

FOR YOUR SAFETY

If you smell gas:

1. Open windows.
2. **DO NOT** try to light any appliance.
3. **DO NOT** use electrical switches.
4. **DO NOT** use any telephone in your building.
5. Leave the building.
6. Immediately call your local gas supplier after leaving the building. Follow the gas supplier's instructions.
7. If you cannot reach your gas supplier, call the Fire Department.

⚠ WARNING



Fire Hazard

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

Some objects can catch fire or explode when placed close to heater.

Failure to follow these instructions can result in death, injury or property damage.

Combat[®]

UHD-Series Tubular Duct Furnace

Models UHD[X][S][R]
75, 100, 125, 150, 175, 200,
225, 250, 300, 350 & 400

Fuel Conversion Kit Instructions

⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can result in death, injury or property damage. Read the Installation, Operation and Service Manual thoroughly before installing or servicing this equipment.

Installation must be done by a contractor qualified in the installation and service of gas-fired heating equipment or your gas supplier.

Installer

Please take the time to read and understand these instructions prior to any installation. Installer must give a copy of this manual to the owner.

Owner

Keep this manual in a safe place in order to provide your serviceman with necessary information.



Quality in Any Language™

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Roberts-Gordon LLC

1250 William Street
P.O. Box 44
Buffalo, New York 14240-0044
Telephone: 716.852.4400
Fax: 716.852.0854
Toll Free: 800.828.7450

www.rg-inc.com

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SECTION 1: HEATER SAFETY



Your Safety is Important to Us!
This symbol is used throughout the manual to notify you of possible fire, electrical or burn hazards. Please pay special attention when reading and following the warnings in these sections.

Installation, service and annual inspection of heater must be done by a contractor qualified in the installation and service of gas-fired heating equipment.

Read this manual carefully before installation, operation or service of this equipment.

Heaters are not approved for residential installations. These instructions, the layout drawing, local codes and ordinances and applicable standards that apply to gas piping, electrical wiring, venting, etc. must be thoroughly understood before proceeding with the installation.

Protective gear is to be worn during installation, operation and service. Thin sheet metal parts, including the various venting components, have sharp edges. To prevent injury, the use of work gloves is recommended.

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

1.1 Manpower Requirements

To prevent personal injury and damage to the heater, two persons will be required for installation.

SECTION 2: INSTALLER RESPONSIBILITY

The installer is responsible for the following:

- To install the heater, as well as the gas and electrical supplies, in accordance with applicable specifications and codes. Roberts-Gordon recommends the installer contact a Local Building Inspector or Fire Marshal for guidance.
- To use the information given in a layout drawing and in the manual together with the cited codes and regulations to perform the installation.
- To install the heater in accordance with the clearances to combustibles.
- To furnish all needed materials not furnished as standard equipment.
- To plan location of supports, vents and air intakes.
- To provide access for servicing.
- To provide the owner with a copy of this Installation, Operation and Service Manual.
- To never use heater as support for a ladder or other access equipment and never hang or suspend anything from heater.
- To ensure there is adequate air circulation around the heater and to supply air for combustion, ventilation and distribution in accordance with local codes.
- To provide a method that ensures that the air flow through the heat exchanger is within the acceptable range indicated on the rating plate prior to energizing the heater, and that such air flow continues at least 90 seconds after the heater is de-energized.

2.1 Wall Tag

A laminated wall tag is included with the heater as a permanent reminder of the safety instructions and the importance of the required clearances to combustibles. Affix the tag by peeling off the backing of the adhesive strips on the rear surface and position the tag on a wall near the heater.

A copy of the wall tag (P/N 91039831) is illustrated on the back cover.

Know your model number. Model number is found on the heater and throughout the Installation, Operation and Service Manual.

2.2 Corrosive Chemicals

Caution: Do not use heater in an area containing corrosive chemicals. Avoid the use of corrosive chemicals to ensure a longer life of the burner, heat exchanger and other parts.

Roberts-Gordon cannot be responsible for ensuring that all appropriate safety measures are undertaken prior to installation; this is entirely the responsibility of the installer. It is essential that the contractor, the sub-contractor, or the owner identifies the presence of combustible materials, corrosive chemicals or halogenated hydrocarbons* anywhere in the premises.

** **Halogenated Hydrocarbons** are a family of chemical compounds characterized by the presence of halogen elements (fluorine, chlorine, bromine, etc.). These compounds are frequently used in refrigerants, cleaning agents, solvents, etc. If these compounds enter the air supply of the burner, the life span of the heater components will be greatly reduced. An outside air supply must be provided to the burners whenever the presence of these compounds is suspected. Warranty will be invalid if the heater is exposed to halogenated hydrocarbons.*

2.3 National Standards and Applicable Codes

All appliances must be installed in accordance with the latest revision of the applicable standards and national codes. This refers also to the electric, gas and venting installation. Note: Additional standards for installations in public garages, aircraft hangars, etc. may be applicable.

SECTION 3: FOR NATURAL TO PROPANE CONVERSIONS ONLY**FIGURE 1: Conversion Kit Regulator Installation in Valve (Natural to Propane)**

This appliance has been converted to _____ fuel.

Orifice: _____

Manifold Pressure: _____

Input: _____

Cet appareil a été converti au: _____

Injecteur: _____

Pression à la tubulure d'alimentation: _____

Débit calorifique: _____

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⚠ WARNING



Fire Hazard

Check conversion kit part number before proceeding.

Kit part number must match the corresponding model number.

Make sure kit contains parts listed in Section 3.1 below.

Failure to follow these instructions can result in death, injury or property damage.

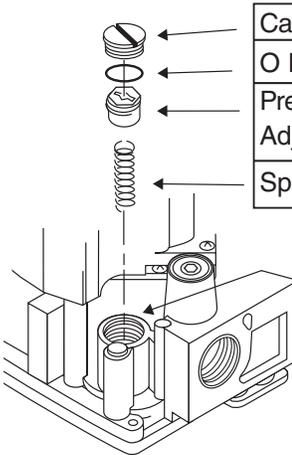
Gas Conversion Label: P/N 91039400



Orifice: P/N (See Section 3.1)

SPRING KIT: P/N 90032600
COLOR CODE FOR PROPANE

Cap Screw	Black
O Ring	Black
Pressure Regulator Adjusting Screw	White
Spring	Red



Pressure Regulator Housing

3.1 Contents of Fuel Conversion Kits (Natural to Propane)

All kits include this manual (P/N 213000NA) and the two Installation, Operation and Service Manuals (P/N 113000NA and 113001NA).

Kit Number	Model	Orifice P/N	Qty	Label	Spring Kit
UHD75NP	75	91930115	5	91039400	90032600
UHD100NP	100	91930125	6	91039400	90032600
UHD125NP	125	91930125	7	91039400	90032600
UHD150NP	150	91930135	7	91039400	90032600
UHD175NP	175	91930135	8	91039400	90032600
UHD200NP	200	91930054	9	91039400	90032600
UHD225NP	225	91930054	10	91039400	90032600
UHD250NP	250	91930054	11	91039400	90032600
UHD300NP	300	91930145	12	91039400	90032600
UHD350NP	350	91930053	14	91039400	90032600
UHD400NP	400	91930053	14	91039400	90032600

SECTION 4: FOR PROPANE TO NATURAL CONVERSIONS ONLY

FIGURE 2: Conversion Kit Regulator Installation in Valve (Propane to Natural)

This appliance has been converted to _____ fuel.

Orifice: _____

Manifold Pressure: _____

Input: _____

Cet appareil a été converti au: _____

Injecteur: _____

Pression à la tubulure d'alimentation: _____

Débit calorifique: _____

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⚠ WARNING

Fire Hazard

Check conversion kit part number before proceeding.

Kit part number must match the corresponding model number.

Make sure kit contains parts listed in Section 4.1 below.

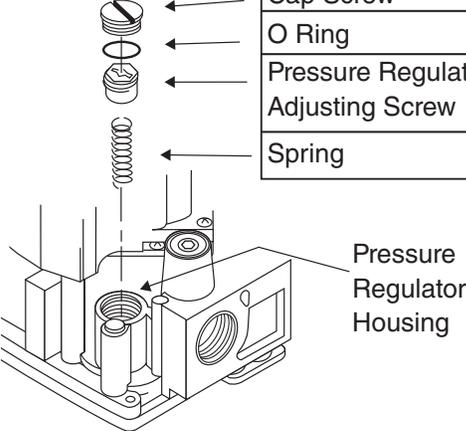
Failure to follow these instructions can result in death, injury or property damage.

