the heater on a propane gas or natural gas fuel system.
- Even if you are not properly trained in the service and repair of radiant heaters, ALWAYS be consciously aware of the odors of propane gas and natural gas.
- A periodic "sniff test" around the heater or at the heater's joints; i.e. hose, connections, etc., is a good safety practice under any conditions. If you smell even a small amount of gas, CONTACT YOUR FUEL GAS SUPPLIER IMMEDIATELY. DO NOT WAIT!

Safety Precautions

1. Do not attempt to install, repair or service this heater or the gas supply line unless you have continuing expert training and knowledge of gas heaters.

Qualifications for service and installation of this equipment are as follows:

QUALIFICATIONS FOR SERVICING AND INSTALLATION:

- a. To be a qualified gas heater service person, you must have been trained in gas-fired heater servicing, repair and also have sufficient experience to allow you to troubleshoot, replace defective parts, and test heaters in order to get them into a continuing safe and normal operation condition. You must completely familiarize yourself with each model heater by reading and complying with the safety instructions, labels, owner's manual, etc. that is provided with each heater.
 - b. To be a qualified gas installation person, you must have sufficient training and experience to handle all aspects of installing, repairing and altering gas lines, including selecting and installing the proper equipment, and selecting proper pipe size to be used. This must be done in accordance with all local, state and national codes as well as the manufacturer's requirements.
2. All installations or applications of L. B. White Co., Inc.'s radiant heater and associated zone control panel should meet the requirements of local, state and national L.P. gas and natural gas, electrical and safety codes. Your gas supplier, local licensed electrician, local fire department and government agencies can help you determine these requirements. In the absence of local codes, comply with the following:
 - a. Installations in the U.S.A.:
 - ANSI/NFPA 58, latest edition, Standard for Storage and Handling of Liquefied Petroleum Gas and/or
 - ANSI Z223.1/NFPA 54, National Fuel Gas Code
 - ANSI/NFPA 70, National Electrical Code.
 - b. Installations in Canada:
 - CAN1-B149.1 or CAN1-B149.2 Installation Codes
 - CSA C22.1 Part 1 Standard Canadian Electrical Code. CSA C22.2 No.3, Electrical Features of Fuel Burning Equipment.
 3. If at any time you notice something unusual about the operation of your heater such as gas odor, overheating, flames other than in the combustion cone area, etc., evacuate the area immediately and call your fire department and your gas service agency. Get assurances from the fire department that the area is free of gas before you attempt to relight the heater.
 4. The components on the heater that call for hand operation should work with hand pressure only. If more force is required, have a qualified gas heater service agency replace the complete part. Do not attempt to repair.
 5. This heater is intended for the heating of livestock in agricultural animal confinement buildings only. The heater shall only be mounted inside the animal confinement building. It shall not be used for outside heating applications.
 6. Do not locate fuel gas containers or fuel supply hoses anywhere within the heating zone of the heater.
 7. Do not block air intakes or discharge outlets of the heater. Doing so may cause improper combustion or damage to the heater components leading to property damage or animal loss.
 8. Do not move, handle, or service the heater while in operation or connected to fuel supply.
 9. The hose assembly providing fuel to the heater must be inspected on a regular basis. This should be done at least once a year, or when the building is cleaned out. If it is evident there is excessive abrasion or wear, or if the hose is cut, it must be replaced prior to heater being put into operation. The hose assembly shall be protected from animals, building materials, and contact with hot surfaces during use. The hose assembly shall be that specified by the manufacturer. See parts list.
 10. Check for gas leaks and proper function upon installation, before building repopulation and when relocating.
 11. If the gas flow is interrupted and the burner flame is extinguished, immediately shut off the gas. Do not relight the heater until you are sure that all of the gas that may have accumulated through the heater has cleared away. Do not relight the heater until at least five minutes have passed.
 12. If the heater is to be relocated, make sure that all gas connections are capped and the gas supply is shut off. All connection points must be leak checked after disconnection and after reconnection
 13. The grower shall inspect the heater before building

WARNING Burn Hazard

- The heater's combustion cones and canopy are extremely hot during operation and shortly after shutting down.
- Always be aware of your proximity to the heater and avoid contact with its hot surfaces during or shortly after operation.
- Failure to follow this warning can result in burns leading to severe personal injury.

repopulation. Such inspection should consist of, but is not limited to, the following points of action:

- Insure proper clearance of heater to nearest combustible materials.
- Check for general cleanliness. Clean if necessary.
- Check for tightness of the gas hose connections.

14. A qualified service person shall inspect the heater and its gas train on at least an annual basis. This should consist of, but is not limited to, the following points of action:

- Start-up and shut down of the heaters and zone

control panel to test for proper operation.

- Leak check of all pipe joints and hose connections.
- Thorough cleaning of the exterior of the heater, its air inlets, combustion cones and filter (if applicable).
- Thorough inspection of the heater's component parts for corrosion, stripped threads, etc. with subsequent parts replacement as necessary.
- Gas pressure checks.

15. Turn off the gas supply when the heater is not in use.

For heaters equipped with the InstaClear™ pilot clean-out.

Installation Instructions

GENERAL

- Do not lift the heater from its shipping container by using the cleanout as a handle.

- Doing so may cause physical damage to the cleanout.

- Lift the heater by its shroud or venturi tube.

1. Read all safety precautions and follow L. B. White recommendations when installing this heater. If during the installation or relocating of the heater, you suspect that a part is damaged or defective, call a qualified service agency for repair or replacement.
2. On initial installation and before use, position the brooder properly regarding clearance to combustible materials and ground clearance to protect the brooder from livestock. Refer to the specification table on page 4 as well as Fig. 2 for installation information for proper hanging and clearances.
3. Position the gas hose outside of the hot zone directly above the heater to avoid any contact with the hot canopy surface of the heater. Refer to Fig. 2.
4. Insure that all accessories that ship with heater have been removed from inside of heater's shipping container and installed. This pertains to gas hose, regulators, etc.
5. The heater's gas regulator (with pressure relief valve) should be installed outside of building. Any regulators inside the buildings must be properly vented to the outside. Local, state and national codes always apply to regulator installation. Natural gas regulators with a vent limiting device may be mounted indoors without venting to outdoors.
6. Any regulator mounted outside the building must be

protected against the weather, particularly ice formation. Ice formation can lead to overpressurization of the regulator and subsequent gas leaks. See codes covering proper protection.

7. Always use pipe joint compound that is resistant to liquefied petroleum gas and natural gas.
8. Check all connections for gas leaks using approved gas leak detectors. Gas leak testing is performed as follows:

WARNING

Fire and Explosion Hazard

- Do not use open flame (matches, torches, candles, etc.) in checking for gas leaks.
- Use only approved leak detectors.
- Failure to follow this warning can lead to fires or explosions.
- Fires or explosions can lead to property damage, personal injury or loss of life.

- Check all pipe connections, hose connections, fittings and adapters upstream of the gas control with approved gas leak detectors.
- In the event a gas leak is detected, check the components involved for cleanliness and proper application of pipe compound before further tightening.
- Furthermore tighten the gas connections as necessary to stop the leak.
- After all connections are checked and any leaks are stopped, turn on the main burner.
- Stand clear while the main burner ignites to prevent injury caused from hidden leaks that could cause flashback.
- With the main burner in operation, check all connections, hose connections, fittings and

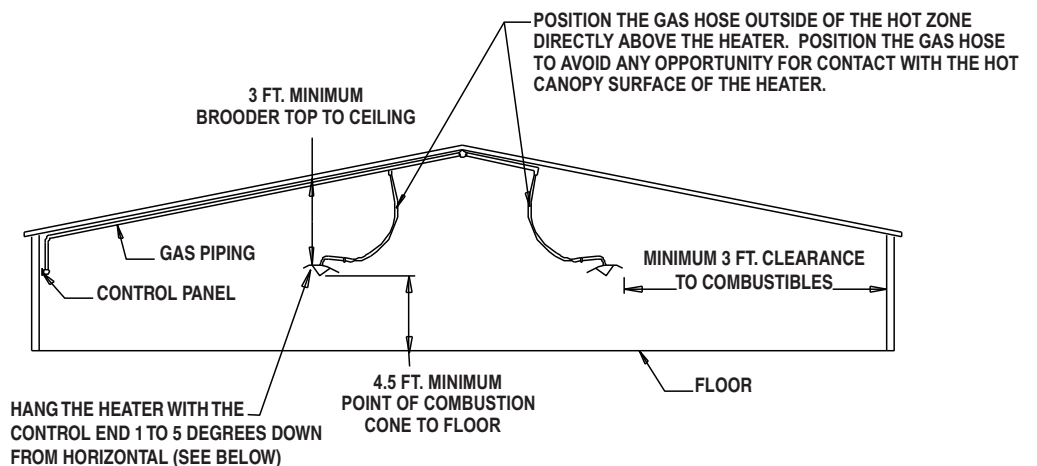
- joints as well as the gas control valve inlet and outlet connections with approved gas leak detectors.
- If a leak is detected, check the components involved for cleanliness in the thread areas and proper application of pipe compound before further tightening.
 - Tighten the gas connection as necessary to stop the leak.
 - If necessary, replace the parts or components involved if the leak cannot be stopped.
 - Ensure all gas leaks have been identified and repaired before proceeding.
9. A qualified service agency must check for proper operating gas pressures upon installation of the heaters.
 10. Use the proper gas supply line to assure proper functioning of the heaters. Typically, 3/4 in. ID black iron pipe is used to supply gas to the inlet of the zone control panel with 1/2 in. ID black iron pipe used to convey the gas to the heaters. However, always consult your fuel gas supplier, or the L. B. White Co., Inc. for proper line sizing and installation.
 11. Infraconic heaters require a regulated gas supply to the gas inlet of the product. Exceeding the gas inlet pressure rating can result in poor performance and unreliable operation. Refer to page 4 of this manual for information on gas pressures relating to specific models.
 12. The heater is designed for either L.P. vapor withdrawal or natural gas, depending on model number. Do not use this heater in an LPG liquid withdrawal system. Do not permit LPG in liquid form to enter the heater at any time.
 13. The corrosive atmosphere present in animal confinement buildings can cause component failure or heater malfunction. The heater should be periodically inspected and cleaned in accordance with the Maintenance and Cleaning Instructions in this manual. Make sure that livestock is protected by a back up alarm system that limits high and low temperatures and also activates appropriate alarms.
 14. Take time to understand how to operate and maintain the heater using the owner's manual. Make sure you know how to shut off the gas supply to the building and to the individual heaters. Contact your gas supplier if you have any questions.
 15. Any defects found in performing any of the service procedures must be eliminated and defective parts replaced immediately. Retest the heater before placing it back into service.

