



Owner's Manual and Instructions

Norseman Heavy Duty Convection Construction Heaters

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MODEL	OUTPUT (Btuh)	FUEL
322	200,000	L.P. Gas Vapor Withdrawal



SCAN THIS QR CODE

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visit <http://goo.gl/nvneR>
to view maintenance
videos for L.B.White heaters.*



*Requires an app like QR Droid for Android or
QR Reader for iPhone.

Congratulations!

You have purchased the finest convection construction heater available.

Your new L.B. White 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 evaluated by L.B. White Co., Inc as a direct fired convection construction heater intended for use as the temporary heating of buildings under construction, alteration, or repair. **The heater shall be used only on noncombustible surfaces.** If you are considering using this product for any applications other than its intended use, then please contact your fuel gas supplier or the L.B. White Co., Inc.



World Provider - Innovative Heating Solutions

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150-29462



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
- Read this Owner's Manual before installing or using this product.
- 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 800-345-7200.



WARNING

- Proper gas supply pressure must be provided to the inlet of the heater.
- Refer to data 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, or building damage.
- 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.



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

If you smell gas:

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

FOR YOUR SAFETY

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



WARNING

Fire and Explosion Hazard

- Keep solid combustibles a safe distance away from the heater.
- Solid combustibles include wood or paper products, building materials 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 this heater.

When calling for technical service assistance, or for other specific information, always have model number, configuration number and serial number available. This information is contained on the dataplate.

This manual will instruct you in the operation and care of your 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, installation of the heater, and repair 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 equipment 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.

Heater Specifications

		Model
SPECIFICATIONS		322
Fuel Type		L.P. Gas
Maximum Input (BTUH)		200,000
Inlet Gas Supply Pressure Acceptable at the Inlet of the Pilot Safety Control Valve	MAX.	23 PSIG.
	MIN.	23 PSIG.
Fuel Consumption Per Hour		9.3 lbs.
Dimensions (Inches) L x W x H		41 x 9 x 12
Minimum Safe Distances From Nearest Combustible Materials	TOP TO CEILING	6 ft.
	SIDES	4 ft.
	DISCHARGE END	5 ft.
Not for use on combustible materials	FUEL CONTAINER	6 ft. (1.83 m)
Net Weight (lbs.)		26
Shipping Weight (lbs.)		30

Safety Precautions

 **WARNING**
Asphyxiation Hazard

- Do not use this 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.
- Lack of proper ventilation air will lead to improper combustion.
- Improper combustion can lead to carbon monoxide poisoning leading to serious injury or death. Symptoms of carbon monoxide poisoning can include headaches, dizziness and difficulty in breathing.
- Proper ventilation air for combustion must be provided in accordance with OSHA 29 CFR 1926.154, Temporary Heating Devices, ANSI A10.10, Safety Requirements for Temporary and Portable Space Heating Devices, or the Natural Gas and Propane Installation Code, CAN/CSA B149.1 as appropriate.

FUEL GAS ODOR

LP 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 (LP) gas tank or cylinder fuel supply valves, or the main fuel supply valve located at the meter if you use natural gas.
- Propane (LP) 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.
- 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 appliance 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 (LP) or natural gas. You must determine if you can smell the odorant in these fuel gases.
- Learn to recognize the odor of propane (LP) gas and natural gas. Local propane (LP) gas dealers 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 (LP) 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 (LP) gas odor may differ in intensity at different levels. Since propane (LP) 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 (LP) gas has 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 (LP) gas then do not attempt to light heater, perform service or repairs, or make any adjustments to the heater on the propane (LP) gas fuel system.
- Even if you are not properly trained in the service and repair of the heater, ALWAYS be consciously aware of the odors of propane (LP) 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!



WARNING
Fire Hazard

- Temperatures at base of this heater may ignite combustible materials
- Use on non-combustible materials to avoid a fire hazard.

ATTENTION

- This heater is not suitable for use on any wooden floors (plywood, particle board, pressboard, etc.) and shall not be set up on these nor any other combustible materials.
- If the heater is used on a combustible floor the heater shall rest on a suitable heat insulating material such as concrete of at least 1 inch thickness or equivalent. The insulating material shall extend beyond the heater 2 feet or more in all directions.

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:

- a. To be a qualified gas heater service person, you must have sufficient training and experience to handle all aspects of gas-fired heater installation, service and repair. This includes the task of installation, troubleshooting, replacement of defective parts and testing of the heater. You must be able to place the heater into a continuing safe and normal operating 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 and tank 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 and applications of L.B. White heaters must meet all relevant local, state and national codes. Included are L.P. gas, natural gas, electrical, and safety codes. Your local fuel gas supplier, a local licensed electrician, the local fire department or similar government agencies, or your insurance agent can help you determine code requirements.