Gas Conversion Label: P/N 91039400



SPRING KIT: P/N 90032700
COLOR CODE FOR NATURAL GAS

Cap Screw	Black
O Ring	Black
Pressure Regulator Adjusting Screw	White
Spring	Silver



Pressure Regulator Housing

Orifice: P/N (See Section 4.1)

4.1 Contents of Fuel Conversion Kits (Propane to Natural)

All kits include this manual (P/N 213000NA) and the two Installation, Operation and Service Manuals (P/N 113000NA and 113001NA)

Kit Number	Model	Orifice P/N	Qty	Label	Spring Kit
UHD75PN	75	91930049	5	91039400	90032700
UHD100PN	100	91930046	6	91039400	90032700
UHD125PN	125	91930046	7	91039400	90032700
UHD150PN	150	91930043	7	91039400	90032700
UHD175PN	175	91930043	8	91039400	90032700
UHD200PN	200	91930225	9	91039400	90032700
UHD225PN	225	91930225	10	91039400	90032700
UHD250PN	250	91930225	11	91039400	90032700
UHD300PN	300	91930040	12	91039400	90032700
UHD350PN	350	91930040	14	91039400	90032700
UHD400PN	400	91930040	14	91039400	90032700

SECTION 5: FUEL CONVERSION INSTRUCTIONS FOR MODELS 75 - 125

⚠ WARNING



Electrical Shock Hazard

Disconnect electrical and gas supply before servicing.

This appliance must be connected to a properly grounded electrical source.

Failure to follow these instructions can result in death or electrical shock.

Step 5.1 Disable the Heater

1. Turn off the gas supply valve.
2. Disconnect power to the heater.
3. Disconnect the nipple going into the heater from its source.

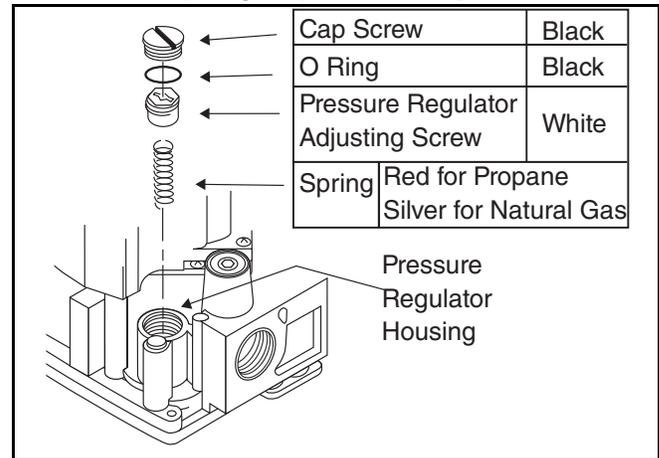
Step 5.2 Burner Removal

1. Remove the heater door. (The door may be allowed to hang on its grounding strap.)
2. If the heater is equipped with the sealed combustion option, disconnect the flexible air duct from the burner compartment cover and then remove the burner cover.
3. Remove the four screws holding the manifold and pull the manifold back to disengage the orifices from the burners.
4. Use a ½" open end wrench to remove the orifices. Apply a small amount of pipe sealant to the threads of the replacement orifices. Over-application of sealant may cause blockage of the orifices. Insert and tighten the replacement orifices. Do not over-tighten the orifices. (The torque value for the orifices is 15 inch-pounds.)
5. Being careful that the rubber grommet at the base of the manifold is properly engaged, realign the orifices with the burners and push the manifold inward until it rests on its mounting points. The burners may be supported at the

front while this is done. Re-install the four screws holding the manifold.

Step 5.3 Spring Replacement

FIGURE 3: Spring Replacement (Models 75 - 125)



1. Remove the cap from the gas valve/regulator with a flat blade screwdriver.
2. Turn the regulator adjustment screw counterclock-wise, remove and retain.
3. Remove and discard the spring from the regulator.
4. Install the spring supplied with this kit into the regulator. For models being converted to propane, the spring is red. For models, being converted to natural gas, the spring is stainless steel.
5. Reinstall the regulator adjustment screw. Turn adjustment screw five full turns clockwise.
6. Reconnect the pipe nipple going into the heater to its source.
7. Reinstall the burner cover.
8. Reconnect the flexible air duct if the heater is equipped with the sealed combustion option.
9. Remove test plug and connect a manometer to the test port connection.
10. Reconnect power to the heater.
11. Turn on the gas supply valve.

Step 5.4 Adjust Regulator

1. Turn up thermostat to call for heat.
2. When the burner lights, set the manifold gas pressure by turning the regulator adjustment screw clockwise to increase the pressure, counterclockwise to reduce the pressure. Set the pressure to the value given on *Page 11, Figure 10* for the model being converted.
3. Turn down the thermostat.
4. Disconnect power to the heater.
5. Disconnect the manometer from the test port and replace the test plug.

6. Replace the regulator cap.
7. Replace the heater door.
8. Reconnect power to the heater.

Step 5.5 Burner Conversion Label

1. Print the requested information in the fields of the burner conversion label as shown on *Page 12, Figure 11*.
2. Attach the burner conversion label as shown on *Page 9, Figure 8*.

FIGURE 4: Burner Compartment (Models 75 - 125)

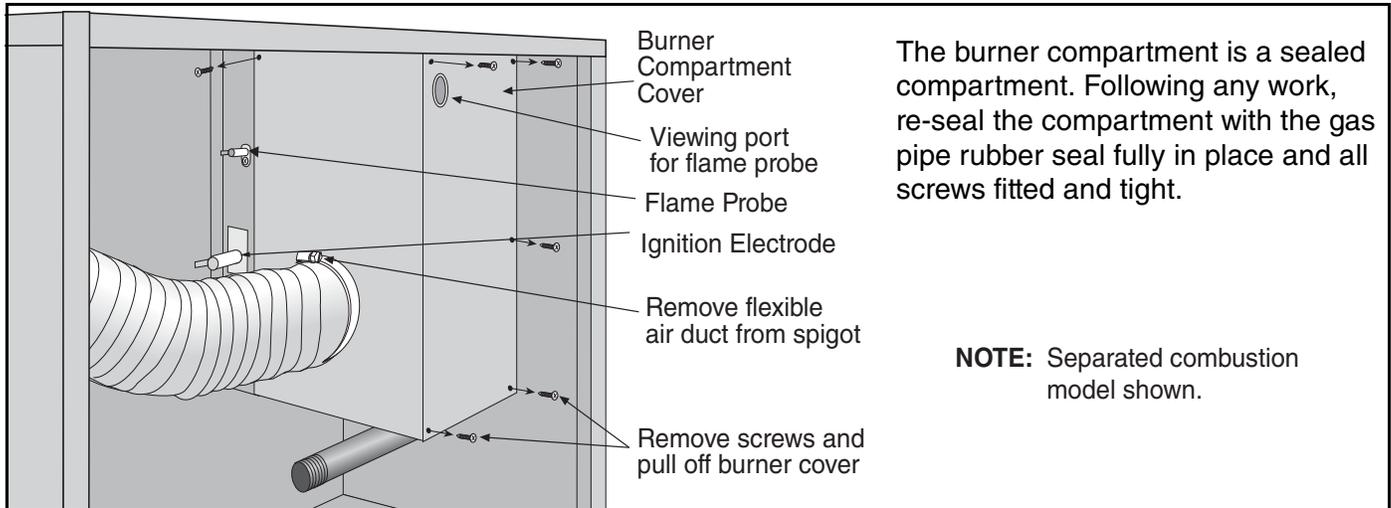
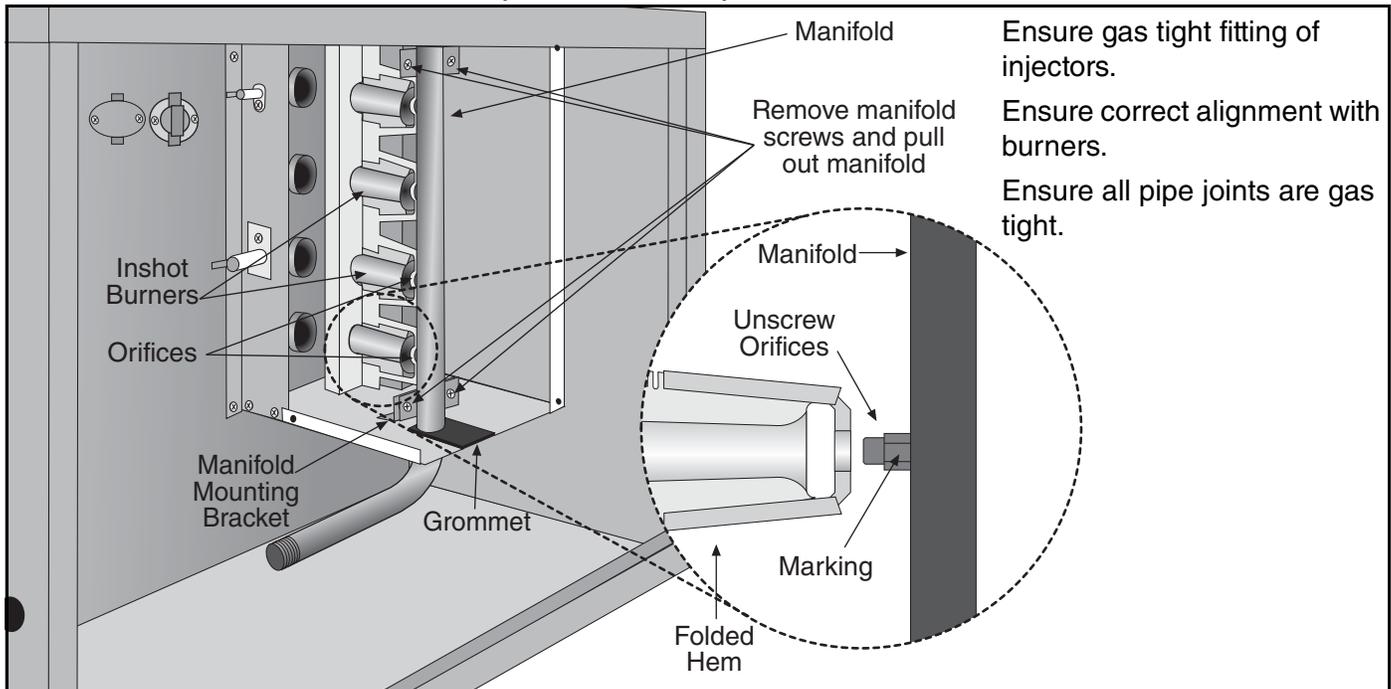