ATTENTION

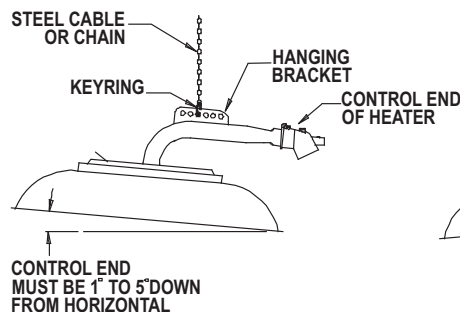
- Model I34 heaters use an integral hanging bracket with key ring for hanging the heater.
- Attach only steel cable or chain to the key ring. Do not use combustible hanging materials such as ropes, lines, etc.
- The installer must make sure that the heater is hung so control end of heater is positioned 1° to 5° down from horizontal after gas supply hose is attached. This allows proper venting of heater and eliminates potential heat damage to optional dust filter.
- Repositioning of factory installed key ring into hanging bracket may be required.
- Refer to following illustrations.

FIG. 2

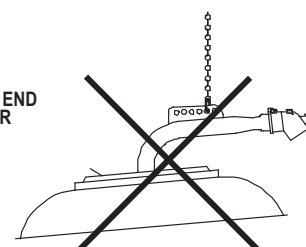
INSTALLATION LAYOUT FOR SAFE CLEARANCES



THIS



NOT THIS



Your heater is supplied with one of the following gas train assemblies. Refer to the appropriate illustrations.

FIG. 3 STANDARD HOSE

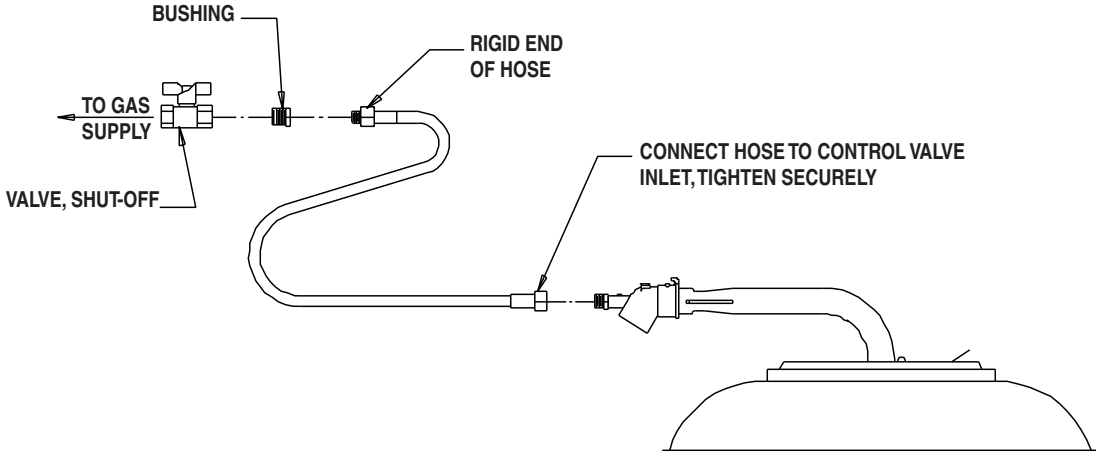
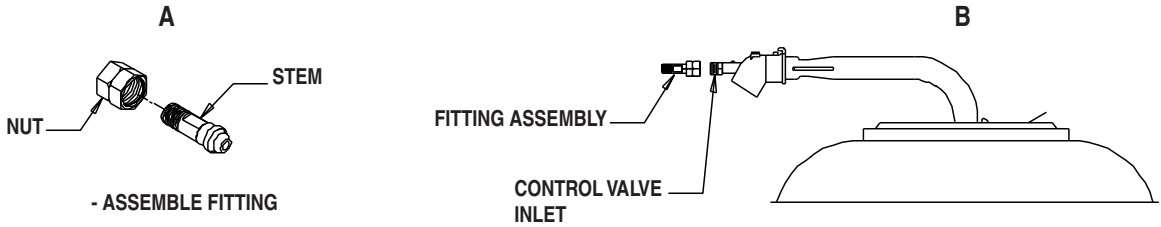
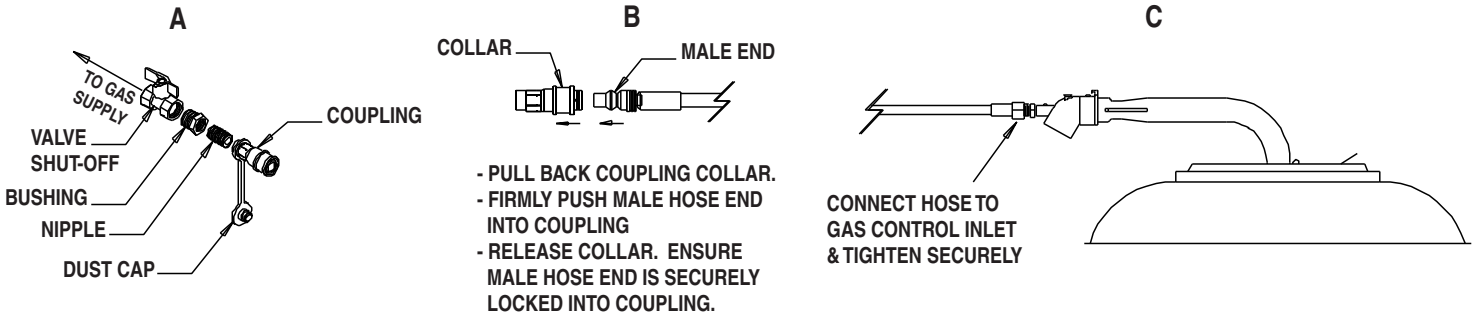


FIG. 4 1/8 NPT FITTING KIT, PART #23406



- ATTACH FITTING TO CONTROL VALVE INLET & TIGHTEN SECURELY.
- CONNECT APPROVED GAS HOSE ASSEMBLY WITH APPROPRIATE CONNECTIONS TO 1/8 NPT FITTING.

FIG. 5 HOSE & QUICK COUPLING KIT



- ASSEMBLE COUPLING KIT COMPONENTS & TIGHTEN SECURELY.
- CONNECT TO GAS SUPPLY.

- PULL BACK COUPLING COLLAR.
- FIRMLY PUSH MALE HOSE END INTO COUPLING
- RELEASE COLLAR. ENSURE MALE HOSE END IS SECURELY LOCKED INTO COUPLING.

ZONE CONTROL PANEL FUNCTION AND INSTALLATION

The zone control panel is a remote mounted control system allowing the operation of a specific amount of heaters within a certain zone of the building.

These panels will control the following quantity of heaters depending on fuel type.

Solenoid Zone Control System			
Model and Heat Output	Fuel	Medium Capacity Panel	High Capacity Panel
		Quantity	Quantity
I34 (34,200 BTUH)	L. P. Gas	7	20
	Natural Gas	4	20

The zone control panel must be mounted to a flat, stable wall inside the building. Use lag screws provided.

There are a number of optional configuration zone panels available. These are high and medium capacity, electrically operated solenoid control designs configured specifically for incorporation into building environmental control systems. **Pilot light infraconic heaters must be installed only with a solenoid controlled zone panel designed specifically for the heater. Use of zone panels without solenoid control will result in high carbon monoxide levels and poor combustion.** Consult your local L. B. White dealer or distributor or call the L. B. White Co. for recommendations on the best configuration for your specific application.

The zone control panel must have an adjustable high pressure regulator installed upstream of the inlet of the zone control panel. This regulator may be purchased from the L. B. White Co. as an optional accessory. For L.P. gas, the regulator must be capable of handling a maximum inlet pressure of 10 psi, while supplying an outlet pressure of 5 psi nominal. This pressure is supplied to the zone control or individual controlled heater. For natural gas, a regulator must be installed to supply an outlet pressure of 5 psi nominal.

INSTALLING DUST FILTER

(Optional accessory on some heater models)

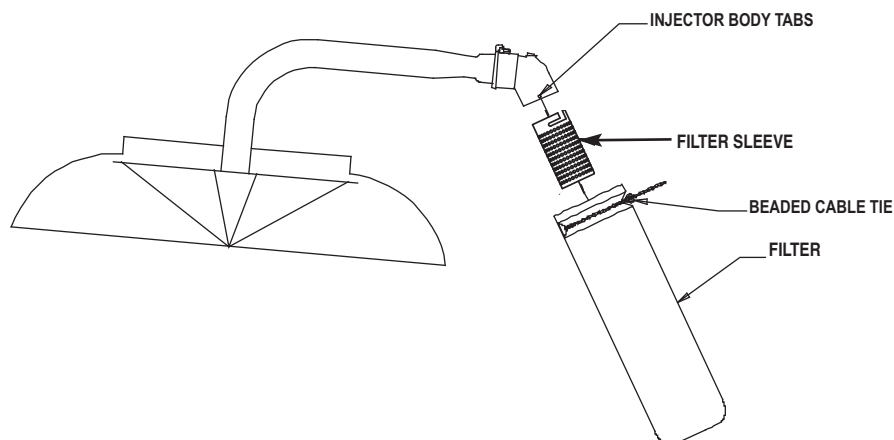
IMPORTANT

This filter kit is designed to provide additional dust filtration capability and capacity for Infraconic heaters when installed in severely dusty environments.