- 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

3. We cannot anticipate every use which maybe made of our heaters. Check with the local fire safety authority if you have questions about applications.
4. The heater shall be installed so that it is not directly exposed to water spray, rain, or dripping water.
5. Do not locate fuel gas containers or fuel supply hoses anywhere near the discharge outlet of the heater.
6. Do not block air intakes or discharge outlets of the heater. Doing so may cause improper combustion or damage to heater components leading to property damage.
7. The hose assembly shall be visually inspected on a daily basis after heater relocation and when the heater is in use. If it is evident there is excessive abrasion or wear, or if the hose is cut, it must be replaced prior to the heater being put into operation. The hose assembly shall be protected from building materials, and contact with hot surfaces during use. The hose assembly shall be that specified by the manufacturer. See parts list.
8. Check for gas leaks and proper function upon heater installation, when relocating, and after servicing. Refer to leak check instructions within installation section of this manual.
9. This heater should be inspected for proper operation by a qualified service person before each use and at least annually.
10. Always turn off the gas supply to the heater if the heater is not going to be used in the heating of the work space.
11. If gas flow is interrupted and flame goes out, do not relight the heater until you are sure that all gas that may have accumulated has cleared away. In any event, do not relight the heater for at least 5 minutes.
12. Minimum LP gas supply cylinder size to be used shall be 100 pounds when using a cylinder supply system. The system must be arranged to provide vapor withdrawal from the operating cylinder.
13. When the heater is to be stored indoors, the connection between the L.P. gas supply cylinder(s) and the heater must be disconnected and the cylinder(s) removed from the heater and stored in accordance with Chapter 5 if the Standard for the Storage and Handling of Liquefied Petroleum Gases, ANSI/NFPA 58.
14. L.P. gas supply containers have left handed threads. Always use the appropriate wrench to make a connection to tighten or loosen the P.O.L. fitting at the cylinders' gas supply valve.



WARNING

Fire or explosion hazard.

Can cause property damage, severe injury or death.

1. To avoid dangerous accumulation of fuel gas, turn off gas supply at the heater service valve before starting installation, and perform gas leak test after completion of installation.
2. Do not force the gas control pilot button. Use only your hand to depress the pilot button. Never use any tools. If the button will not operate by normal hand pressure the control should be replaced by a qualified service technician. Force or attempted repair may result in fire or explosion.



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.

1. Read all safety precautions and follow L. B. White recommendations when installing this heater. If during the installation or relocating of heater, you suspect that a part is damaged or defective, call a qualified service agency for repair or replacement.
2. Make sure the heater is properly installed before use. Observe and obey all minimum safe distances of the heater to the nearest combustible materials. Safe distances are given on the heater dataplate and on page 4 of this manual.
3. The heater is approved for indoor use only.
4. The heater shall not be used with ductwork.
5. The heater's gas pressure regulator (with pressure relief valve) must be protected from adverse weather conditions (rain, ice, snow) as well as from building materials (tar, concrete, plaster, etc.) which can affect safe operation and could result in property damage or injury.
6. Heaters used in the vicinity of combustible tarpaulins, canvas, plastics, wind barriers, or similar coverings shall be located at least 10 feet from the coverings. The coverings shall be securely fastened to prevent ignition or upsetting of the heater due to wind action on the covering or other material.

7. Check all connections for gas leaks using approved gas leak detectors. Gas leak testing is performed as follows:
 - 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.

8. A qualified service agency must check for proper operating gas pressure upon installation of the heater.
9. Light according to instructions on heater or within owner's manual.
10. Make sure the heater has the proper gas regulator for the application. A regulator must be connected to the gas supply so that gas pressure at the inlet to the gas valve is regulated within the range specified on the dataplate at all times. Contact your gas supplier, or the L.B. White Co., Inc. if you have any questions.
11. This heater is configured for use for L.P. gas vapor withdrawal only. Do not use the heater in an L.P. gas

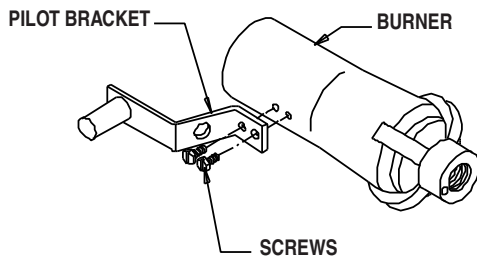
liquid withdrawal system or application. If you are in doubt, contact the L.B. White Co., Inc.