FIGURE 5: Internal View of Burners (Models 75 - 125)



SECTION 6: FUEL CONVERSION INSTRUCTIONS FOR MODELS 150 - 400

⚠ WARNING



Electrical Shock Hazard

Disconnect electrical and gas supply before servicing.

This appliance must be connected to a properly grounded electrical source.

Failure to follow these instructions can result in death or electrical shock.

Step 6.1 Disable the Heater

1. Turn off gas supply valve.
2. Disconnect power to the heater.

Step 6.2 Door Assembly Removal

1. Open and secure the heater door.
2. If the heater is equipped with the sealed combustion option, disconnect the flexible air duct from the burner compartment cover and then remove the burner cover.
3. Disconnect the ignition cable and the sense lead.
4. Remove the screws holding the Burner Mount 2. See Page 9, Figure 8, and place it aside.
5. Rotate and pull the individual burners to disengage them from the burner mount and the orifices. Place them aside.

IMPORTANT: Models 150 and 225 have a blank orifice in the top hole of the manifold.

Do not remove the blank orifice.

6. Use a ½" open end wrench to remove the orifices. Apply a small amount of pipe sealant to the threads of the replacement orifices, insert and tighten them. Over-application of sealant may cause blockage of the orifices. Do not over-tighten the orifices. (The torque value for the orifices is 15 inch-pounds.)
7. Reinstall the individual burners by slipping them over the orifices and pulling them back toward the manifold until the slots in the burners align with the tabs on the burner mount. Push them

into the burner mount.

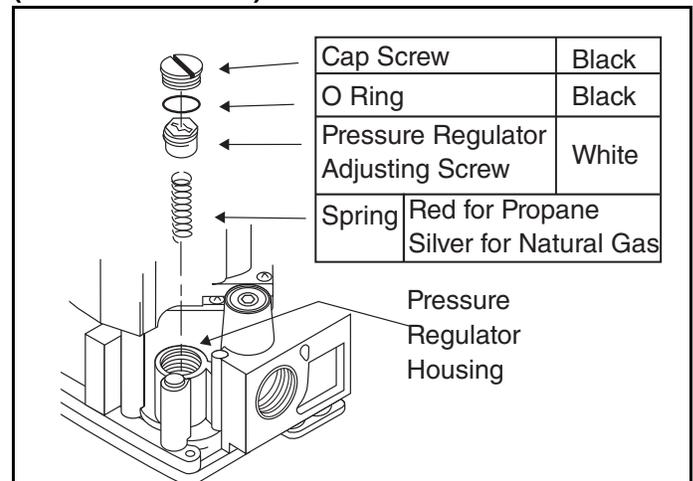
IMPORTANT: When reinstalling the burners that the folded hems all face in the same direction. See Page 9, Figure 8.

8. Reinstall the Burner Mount 2. Replace and tighten all screws.
9. Reconnect the ignition cable and sense lead.
10. Reinstall the burner cover and reconnect the flexible air duct if so equipped.

Step 6.3 Spring Replacement

1. Remove the cap from the gas valve/regulator with a flat blade screwdriver.
2. Turn the regulator adjustment screw counterclock-wise, remove and retain.
3. Remove and discard the spring from the regulator.

FIGURE 6: Spring Replacement (Models 150 - 400)



4. Install the spring supplied with this kit into the regulator. For models being converted to propane, the spring is red. For models being converted to natural gas, the spring is stainless steel.
5. Reinstall the regulator adjustment screw. Turn down approximately ½".
6. Remove test plug and connect a manometer to the test port connection.
7. Reconnect power to the heater.
8. Turn on the gas supply valve.

6.4 Adjust Regulator

1. Turn up thermostat to call for heat.
2. When the burner lights, set the manifold gas pressure by turning the regulator adjustment screw clockwise to increase the pressure, counterclockwise to reduce the pressure. Set the pressure to the value given on *Page 11, Figure 10* for the model being converted.
3. Turn down the thermostat.
4. Disconnect power to the heater.
5. Disconnect the manometer from the test port and replace the test plug.
6. Replace the regulator cap.
7. Secure the heater door.
8. Reconnect power to the heater.

FIGURE 7: Burner Compartment (Models 150 - 400)

The burner compartment is a sealed compartment. Following any work, re-seal the compartment with the gas pipe rubber seal fully in place and all screws fitted and tight.

NOTE: Separated combustion model shown.

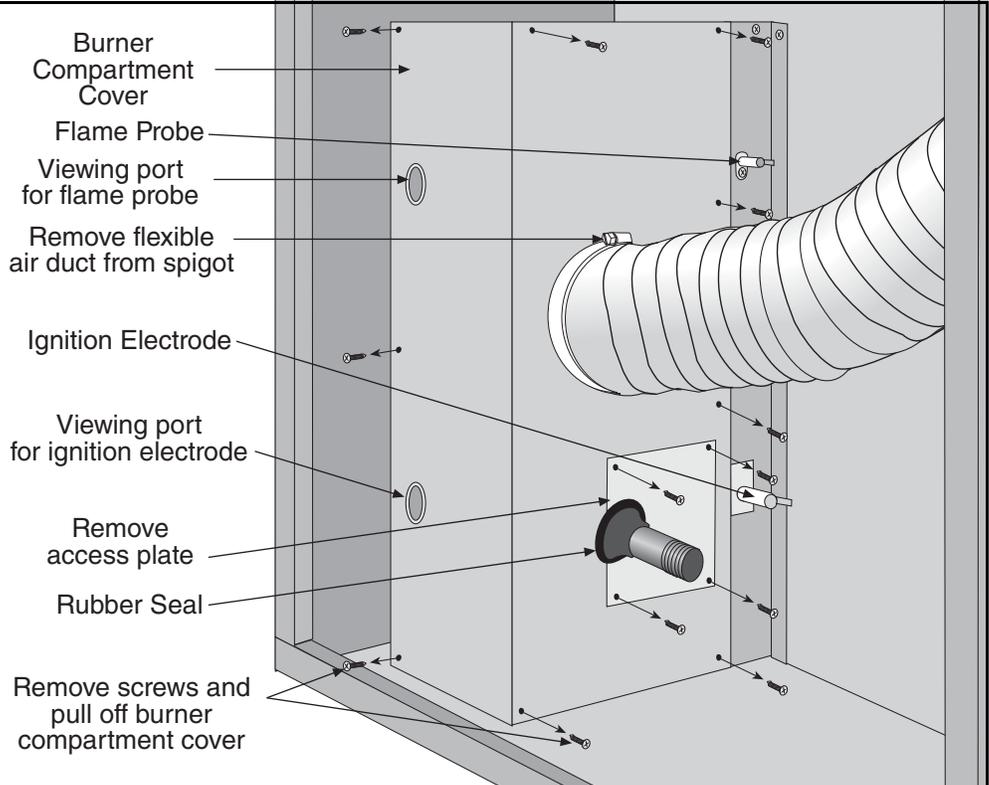


FIGURE 8: Internal View of Burner (Models 150 - 400)

