

GENERATION 2 QUADRATHERM® Heater

FOR YOUR SAFETY

If you smell gas:

- 1. Open Windows**
- 2. Do not touch electrical switches**
- 3. Extinguish any open flames**
- 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

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CTB, Inc. warrants each new product manufactured by it to be free from defects in material or workmanship for one (1) year from and after the date of initial installation by or for the original purchaser. If such a defect is found by Manufacturer to exist within the one-year period, the Manufacturer will, at its option, (a) repair or replace such product free of charge, F.O.B. the factory of manufacture, or (b) refund to the original purchaser the original purchase price, in lieu of such repair or replacement. Labor costs associated with the replacement or repair of the product are not covered by the Manufacturer.

Conditions and Limitations

1. The product must be installed by and operated in accordance with the instructions published by the **Manufacturer or Warranty will be void.**
2. Warranty is void if **all components** of the system are not original equipment supplied by the **Manufacturer.**
3. This product must be purchased from and installed by an authorized distributor or installer or a certified representative thereof **or the Warranty will be void.**
4. Malfunctions or failure resulting from misuse, abuse, negligence, alteration, accident, or lack of proper maintenance, or from lightning strikes, electrical power surges or interruption of electricity, shall not be considered defects under the Warranty.
5. This Warranty applies only to systems for the care of poultry and livestock. Other applications in industry, commerce, or residential applications are not covered by this Warranty and are **strictly prohibited.** Any such use **will void the Warranty.**

Manufacturer shall not be liable for any **Consequential or Special Damage** which any purchaser may suffer or claim to suffer as a result of any defect in the product. *“Consequential” or “Special Damages” as used herein include, but are not limited to, lost or damaged products or goods, costs of transportation, lost sales, lost orders, lost income, increased overhead, labor and incidental costs and operational inefficiencies.*












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Distributors are not authorized to modify or extend the terms and conditions of this Warranty in any manner or to offer or grant any other warranties for the products in addition to those terms expressly stated above. An officer of the Manufacturer must authorize any exceptions to this Warranty in writing. Manufacturer reserves the right to change models and specifications at any time without notice or obligation to improve previous models.

Effective 08/08

Chore-Time Equipment
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WARNING!
**SERIOUS PERSONAL INJURY AND/OR DEATH MAY RESULT FROM USE OF THIS HEATER IN
AN UNVENTILATED BUILDING OR IN HUMAN LIVING AREAS.**

-  Do not use the heater to heat human living areas. The intended use of the heater is to provide warmth for poultry and hog buildings
-  Use only the type of gas being supplied to the unit as marked on it (Propane or Natural Gas). Do not operate with improper fuel.
-  Before each use, a visual inspection of the heater is essential to insure safety and satisfactory heating. Replace or repair defective components before operating heater. Failure to do so will void warranty and could result in injury and property damage.
-  **WARNING:** Improper installation, adjustments, alteration, service or maintenance could cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.
-  **WARNING:** Failure to follow WARNINGS in this manual could result in serious injury or significant property damage.
-  Before lighting, sniff all around the appliance area for a gas odor. Be sure to sniff next to the floor because propane gas is heavier than air and may temporarily exist at floor level.
-  **DO NOT ALLOW POWER CORDS AND/OR GAS SUPPLY HOSES TO REST ON THE CANOPY, HANGING BRACKETS OR OTHER HOT SURFACES OF THE UNIT OR TO COME WITHIN 12" OF THE HEATER.**
-  **DSI UNITS MUST BE PROPERLY GROUNDED. DO NOT ALTER ELECTRICAL CORD.**
-  Plug in the three-prong power cord to a correctly grounded three-prong electrical outlet.
-  The installation of this appliance must in all cases conform with local and national building codes or in the absence of local codes with the current National Fuel Gas Code ANSI Z223.1/NFPA 54, or the Natural Gas and Propane Installation Codes, CSA B149.1 and B149.2.
-  Heaters must be electrically grounded in accordance with the National Electrical Code, ANSI/NFPA 70 or the current Canadian Electrical Code, CSA C22.1. Polarity of Line voltage and neutral wires must be maintained. The total load of all heaters in a circuit must be considered for overload control of that circuit. Power supply must have earth ground.

**THESE INSTRUCTIONS SHOULD BE LEFT WITH THE APPLIANCE AND THE USER TO RETAIN
FOR FUTURE REFERENCE.**

**READ THESE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING, USING OR SERVICING
THIS EQUIPMENT.**

QUADRADIANT

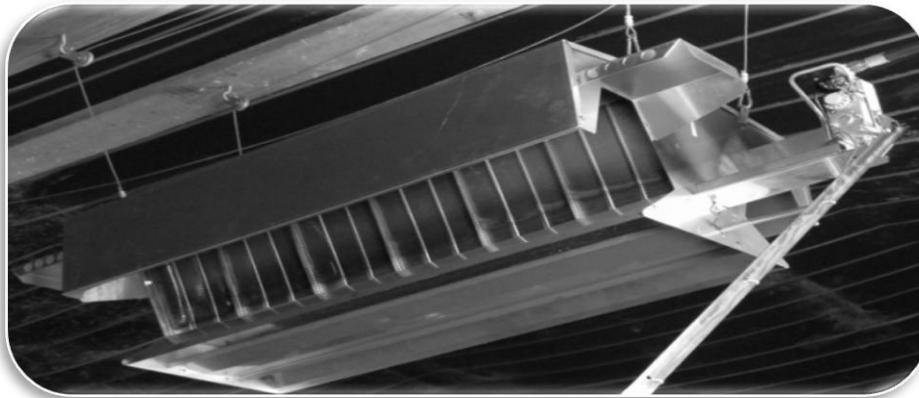
80,000 BTU Heater (74,000 BTU – High Altitude)
Low Pressure (11"WC at Heater)
Pilot Ignition



WARNING:

During normal operation, the surfaces of the unit become very hot. It is VERY IMPORTANT that the power cords and gas supply hoses DO NOT TOUCH or REST ON ANY surface of the unit or to come within 12" of the heater.

The area directly above the unit becomes hot during normal operation of the heater. DO NOT install electrical wiring, water lines or conduit above the heater.
DO NOT run gas supply hoses above the heater.



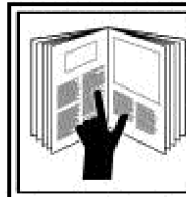
DO NOT ALLOW ANYONE WHO HAS NOT READ THESE INSTRUCTIONS TO INSTALL, ASSEMBLE, LIGHT, ADJUST OR OPERATE THIS HEATER.

THIS HEATER IS TO BE INSTALLED BY CERTIFIED INSTALLERS ONLY.

ONLY PERSONS WHO CAN UNDERSTAND AND FOLLOW THESE INSTRUCTIONS SHOULD USE OR SERVICE THIS HEATER.

HEATER IS SHIPPED PRE-ASSEMBLED
TOOLS REQUIRED FOR INSTALLING HEATER:

3/4" wrench for tightening gas connections.
11/16" wrench
2 Pipe wrenches



WARNING

Failure to read and understand operator's manual and all safety signs could result in serious injury. Manual must remain with equipment.



⚠ WARNING ⚠

**11 ¼" WC MAXIMUM OUTLET PRESSURE.
GAS PRESSURE EXCEEDING 11 ¼" MAY VOID WARRANTY.
USE THREADED GAS CONNECTIONS ONLY.
HEATER MUST BE CONNECTED TO GAS SUPPLY USING THE
DRIP LEG, HOSE AND CONNECTORS PROVIDED WITH THE
UNIT BY THE MANUFACTURER.**



**ALLOW HEATING UNIT TO COOL
BEFORE WINCHING, CLEANING
OR SERVICING.**

**DO NOT ALLOW GAS HOSES OR
POWER CORDS TO TOUCH HOT
SURFACE.**

**DO NOT TOUCH HOT
EMITTER PANELS.**



**BEFORE USING HEATER CHECK
ALL FITTINGS AND
CONNECTIONS FOR LEAKS.**

**DO NOT USE OPEN FLAME TO
CHECK FOR LEAKS.**

**USE SOAP AND WATER TO
CHECK FOR LEAKS.**



THE STATE OF CALIFORNIA REQUIRES THE FOLLOWING WARNING:

WARNING;

Combustion by-products produced when using this product contain carbon monoxide, a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm).