12. Take time to understand how to operate and maintain the heater by using this Owner's Manual. Make sure you know how to shut off the gas supply to the building and also to the individual heater. Contact your fuel gas supplier if you have any questions.
13. Any defects found in performing any of the service or maintenance procedures must be eliminated and defective parts replaced immediately. The heater must be retested by properly qualified service personnel before placing the heater back into use.

BURNER AND GAS CONTROL ASSEMBLY

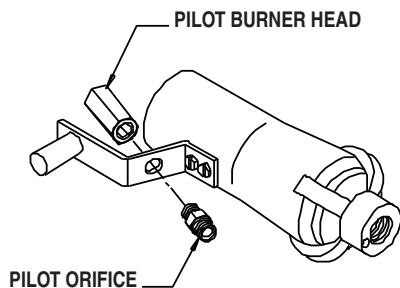
1. Attach pilot bracket to burner casting with machine screws. Tighten the screws securely. See Fig. 1.

FIG. 1



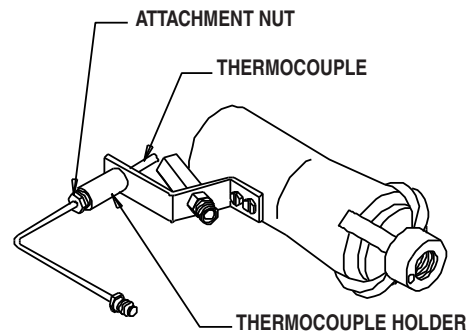
2. Align the threaded hole in the pilot burner head to hole in the pilot bracket. Thread pilot orifice into pilot head until hex of orifice butts up against pilot bracket. See Fig. 2.

FIG. 2



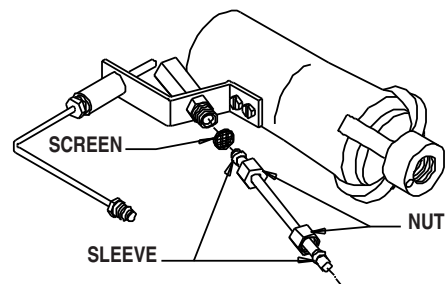
3. Position the thermocouple within its holder on the pilot bracket. Secure in place with its attachment nut. Tighten the nut securely. See Fig. 3.

FIG. 3



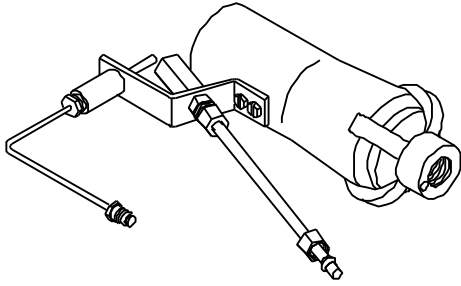
4. Slide compression nut and sleeve onto the pilot tube. Form the small screen around this end of the pilot tube to prevent debris from entering the pilot orifice. See Fig. 4.

FIG. 4



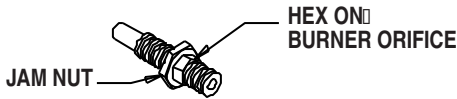
5. Thread compression nut onto pilot orifice. Ensure that compression sleeve and pilot tube are firmly pushed up within pilot orifice. Tighten the nut securely. See Fig. 5

FIG. 5



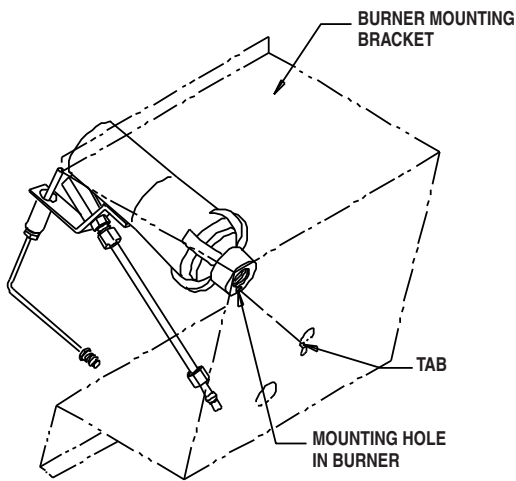
6. Thread jam nut onto burner orifice so it butts up against hex at end of orifice threads. See Fig. 6