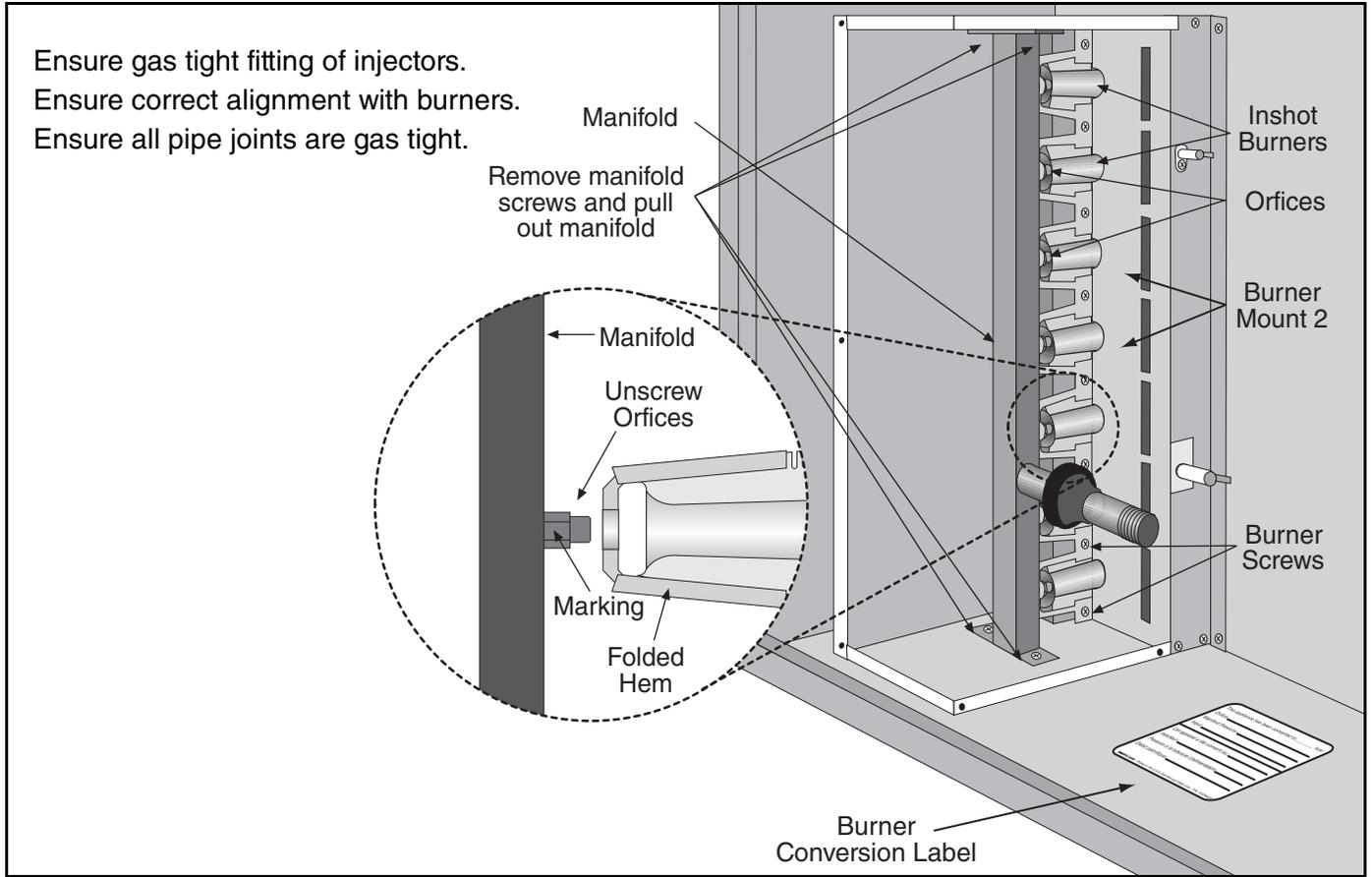
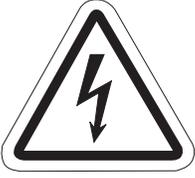


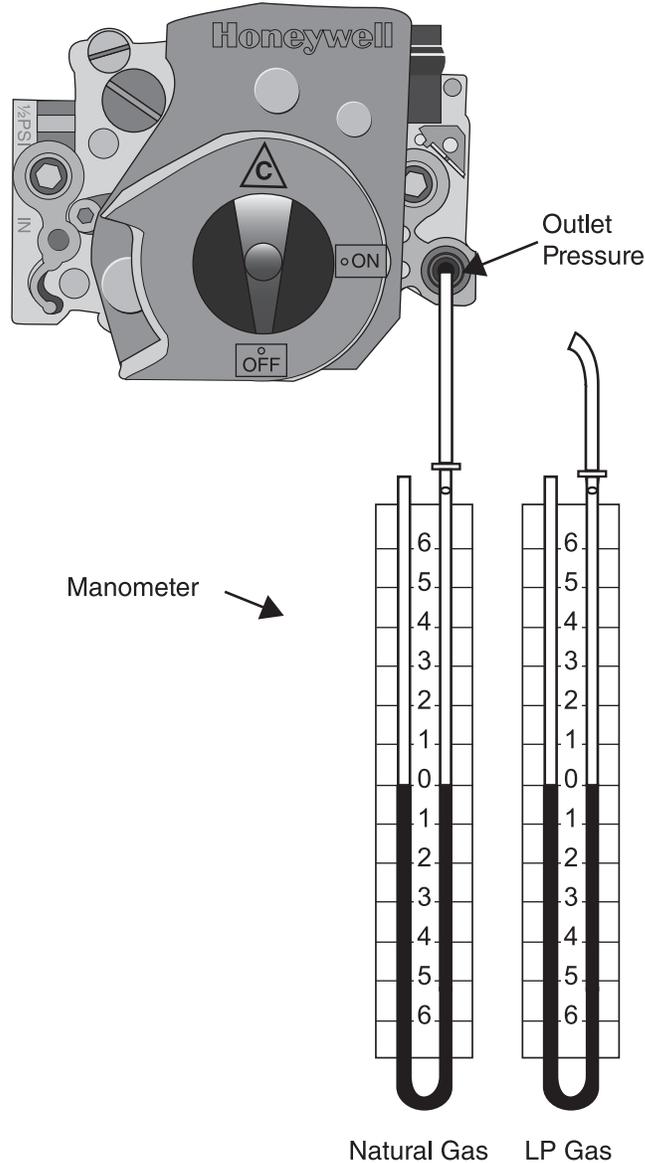
FIGURE 9: Manometer Reading

⚠ WARNING



Electrical Shock Hazard
Disconnect electrical and gas supply before servicing.
This appliance must be connected to a properly grounded electrical source.
Failure to follow these instructions can result in death or electrical shock.

Gas Valve for Models UHD[X][S][R] 75 - 400

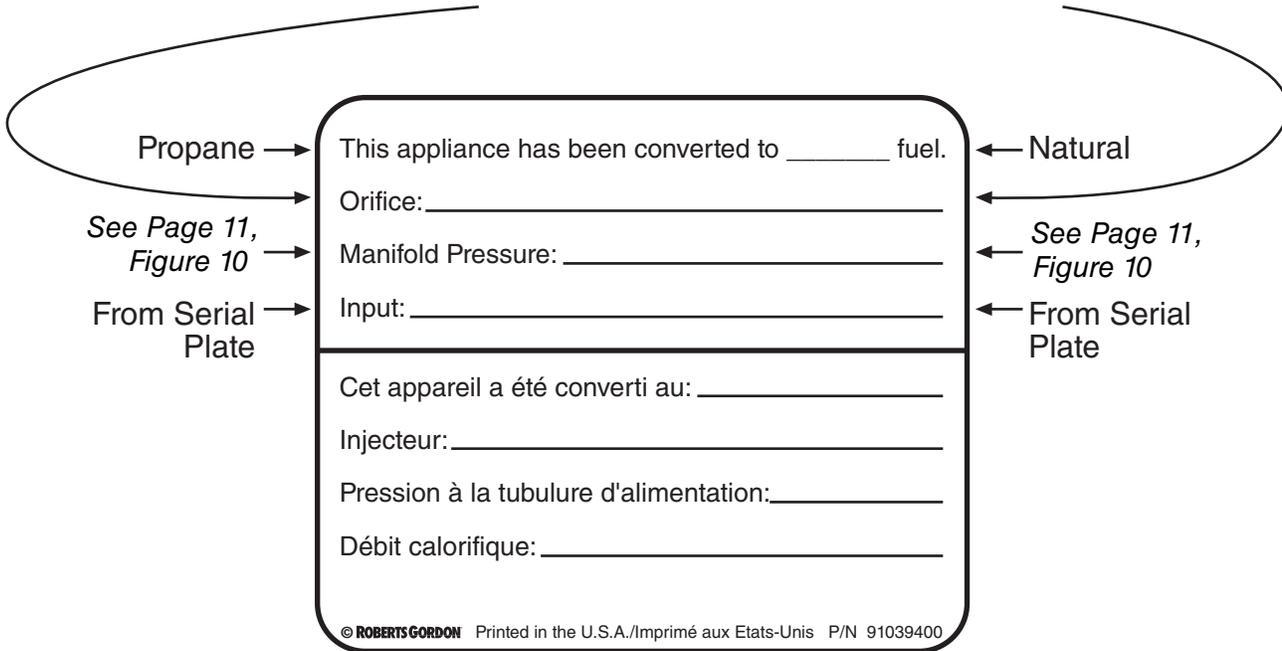


SECTION 7: MANIFOLD PRESSURES**FIGURE 10: Manifold Pressures**

Manifold Pressures by Model and Fuel		
Model	Natural Gas	Propane
75	3.5" wc	10.0" wc
100	2.6" wc	9.1" wc
125	3.3" wc	10.0" wc
150	3.2" wc	9.9" wc
175	3.4" wc	10.4" wc
200	3.7" wc	10.5" wc
225	3.7" wc	10.7" wc
250	4.0" wc	10.7" wc
300	2.7" wc	9.4" wc
350	2.5" wc	9.3" wc
400	3.3" wc	11.1" wc

FIGURE 11: Label P/N 91039400

Enter Data for Natural to Propane Conversions		Enter Data for Propane to Natural Conversions	
Model	Propane Orifice Size	Model	Natural Orifice Size
75	1.15 mm	75	#49
100	1.25 mm	100	#46
125	1.25 mm	125	#46
150	1.35 mm	150	#43
175	1.35 mm	175	#43
200	#54	200	2.25 mm
225	#54	225	2.25 mm
250	#54	250	2.25 mm
300	1.45 mm	300	#40
350	#53	350	#40
400	#53	400	#40



Step 7.1 Burner Conversion Label Information

Print the requested information in the fields of the burner conversion label as shown. See Page 12, Figure 11.

