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.

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

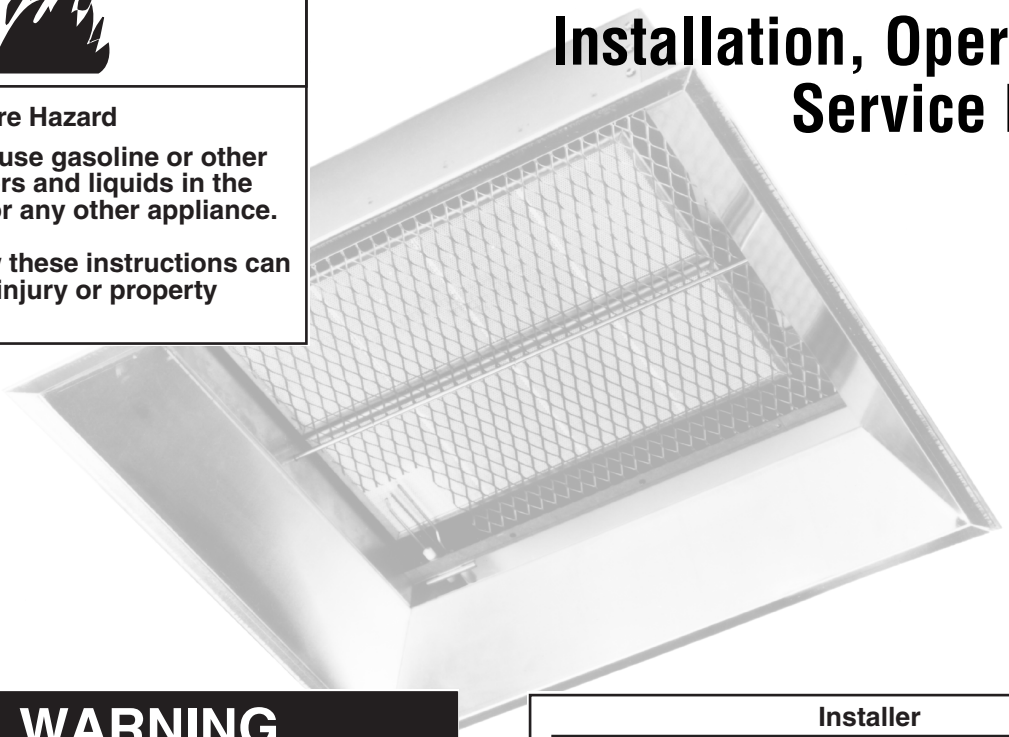
ROBERTS GORDON

GordonGlo™

Gas-Fired, Unvented High-Intensity Infrared Heaters

Installation, Operation & Service Manual

GG-30
GG-60
GG-100
GG-130
GG-160



⚠ 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 to provide your serviceman with information should it become necessary.

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Quality in Any Language™

P/N 142100NA Original 04/02

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Printed in U.S.A.

TABLE OF FIGURES

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.

This heater is designed for heating nonresidential indoor spaces. Do not install in residential spaces. 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.

Thin sheet metal parts, such as the reflector portion of the heater and the various venting components, have sharp edges. To prevent injury, the use of work gloves is recommended. The use of gloves will also prevent the transfer of body oils from the hands to the surface of the reflector.

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.
- To provide access to burners for servicing on all sides, for burner removal.
- To provide the owner with a copy of this installation, operation and service manual.
- To never use heater as support for ladder or other access equipment and never hang or suspend anything from heater.
- To safely and adequately install heater attaching chain, rod or angle iron brackets through four mounting holes.
- To ensure there is adequate air circulation around the heater and to supply air for combustion, ventilation and distribution in accordance with local codes.

2.1 Wall Tag

A laminated wall tag is available for the GG-Series™ heater as a permanent reminder of the safety instructions and the importance of the required clearances to combustibles. Please contact Roberts-Gordon or your ROBERTS GORDON® independent distributor to obtain the wall tag. Since the GG-Series™ heater is available in DSI and millivolt, it is important to order the correct tag for the heater purchased. 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 GG-Series™ heater (e.g. thermostat or ROBERTS GORDON® BZC Controller).