FIG. 6



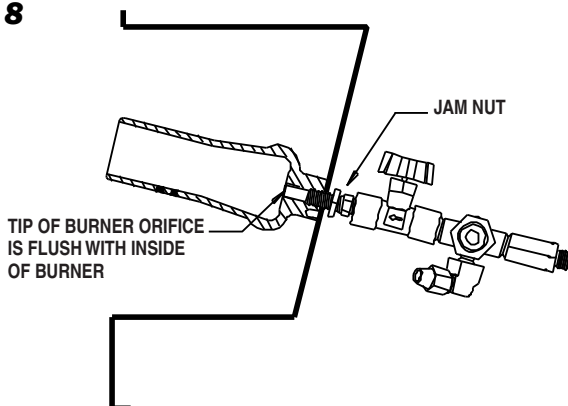
7. Position the burner casting within the burner mounting bracket. The tab on the burner bracket must fit within the mounting hole of the burner casting. See Fig. 7.

FIG. 7



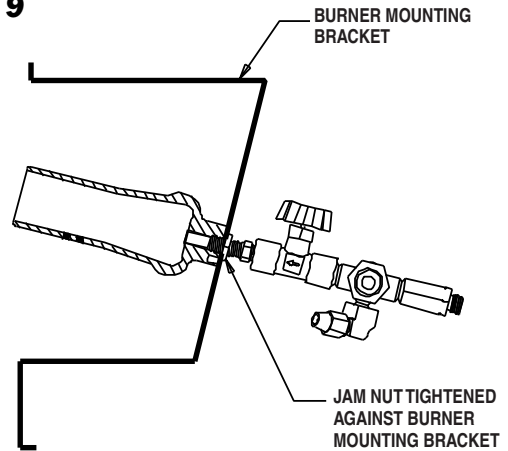
8. Thread the orifice with control assembly into the inlet of the burner casting so that the tip of the burner orifice is flush with the inside of the burner and so the control assembly is positioned as shown. See Fig. 8.

FIG. 8



9. Tighten the jam nut up against the burner mounting bracket. See Fig. 9.

FIG. 9

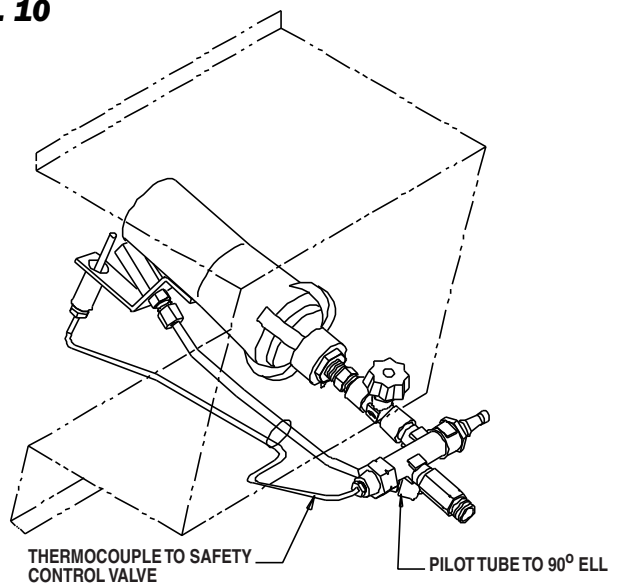


10. Carefully hand form the thermocouple and pilot line through the hole in the burner mounting bracket to align with safety control valve. See Fig. 10.

11. Thread the thermocouple connector nut into the pilot safety control valve. Tighten finger tight and snug into place with the appropriate wrench. See Fig. 10.

12. Slide the remaining compression nut and sleeve onto the other end of the pilot line tube. Thread the compression nut onto the 90 degree elbow at the safety control valve while firmly pushing the pilot tube into the elbow. Tighten the compression nut securely. See Fig. 10.