Step 7.2 Attach Burner Conversion Label

1. Attach the small yellow gas label (included in conversion kit) to the gas valve. Attach the conversion label (P/N 91039400) to the side of the burner housing top. See Page 9, Figure 8.
2. Replace the burner housing door.

SECTION 8: CRITICAL CONSIDERATIONS

8.1 Basic Information

UHD[X][S][R] heaters have automatic ignition burners for ON/OFF operation only.

8.2 Manufactured Units

Gas-fired, power-vented duct furnace with tubular heat exchanger. Units shall have a minimum of 82% thermal efficiency. The standard unit shall consist of a non-separated combustion design with an aluminized heat exchanger. Design and heat exchanger alternatives shall be offered as follows:

- **Separated Combustion:** A separated combustion unit shall feature an enclosed, sealed burner box. A piece of flexible air duct connects this burner box to a flange on the cabinet. Combustion air should be ducted from outside the heated space, with the ductwork connecting to the unit with the use of the flange.
- **Stainless Steel Heat Exchanger:** A stainless steel heat exchanger unit shall consist of heat exchanger tubes, heat exchanger tube supports, heat exchanger tube plates and vent box produced of 409 stainless steel.

8.3 Location and Suspension

All models:

- Must be installed indoors.
- Must be installed on the positive pressure side of the circulating air blower.
- Must be installed in a level position with horizontal discharge.
- May be mounted on a shelf of non-combustible material using shelf mounting brackets.
- May be suspended from above or from wall brackets of sufficient strength to support the heater. Drop rods must be a minimum of 3/8" diameter mild steel. Four suspension points (3/8" nuts) are located on top of the heater.
- Must be installed in a manner which allows access to all serviceable components.
See Page 13, Figure 12 through Page 13, Figure 13 for details.

8.4 Minimum Required Installation Clearances

Clearances around the heater and vent must be as indicated on Page 13, Figure 12 through Page 13, Figure 13 to ensure access for servicing, and correct operation.

8.5 Clearances to Combustibles



Clearances must be as indicated on Page 13, Figure 12 through Page 13, Figure 13. If clearances to combustibles are not indicated, then installation clearances apply.

FIGURE 12: Clearances to Combustibles (Models 75 - 125)

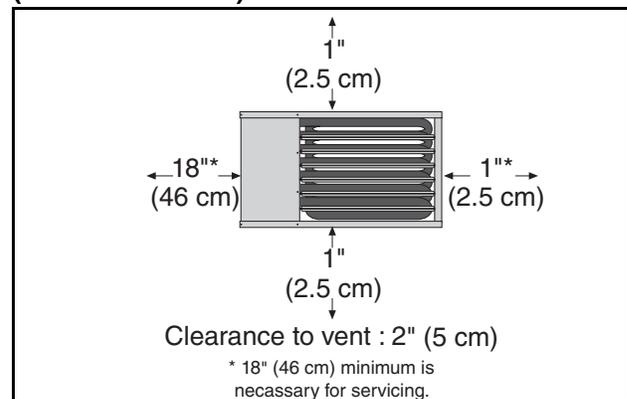
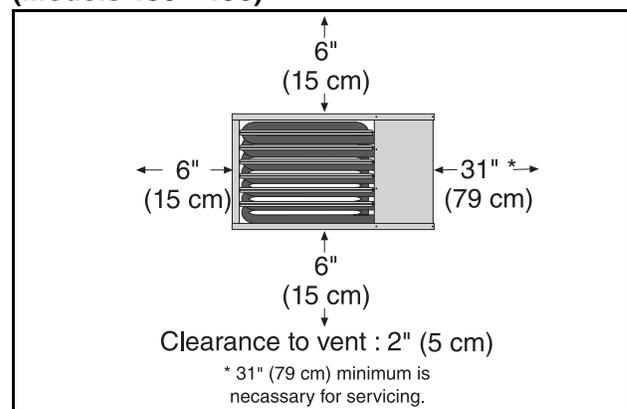


FIGURE 13: Clearances to Combustibles (Models 150 - 400)



8.6 Ventilation

⚠ WARNING	
	<p>Carbon Monoxide Hazard</p> <p>Vented heaters must be vented to the outdoors.</p> <p>Heaters installed unvented must be interlocked with sufficient building exhaust.</p> <p>Heaters must be installed according to the installation manual.</p> <p>Failure to follow these instructions can result in death or injury.</p>

It is important to ensure that there is adequate air space around the heater to supply air for combustion, ventilation and distribution in accordance with local and national codes.

8.7 Gas Supply

⚠ WARNING	
	
<p>Fire Hazard</p> <p>Connect gas supply according to installation, operation and service manual.</p> <p>Do not use gas supply pipe and electrical connections to support any of the heaters' weight.</p> <p>Gas can leak if not installed properly.</p> <p>Failure to follow these instructions can result in death, injury or property damage.</p>	

It is important that the gas supply pipe is sized correctly to provide the inlet pressure as stated on the heater data plate.

8.8 Electrical Supply

⚠ WARNING	
	
<p>Electrical Shock Hazard</p> <p>Disconnect electrical and gas supply before servicing.</p> <p>This appliance must be connected to a properly grounded electrical source.</p> <p>Failure to follow these instructions can result in death or electrical shock.</p>	

A permanent 120 V/1 Ø/60 Hz electrical supply is required for the main electrical power.

8.9 Vent

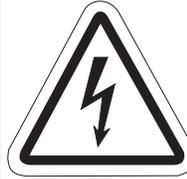
Choose heater orientation to allow for proper location of the vent. Each heater must be fitted with a correctly sized sealed vent system. If vented horizontally, no other appliance may be connected to the vent.

8.10 Separated Combustion Installation

For separated combustion installation, the vent and air intake must be fitted with an individual and correctly sized sealed system and the vent and air intake must terminate at approved wall and roof terminals.

Separated combustion units may not be common vented.

SECTION 9: OPERATION AND MAINTENANCE

⚠ WARNING		
		
Explosion Hazard		
<p>Installation, service and annual inspection must be done by a contractor qualified in the installation and service of gas-fired heating equipment or your gas supplier.</p> <p>Turn off gas and electrical supplies before performing service or maintenance.</p> <p>Failure to follow these instructions can result in death, injury or property damage.</p>		

Read this manual carefully before installation, operation, or service of this equipment. All components are accessed via the door secured by four sheet metal screws. Opening the door exposes live electrical connections and hot components.

9.1 Pre-Start-Up Checks

All pre-start-up checks must be carried out before lighting the heater.

Ensure that the heater and all controls are suitable for the gas, pressure and electrical supply to which they are to be connected.

9.1.1 Electrical Checks

All pre-start-up checks must be carried out before start-up of the heater.

1. Check that all site wiring is connected in accordance with the appropriate wiring diagram.

9.1.2 Gas Supply

All aspects of the gas installation including the gas meter must be inspected, tested for gas tightness and purged in accordance with local and national codes.

Ensure that the air is fully purged from the heater inlet pipe up to the main gas valve inlet test nipple.

9.1.3 Mechanical Checks

1. Check that the flue (and air intake for separated combustion units) is installed in accordance with these instructions and local regulations.

9.2 Begin Start-Up

9.2.1 Before Operating the Heater

To ensure that all the controls are in safe working order, operate the heater for the first time with the manual gas shut off cock in the closed position and power supply turned on.

1. Turn up the thermostat above room temperature. The automatic ignition sequence will now begin as described on Page 16, Figure 14.

There will be no ignition of the burner and lockout will occur, which proves the controls are operating correctly.