1. Attach filter sleeve to injector body. The injector body tabs fit into the slots on the sleeve. Rotate the sleeve to lock it onto the injector body.
2. Position the filter onto the sleeve. Ensure all sleeve holes are covered by the filter.

3. Securely attach the filter to the sleeve using the beaded cable tie.
4. Ensure filter does not sag or touch heater's canopy.

FIG. 6



Start-Up Instructions

WARNING
Fire or Explosion Hazard

- Do not force the gas control button.
- Use only your hand to depress the gas control button. Never use any tools.
- If the button will not depress by normal hand pressure, the control should be replaced by a qualified service person.
- Force or attempted repair may result in fire or explosion, causing property damage, livestock loss, severe injury or death.

Follow these start-up instruction steps for initial start-up before building repopulation. For normal start-up, simply adjust the thermostat on the building's environment controller above room temperature.

1. Open all gas supply valves to the heater(s) and check for gas leaks at all connections using approved lead detectors.
2. Energize the solenoid of the zone control panel to allow full 5 PSIG flow to the heater.

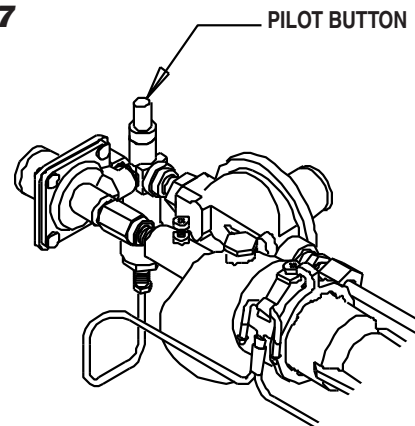
3. Fully depress the pilot button on the pilot safety control valve while applying flame to the main burner cone point. On initial start-up leave the main burner on for several minutes to bleed residual air from the system.

4. De-energize the solenoid of the zone control panel. The pilot flame should light and remain lit upon completion of transition from full output to pilot.

Note: It is normal to have flame "pop" out of the air inlet of the heater when cycling from main burner mode to pilot mode.

5. Set the thermostat controlling the heater(s) to the desired temperature.

FIG. 7



To reduce temperature, adjust the building's environmental control system to its minimum setting.

To shut down the heaters for cleaning, maintenance, or service:

1. Shut off all gas supply valves to the heaters.

Shut-Down Instructions

2. Allow heaters to burn off fuel gas remaining in the gas supply line.

3. Set building environment control to minimum setting.

Cleaning Instructions

CAUTION

- Disinfectants utilized in agricultural animal confinement buildings may contain chemicals damaging to components of the heater.
- Protect the pilot gas control valve, pressure valve, and pilot relight valve by wrapping these components with a plastic bag before disinfecting.
- Always make sure to remove the plastic bag or other protective covering before start up.

Clean the heater and optional dust filter on a regular basis to maintain proper combustion and to eliminate future problems.

The frequency of cleaning will vary depending upon livestock being raised and overall ventilation of the building.

Problems associated with lack of cleaning typically are:

- Black soot on inside of canopy.
- Gas backflashing in venturi tube or injector body.
- Burner flame appearing beyond outer cone.

A. HEATER

CLEANING WITH BACKPACK BLOWERS AND HEATER BLOWER

Blower Part No. 21170

For general cleaning when the heaters do not have heavy accumulations of dust or dirt, use either a backpack type of blower or the heater blower.

Follow the same procedures for cleaning as listed for "Cleaning with Compressed Air".

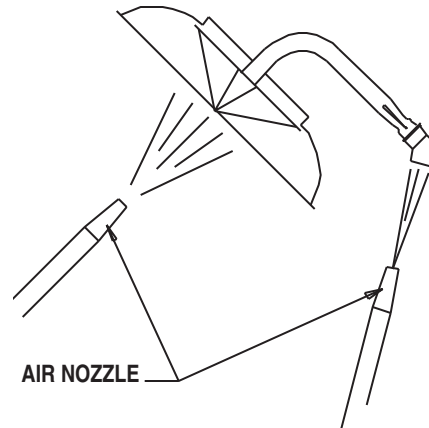
If the dust and dirt cannot be removed effectively using the backpack blower or heater blower, then clean the heater using either the "Compressed Air" or "Water Cleaning" methods.

CLEANING WITH COMPRESSED AIR

1. Turn off the gas supply to the heater and let the heater cool down.
2. Using a soft bristle brush, brush off all exterior surfaces of the heater. Pay particular attention to the air inlet hole on the injector body and pilot bracket.
3. Direct the air at the combustion cones, working your way around entire surface of cone assembly.
4. Blow air through air inlet opening in the venturi tube to blow back out any loosened dust through combustion cones.

5. Repeat Steps 3 and 4 until the cones and the venturi tube are no longer emitting dust.
6. Inspect the cones, pilot bracket, and venturi tube to make sure these areas are clean.
7. Return the heater to its normal hanging position and relight the heater.

FIG. 8

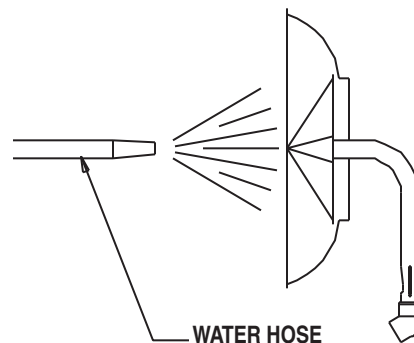


CLEANING WITH WATER (Continued on page 13)

The following should be accomplished only if the heater cannot be cleaned adequately by the compressed air method. **DO NOT USE HIGH PRESSURE WASHERS!**

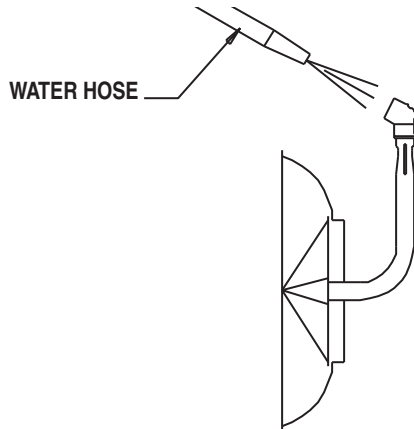
1. Wrap the pressure switch, gas regulator, and pilot safety control valve with a plastic bag to protect these components from entry of water.
2. Using a standard garden hose with standard faucet pressure, spray water against the cones to wash out the build up of dust in the cones and the venturi tube. Work your way around the entire cone assembly. See Fig. 9.

FIG. 9



3. Position the heater as shown in Fig. 10 and run water down through the venturi tube and out through combustion cones.

FIG. 10



4. Repeat steps 2 and 3 until water runs clean.
5. Remove the plastic bag and inspect the cones and venturi tube to make sure these areas are clean.
6. Shake the heater vigorously to clear water off of the pilot orifice and combustion cones to allow proper ignition of gas at the combustion cones.
7. Return the heater to its original hanging position.
8. Relight the heater to dry out the cones and the venturi tube.

B. INSTACLEAR™ PILOT CLEAN-OUT

- For heaters so equipped, the InstaClear™ clean-out provides a fast, easy method of cleaning the pilot orifice without removal of the orifice.
- The clean-out is virtually maintenance free. However, if the pilot orifice of the clean-out should ever need replacement, refer to the orifice service instructions in this manual.

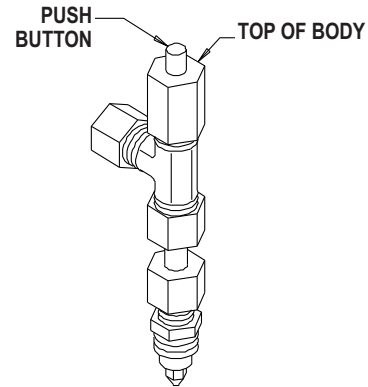
A. To operate the clean-out:

- Fully depress push button at top of clean-out. See Fig. 11.
- Ensure button is flush with top of body to allow proper cleaning of orifice hole.
- When accomplished, a small pin will move through the orifice hole to clean any material from the hole.

B. Use the clean-out feature at the start of each new growing cycle, or when plugging of the orifice occurs. Indications of pilot orifice plugging are:

- Weak pilot flame center
- Pilot outages

FIG. 11



C. DUST FILTER

A. During continued heater use:

- Remove filter and shake off dust.
- Do not squeeze or tap filter while filter is installed on heater. Doing so will cause dust to be blown into venturi tube or combustion cones.

B. After continued heater use or before building repopulation:

- Remove filter and shake off dust.
- Use compressed air or water (standard faucet pressure) to clean it.
- Do not use high pressure water, air, or a washing machine. Filter material damage may occur.
- If water is used, squeeze out excess water from filter before installation.
- Let filter dry before lighting heater.

Maintenance Instructions

1. Have your gas supplier check all gas piping annually for leaks or restrictions in gas lines. Also, at this time have your gas supplier clean out the sediment trap on the zone control panel of any debris that may have accumulated.
2. **The heater's surrounding area shall be kept clear and free from combustible materials, gasoline, and other flammable vapors and liquids.**
3. Regulators can wear out and function improperly. Have your gas supplier check the date codes on all regulators installed and check delivery pressures to the appliance to make sure that the regulator is suitable for continued use.
4. Regulators must be periodically inspected to make sure the regulator vents are not blocked. Debris, insects, insect nests, snow, or ice on a regulator can block vents and cause excess pressure at the appliance.
5. For safety as well as for optimum performance at the heater, it is necessary to keep the inside and the outside of the heater free of dust, dirt or any combustible material. If any operational component shows signs of rust or corrosion, replace the component immediately.
6. If any warning or instruction labels, dataplates, etc. become lost or hard to read, replace them immediately. Do not operate the heater until you have all instructions and can read and understand them.
7. Check overall condition of heater for cracked or damaged components, loose screws or bolts, etc. Replace any suspect components.
8. Check all hose and tubing assemblies for cracks, abrasions or ruptures. Replace any hoses are suspect.

If it becomes apparent that a dark spot has formed part way up on the inner combustion cone or a build up of debris is occurring in the bottom of the inner cone, it will be necessary to clean out the combustion cone assembly. Refer to Cleaning Instructions.