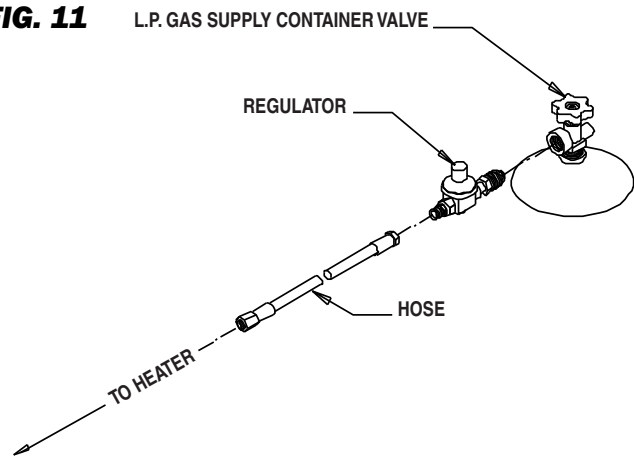
FIG. 10



HOSE AND REGULATOR ASSEMBLY

1. Always use approved pipe thread compound suitable for use with L.P. gas or natural gas on the threaded connections.
2. Assemble the components together according to the figure. This view is to show general assembly of the components only.
3. Tighten all connections securely.
4. **Check all connections for gas leaks using approved gas leak detectors.**

FIG. 11



Start-Up Instructions

WARNING
Burn Hazard

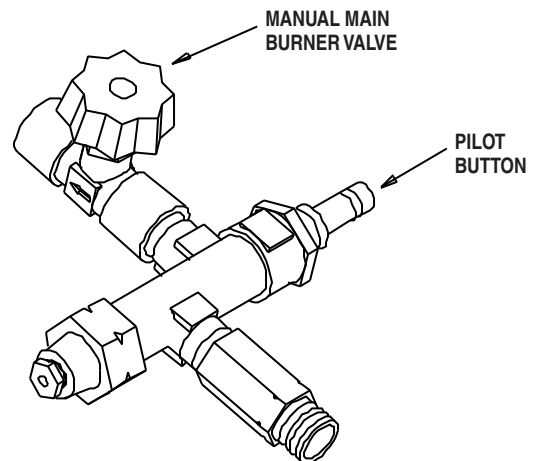
- Close the manual main burner valve before lighting the pilot.
- Failure to do so will result in the main burner igniting when the pilot is being lit.
- Serious injury or death by burns may occur.

1. Slowly open the LP Gas supply container valve.
2. Fully depress the button on the pilot safety control valve while applying flame to the pilot.
3. Keep the pilot button depressed for about 30 seconds to allow the thermocouple to warm up so the pilot stays lit after the pilot button is released.
4. To ignite the main burner fully open the manual main burner valve located between the pilot safety control and burner.

ATTENTION

- On new installations it may take a short time for gas to purge out any air in the pilot line before the pilot stays lit.

FIG. 12



Shut-Down Instructions

1. Close the gas supply valve located on the LP gas supply container.
2. Allow the heater to burn off any fuel gas remaining in the gas supply line.
3. Close the manual main burner valve on the heater.
4. Disconnect the heater from its gas supply.

Cleaning Instructions



WARNING Fire, Burn, and Explosion Hazard

- This heater contains components used in the gas management, and safety systems.
- Such components may become inoperative or fail due to dust, dirt, wear and aging.
- Periodic cleaning and inspection as well as proper maintenance are essential to avoid serious injury or property damage.

1. Before cleaning, shut off all gas supply valves and disconnect gas supply.
2. The heater should have dirt or dust removed periodically:
 - a. Before each use give the heater a general cleaning using compressed air or a soft brush or dry rag on its case and internal components.
 - b. At least once a year, give the heater a thorough cleaning. At this time, make sure the burner casting is free of dust accumulation.



WARNING

Do not use a pressure washer, water, or liquid cleaning solution on any gas controls. Use of a pressure washer, water, or liquid cleaning solution on the control components can cause severe personal injury or property damage due to water and/or liquids:

- * On gas control valves causing corrosion which can result in gas leaks and fire or explosion from the leak.

Clean all components of the heater with pressurized air, a dry brush or a dry cloth.

Maintenance Instructions

1. The area surrounding the heater shall be kept clear and free from combustible materials, gasoline, and other flammable vapors and liquids.
2. Have your gas supplier check all gas piping annually for leaks or restrictions in gas lines.
3. 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.
4. Regulators can wear out and function improperly.
5. Review all heater markings (warnings, start-up, shut-down, etc.) at the time of maintenance for legibility. Make sure none are cut, torn, or otherwise damaged. Any damaged markings must be replaced immediately by contacting the L.B. White Co., Inc. Dataplates, start-up and shut-down instructions and warnings are available at no cost.

Service Instructions

The servicing of burner related components such as burner orifice, pilot orifice, thermocouple, and pilot tubing may be accomplished by referring to the Burner and Gas Control Assembly Instructions and illustrations provided within this manual. The assembly procedures may be reversed for disassembly and servicing of burner related components.