Figure 14: Automatic Burner Control Sequence

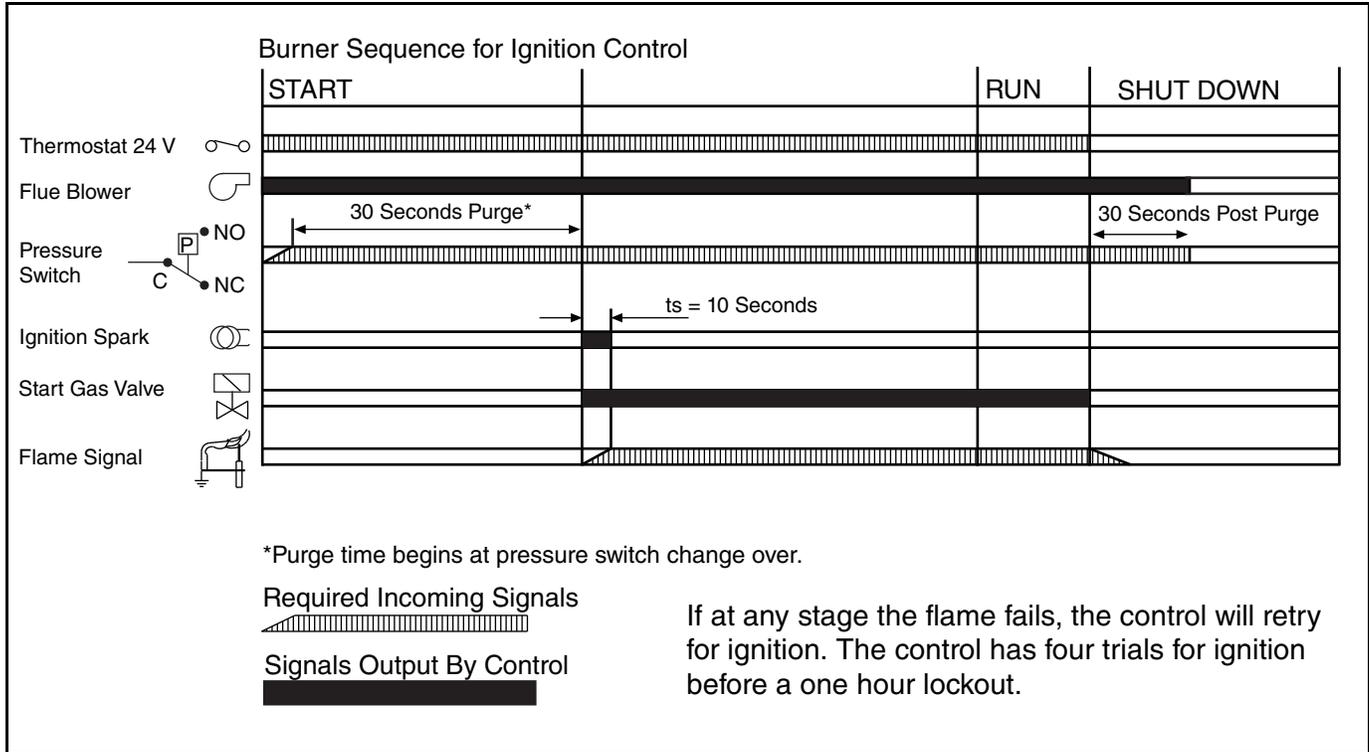
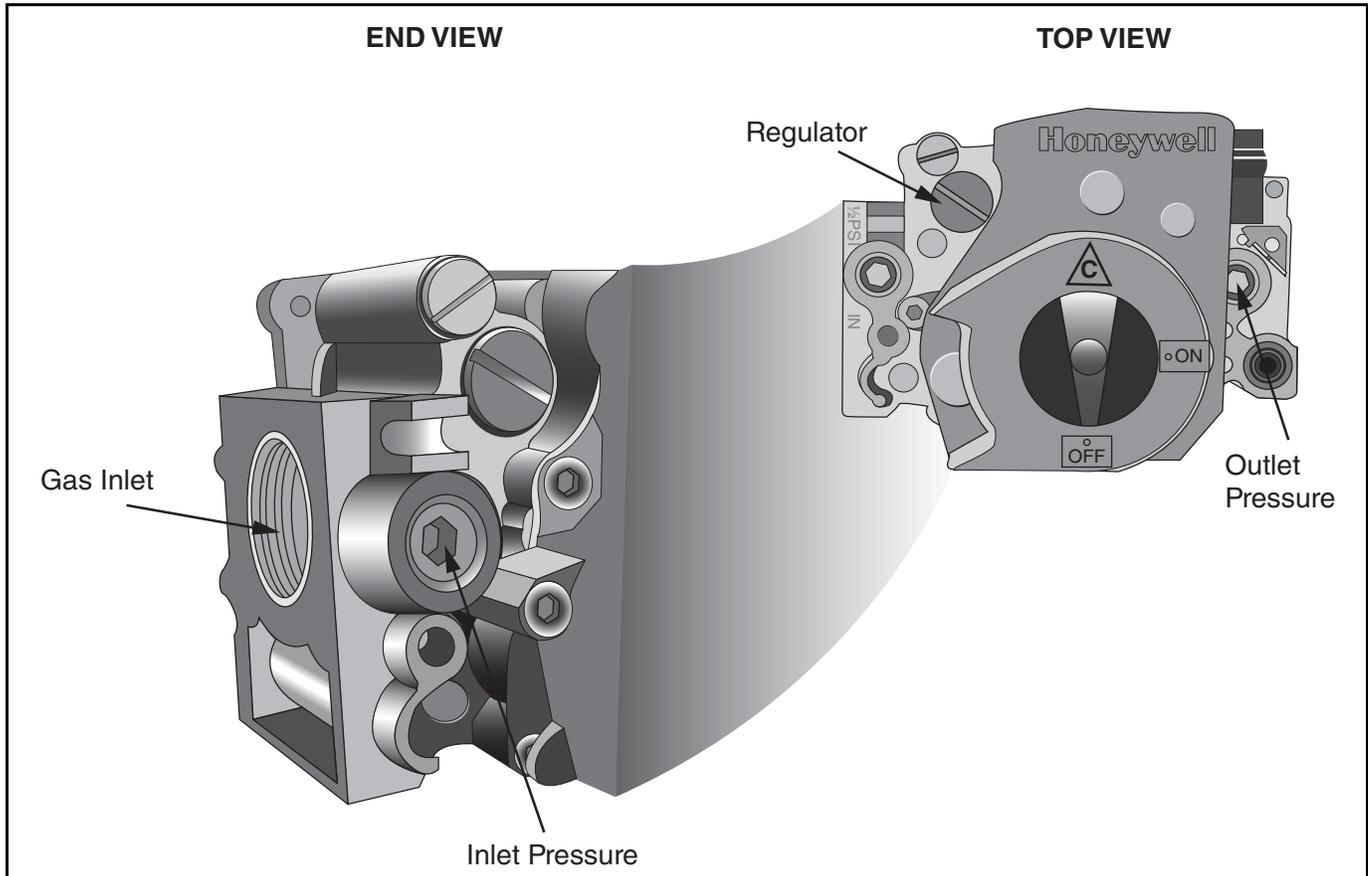


FIGURE 15: Gas Valve



9.2.1.1 Check Burner Gas Pressure

1. Remove the plug in the outlet (burner) pressure test point and connect a pressure tap and a manometer.
2. With the burner firing, measure the pressure on the manometer. To adjust the burner pressure, remove the regulator cover from the valve and turn the regulator adjustment screw to set the required burner pressure.

IMPORTANT: If the correct burner pressure cannot be reached, then check the inlet pressure to the valve with the burner firing.

Do not continue to adjust the regulator if the pressure is not changing.

If the inlet pressure is too low to allow correct burner pressure setting, then the gas inlet pressure must be corrected before completing the start-up.

Check Gas Rate

1. After burner pressure adjustment, allow the heater to operate for at least 15 minutes and then re-check settings. Adjust pressure setting if necessary.
2. Check gas flow rate at gas meter.
3. Turn off heater and electrical supply.
4. Remove the manometer and refit all covers to the valve and tighten the screw of the outlet pressure tap.

9.2.2 Pressure Switch

The pressure switch is factory pre-set for each model and is not adjustable.

9.2.3 Turning Off the Heater

Set the thermostat to the "OFF" position or lowest setting and the main burner will stop.

9.2.4 External Controls

External controls may include time switch, interlock switch, room thermostat and frost thermostat. Operate each control to ensure that they function correctly. Set the switches (if fitted) and thermostat(s) to the users' requirements.

9.3 Complete Start-Up

Ensure that all covers are fitted correctly and all test points are properly sealed.

9.3.1 Instruction to the User

Explain the controls of the heater to the user including how to turn it on and off, using the controls fitted on site.

Give this manual to the user.

Ensure that the user is shown and understands the importance of maintaining clearances to combustibles on *Page 13*, *Figure 12* and *Figure 13* and the user instructions, on *Page 18*, *Section 10* and all warnings defined in this manual.

SECTION 10: USER INSTRUCTIONS

⚠ WARNING



Explosion Hazard

Installation, service and annual inspection must be done by a contractor qualified in the installation and service of gas-fired heating equipment or your gas supplier.

Turn off gas and electrical supplies before performing service or maintenance.

Failure to follow these instructions can result in death, injury or property damage.

10.1 User Instructions

The UHD[X][S][R] Series heaters are fully automatic and operate from the external controls fitted on site. The only user control at the heater is the Manual Reset Limit Switch - See Page 18, Section 10.3.1.