CAUTION:

This appliance is hot during normal operation. Avoid physical contact.



DANGER:

Do not attempt to clean the heater while it is operating or while it is still hot.

QuadRadiant® Heater Installation Checklist

Installation topics	Checkmark below
<p>1. Gas Pressure at Heater</p> <p>Q. Have you verified that your gas pressure at the heater is 10¼" WC-LP Gas Maximum?</p> <p>A. See page 15 in the installation and operation manual.</p>	
<p>2. Gas Hoses and Power Cords</p> <p>Q. Are your gas hoses and power cords positioned properly away from heater?</p> <p>A. See page 8, 9, 14 in the installation and operation manual.</p>	
<p>3. Purging the Gas Lines</p> <p>Q. Before attaching the hose, have you purged all gas lines?</p> <p>A. See page 7, 15 in the installation and operation manual.</p>	
<p>4. Drip Leg</p> <p>Q. Have you installed a drip leg or sediment trap for each heater?</p> <p>A. See page 7 in the installation and operation manual.</p>	
<p>5. Floor and Ceiling Clearance</p> <p>Q. Are your heaters the correct distance from the floor and ceiling?</p> <p>A. See page 9, 10 in the installation and operation manual.</p>	
<p>6. Heat Shields</p> <p>Q. Have you installed all the heat shields on all of the heaters?</p> <p>A. See page 11, 12 in the installation and operation manual.</p>	
<p>7. Sensor Location</p> <p>Q. Have you positioned your temperature sensor correctly?</p> <p>A. See page 16 in the installation and operation manual.</p>	
<p>8. Hanging</p> <p>Q. Are your heaters' hanging points positioned properly, and are all heaters hanging level?</p> <p>A. See page 13 in the installation and operation manual.</p>	
<p>9. Air Movement</p> <p>Q. Have you ensured that there will be no direct air blowing on the heaters?</p> <p>A. See page 8, 9 in the installation and operation manual.</p>	
<p>10. Cleaning</p> <p>Q. Have you established a cleaning schedule for the heaters and orifices?</p> <p>A. See page 17 in the installation and operation manual.</p>	
<p>11. Cleaning</p> <p>Q. Have you established a cleaning schedule for the heaters and orifices?</p> <p>A. See page 17 in the installation and operation manual.</p>	

This checklist provides only a limited set up and operational information. Reference the complete installation & operating manual for the QuadRadiant heater to familiarize yourself with all operational risks and requirements in their entirety. Failure to follow complete installation & operation instructions contained in the product manual(s) shall be considered misuse of the product and could result in personal injury and/or property damage.

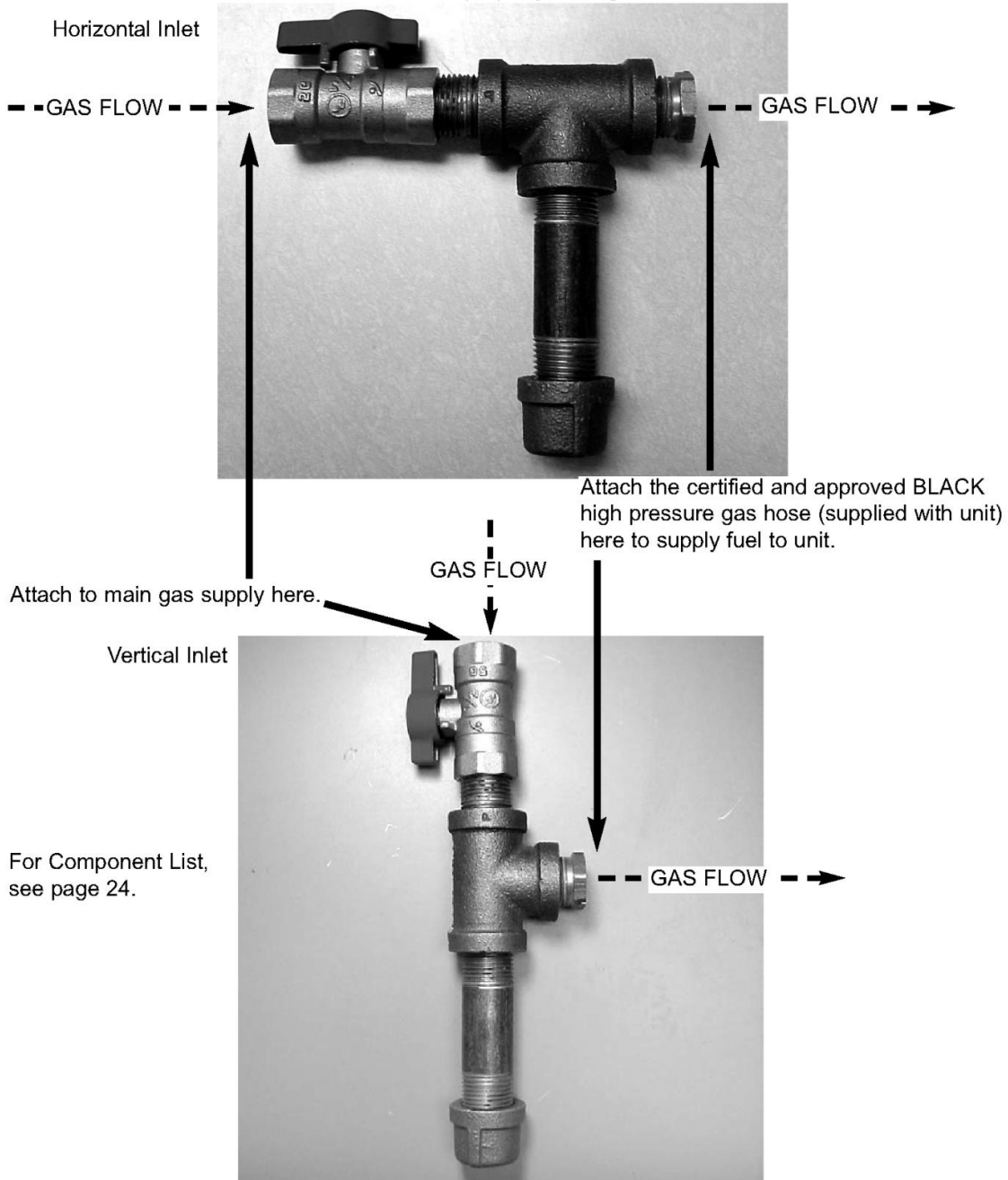
Install drip leg on gas line.

The manufacturer requires the installation of the drip leg in order to help keep the gas orifice free from debris commonly found in gas lines. Use approved and certified sealant on all connections.



WARNING!

Failure to follow the instructions in this manual could result in serious personal injury or property damage.



CAUTION: Purge gas supply line of any contaminants before attaching the swivel end of certified and approved BLACK high pressure gas hose assembly (supplied with unit) to valve. Tighten using $\frac{3}{4}$ " and $\frac{11}{16}$ " wrenches.

SUSPENDING THE HEATER

NOTE: We recommend that the heater be installed level. Keep gas hose away from hot surfaces. The heater is attached to a winch cable used for raising and lowering.

In addition, a safety cable or chain (not supplied) is required to be attached to the suspension hooks to prevent the heater from falling to the litter if the cable should happen to break.