ATTENTION

When performing any service work, it is necessary to adhere to the following guidelines:

- Always close the fuel supply valves to the heater.
- Allow the heater to cool before servicing
- Leak check all gas connections after performing service work. Use approved leak detectors.

- Use only a soft brush, dry rag, or compressed air to clean the burner and pilot orifices.
- Do not push instruments into burner or pilot orifice holes. Doing so may enlarge or distort the holes creating improper combustion, pilot outages, or burner flames extending beyond the heater case.
- Ensure the pilot orifice screen is installed prior to orifice assembly. Its purpose is to trap contamination that would prevent the pilot orifice from operating properly.
- Do not use pliers to loosen or tighten heater components. Doing so may round off the component creating service problems. Always use the appropriate wrench.

Gas Pressure Checks

ATTENTION

This procedure is to be done once a year prior to the heating season, anytime the heater is moved from one job location to the next, or after servicing the heater.



WARNING

- Do not disassemble the pilot safety control valve.
- Do not attempt to replace any components of the pilot safety control valve.
- The pilot safety control must be replaced if any physical damage occurs to it.
- Failure to follow this warning will result in fire or explosions, leading to injury or death, and building damage.

MATERIALS REQUIRED

(To be secured through local purchase)

Quantity	Description
1	High Pressure Gas Gauge capable of reading up to 35 PSIG
1	1/4 in. Tee
1	1/4 in. Nipple

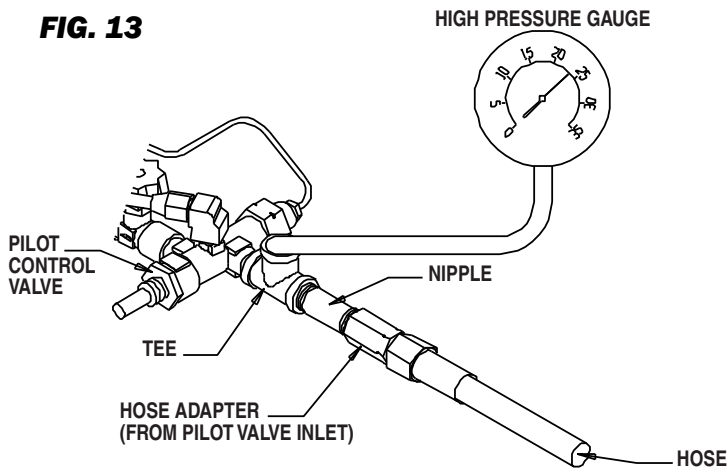
A. PREPARATION

1. Close fuel supply valve at LP gas supply container.
2. Allow heater to burn off gas remaining in it's gas supply line..
3. Close manual main burner valve on heater.
4. Remove gas hose from heater.
5. Remove hose adapter from inlet of pilot safety control valve.

B. GAUGE INSTALLATION

1. Connect the following materials together in the order as given. See Fig. 13
 - Tee to inlet of pilot safety control.
 - Nipple to tee.
 - Hose adapter (as removed earlier) to nipple.
 - Gas hose to hose adapter.
2. Connect gauge to tee.
3. Tighten all connections securely.

FIG. 13



3. If the inlet pressures do not agree with that specified on the dataplate, then check the following:
 - Improper regulator for heater.
 - Regulator out of adjustment. (Replace if necessary).
 - Blockage in gas hose.
 - Insufficient size or quantity of LP gas supply containers.

D. COMPLETION

1. Once the proper inlet pressure has been confirmed, close fuel supply valves.
2. Allow heater to burn off fuel remaining in gas supply line.
3. Remove gauge, hose adapter, nipple and tee.
4. Reconnect hose adapter to inlet of safety control valve and hose to hose adapter.
5. Tighten all connection securely and check for gas leaks.

C. READING PRESSURES

1. Start the heater. With the heater operating, the pressure gauge should read the pressure specified on the dataplate or in the specification section of this owner's manual.
2. Does the pressure reading at the inlet of the safety control agree with that given on the dataplate? If so, no further checking or adjustment is required. Proceed to section D.