Copies of the wall tags (P/N 91037911 for DSI and P/N 91037913 for millivolt) are illustrated on the back cover. The appropiate copy of the wall tag can be affixed on the wall near the heater. To complete the tag you must know the model number of your heater. The model number is found on the burner and in the Installation, Operation and Service Manual. Write the largest clearance dimensions with permanent ink according to your model number in the open spaces on the tag.

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 and other parts.

Failure to follow these instructions can result in property damage.

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 lifespan 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: CRITICAL CONSIDERATIONS

3.1 Required Clearances to Combustibles

Clearances are the required distances that combustible objects must be away from the heater to prevent serious fire hazards. Combustibles are materials, which may catch on fire and include common items such as wood, paper, rubber, fabric, etc. **Maintain clearances to combustibles at all times for your safety.**

Clearances for all heater models are located on the heater and *on Page 4, Figure 1* in this manual. Check the clearances on each heater for the model being installed to make sure the product is suitable for your application and the clearances are maintained. Read and follow the safety guidelines below:

- Keep gasoline or other combustible materials including flammable objects, liquids, dust or vapors away from this heater or any other appliance.
- Maintain clearances from heat sensitive material, equipment and workstations.
- Maintain clearances from vehicles parked below the heater.
- Maintain clearances from swinging and overhead doors, overhead cranes, vehicle lifts, partitions, storage racks, hoists, building construction, etc.
- In locations used for the storage of combustible materials, signs must be posted to specify the maximum permissible stacking height to maintain required clearances from the heater to the combustibles. Signs must be posted adjacent to the heater thermostat. In the absence of a thermostat, signs must be posted in a conspicuous location.
- Consult local Fire Marshal, Fire Insurance Carrier or other authorities for approval of proposed installation when there is a possibility of exposure to combustible airborne materials or vapors.
- Hang heater in accordance to the minimum suspension requirements *on Page 7, Figure 2*.

⚠ WARNING

Fire Hazard

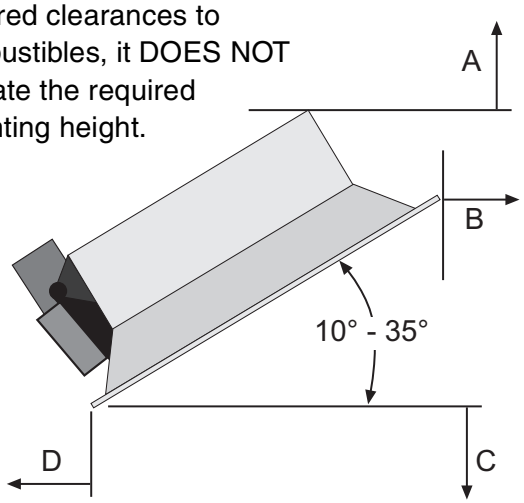
Some objects will catch fire or explode when placed close to heater.

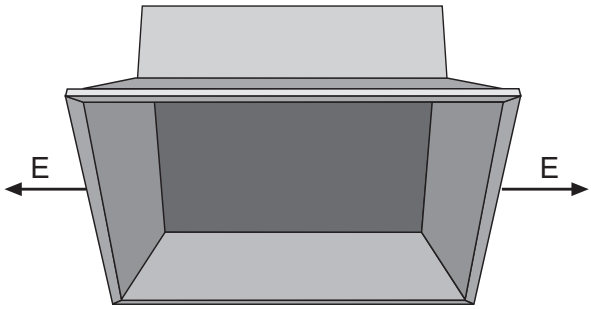
Keep all flammable objects, liquids and vapors the required clearances to combustibles away from heater.

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

FIGURE 1: Clearances to Combustibles

NOTE: Dimension "C" indicates the required clearances to combustibles, it DOES NOT indicate the required mounting height.