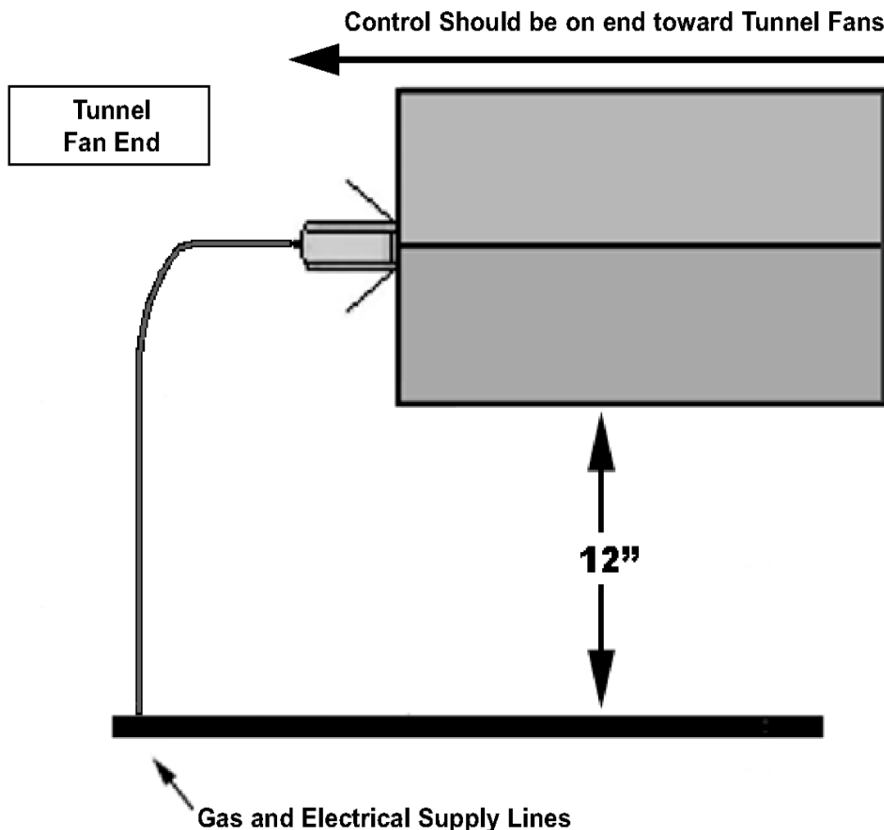
HEATER SAFETY CLEARANCE

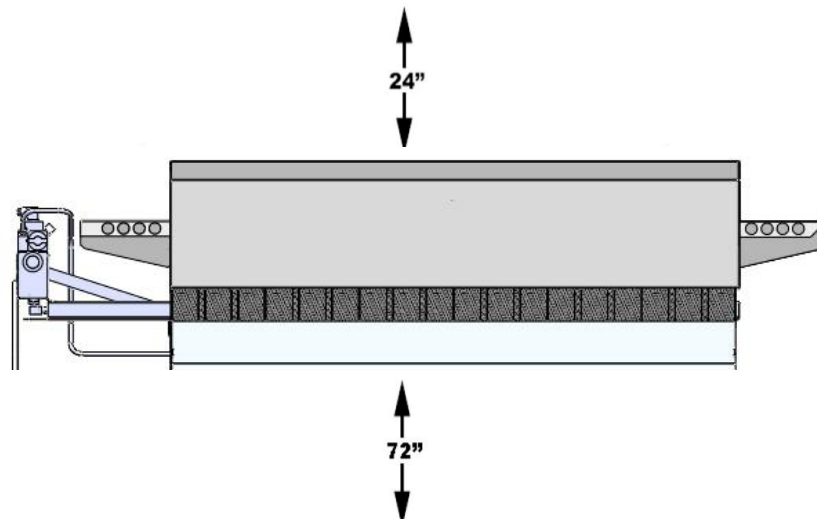
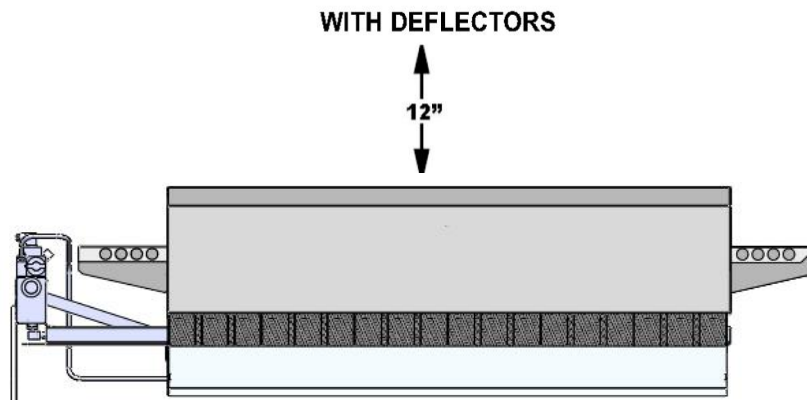
The heater must be located so there is a minimum clearance to combustible material of 24" (minimum of 12" if heat deflectors are used) above the heater and 48" from the side. The heater should be hung with a min. of 72" from the bottom of the heater to the floor. We require a minimum clearance of 12" from the heater to the fuel and electric supply lines.

The installer **MUST** comply with all applicable local, state, and federal gas codes and regulations for your area.

CAUTION

Always allow heater to cool off before winching unit up to ceiling!
Materials that come in close proximity to hot surfaces may ignite.





CONNECTING HEATER TO THERMOSTATICALLY CONTROLLED POWER SUPPLY
Insert grounded plug into 120 volt controlled electrical outlet.



WARNING!

Do not allow power cords and/or gas supply hoses to rest on the canopy, hanging brackets or any other hot surfaces of the unit or within 12" of the heater. Failure to follow these instructions could result in serious personal injury or significant property damage.



WARNING!

Failure to follow the instructions in this manual could result in serious personal injury or property damage.



WARNING!

Failure to comply with all applicable local, state, and federal gas codes could result in serious personal injury and/or serious property damage.

AIR MOVEMENT

Position heaters so there is no direct air movement on the heater.

Stir fans, inlets and tunnel doors should not blow directly on the units (During minimum ventilation, lock off inlets that affect heater operation.)

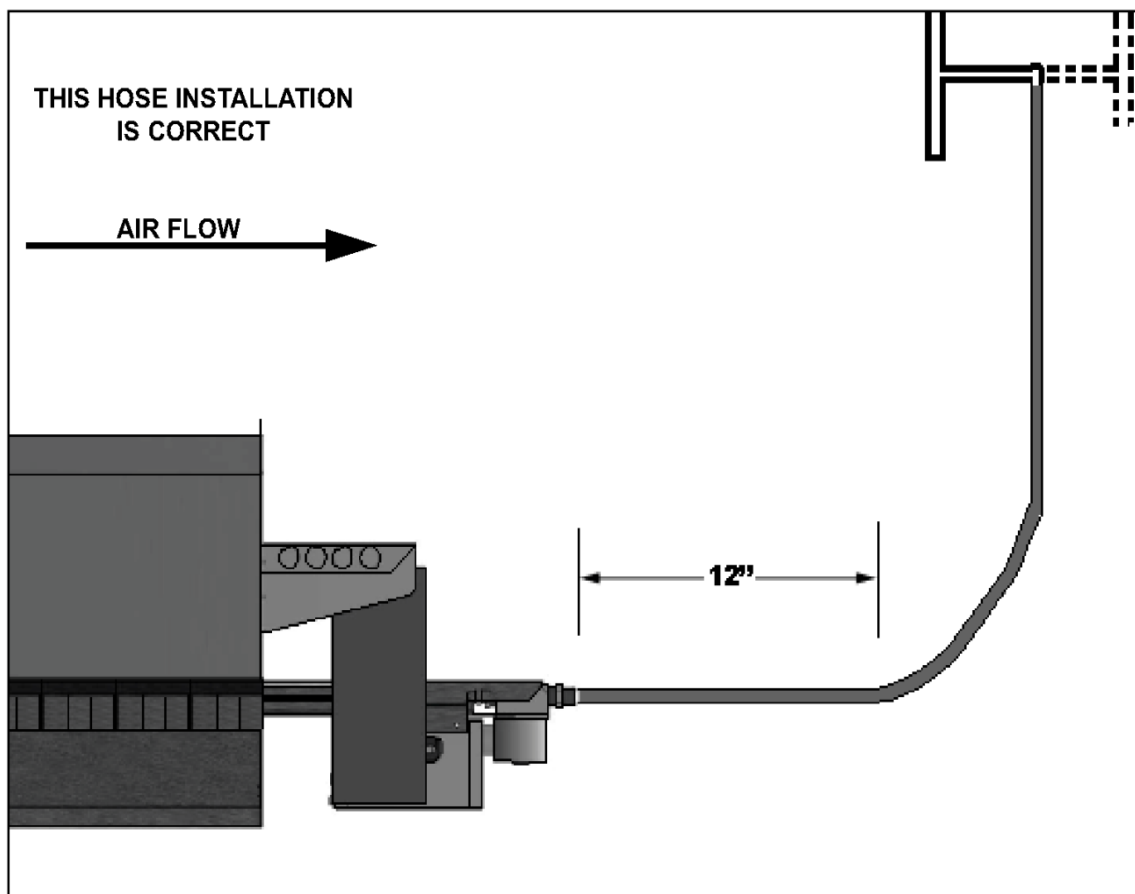
Check all heaters to be sure flame is not blowing outside the emitter.