Troubleshooting Information

<u>PROBLEMS</u>	<u>CAUSES</u>	<u>REMEDIES</u>
1. Pilot will not light.	<ul style="list-style-type: none"> * Fuel supply valves closed. * Pilot button not fully depressed. * Pilot orifice is plugged. * Screen at inlet of gas valve is plugged. * Restriction in gas hose or pilot line. * Air in gas line. * Pilot safety gas control power unit is defective. 	<ul style="list-style-type: none"> * Open fuel supply valves. * Depress pilot button completely. * Clean or replace pilot orifice. (DO NOT insert sharp instruments in orifice holes, blow out with compressed air.) * Remove screen and clean or replace screen. * Remove hose or pilot line from heater and blow out with compressed air or replace if necessary. * Push in pilot button (normally 30 seconds is sufficient) on pilot valve to purge air from line (usually necessary at time of installation). * Replace entire pilot safety control valve.
2. Pilot lights but will not stay lit when pilot button is released.	<ul style="list-style-type: none"> * Restriction in gas hose or pilot line. * Insufficient time allowed for pilot light to heat up thermocouple. * Loose thermocouple. * Defective thermocouple. * Pilot orifice is plugged. * Defective pilot safety control valve. * Improper gas pressure. 	<ul style="list-style-type: none"> * See remedy for same cause in Problem #1. * Hold in pilot button for 30 seconds to allow proper warm up. * Tighten thermocouple at gas control and make sure it is securely pushed into pilot bracket. Tighten finger tight and snug the contact nut with an appropriate wrench. * Replace thermocouple. * See remedy for same in Problem #1. * Replace entire pilot safety control valve. * Set pressure according to pressure on dataplate.
3. Main burner will not light	<ul style="list-style-type: none"> * Fuel supply valves closed on heater and at gas supply. * Pilot light not lit. * Burner orifice plugged. 	<ul style="list-style-type: none"> * Open all valves. * Light the pilot. * Clean the burner orifice.
4. Burner flame lifting off burner.	<ul style="list-style-type: none"> * Fuel pressure set too high. * Blockages in burner orifice or at primary air inlets of burner. 	<ul style="list-style-type: none"> * Set pressure according to pressure on dataplate. * Clean suspected area with soft brush, dry cloth, or compressed air.
5. Heater does not seem to be delivering maximum heat output.	<ul style="list-style-type: none"> * Gas supply valves not fully open. * Burner orifice plugged. * Low fuel supply pressure. 	<ul style="list-style-type: none"> * Open valves completely. * Clean burner orifice with compressed air or replace. * Consult propane gas supplier. Cylinder or tank needs replacement or refill. Regulator needs adjustment. Check for use of proper regulation and fuel gas.

(1) Tighten the thermocouple nut finger tight and snug in place with appropriate wrench. DO NOT OVERTIGHTEN.

Heater Component Function

Burner

Cast iron component used to channel gas and provide an area at which the fuel may ignite.

Burner Orifice

Brass metering device used to feed gas to burner at a specific rate.

Gas Hose

Flexible connector used to convey gas from supply line in building to heater.

Pilot Light Orifice

A metering device used to supply gas for the dual purpose of igniting the main burner and heating the thermocouple.

Pilot Safety Control Valve

A gas control valve which is held open by electrical power supplied by a pilot generator and which closes automatically to shut off the flow of gas to the main burner when the pilot flame is extinguished or becomes too small to light the main burner.

Pilot Tube

Formed copper tube used to convey gas from the safety control valve to the pilot light orifice.