Service Instructions

GENERAL



WARNING Burn Hazard

- Heater surfaces are extremely hot for a period of time after the heater has been shut down.
- Allow the heater to cool before performing service, maintenance, or cleaning.
- Failure to follow this warning will result in burns causing injury.



WARNING Fire and Explosion Hazard

- Do not disassemble or attempt to repair heater components or any gas train components.
- All component parts must be replaced if defects are found.
- Failure to follow this warning will result in fire or explosions, causing property damage, injury, or death.

1. Close the fuel supply valve to the heater before servicing unless it is necessary to have it open for your service procedure.
2. Disconnect the gas hose when replacing the pilot control valve, pilot relight valve, or pressure valve.
3. For reassembly, reverse the respective service procedure. Ensure gas connections are tightened securely.
4. After servicing, start the heater to ensure proper operation and check for gas leaks.
5. **Clean the heater's orifices with compressed air or a soft, dry rag. Do not use files, drills, broaches, etc. to clean the orifice holes. Doing so will enlarge the hole, causing combustion or ignition problems. Replace the orifice if it cannot be cleaned properly.**

PILOT ORIFICE, INSTACLEAR™ & STANDARD

The instructions apply to both pilot designs.

1. Loosen injector tube screw.
2. Loosen pilot tube compression nut at gas inlet to pilot assembly.
3. Remove thermocouple from pilot safety control valve.
4. Slightly pull control assembly with pilot tube away from injector body.
5. Loosen orifice holder.
6. Remove pilot orifice from its holder.
7. Clean orifice.

■ Use care when servicing InstaClear™ orifice to avoid damage to clean-out pin.

FIG. 12

INSTACLEAR™ PILOT

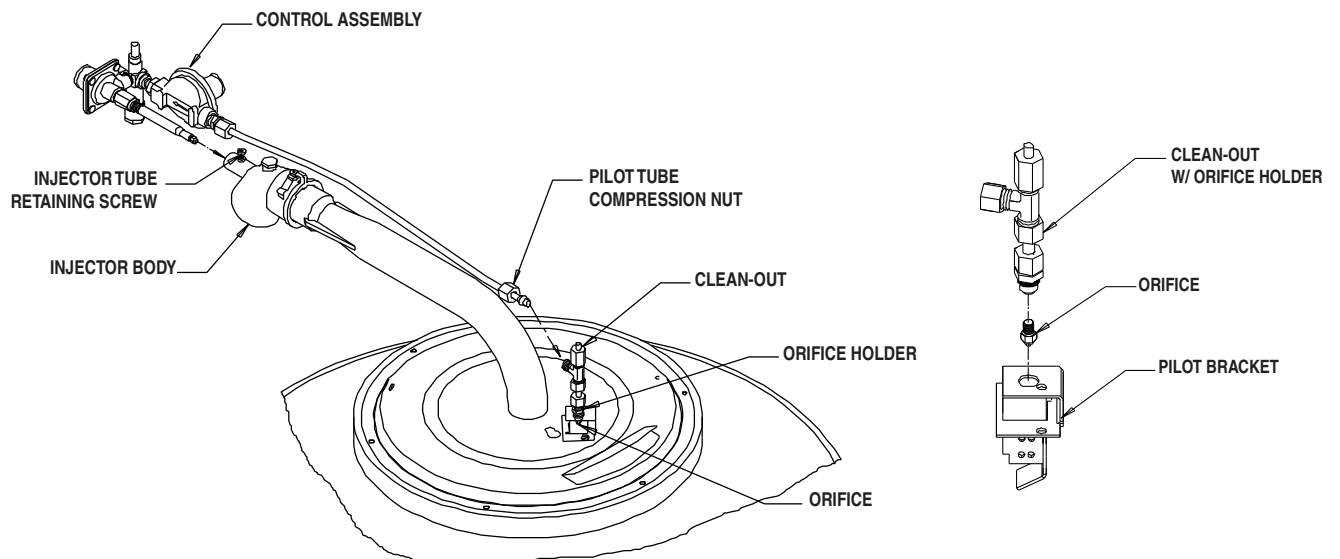
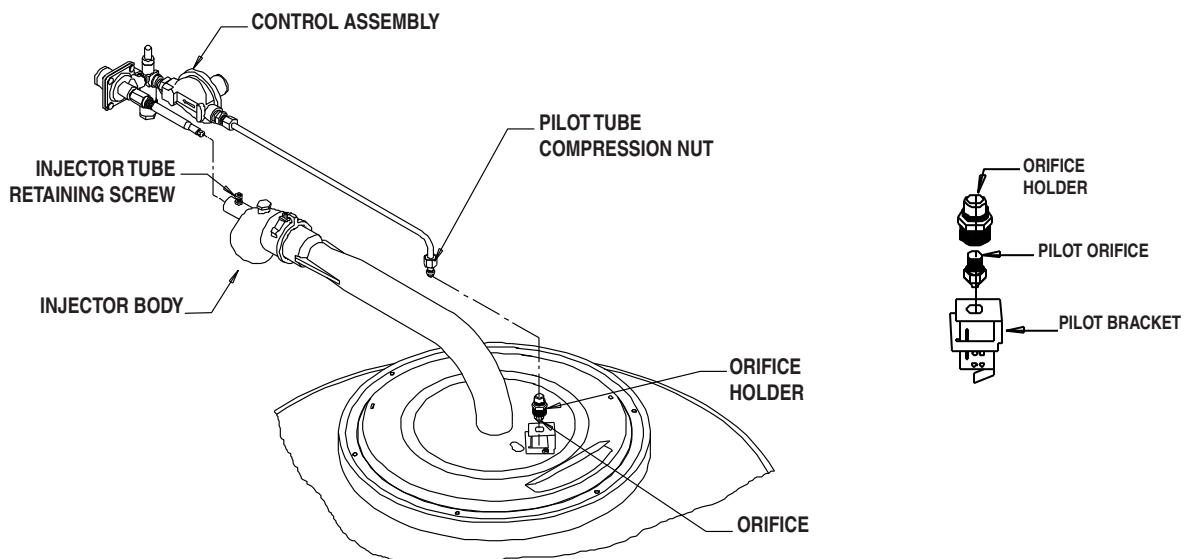


FIG. 13

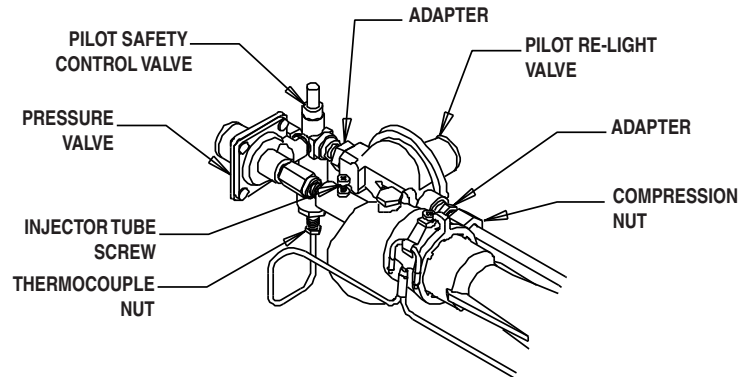
STANDARD PILOT



PILOT SAFETY GAS CONTROL VALVE

1. Remove thermocouple from the pilot safety control valve.
2. Loosen the injector tube screw on the injector body and the compression nut at the outlet of the pilot relight valve. Pull control assembly from heater.
3. Remove pressure valve from pilot control valve.
4. Remove the adapter connecting the pilot control valve to pilot relight valve.

FIG. 14



PRESSURE VALVE

1. Remove thermocouple from pilot safety control valve.
2. Loosen injector tube screw and compression nut at outlet of pilot relight valve. Pull control assembly from heater.
3. Remove pressure valve with adapter from safety control valve.
4. Remove adapter and injector tube from pressure valve.

■ The replacement pressure valve will ship with a small tube of Loctite thread lock compound.

■ Apply Loctite sparingly (normally 2 drops is sufficient) to the upper threads of the adapter. See Fig. 16.

FIG. 16

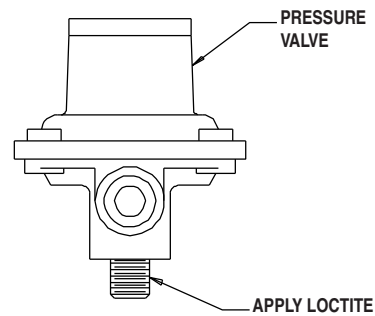
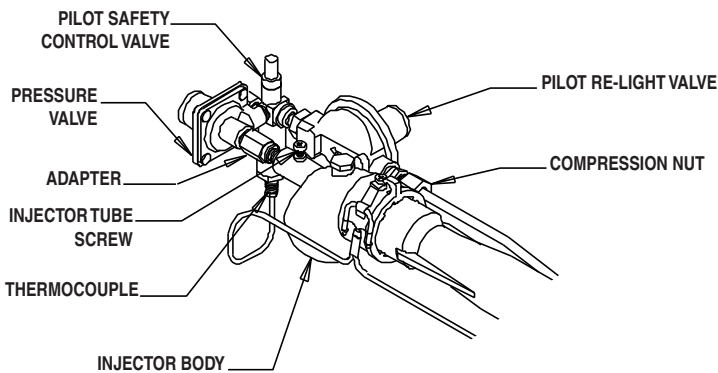


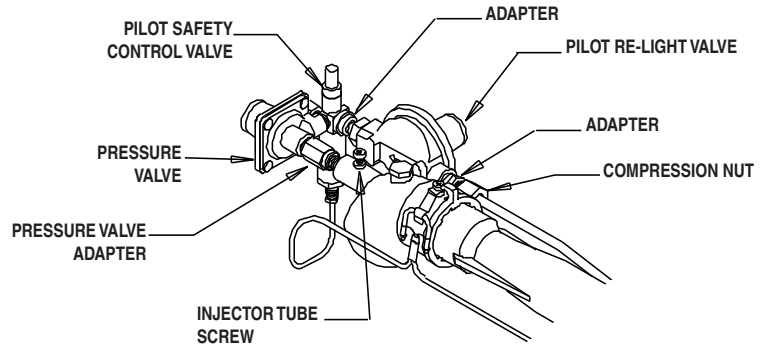
FIG. 15



PILOT RELIGHT VALVE

1. Remove thermocouple from pilot safety control valve.
2. Loosen pilot tube compression nut at outlet of pilot re-light valve.
3. Loosen injector tube screw and pull control assembly from heater.
4. Remove pressure valve from pilot safety control valve.
5. Remove pilot safety control from adapter at pilot relight valve inlet.
6. Remove adapters from relight valve inlet and outlet.