Do not run heaters during tunnel ventilation.

Control end of heater should be toward tunnel fan end.

The gas supply inlet must be installed so that the gas supply hose is away from the surface of the heater. Electrical supply must be installed so that the electrical power cord is away from the surface of the unit.

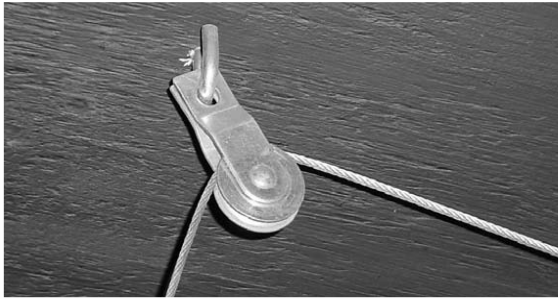
The gas supply hose and the electrical power cord must not touch or rest on any surface of the heater during operation of the unit or rest on the unit while the heater is being winched up or down.



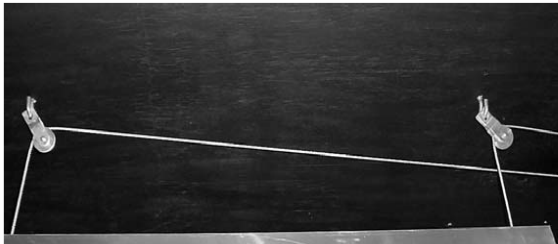
The gas supply installation shown in the illustration above allows the gas supply hose to hang AWAY from the surfaces of the heater even during winching of the unit. This is the CORRECT method for installing the gas supply hose.

Pulleys should be mounted in the ceiling and positioned 6" wider than the suspension points on the heater.

Cable Suspension



Chain AND Carabiner Suspension



Cable Suspension



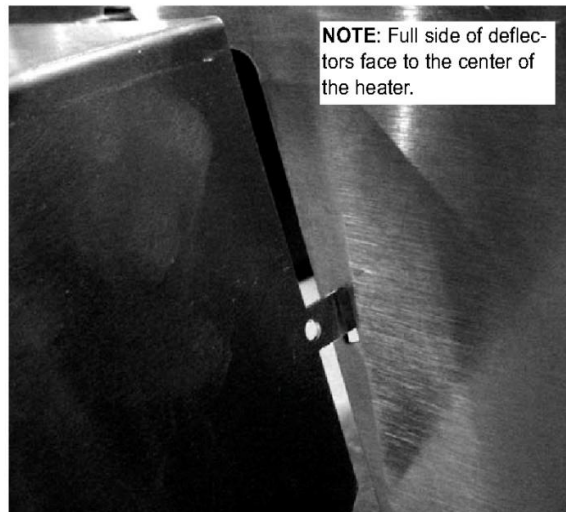
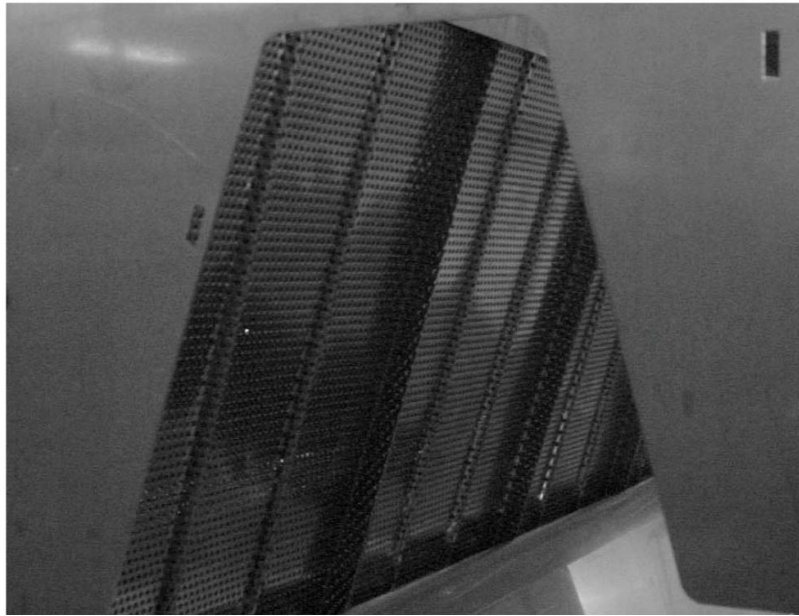
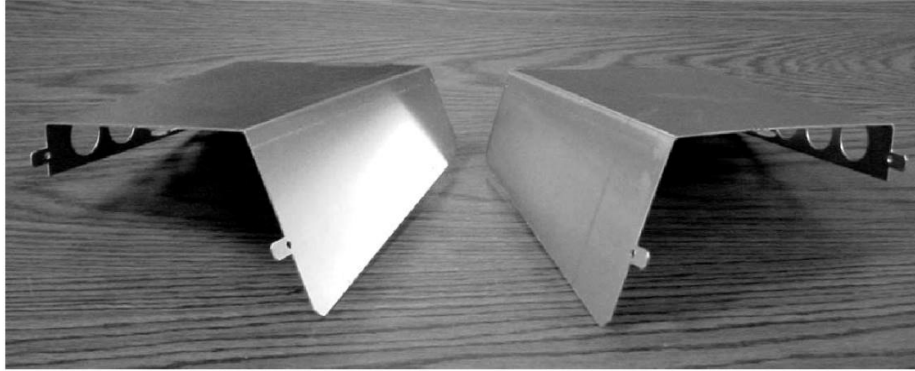
Chain AND Carabiner Suspension



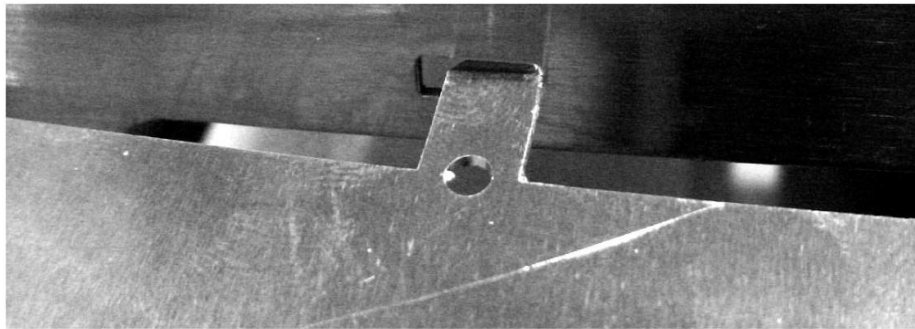
NOTE: Do not mount this heater directly below electrical wiring that is exposed or in conduit.

NOTE: During and after winching, make certain that ALL hoses and power supply cords are NOT resting on the heater nor are within 12" of the heater.