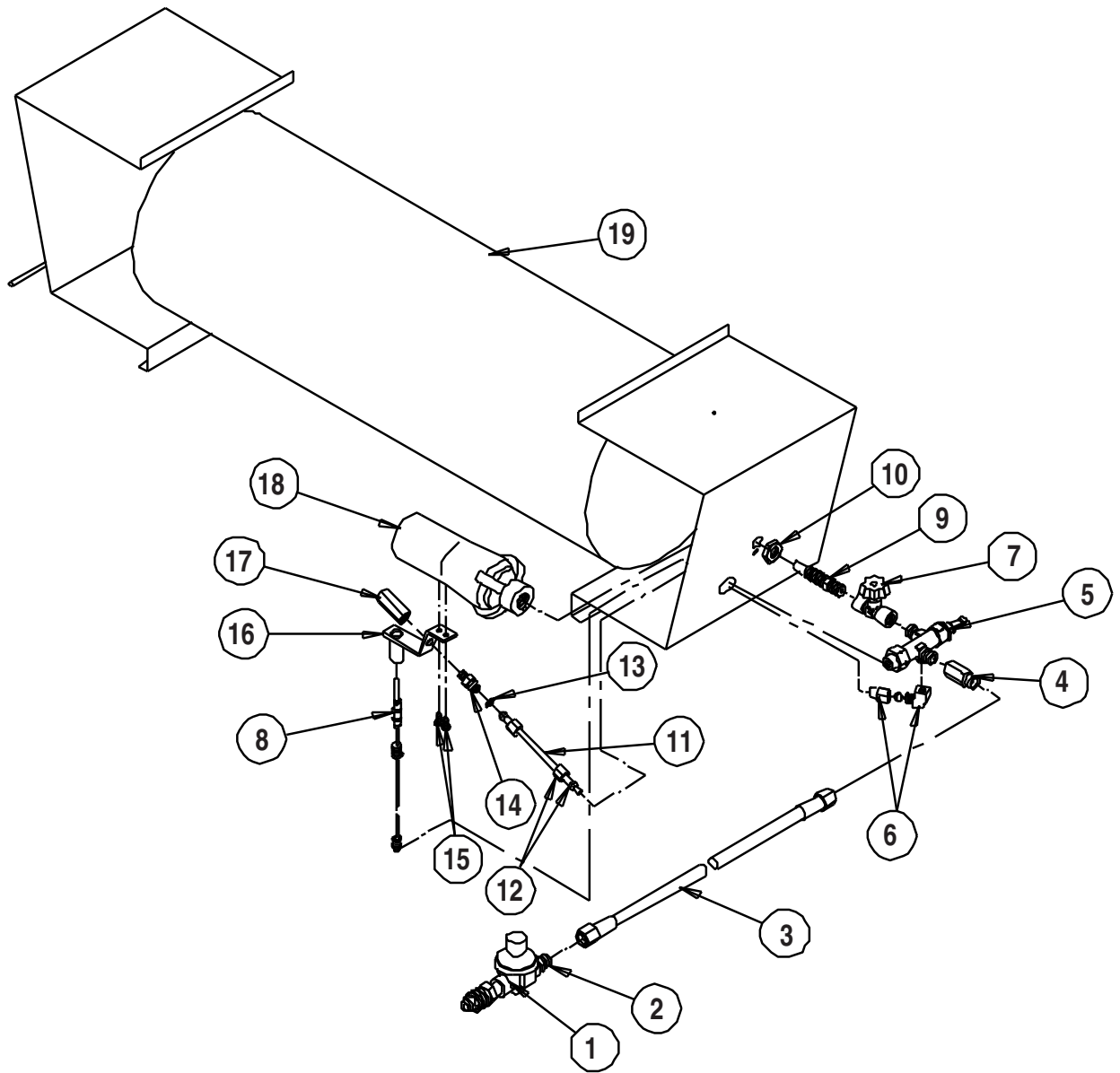
Regulator

The heart of any gas supply installation. Used to deliver a working pressure to the appliance under varying conditions in tank pressure.

Thermocouple

A thermoelectric device that converts heat energy directly into electrical energy. Works in conjunction with the electromagnet in the gas control valve thereby providing gas supply for the pilot light.

PARTS SCHEMATIC



Parts Identification

PARTS LIST

Item	Description	Part Number
1	Regulator	21788
2	Adapter, Hose	01098
3	Hose, 1/4 in. x 10 ft.	20242
4	Adapter, Hose	07970
5	Valve, Pilot Safety	07966
6	Ell w/nut and Sleeve	07968
7	Valve, Manual Burner	20229
8	Thermocouple	01090
9	Orifice Burner	01591
10	Jam Nut	09379
11	Tube, Pilot w/Nuts & Sleeves	07073
12	Nut and Sleeve	01168
13	Screen	01722
14	Orifice, Pilot w/ Screen	01230
15	Screw	01213
16	Bracket, Pilot	03202
17	Head, Pilot	01079
18	Burner, Casting	01337
19	Case, Assembly w/Labels	22337

Warranty Policy

HEATER

L.B. White Co., Inc. warrants that the component parts of its heater 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 24 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 heater, with a new part or heater, F.O.B., Onalaska, Wisconsin.

Registering your product online with L.B.White will automatically qualify a unit and its component parts for warranty consideration. If a product has not been registered with L.B.White, a copy of the bill of sale will be required to establish warranty qualification. If neither is available, the warranty period will be 24 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 **24 months from the date of purchase by the end user**. Warranty is automatic if a component is found defective within 24 months of the date code marked on the part. If the defect occurs more than 24 months later than the date code but within 24 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 states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Some states 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.

To register your product and ensure full warranty, go to <http://www.lbwhite.com/product-registration>. Please have the serial number(s) and model(s) handy for the products you are registering.

Replacement Parts and Service

Contact your local L.B. White dealer for replacement parts and service or call the L.B. White Co., Inc. at 1-800-345-7200

for assistance. Be sure that you have your heater model number and configuration number when calling.