FIG. 17



OPERATION AND SETTING OF PRESSURE VALVE AND PILOT RELIGHT VALVE

All infraconic pilot ignition radiant heaters use two control components. These are the main burner pressure valve and pilot relight valve.

OPERATION

The regulator on the zone control panel supplies constant 20 in. W.C. pressure to the pilot light through the pilot relight valve on the heater. The pilot relight valve allows gas to flow to the pilot at the range of 20 in. W.C. to 65 in. W.C. When the building controller calls for heat, the solenoid on the zone panel opens, supplying high pressure gas to the heater.

As pressure increases up to 45 in. W.C. the pressure valve opens and supplies gas to the burner cones. The pilot lights the burner. When pressure increases to 65 in. W.C. the pilot relight valve closes, stopping the flow of gas to the pilot. The main burner pressure valve continues to open until 5 psig is being fed to the burner cones.

When the temperature is satisfied, the building controller shuts off power to the zone panel. Pressure decreases to the heater. The main burner pressure valve starts to close. At 65 in. W.C. the pilot relight valve opens, supplying gas to the pilot. The main burner flame lights the pilot before the burner shuts down.

SETTING

After significant use, the pilot relight valve and main burner pressure valve may require checking to ensure proper operation. This procedure may require assistance of another person.

INITIAL PREPARATION

- Close fuel supply to zone panel.
- Clean the heater thoroughly, including pilot and main burner orifices.
- Connect an accurate 0-100 in. W.C. pressure gauge to panel.

- Remove spring from regulator on zone panel. Replace it with spring that allows pressure adjustment range to 65 in. W.C. (available from L.B. White., part #21876)
- Open fuel supply and light pilot.

PROCEDURE

A. Main Burner Pressure Valve

- Observe pressure gauge and burner when conducting test.
- Slowly increase pressure to the heater using the zone panel regulator.
- The burner should light when pressure to valve reaches 45 in. W.C.
- If pressure valve opens above 45 in. W.C., remove its cap and slowly turn the adjusting screw counter-clockwise.
- If main burner pressure valve opens below 45 in. W.C., slowly turn its adjusting screw clockwise.

B. Pilot Relight Valve

- Observe pressure gauge and pilot flame when conducting this test.
- If relight valve closes above 65 in. W.C., remove its cap and slowly turn, adjusting screw counter-clockwise.
- If relight valve closes below 65 in. W.C., remove its cap and slowly turn adjusting screw clockwise.

COMPLETION

- Remove test spring from regulator on zone panel and install original spring.
- Light heater and set pilot pressure to 20 in. W.C. at zone panel regulator.
- Shut off gas supply.
- Remove gauge.

BURNER ORIFICE

1. Remove the thermocouple at the pilot control valve.
2. Loosen the injector body screw securing the thermocouple retaining clip.
3. Loosen compression nut at outlet of pilot relight regulator.
4. Loosen injector tube screw.
5. Pull injector body from heater.
6. Using a 6 mm hex nut driver, remove orifice from the injector body by turning counter-clockwise.
7. Reinstall orifice head back into the injector body. Do not overtighten the orifice as overtightening can strip the threads in the injector body.

FIG. 18

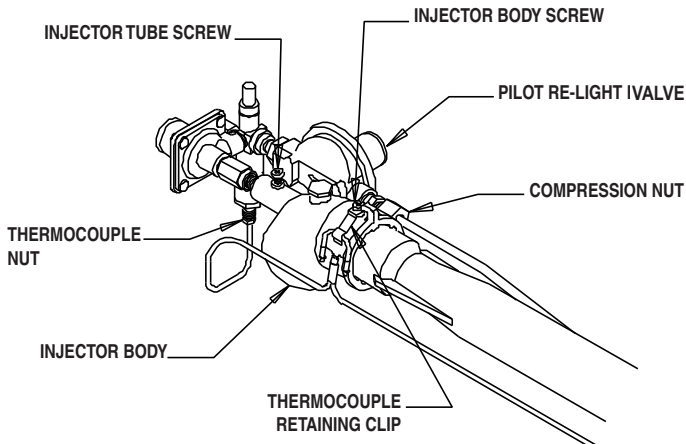
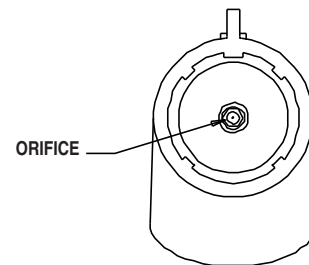


FIG. 19

INJECTOR BODY VIEWED FROM ORIFICE END



THERMOCOUPLE

1. Remove the thermocouple at the pilot gas control valve. See Fig. 20.
2. Loosen the thermofuse retaining clip screw. See Fig. 20.
3. Loosen upper retaining nut on thermocouple. See Fig. 21.
4. Remove the thermocouple, with nuts and cover, from the heater assembly.
5. Transfer nuts and cover to replacement thermocouple. Position as shown in Fig. 22.
6. Position the thermofuse under the retaining clip and tighten the position screw.
7. Angle the thermocouple tip to allow passage through the keyhole slot and into the thermocouple location hole of the burner plate. Pull up on the thermocouple lead so the lower nut is tight against the inside of the heater housing. Tighten upper nut against the housing. See Fig. 23.
8. The installed finished position of the thermocouple is 1/2 - 9/16 inch from the top edge of thermocouple to the heater housing. See Fig. 23.
9. Thread the nut on thermocouple into gas control valve. Tighten finger tight and snug in place. DO NOT OVERTIGHTEN.

FIG. 20

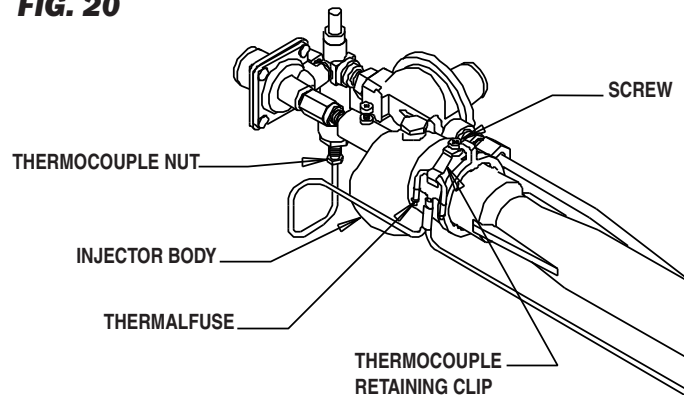


FIG. 21

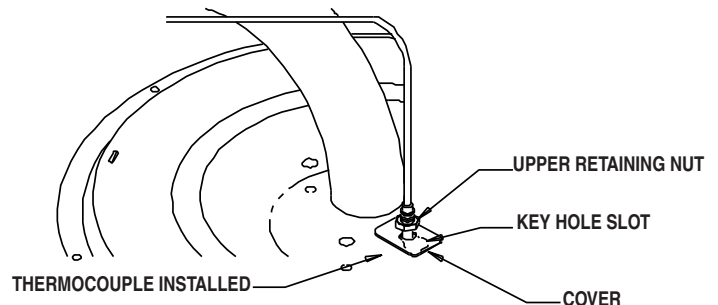


FIG. 22

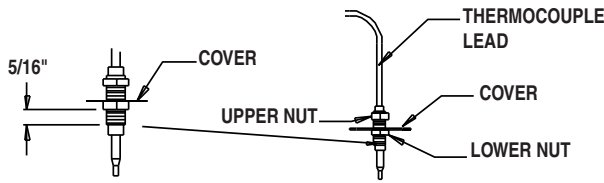
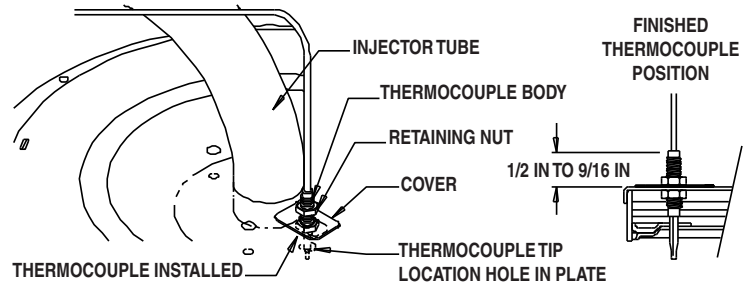


FIG. 23



GAS PRESSURE CHECKS

A. Preparation

1. Obtain an L.B. White pressure gauge test kit - Part No. 20736.
2. Close the fuel supply valve to the heater.
3. Brush or blow off any dust and dirt on or in the vicinity of the gas control valve.
4. Disconnect the gas hose from the heater.

B. Gauge Installation

1. Connect the pressure test kit between the heater and its gas supply hose as shown in Fig. 24. Insure both gas shut-off valves on the test kit are in the closed position when connecting the kit to the heater and gas supply.
2. Open the main fuel supply valve to the heater.
3. Open only the gas shut-off on the test kit to which the main gas supply hose is connected. Light the heater.