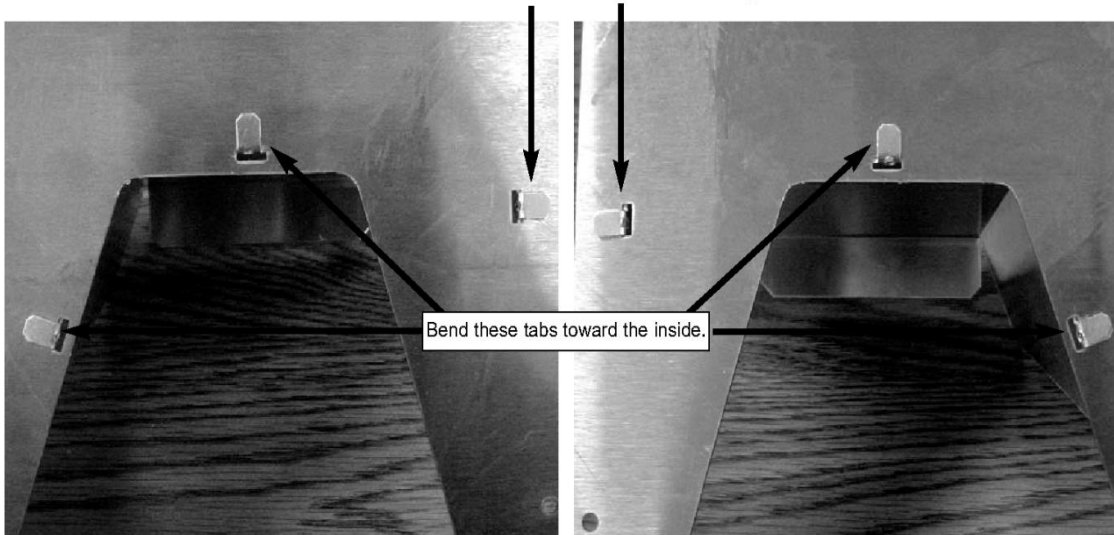
Each unit requires two Left Deflectors and two Right Deflectors



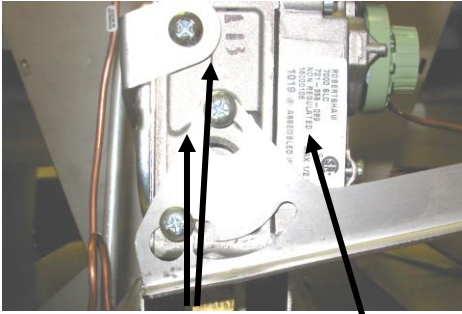
Align tabs of deflectors with slots on heater and insert tab into slots completely so that deflectors are flush against the unit.



Using pliers, bend the tabs to secure deflectors to the heater.
Bend these tabs toward the outer edge.

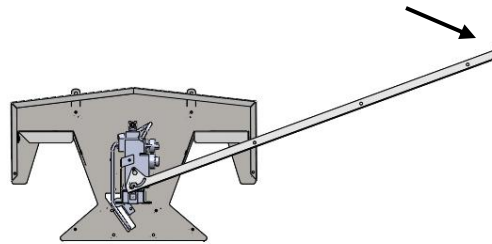


FOR INDIVIDUAL "SNAP" CONTROLS

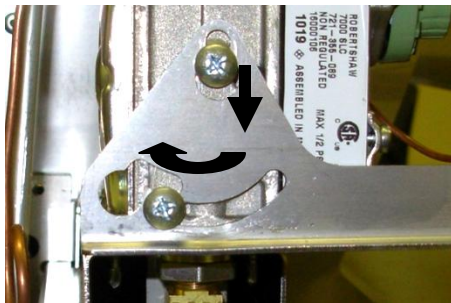


1 Assemble the Sensor Bulb Bracket over the two (2) screws on the side of the control valve.

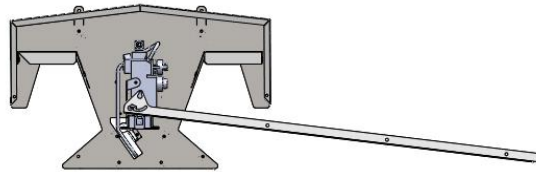
SENSOR BULB LOCATION



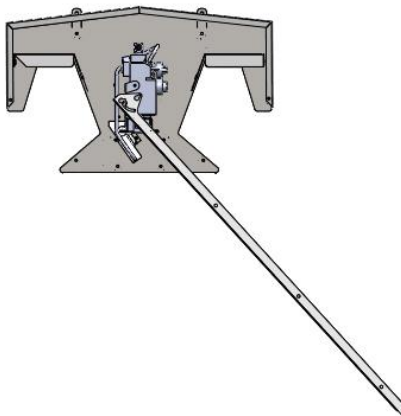
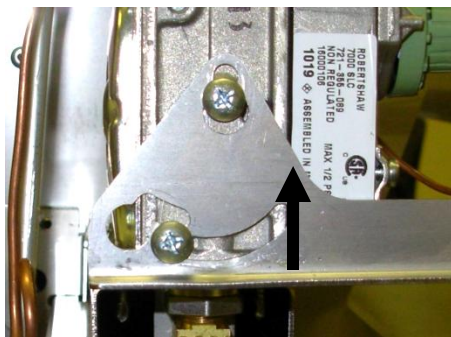
ASSEMBLING POSITION



2. Lower and Rotate bracket.

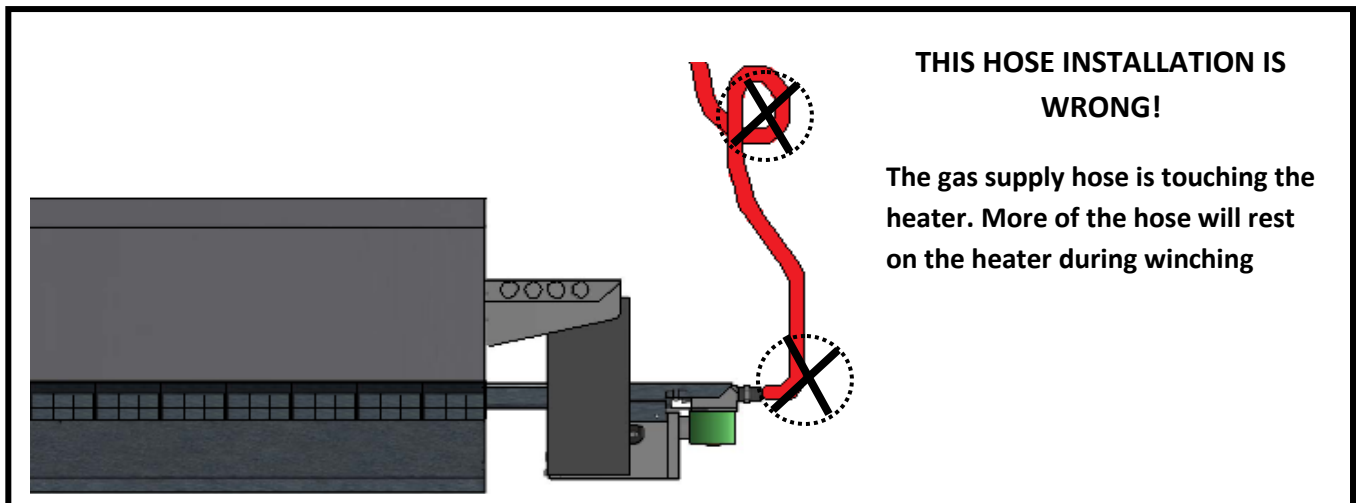
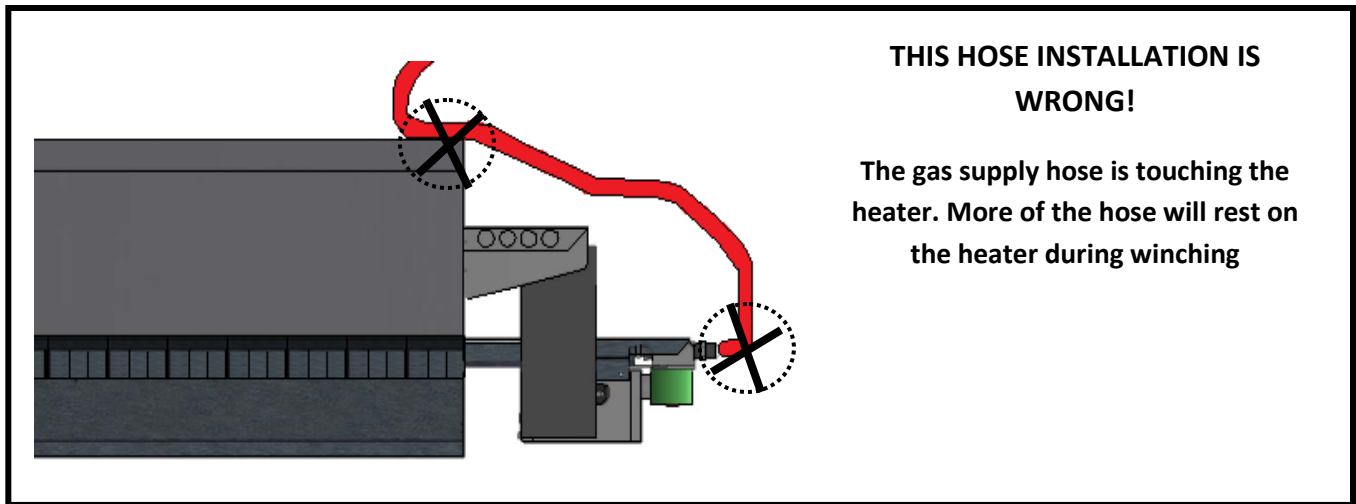
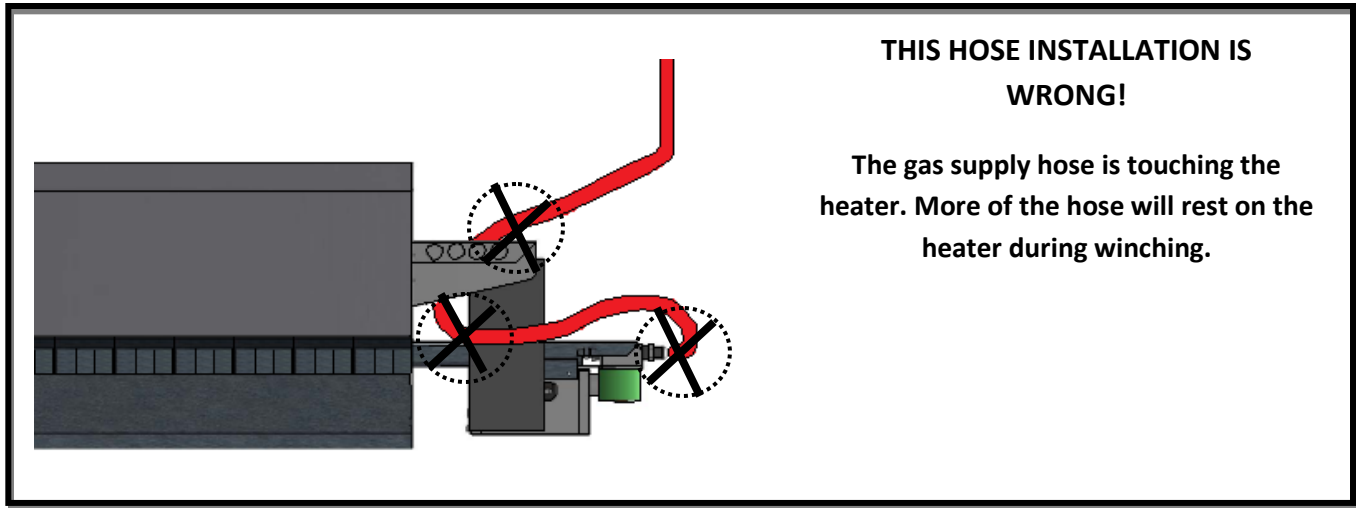