Required Clearances to Combustibles (inches)					
Model	**A**	**B**	**C**	**D**	**E**
GG-30	30	36	48	11	16
GG-60	37	43	62	16	24
GG-100	46	68	95	25	37
GG-130	47	78	105	25	40
GG-160	55	82	109	27	44

Required Clearances to Combustibles (centimeters)					
Model	**A**	**B**	**C**	**D**	**E**
GG-30	77	92	122	28	41
GG-60	94	110	158	41	61
GG-100	117	173	242	64	94
GG-130	120	199	267	64	102
GG-160	140	209	277	69	112

SECTION 4: NATIONAL STANDARDS AND APPLICABLE CODES

4.1 Gas Codes

The type of gas appearing on the nameplate must be the type of gas used. Installation must comply with national and local codes and requirements of the local gas company.

United States: Refer to National Fuel Gas Code, ANSI Z223.1 - latest revision, (same as NFPA Bulletin 54).

Canada: Refer to CAN/CGA B149.1 and B149.2: Installation Codes for Gas Burning Appliances.

4.2 Aircraft Hangars

Installation in aircraft hangars must be in accordance with the following codes:

United States: Refer to Standard for Aircraft Hangars, ANSI/NFPA-409 - latest revision.

Canada: Refer to Standard CAN/CGA B149.1 and B149.2.

• In aircraft storage and servicing areas, heaters shall be installed at least 10' (3 m) above the upper surface of wings or of engine enclosures of the highest aircraft which may be housed in the hangar. The measurement shall be made from the wing or engine enclosure whichever is higher from the floor, to the bottom of the heater.

• In shops, offices and other sections of aircraft hangars communicating with aircraft storage or servicing areas, heaters shall be installed not less than 8' (2.4 m) above the floor.

• Suspended or elevated heaters shall be so located in all spaces of aircraft hangars that they shall not be subject to injury by aircraft, cranes, movable scaffolding or other objects. Provisions shall be made to assure accessibility to suspended heaters for recurrent maintenance purposes.

4.3 Public Garages

Installation in garages must be in accordance with the following codes:

United States: Standard for Parking Structures NFPA-88A - latest revision or the Standard for Repair Garages, NFPA 88B - latest revision. Canada: Refer to CAN/CGA B149.1 and B149.2: Installation Codes for Gas Burning Appliances.

• Heaters must not be installed less than 8' (2.4m) above the floor. Minimum clearances to combustibles must be maintained from vehicles parked below the heater.

• When installed over hoists, minimum clearances to combustibles must be maintained from the upper most point of objects on the hoist.

4.4 Electrical

The heater must be electrically grounded in accordance with the following codes:

United States: Refer to National Electrical Code®, ANSI/NFPA-70 - latest revision. Wiring must conform to the most current National Electrical Code®, local ordinances, and any special diagrams furnished.

Canada: Refer to Canadian Electrical Code, CSA C22.1 Part 1 - latest revision.

SECTION 5: MAJOR COMPONENTS

5.1 Standard Parts List

Table 1: DSI Carton Contents

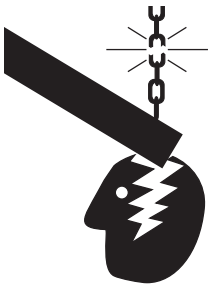
Part No.	Description	GG-30	GG-60	GG-100	GG-130	GG-160
042XXXXX	Burner Assembly (Rate and Fuel Varies)	1	1	1	1	1
90439900	Transformer	1	1	1	1	1
91317300	Terminals	2	2	2	2	2
142100NA	Installation, Operation and Service Manual	1	1	1	1	1

Table 2: Millivolt Carton Contents

Part No.	Description	GG-30	GG-60	GG-100	GG-130	GG-160
043XXXXX	Burner Assembly (Rate and Fuel Varies)	1	1	1	1	1
90440000	Thermostat	1	1	1	1	1
142100NA	Installation, Operation and Service Manual	1	1	1	1	1

SECTION 6: HEATER INSTALLATION

⚠ WARNING



Suspension Hazard

Hang heater with materials with a minimum working load of 175 lbs (80 kg).

Failure of the supports can result in death, injury or property damage.

To ensure your safety, and comply with the terms of the warranty, all units must be installed in accordance with these instructions.