C. Reading Pressures

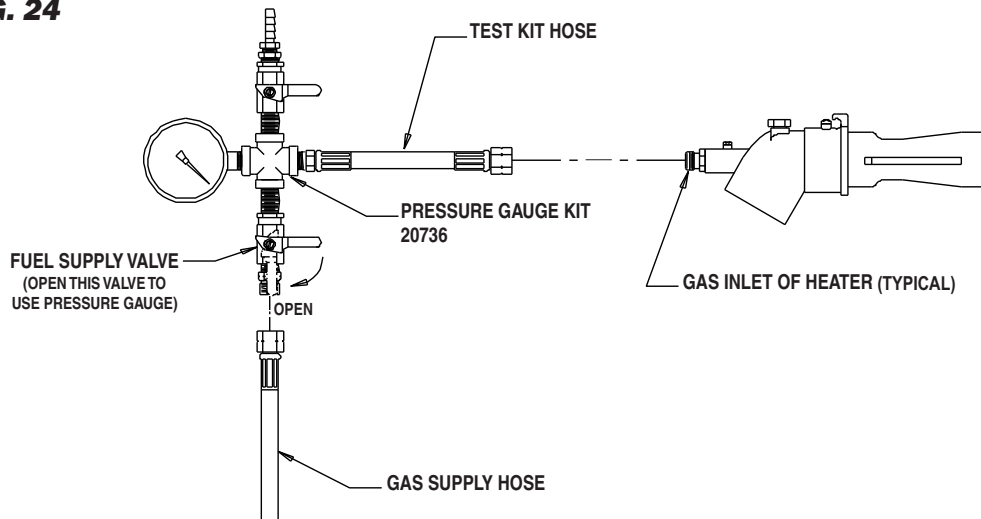
1. Set building temperature control to call for heat.

2. Read the pressure gauge when the heater is operating at full heat output and also when the pilot only is lit.
3. Does the reading on the gauge of the test kit agree with that specified on the dataplate? If so, then no further checking or adjustment is required. Proceed to Section D.
4. If the pressure does not agree with that specified on the dataplate, the regulators controlling gas pressure to the heaters requires adjustment.

D. Completion

1. Once gas pressure has been confirmed and/or properly set, close the fuel supply valve to the heater and allow the heater to burn off any gas remaining in the gas supply line.
2. Remove the gauge kit and connect gas hose to heater.
3. Open the main fuel supply valves to the heater and light the heater.
4. Set building control to desired temperature.

FIG. 24



Troubleshooting Guide

READ THIS ENTIRE SECTION BEFORE BEGINNING TO TROUBLESHOOT PROBLEMS.

The following troubleshooting flow charts provide systematic procedures for isolating heater problems. The charts are intended for use by a QUALIFIED GAS HEATER SERVICE PERSON. **DO NOT SERVICE THE HEATER UNLESS YOU HAVE BEEN PROPERLY TRAINED.**

TEST EQUIPMENT REQUIRED

The following pieces of test equipment will be required to troubleshoot this system with minimal time and effort.

- **Digital Multimeter** - For measuring DC voltage when using thermocouple diagnostic kit.
- **Thermocouple Diagnostic Kit** - (Part No. 21188) When used with a standard digital multimeter, this kit allows testing of the thermocouple and electromagnetic power unit.
- **Pressure Gauge** - (Part No. 20736) For checking inlet pressures to heaters.

INITIAL PREPARATION

- Inspect heater for damage.
- Clean the heater as necessary.



WARNING Burn Hazard

- Troubleshooting this system may require operating the heater with the burner on. Use extreme caution when working on the heater.
- Failure to follow this warning will result in burns causing severe injury.

Heater Problems

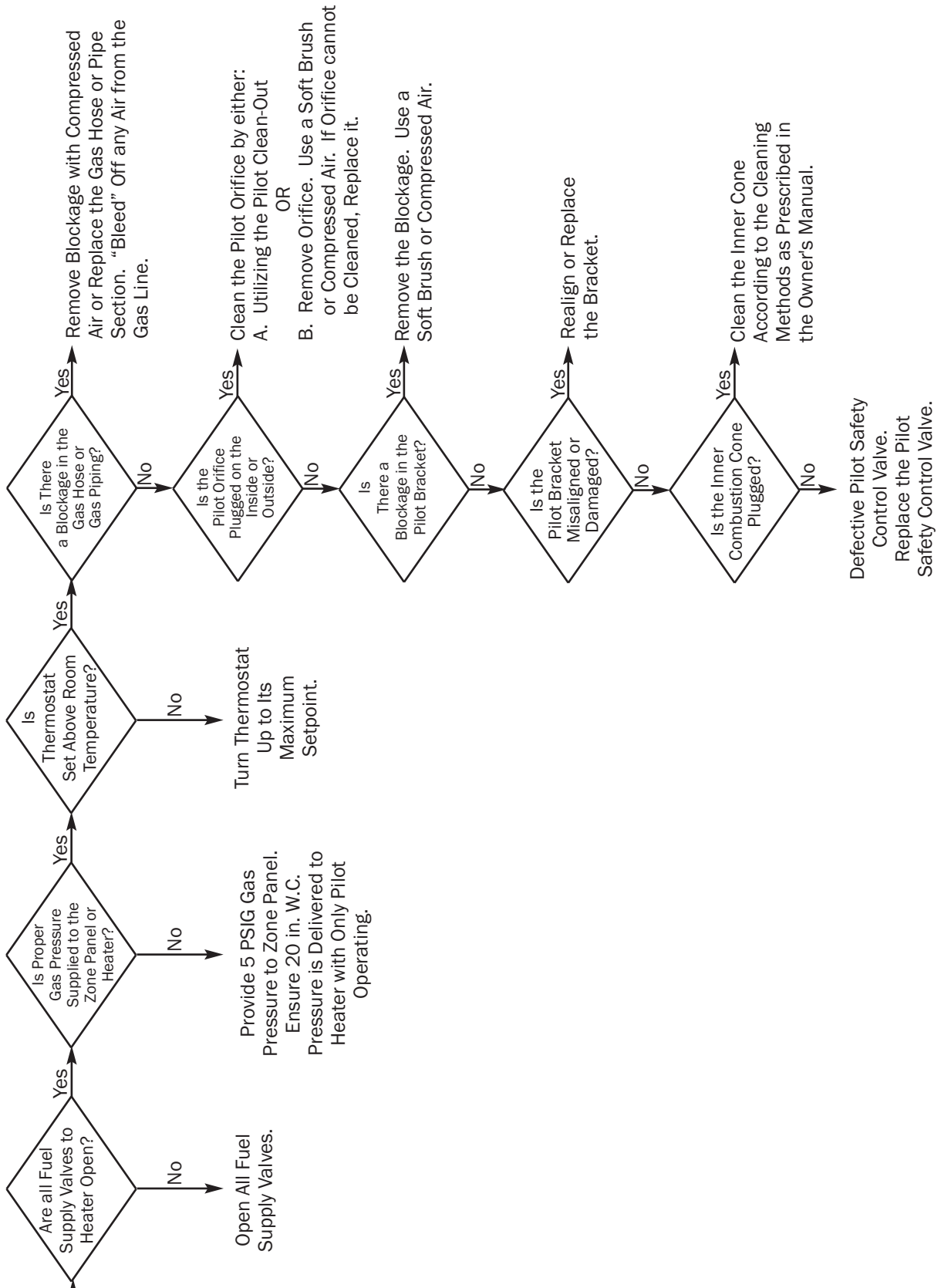
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1. Pilot will not Light	21
2. Pilot Lights, but will not Stay Lit	22
3. Pilot Does Not Relight After Cycling From Main Burner	23
4. Outer Combustion Cone Does Not Heat	23
5. Heater Backflashes Gas Through Injector Body Air Inlet	24
6. Heater Does Not Operate from Main Burner to Pilot Only	24

Components should be replaced only after each step has been completed and replacement is suggested in the flow chart. Refer to the "Servicing" sections as necessary to obtain information on disassembly and replacement procedures of the component once the problem is identified by the flow chart.