10.2 Heater Operation

When the heater has been switched on by the thermostat installed on site, the main burner will automatically turn on. The burner control box will control the safe ignition of the flame. All heaters require a constant gas and electricity supply which must not be interrupted during the normal operation of this heater.

10.3 Common User Controls

10.3.1 Manual Reset Limit Switch

⚠ WARNING



Explosion Hazard

Do not make more than one attempt to restart the heater if manual reset limit switch locks out.

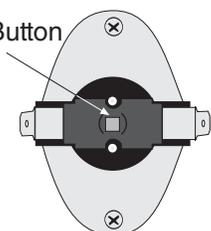
The vent or heat exchanger may be blocked.

The fault must be traced and repaired.

Failure to follow these instructions can result in death, injury or property damage.

The limit thermostat is located inside the access door of the heater. This control protects against excessive heat build-up inside the burner compartment.

FIGURE 16: Manual Reset Limit Switch (Models 75 - 125)



To reset manual reset limit switch, press reset button. **NOTE:** To reset, the switch must be cool.

Description	Part Number
Manual Reset Limit Switch	90412106

10.4 Lighting Instructions

10.4.1 To Turn On Heater

1. Ensure that the electrical and gas supplies to the heater are on. Check that the on site controls are "ON".

IMPORTANT: The thermostat setting must be above the ambient temperature for the heater to operate.

2. The automatic firing sequence will begin as described on Page 16, Figure 14. The heater will now operate automatically under the control of the on site controls.

10.4.2 To Turn the Heater Off

Set the thermostat to the “OFF” position.

The burner will turn off immediately.

To restart, turn the thermostat above room temperature.

10.5 Simple Troubleshooting

Some possible reasons for the heater not operating are:

1. Gas supply not “ON”
2. Electricity supply not “ON”
3. The time and/or temperature controls are not “ON”
4. A limit switch may have operated. This may be caused by an interruption of the electrical supply, failure of the distribution fan or vent or heat exchanger blockage.

If a temperature limit switch persistently trips, there is a fault which must be investigated by a contractor qualified in the installation and service of gas-fired heating equipment.

10.5.1 Simple Troubleshooting (Burner Faults)

If the burner fails to ignite for any reason, it will retry for ignition (four trials total). After four unsuccessful ignition trials, the control will put the heater into lockout for one hour.

Lockout should not occur during normal operation of the heater and indicates there is a fault condition which must be corrected. There is an LED light on the ignition control that flashes codes to assist in fault correction. See *Page 19, Figure 17* for LED indication codes.

FIGURE 17: LED Diagnostic Codes

LED INDICATION	FAULT MODE
Slow Flash	Normal Operation - No call for heat.
Fast Flash	Normal Operation - Call for heat.
2 Flashes	Ignition Lockout - No flame detected.
3 Flashes	Airflow Fault - Pressure switch open or closed.
4 Flashes	Temperature Limit or Manual Reset Limit Switch Open
5 Flashes	Flame Sense Error - Gas valve not energized.
Steady On	Internal Control Failure

SECTION 11: SERVICING



11.1 Servicing Instructions

After start-up, the heater will require maintenance to be carried out annually. If the heater is used in a dirty or dusty area, more frequent maintenance may be required.

IMPORTANT: After any maintenance or repair work, always test fire the heater in accordance with the start-up instructions to ensure all safety systems are in working order before leaving the heater to operate.

IMPORTANT: Check all gas pipes and pipe joints to ensure there are no cracks or gas leaks. Any cracks in the pipes or pipe joints must be repaired.

IMPORTANT: Inspect all suspended components and hardware. Ensure that they are in good condition, properly tightened, and corrosion free.

11.2 Burner Maintenance

1. Open the door and remove the burner compartment cover.
2. Clean any deposits from the main burner which may have formed in the injectors or venturi of the burner. *See Page 9, Figure 8.*
3. Remove the ignition electrode and flame probe. Check condition of ignition electrode and flame probe. Clean off any deposits which may have been formed, check condition of ceramic insulators. Replace as required.

11.3 Heat Exchanger Maintenance

The heat exchanger will remain clean unless a problem has developed with combustion. Inspect the heat exchanger. Look for signs of overheating at the front tubes which may indicate burner over firing or persistently low air flows.

11.4 Gas Valve Maintenance

No regular maintenance is required on this device.

Do not repair or disassemble gas valve.

Replace faulty gas valves with genuine replacement parts sold and supplied by Roberts-Gordon.

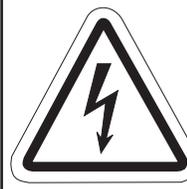
11.5 Flue Blower

The flue blower should not require maintenance. However, if the air pressure switch is causing burner lockout, then remove the flue blower from the vent box by unscrewing the three screws at the mounting plate. Remove the four screws attaching the mounting plate to the fan inlet. Ensure that the blower is free to run and that the blower wheel is clean.

11.6 Venting and Air Intake Pipe

Inspect all venting and air intake pipe. Ensure that all seams are sealed and suspension points secure. Repair suspension points if any part of the venting or combustion air pipe is sagging. Check to make sure any insulation is not missing or in poor condition. Replace as required. Check all venting and air intake components to ensure they are in good condition, gas tight and corrosion-free.

11.7 Maintenance Checklist

⚠ WARNING		
		
Explosion Hazard		
<p>Installation, service and annual inspection must be done by a contractor qualified in the installation and service of gas-fired heating equipment or your gas supplier.</p> <p>Turn off gas and electrical supplies before performing service or maintenance.</p> <p>Failure to follow these instructions can result in death, injury or property damage.</p>		

Installation Code and Annual Inspections: All installations and service of ROBERTS GORDON® equipment must be performed by a contractor qualified in the installation and service equipment sold and supplied by Roberts-Gordon and conform to all requirements set forth in the ROBERTS GORDON® manuals and all applicable governmental authorities pertaining to the installation, service and operation of the equipment. To help facilitate optimum performance and safety, Roberts-Gordon recommends that a qualified contractor annually inspect your ROBERTS GORDON® equipment and perform service where necessary, using only replacement parts sold and supplied by Roberts-Gordon.

The Vicinity of the Heater	<p>Do not store or use flammable objects, liquids or vapors near the heater. Immediately remove these items if they are present.</p> <p><i>See Page 13, Section 8.</i></p>
Vehicles and Other Objects	<p>Maintain the clearances to combustibles.</p> <p>Do not hang anything from, or place anything on, the heater.</p> <p>Make sure nothing is lodged in between the heat exchanger tubes.</p> <p>Immediately remove objects in violation of the clearances to combustibles.</p> <p><i>See Page 13, Section 8.</i></p>
Vent Pipe/Terminals	<p>Venting must be intact. Using a flashlight, look for obstructions, cracks on the pipe, gaps in the sealed areas or corrosion.</p> <p>The area must be free of dirt and dust.</p> <p>Remove any carbon deposits or scale using a wire brush.</p> <p>If the vent terminal has a screen built in, remove any dirt, dust or deposits from the screen.</p>
Combustion Air Intake Pipe	<p>Intake pipe and inlet must be intact. Look for obstructions, cracks on the pipe, gaps in the sealed areas or corrosion.</p> <p>The area must be free of dirt and dust.</p> <p>Clean and reinstall as required.</p>
Heat Exchanger	<p>Make sure there are no cracks.</p> <p>Make sure there is no sagging, bending or distortion.</p> <p>Clean or replace as required.</p>

Gas Line and Shut-off Valves	Check for gas leaks.
Burner Observation Window	Make sure it is clean and free of cracks or holes. Clean and replace as required.
Flue Blower Scroll, Wheel and Motor	Compressed air or a vacuum cleaner may be used to clean dust and dirt.
Inshot Burners and Orifices	Clear obstructions (even spider webs will cause problems). Carefully remove any dust and debris from the burner.
Direct-Spark Igniter	Replace if there are cracked ceramics, excessive carbon residue, or erosion of the electrode. The electrode gap should be 1/8" (3.2 mm).
Thermostat	There should be no exposed wire or damage to the device or wiring.
Suspension Points	Make sure the heater is hanging securely. Look for signs of wear on the suspension materials or ceiling.
Silicone Tubing	Ensure tight, secure fit on all pressure fittings at pressure switch, burner partition, and blower outlet.
Gas Valve	Verify that cap covering pressure regulator adjustment screw is secure and has not been tampered with. Verify all wiring connections.
Condensate Drain (when installed)	Flush drain and clear any obstructions.
Ductwork	Consult an indoor air quality professional for proper cleaning procedures.
Air Circulation Blower	For a complete inspection, refer to the manufacturers installation, operation and service manual.
Wall Tag	If a wall tag is present, make sure it is legible and accurate. Please contact Roberts-Gordon LLC or your ROBERTS GORDON® independent distributor if you need a wall tag. <i>See Page 2, Section 2.1.</i>

SECTION 12: THE ROBERTS GORDON® COMBAT® UHD-SERIES WARRANTY

ROBERTS-GORDON WILL PAY FOR:

Within 24 months from the date of purchase of heater by buyer or 27 months from the date of shipment by Roberts-Gordon (whichever comes first), replacement parts will be provided free of charge for any part of the product which fails due to a manufacturing or material defect.