The gas or the electrical supply lines must not be used to support the heater.

Do not locate the gas or electric supply lines directly over the path of the flue products from the heater.

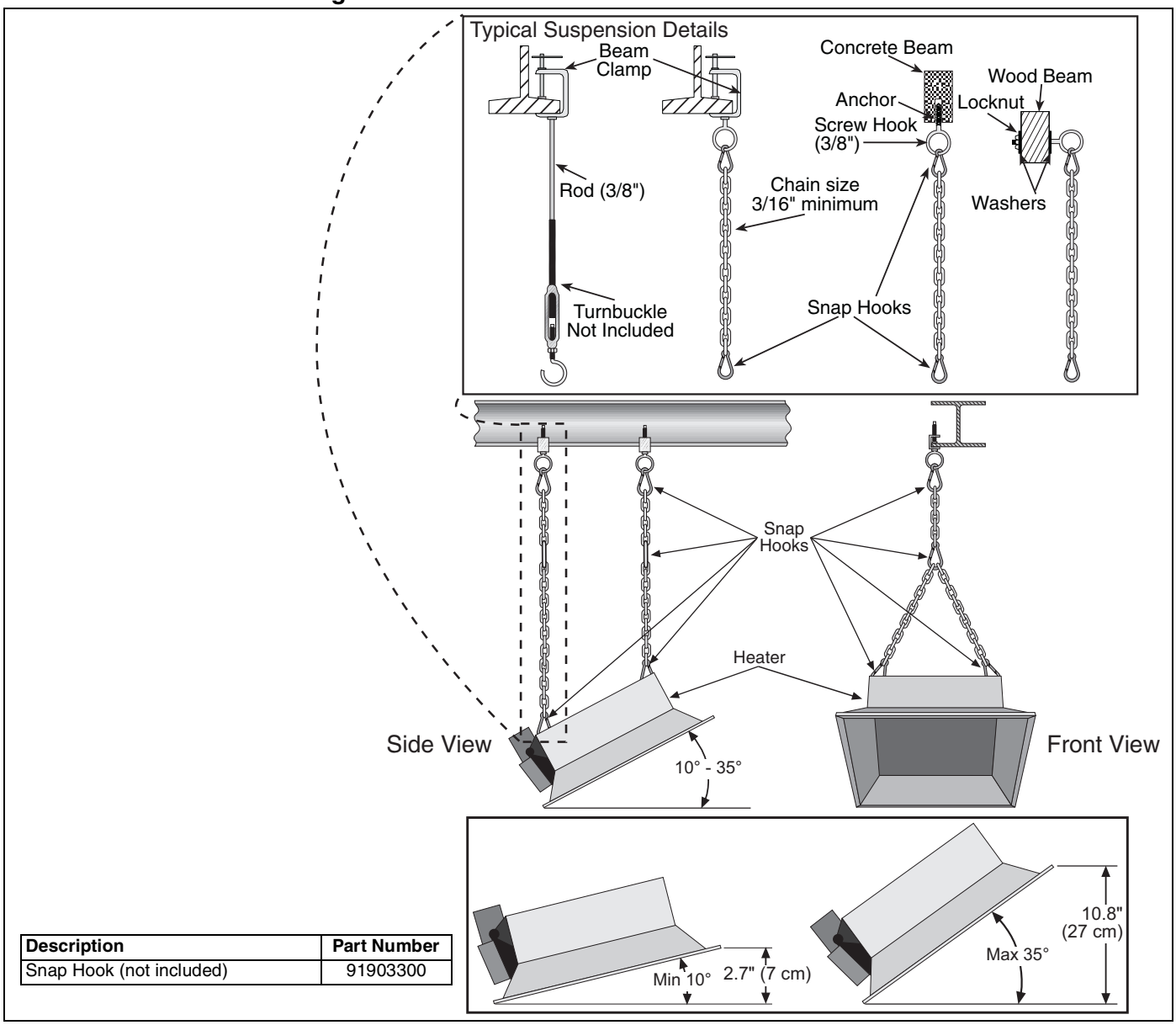
The heater must be installed in a location that is readily accessible for servicing and no restriction of air flow to the inlet of the heater's venturi tubes can occur.