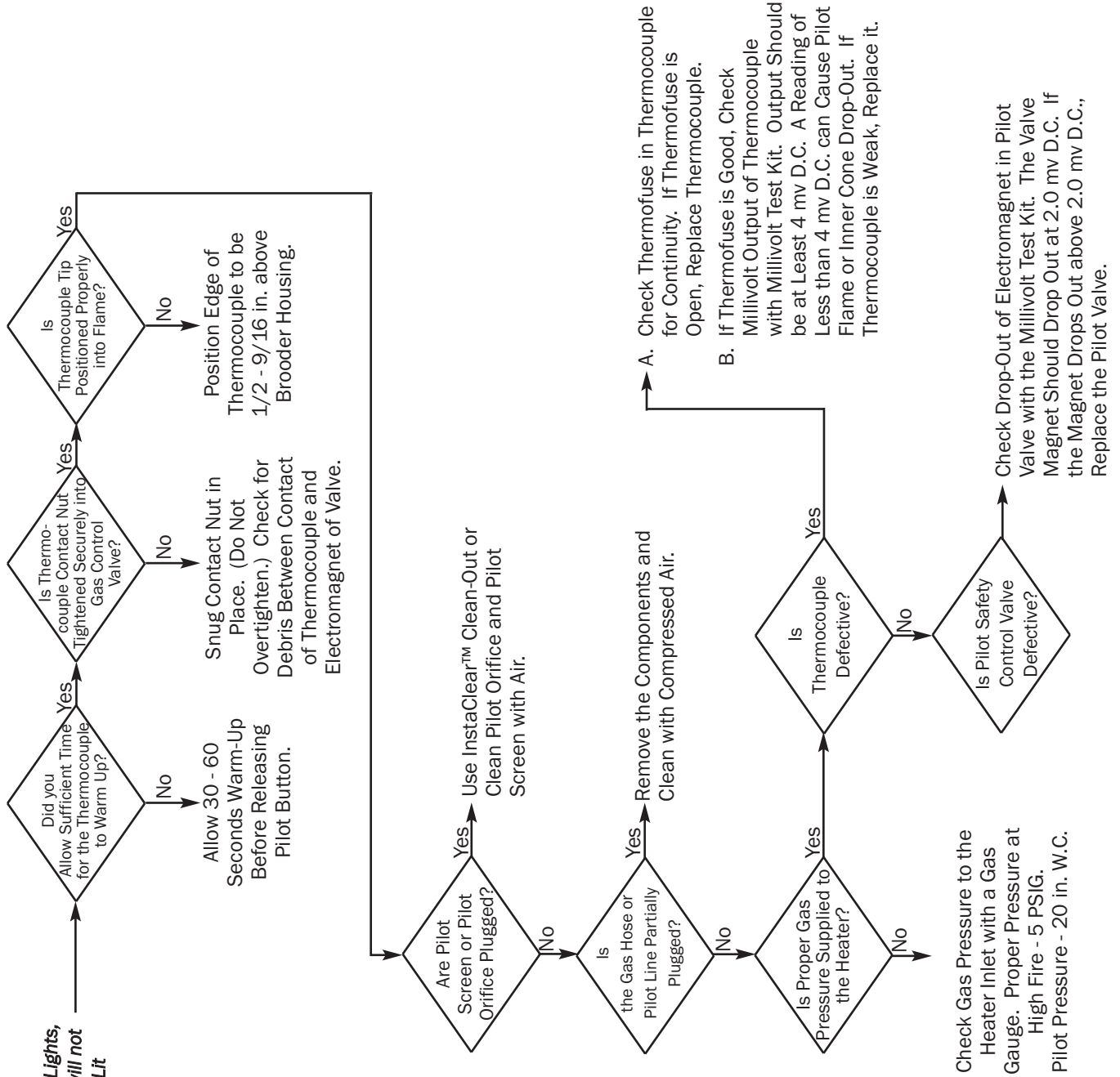
Problem 1

Pilot Will Not Light



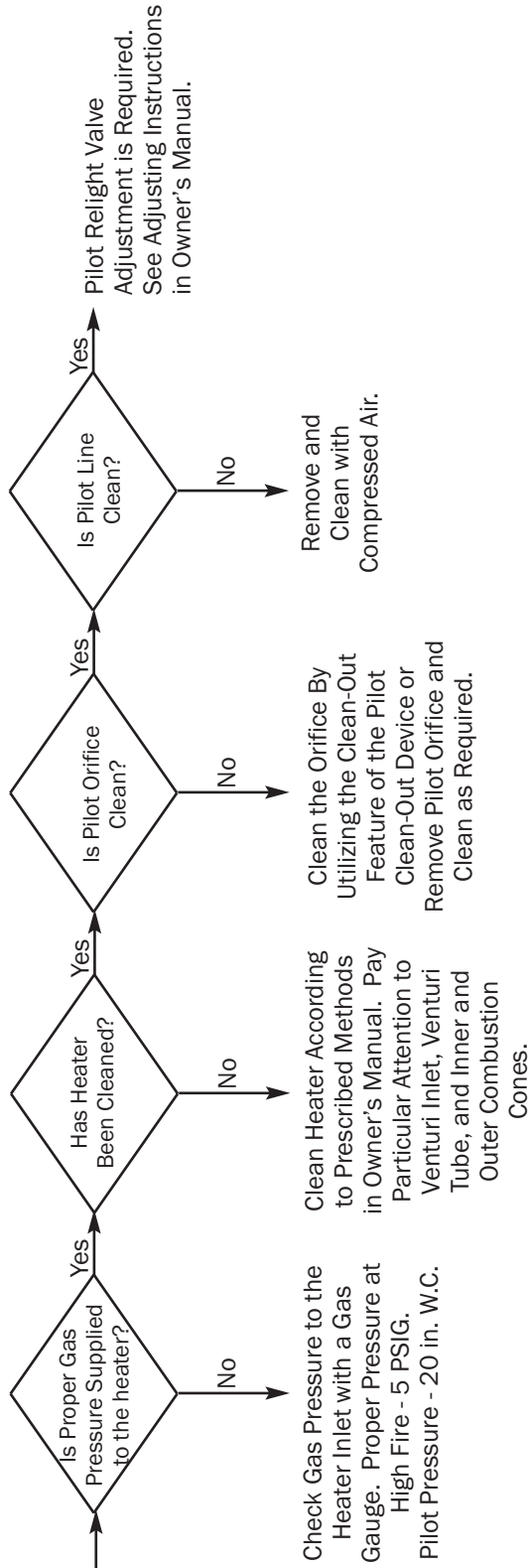
Problem 2

Pilot Lights, but will not Stay Lit



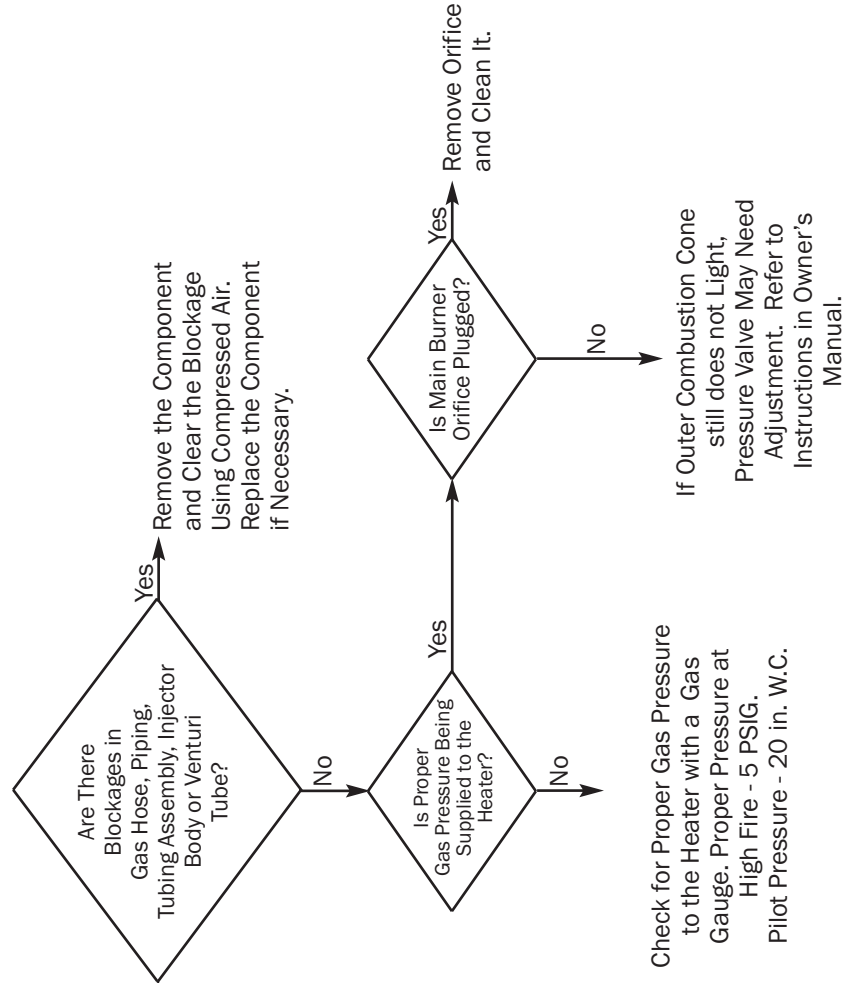
Problem 3

Pilot Does Not Relight After Main Burner Shuts Down



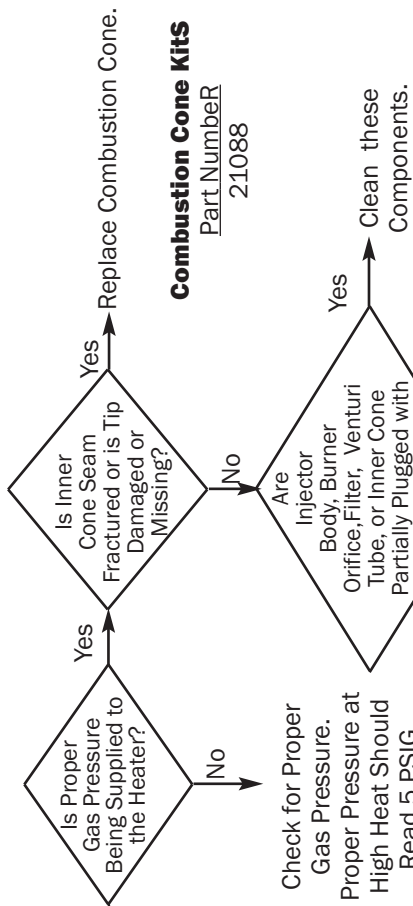
Problem 4

Outer Combustion Cone Does Not Heat



Problem 5

Heater Backfires Gas Through Air Inlet.

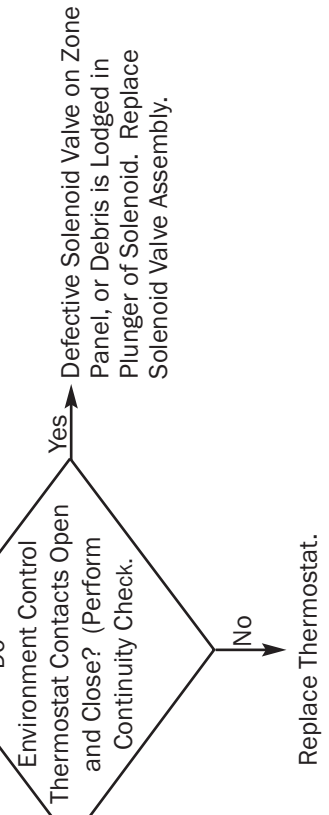


Combustion Cone Kits

Part Number
21088

Problem 6

Heater does not Operate from Main Burner to Pilot Only.



Heater Component Function

Burner Orifices

Metering devices used to feed gas to combustion cones at a specific flow rate.

Canopy

Reflective aluminum heat shield for heater.

Double Combustion Chamber

Made of special alloy steel. This is where combustion of gas occurs, providing radiant heat used in the warming process. Consists of a small inner cone and large outer cone.

Gas Hose

Flexible connector used to convey gas from gas supply line to inlet of heater.

Injector Body

Secures pilot gas valve to venturi tube. Also allows combustion air to be drawn in to venturi tube with gas flow for combustion.