CLEAN OUT POSITION



OPERATING POSITIONS

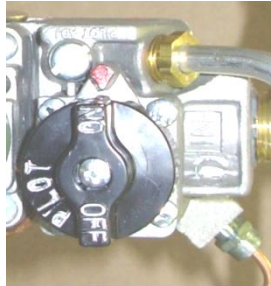




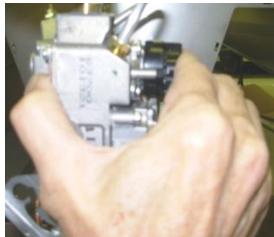
Turn on the gas supply to the unit and CHECK ALL FITTING AND CONNECTIONS FOR LEAKS with Gas Sensing Meter and/ or a soap solution. Do Not Use an open flame to check for gas leaks. NOTR: The burner connections can only be checked with the burner burning.

LIGHTING INSTRUCTIONS

1. Turn "ON" gas supply.



2. Turn control knob to "PILOT"



3. Depress and hold while Lighting pilot through liter hole next to burner.



LIGHTING MAIN BURNER

Turn control knob "ON"

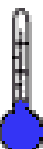


ADJUSTING HEAT SETTING:
Setting must be higher than house temperature for burner to come on.

For Individual "Snap "control
With "Sensor Bulb Bracket" in
the Operating Position, turn
control to desired number
setting.



Low



Warm



Setting #8



Hotter

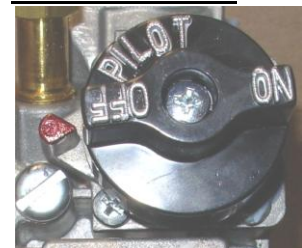
For 24 volt Zone Controls:

Set Thermostat at desired temperature.



Thermostat Connections

TURN OFF HEATER



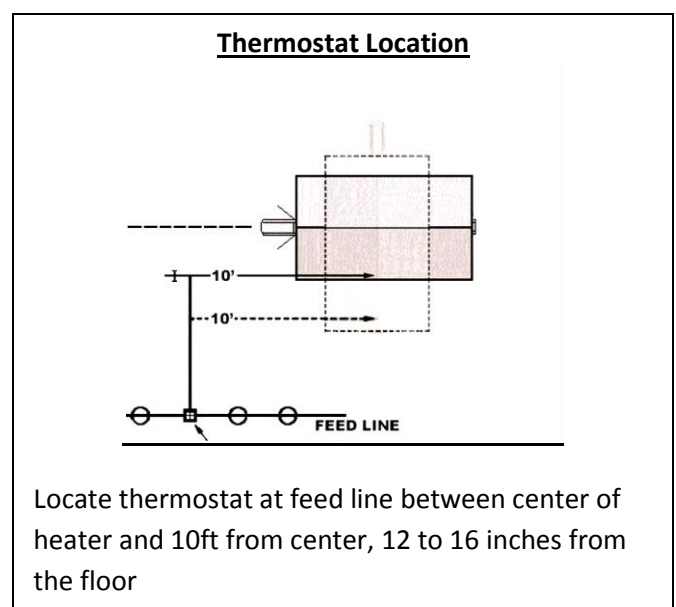
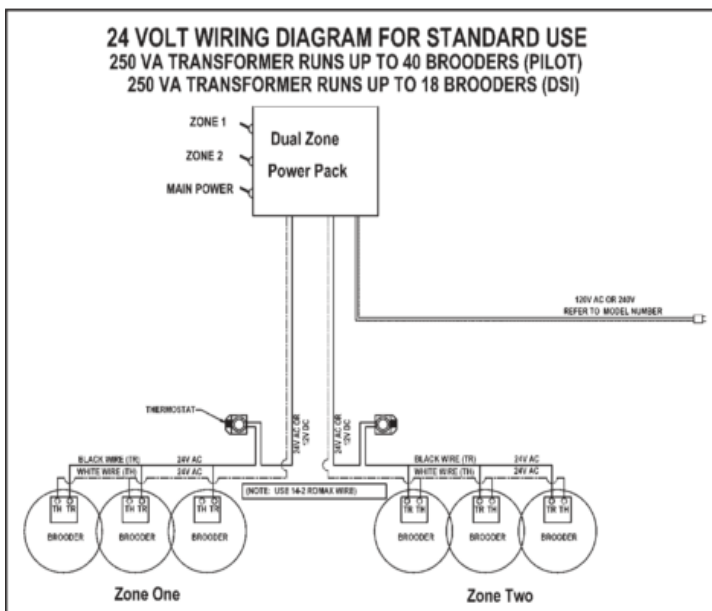
1. Turn control "OFF"



2. Turn "Temperature Control Knob" or Thermostat to "1" or the lowest setting.

WIRING INSTRUCTIONS FOR 24 VOLT ZONE HEATERS

1. Mount Power Supply in convenient location near electrical panel WITHIN 3 FEET OF OUTLET. Outlet should be separately fused – 15 AMP.
2. Mount junction box over each thermostat location selected.
3. Run 14-2 romex from connections on A.S.O. to nearest junction box and continue on the other junction boxes (if used).
4. Run 14-2 romex over each line of brooders to be hooked up to Zone Control. Lines should be run adjacent the gas line. **If more than one thermostat (zones) is to be used – black wire should be cut between zones.**
5. Cut outer insulation ONLY on romex over each brooder to expose black and white wires. **DO NOT OR STRIP WIRES.** Bare ground wires in not used.
6. Using “T” tap connectors connect wire from brooder valve (24V) to romex—white to white; black to black. Note—cut off excess wire from valve.
7. Connect together in junction box using wire nuts:
 - a. Black from feed (A.S.O.), Black to next junction box (if used), Black from thermostat.
 - b. White from feed (A.S.O.), White to next junction box (if used), White from line over brooders.
 - c. White from thermostat to black from line over brooders.
8. Light brooders in usual manner and set ZONE thermostat for desired temperature.
9. Check for voltage drops to brooder.