The heaters must be installed with clearances to combustibles as indicated on the rating plate and in this instruction manual.

The minimum and maximum gas inlet pressures must be maintained as indicated on the rating plate.

The heater has four mounting holes, one at each corner, for attaching chain, rod or angle iron brackets. Typical installation configurations are shown in *Figure 2*.

FIGURE 2: Installation Configurations



Description	Part Number
Snap Hook (not included)	91903300

Table 3: Recommended mounting height and approximate coverage for indoor spot heating.

Model	Mounting Height		Approx. Coverage
	Minimum	Maximum	
	+30°F Design Temperature		**100 BTU/Hr./sq.ft.**
GG-30	10’ (3m)	12’ (3.6m)	300 sq. ft.
GG-60	16’ (5m)	18’ (5.4m)	600 sq. ft.
GG-100	19’ (6m)	23’ (7m)	900 sq. ft.
GG-130	22’ (6.7m)	28’ (8m)	1200 sq. ft.
GG-160	25’ (7.6 m)	32’ (9.7 m)	1500 sq. ft.
	0°F Design Temperature		**250 BTU/Hr./sq.ft.**
GG-30	8’ (2.4m)	9’ (2.7m)	120 sq. ft.
GG-60	11’ (3.3m)	13’ (4m)	240 sq. ft.
GG-100	13’ (4m)	15’ (4.5m)	360 sq. ft.
GG-130	16’ (5m)	18’ (5.4m)	480 sq. ft.
GG-160	20’ (6 m)	24’ (7.3 m)	600 sq. ft.
	-30°F Design Temperature		**420 BTU/Hr./sq.ft.**
GG-30	-	-	-
GG-60	9’ (2.7m)	11’ (3.3m)	142 sq. ft.
GG-100	11’ (3.3m)	13’ (4m)	210 sq. ft.
GG-130	12’ (3.6m)	14’ (4.2m)	285 sq. ft.
GG-160	16 (4.8 m)	20 (6 m)	360 sq. ft.

6.1 Insulation

Roof insulation or built-up roofing is required for metal decks to maintain inside surface temperatures above the dew point of air. If the roof is bare metal, not insulated, the inside surface temperature may become cold enough for moisture to form. Vapor barriers must be applied to insulation. Tears or gaps must be sealed. Insulation without a vapor barrier is not acceptable.

6.2 Ventilation

Ventilation of upper levels of the space to be heated is required to supply combustion air to the heaters and sufficiently dilute the products of combustion. This also prevents excessive humidity build-up. The minimum intake and exhaust air openings shall provide for not less than 400 CFM for every 100,000 BTU input except that the infiltration area may be included in the intake area. The exhaust fan must be interlocked with the heater thermostat. Check with local codes for requirements. Many large industrial buildings have sufficient air movement to satisfy these dilution requirements. However, in tightly constructed buildings, where insufficient air movement exists, induced air displacement is required. This may be accomplished by either gravity or mechanical means. Where natural (gravity) ventilation is provided for exhaust, the openings must be distributed above the heaters (preferably at the peak of the roof) and the areas of openings shall not be less than 300 square inches for every 100,000 BTU input. Provisions must be made to provide sufficient fresh air inlet area and exhaust air outlet area to accomplish the displacement. This is essential in providing a balanced system to avoid negative building pressures which cause excessive infiltration, unfavorable drafts and effect efficient combustion of infrared heaters.

Mechanical exhausters are preferred and are typically mounted at high points in the building where stagnant air can accumulate under the deck.

Local codes may require that mechanical exhausters be interlocked with the heaters to enable both to operate simultaneously. Other codes may allow

control of exhausters with a ceiling mounted humidistat. Exhausters then operate when relative humidity rises above the humidistat setting. Since the combustion process increases the relative humidity, this is a feasible method of controlling humidity.

SECTION 7: GAS PIPING

⚠ WARNING

Fire Hazard

Tighten gas line fittings to connect gas supply according to *Figure 3*.