Roberts-Gordon will require the part in question to be returned to the factory. Roberts-Gordon will, at its sole discretion, repair or replace after determining the nature of the defect and disposition of part in question.

ROBERTS GORDON® Replacement Parts are warranted for a period of 12 months from date of shipment from Roberts-Gordon or the remaining ROBERTS GORDON® COMBAT® UHD-Series warranty.

ROBERTS-GORDON WILL NOT PAY FOR:

Service trips, service calls and labor charges.

Shipment of replacement parts.

Claims where the total price of the goods have not been paid.

Damage due to:

- Improper installation, operation or maintenance.
- Misuse, abuse, neglect, or modification of the ROBERTS GORDON® COMBAT® UHD-Series in any way.
- Use of the ROBERTS GORDON® COMBAT® UHD-Series for other than its intended purpose.
- Incorrect gas or electrical supply, accident, fire, floods, acts of God, war, terrorism, or other casualty.
- Improper service, use of replacement parts or accessories not specified by Roberts-Gordon.
- Failure to install or maintain the ROBERTS GORDON® COMBAT® UHD-Series as directed in the Installation, Operation and Service manual.
- Relocation of the ROBERTS GORDON® COMBAT® UHD-Series after initial installation
- The use of the ROBERTS GORDON® COMBAT® UHD-Series in a corrosive atmosphere containing contaminants.
- The use of the ROBERTS GORDON® COMBAT® UHD-Series in the vicinity of a combustible or explosive material.
- Any defect in the ROBERTS GORDON® COMBAT® UHD-Series arising from a drawing, design, or specification supplied by or on behalf of the consumer.
- Damage incurred during shipment. Claim must be filed with carrier.

WARRANTY IS VOID IF:

The ROBERTS GORDON® COMBAT® UHD-Series is not installed by a contractor qualified in the installation and service of gas-fired heating equipment.

You cannot prove original purchase date and required annual maintenance history.

The data plate and/or serial number are removed, defaced, modified or altered in any way.

The ownership of the ROBERTS GORDON® COMBAT® UHD-Series is moved or transferred. This warranty is nontransferable.

Roberts-Gordon is not permitted to inspect the damaged controller and/or component parts.

READ YOUR INSTALLATION, OPERATION AND SERVICE MANUAL

If you have questions about your controller, contact your installing professional. Should you need Replacement Parts or have additional questions, call or write Roberts-Gordon:

U.S.A.

1250 William Street

P.O. Box 44

Buffalo, New York 14240-0044

716.852.4400

On the web at: www.rg-inc.com

Roberts-Gordon's liability, and your exclusive remedy, under this warranty or any implied warranty (including the implied warranties of merchantability and fitness for a particular purpose) is limited to providing replacement parts during the term of this warranty.

Some jurisdictions do not allow limitations on how long an implied warranty lasts, so this limitation may not apply to you. There are no rights, warranties or conditions, expressed or implied, statutory or otherwise, other than those contained in this warranty.

Roberts-Gordon shall in no event be responsible for incidental or consequential damages or incur liability for damages in excess of the amount paid by you for the ROBERTS GORDON® COMBAT® UHD-Series. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this 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 jurisdiction to jurisdiction.

Roberts-Gordon shall not be responsible for failure to perform under the terms of this warranty if caused by circumstances out of its control, including but not limited to war, fire, flood, strike, government or court orders, acts of God, terrorism, unavailability of supplies, parts or power. No person is authorized to assume for Roberts-Gordon any other warranty, obligation or liability.

LIMITATIONS ON AUTHORITY OF REPRESENTATIVES:

No representative of Roberts-Gordon, other than an Executive Officer, has authority to change or extend these provisions. Changes or extensions shall be binding only if confirmed in writing by Roberts-Gordon's duly authorized Executive Officer



OWNER WARRANTY REGISTRATION CARD

Mail or Fax to:
Roberts Gordon LLC • 1250 William Street, P.O. Box 44 • Buffalo, NY 14240-0044 • Phone: 716-852-4400 • Fax: 716-852-0854
Toll Free: 800-828-7450 • www.rg-inc.com

About the Owner:

Name: _____
Address: _____ City: _____ State: _____ Zip Code: _____
Phone: _____ Fax: _____ E-mail: _____

About the Installer:

Name: _____
Address: _____ City: _____ State: _____ Zip Code: _____
Phone: _____ Fax: _____ E-mail: _____

Purchased From (if different than installer):

Name: _____
Address: _____ City: _____ State: _____ Zip Code: _____
Phone: _____ Fax: _____ E-mail: _____

About your Heater:

Model#: _____ Serial #: _____ Fuel: _____ Installation Date: _____

Type of Installation (check one):

- Automotive Manufacturing Warehouse Recreational Aircraft
- Public Building Office Retail Agricultural Other _____

Installation Code and Annual Inspections: All installations and service of ROBERTS GORDON® equipment must be performed by a contractor qualified in the installation and service of equipment sold and supplied by Roberts-Gordon and conform to all requirements set forth in the ROBERTS GORDON® manuals and all applicable governmental authorities pertaining to the installation, service and operation of the equipment.

To help facilitate optimum performance and safety, Roberts-Gordon recommends that a qualified contractor annually inspect your ROBERTS GORDON® equipment and perform service where necessary, using only replacement parts sold and supplied by Roberts-Gordon.

These products are not approved for residential use.

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Attach this information to the wall near the ROBERTS GORDON® heater



Read the Installation, Operation and Service Manual thoroughly before installation, operation or service.

OPERATING INSTRUCTIONS

1. STOP! Read all safety instructions on this information sheet.
2. Open the manual gas valve in the heater supply line.
3. Turn on electric power to the heater.
4. Set the thermostat to desired setting (above ambient temperature).
The automatic starting sequence begins.

TO TURN OFF THE HEATER

1. Turn the thermostat/time switch to 'OFF' or lowest setting. The burner will turn 'OFF' immediately, but fans will continue to cool heat exchanger until the fan thermostat switches off.

IF THE HEATER WILL NOT OPERATE, TO ENSURE YOUR SAFETY, FOLLOW THESE INSTRUCTIONS TO SHUT DOWN YOUR HEATER

1. Set the thermostat to off or the lowest setting.
2. Turn off electric power to the heater.
3. Turn off the manual gas valve in the heater supply line.
4. Call your installer/contractor qualified in the installation and service of gas-fired heating equipment.

⚠ WARNING



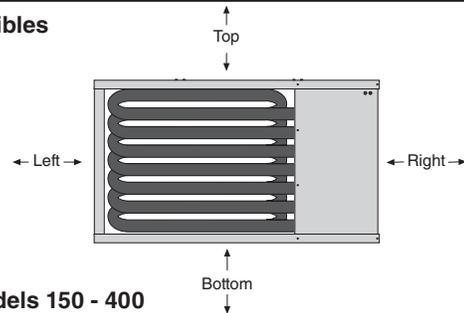
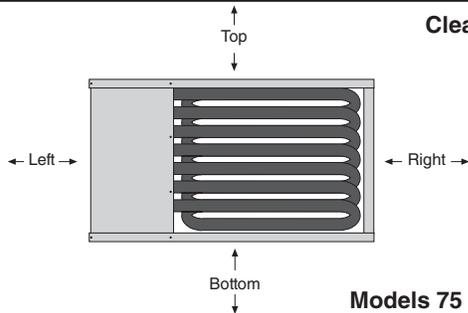
Fire Hazard

Some objects can catch fire or explode when placed close to heater.

Keep all flammable objects, liquids and vapors the required clearances to combustibles away from heater.

Failure to follow these instructions can result in death, injury or property damage.

Clearances to Combustibles



Models	75 - 125	150 - 400
Top	1"	6"
Bottom	1"	6"
Right	1"	31"*
Left	18"*	6"
Vent	2"	2"

* Clearance needed for servicing.

Roberts-Gordon LLC
1250 William Street
P.O. Box 44
Buffalo, NY 14240-0044 USA
Telephone: 716.852.4400
Fax: 716.852.0854
Toll Free: 800.828.7450

Installation Code and Annual Inspections:

All installation and service of ROBERTS GORDON® equipment must be performed by a contractor qualified in the installation and service of equipment sold and supplied by Roberts-Gordon and conform to all requirements set forth in the ROBERTS GORDON® manuals and all applicable governmental authorities pertaining to the installation, service and operation of the equipment. To help facilitate optimum performance and safety, Roberts-Gordon recommends that a qualified contractor conduct annual inspections of your ROBERTS GORDON® equipment and perform service where necessary, using only replacement parts sold and supplied by Roberts-Gordon.

For installations at elevations above 2000' (610 m), the appliance shall be derated 4% for each 1000' (305 m) of elevation above sea level.

Further Information: Applications, engineering and detailed guidance on systems design, installation and equipment performance is available through ROBERTS GORDON® representatives. Please contact us for any further information you may require, including the Installation, Operation and Service Manual.

This product is not for residential use.