GAS PRESSURE should be **CHECKED AND ADJUSTED** to recommended settings.
Pressure exceeding 11 ¼ WC could void warranty.

To check gas pressure:

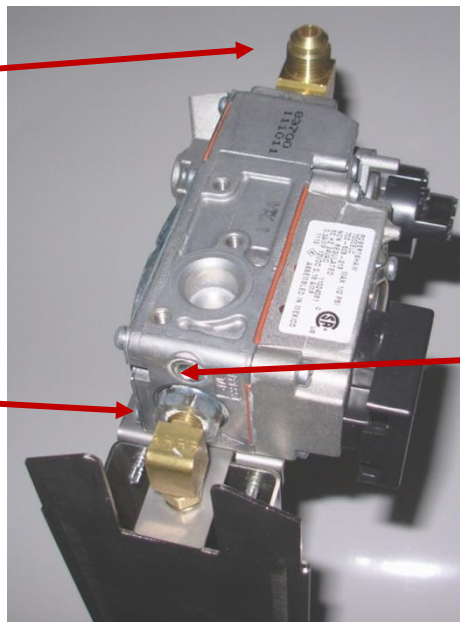
FIRST - go to the furthest heater from the regulator and connect the pressure gauge to the Pressure Tap located next to the outlet fitting of the gas control valve. Turn "ON" only the heater you are testing or if you have a zone system, turn "ON" all the heaters in the zone.
Set the pressure at a maximum of 11 ¼ WC.

SECOND – Turn "ON" all stoves in the house on the same regulator and check the pressure again. The pressure should not drop below 10½" WC. If the pressure falls below 10½" WC, the gas distribution system is inadequately designed. The problem may be a regulator (size or quality), pipe sizing or other restrictions in the system.

It is recommended that the regulator be sized to 130% of the load it is supplying. Gas layout and pipe sizing guidelines are available through your distributor.

GAS SUPPLY INLET
Part #16000054
ELBOW, ⅜" MPT X ⅜" MF

OUTLET FITTING



PRESSURE TAP

Check gas pressure here
(Same location both
"Individual" and "Zone"
control valve).

WARNING!



Failure to comply with all applicable local, state, and federal gas codes could result in serious personal injury and/or serious property damage.

MAINTENANCE

Proper care and maintenance of your heater cannot be over emphasized!!

A POORLY MAINTAINED HEATER WILL:

- Raise Operating Costs- due to poor combustion.
- Lower Air Quality
- Cause Inconsistent Temperatures
- Decrease the Life of the Heater

CAUTION



**BEFORE PERFORMING ANY MAINTENANCE ON THE HEATER,
MAKE CERTAIN THAT ALL POWER AND FUEL HAS BEEN SHUT
OFF TO THE UNIT.**



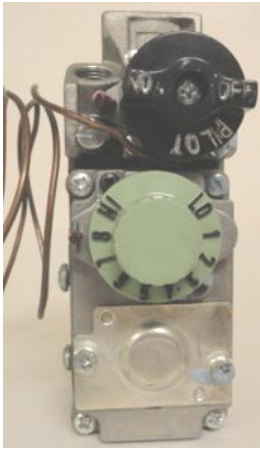
MAINTENANCE PROGRAM

- ◆ Daily: Check burner, flames should be burning clear and blue; if not, clean as required or check gas pressure.
- ◆ Clean heater after each flock.
- ◆ Clean orifice using the CORRECT size orifice drill - 54 for LP and 51 for Natural Gas. Extreme care must be taken not to enlarge or distort the orifice openings.
- ◆ Clean dust and dirt from canopy, reflector pan, emitters and burner ports with compressed air. Blow out the inside of the burner assembly using compressed air.
- ◆ If houses are washed down, care should be taken to prevent moisture from accumulating on control valve and burner assemblies. Cover valve assembly with plastic before washing. After wash downs remove plastic from heater. We recommend that you light the heaters to dry up any excess moisture.
- ◆ For proper combustion it is important that the small holes in the emitter be clean and unobstructed. The emitter can also be cleaned by inserting a long brass bristle brush between the screens and inner cone.
- ◆ Check ignitor and burner ports for debris, wipe clean with steel wool and clear burner ports with wire.
- ◆ If heater is disconnected from the gas line, use tape to seal the open connections. This will keep moisture, dust, and insects out and prevent future problems.

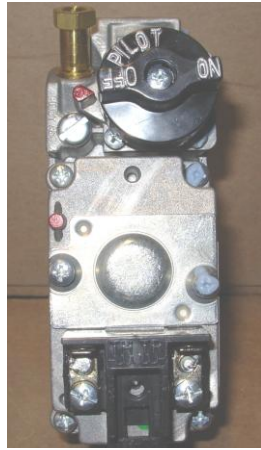


WARNING! Never spray penetrating oil (WD-40) on the control valve. This will cause the loss of high temperature valve grease and cause the valve to leak.

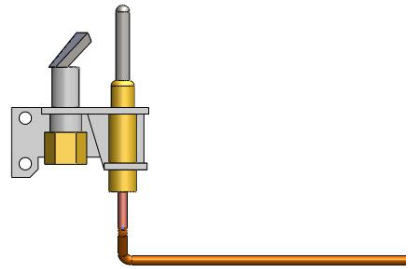
Failure to follow these instructions could result in serious personal injury or significant property damage.



16000106 VALVE,
7000SLC 1each



11004081 VALVE,
7000ELC 1each



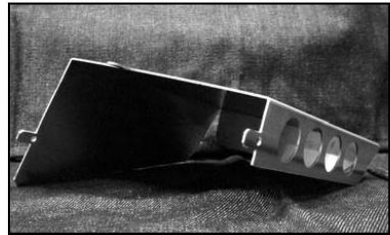
11006188 PILOT AMS 2CHL-10 1 each
16-11154 THERMOCOUPLE 24 IN 1each



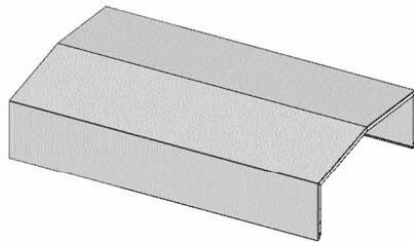
16550086
SPACER, BURNER/INNER CONE-SHORT
2 each



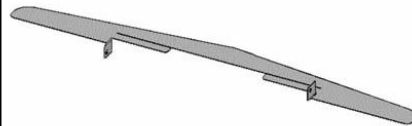
16550038 HEAT DEFLECTOR LEFT
2 each



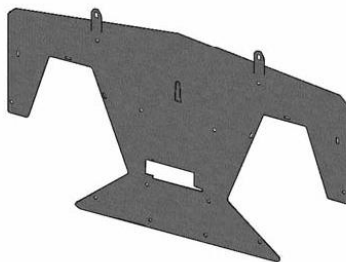
16550037 HEAT DEFLECTOR RIGHT
2 each



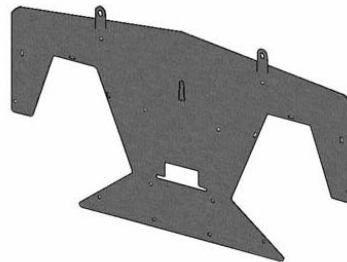
16550015 CANOPY
1 each




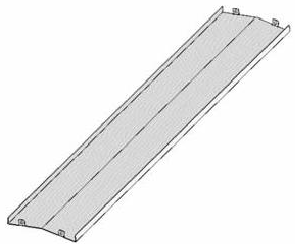
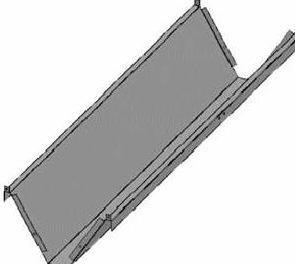
16550081 CENTER SUPPORT CANOPY
1 each