Manual Shut Off Valve

It's purpose is to shut off gas flow to the appliance if maintenance or service are required, or if an emergency situation occurs. When the handle on the manual valve is turned parallel to gas flow, the valve is completely open delivering full gas supply to the appliance. Turning handle perpendicular (90°) to gas flow shuts off gas flow.

Pilot Orifice

Maintains the pilot flame on the thermocouple to hold the safety valve open. Pilot flame will ignite the main burner. After igniting the main burner, the pilot gas flame will shut off and relight when main burner shuts off.

Pilot Relight Valve

Controls gas flow to pilot light, opens at pressures of 65 in. W.C. and below, closes on an increase of pressure, 65 in. W.C. and above.

Pilot Safety Control Valve

Safety shut off device used to feed fuel gas to the heater combustion cones for heating. Will shut off flow of gas completely if pilot gas flame is extinguished.

Pressure Valve

Feeds higher pressure gas to burner orifice, and therefore to combustion cones.

Thermal Fuse

Safety device connected in series with thermocouple which will shut off gas control valve if temperature of heater injector body increases abnormally. (Available only with thermocouple for replacement purposes.)

Thermocouple

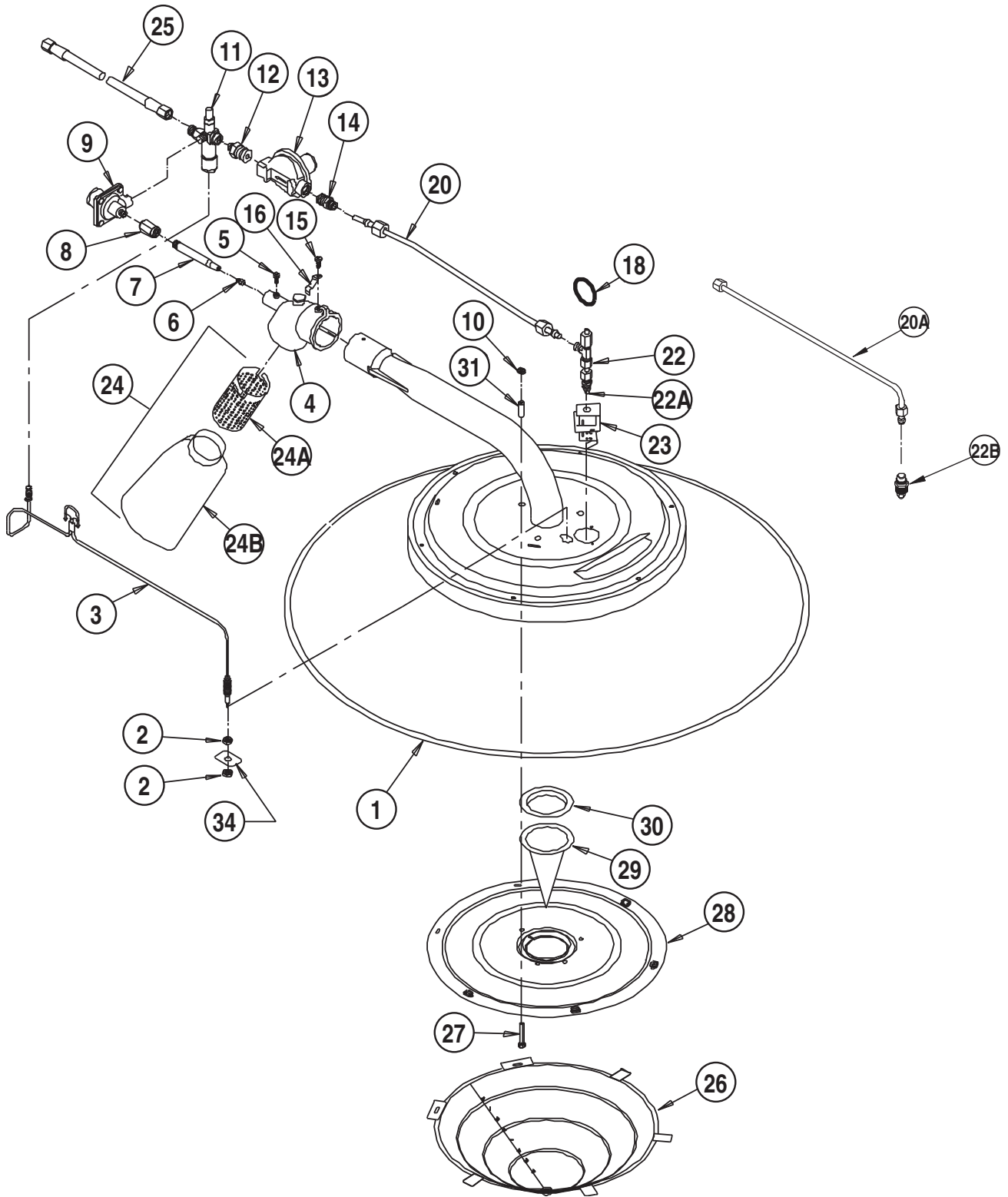
Safety device that will continue to hold open electromagnet in pilot gas control valve when heat is applied to thermocouple tip. It will also stop gas flow if inner combustion flame is out.

Venturi Tube

Tubular steel "neck" connecting the gas control valve and burner orifices to the combustion cones. Gas is fed to the combustion cones through the injector tube.

Parts Identification

PARTS SCHEMATIC



PARTS LIST

Item	Description		Part Number
1	Venturi Tube & Burner Assembly		20671
2	Thermocouple Retaining Nut		09576
3	Thermocouple w/ Fusible Link		09596
4	Injector Body w/ Register Plate	Propane Gas	20672
		Natural Gas	21559
5	Screw, Injector Tube		09572
6	Burner Orifice	Propane Gas	26702
		Natural Gas	26701
7	Injector Tube		09562
8	Adapter, Injector Tube to Pressure Switch		20513
9	Pressure Switch		20669
10	Nut		09578
11	Pilot Safety Control Valve		22285
12	Adapter, Pilot Control to Pilot Regulator	Propane Gas	20514
		Natural Gas	21054
13	Pilot Relight Valve		20670
14	Adapter, 1/4 NPT x 1/4 Compression		02770
15	Screw, Control Assembly & Thermocouple		09575
16	Thermocouple Fuse Clip		09565
18	Key Ring		09620
20	Pilot Tubing w/ Nuts & Sleeves (For Heaters with Pilot Clean-Out)		23918
20A	Pilot Tubing w/ Nuts & Sleeves (For Heaters with Standard Pilot Orifice)		23916
22	Pilot Clean-Out w/ Pilot Orifice (InstaClear™)	Propane Gas	22690
		Natural Gas	22691
22A	Orifice, Pilot (For InstaClear™ Pilot Clean-Out and Standard Pilot)	Propane Gas	27483
		Natural Gas	22673
22B	Orifice Holder w/ Orifice (For Standard Pilot Light)	Propane Gas	23071
		Natural Gas	23072
23	Pilot Bracket	Propane Gas	23307
		Natural Gas	23304
24	Filter Kit		572428
24A	Sleeve		20421
24B	Filter		572429
25	Hose, 1/4 in x 6 ft., Rigid x Swivel - Poultry		20495
	1/4 in x 10 ft., Rigid x Swivel - Poultry		20496
	1/4 in x 12 ft., Rigid x Swivel - Poultry		20497
	1/4 in x 6 ft, Swivel Both Ends - Swine		20499
	1/4 in x 10 ft., Swivel Both Ends - Swine		20242
	1/4 in x 15 ft., Swivel Both Ends - Swine		20500
26	Outer Cone		09556
27	Screw, 10-32 x 1 1/2 in.		23636
28	Plate, Burner		571039
29	Inner Cone		09557
30	Gasket		09560
31	Spacer		09568
33	Combustion Cone Kit w/ Gasket		21088
34	Cover Plate, Thermocouple		23315
35	Fitting Kit, 1/8 NPT w/ Nut (Not Illustrated)		23406
36	Quick Coupling Kit, Female Coupling and Shut-Off (Not Illustrated)		21335
	Consisting Of:		
	Shut-off Valve		05548
	Nipple, 1/4 in. Close		01142
	Coupling, Quick Disconnect		21328
	Bushing, 1/2 x 1/4		01519

Warranty Policy

EQUIPMENT

L.B. White Co., Inc. warrants that the component parts of its equipment are free from defects in material and workmanship, when properly installed, operated, and maintained in accordance with the Installation and Maintenance Instructions, safety guides and labels contained with each unit. If, **within 12 months from the date of purchase by the end user**, any component is found to be defective, L.B. White Co., Inc. will at its option, repair or replace the defective part or equipment, with a new part or equipment, F.O.B., Onalaska, Wisconsin.

A warranty card on file at L.B. White will automatically qualify a unit and its component parts for warranty consideration. If a warranty card is not on file, a copy of the bill of sale will be required to establish warranty qualification. If neither is available, the warranty period will be 12 months from date of shipment from L.B. White.

PARTS

L.B. White Co., Inc. warrants that replacement parts purchased from the company and used on the appropriate L.B. White equipment are free from defects both in material and workmanship for **12 months from the date of purchase by the end user**. Warranty is automatic if a component is found defective within 12 months of the date code marked on the part. If the defect occurs more than 12 months later than the date code but within 12 months from the date of purchase by the end user, a copy of a bill of sale will be required to establish warranty qualification.

duration to the duration of the applicable warranty stated above. The remedies set forth above are the sole and exclusive remedies available hereunder. L.B. White will not be liable for any incidental or consequential damages directly or indirectly related to the sale, handling or use of the equipment, and in any event L.B. White's liability in connection with the equipment, including for claims based on negligence or strict liability, is limited to the purchase price.

The warranty set forth above is the exclusive warranty provided by L.B. White, and all other warranties, including any implied warranties or merchantability or fitness for a particular purpose, are expressly disclaimed. In the event any implied warranty is not hereby effectively disclaimed due to operation of law, such implied warranty is limited in

Some regions do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Some regions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Replacement Parts and Service

Contact your local L.B. White dealer for replacement parts and service or call the L.B. White Company, Inc. at 1-800-345-7200 for assistance. Be sure that you have your heater model number when calling.