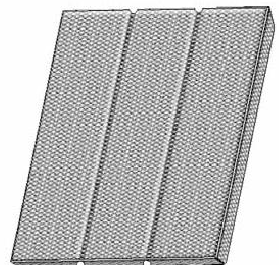


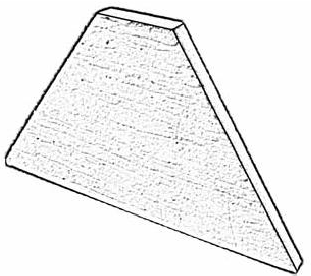
16550080 END PLATE
CONTROL END — 1 each



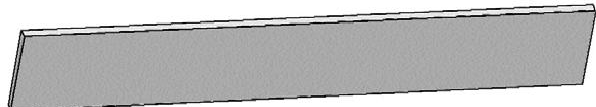
16550079 END PLATE
OPPOSITE CONTROL END — 1 each

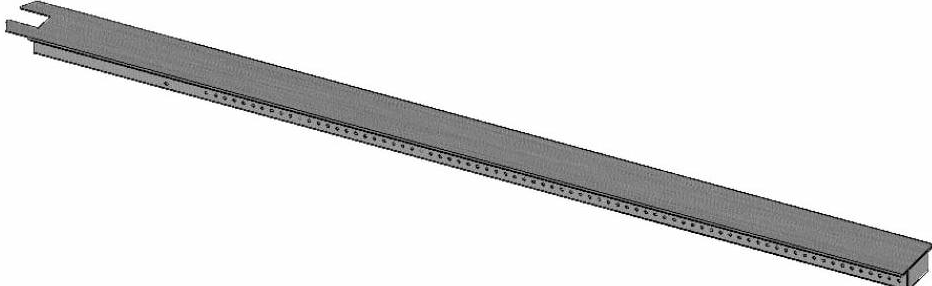
		
16550085 PAN/CHANNEL REFLECTOR 2 each	16550082 BOTTOM FLAME SHIELD 1 each	16550089 INNER CONE, CORRUGATED QDR 1 each

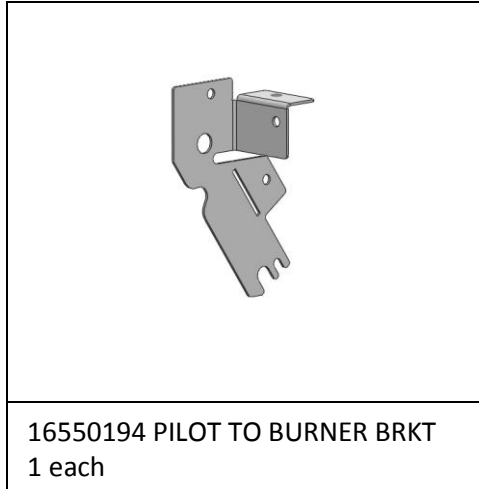
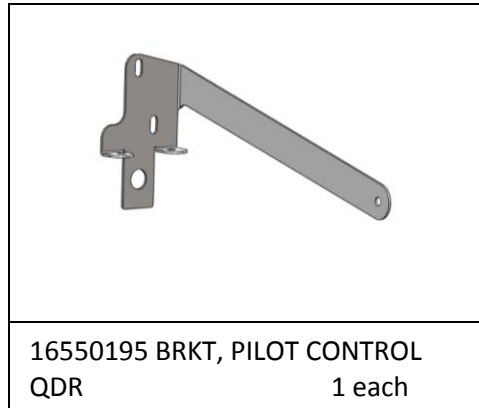
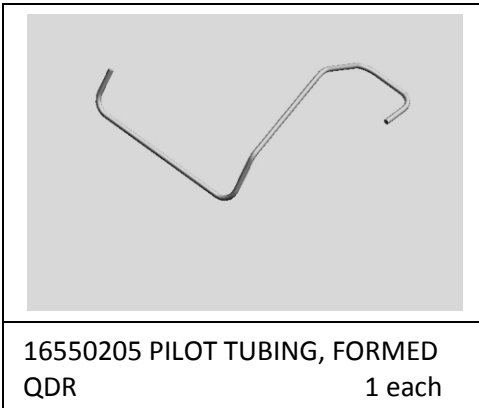
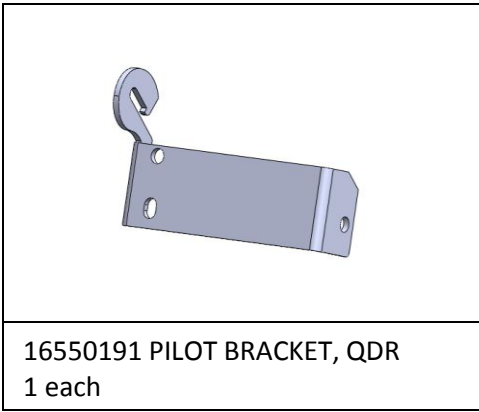

16550084 EMITTER, PANEL QDR II 12 each


16050048 INSULATION, END PANEL 2 each


16050046 INSULATION, BOTTOM PANEL 1 each


16050047 INSULATION, SIDE PANEL 2 each


16550093 BURNER ASM 1 each

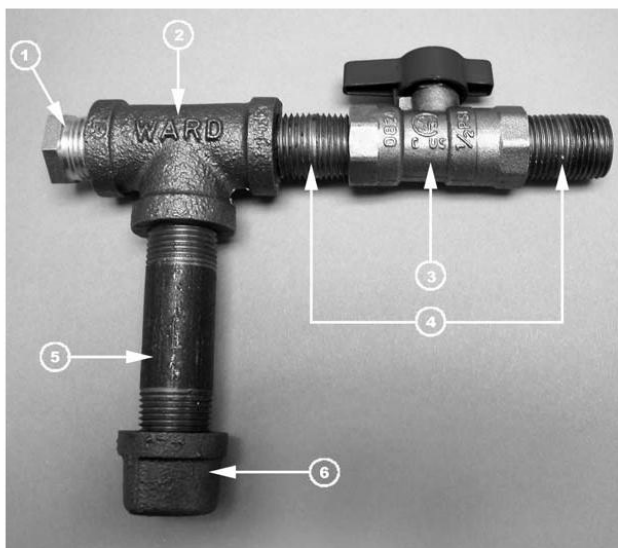




16550190 BRKT, SENSOR BULB PILOT QDR
1 each



16-111194 BUSHING
GALV STD X 3/8 X 3/8 1 each



16550206 DRIP LEG

1	11000683	BSHG 3/8 FPT X 1/2 MPT	1
2	13005255	PIPE TEE 1/2 X 1/2 X 1/2	1
3	13004937	VALVE 1/2 BRASS BALL	1
4	13005228	PIPE NPL 1/2 CLOSE BLK	2
5	13005193	PIPE NPL 1/2 X 3 BLK	1
6	13005229	PIPE CAP 1/2 BLK	1

Also included in the drip leg parts bag:



16050061 Carabiner
3/16" ZINC 4 each



11000058 ADAPTR
3/8"MPT X 3/8"MF
1 each

PARTS NOT SHOWN IN ILLUSTRATIONS

16050021	RUVET: POP 3/16" SS SSD	36
11000022	SCREWS 10-24 X 1/2 PH PAN	2
18003945	SCREW 10-24 X 3/8 PH PAN	3
11000365	SCREW 10-32 X 1/2 SS	2
16050077	SCREW#8 X 1/2 SERRATED HEX	6
16050002	SCREW 10-24 X 3/8	6
16-104443	NUT: HEX 10-24 18.8 SS	6
13005213	WIRE TIES 5 1/2	3



21000615 CONN 1/8" MP X 1/8"
MP HEX BRASS TAPPED 1each