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

7.1 Gas Supply

It is important that the gas supply pipe and the electrical connections do not support any of the heater's weight.

Provide adequate gas supply for rated input of each heater. Installation must comply with local codes and recommendations of the local gas company. United States: Refer to National Fuel Gas Code, ANSI Z223.1 - latest revision, (same as NFPA Bulletin 54). Canada: Refer to Can 1-B149.1 and B149.2: Installation Codes for Gas Burning Appliances. For recommended heater gas connection, refer to *Figure 3*.

7.2 Gas Pressure

When a higher than the maximum recommended gas pressure is being maintained at the main gas line, a separate regulator must be installed ahead of the heater. Refer to the Specifications *on Page 18, Section 12* for the maximum allowable pressure for stated heater model and gas.

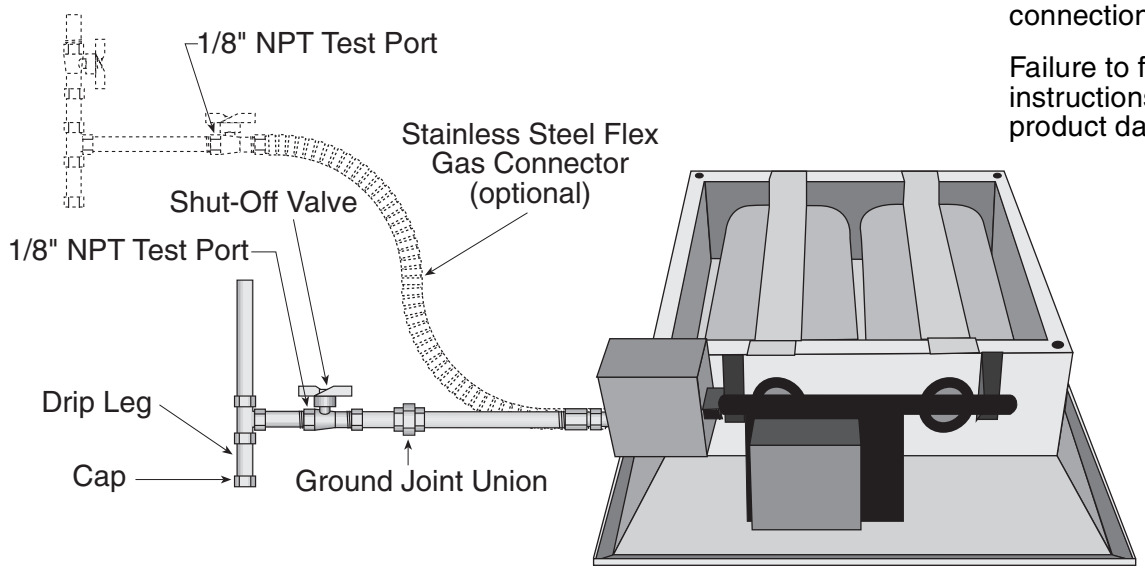
Install a ground joint union with brass seat and a manual shut-off valve adjacent to the unit for emergency shut-off and easy servicing of controls, including a 1/8" NPT plugged tapping immediately upstream of the gas supply connection to the heater, accessible for test gauge connection. *See Figure 3* below.

A plugged 1/8" NPT Test point is located on the heater gas control. See heater rating plate for minimum gas supply pressure "For the Purpose of Input Adjustment."

On a multiple heater installation, it may be possible to use one large capacity regulator or an individual regulator for each heater.

- **Do not high pressure test the gas piping with the burner connected. Failure to follow these instructions can result in property damage.**
- **Check the gas pipe for leaks before placing heating equipment into service. When checking for gas leaks, use a soap and water solution; never use an open flame.**

FIGURE 3: Gas Connection



SECTION 8: WIRING

⚠ WARNING

Electrical Shock Hazard

Disconnect electrical power 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.

8.1 DSI Heater

Heaters are normally controlled by thermostats. Line voltage thermostats are wired directly (see below); a 24V thermostat may also be used. Heaters may also be controlled with a manual line voltage switch or timer switch in place of the thermostat.

8.2 Millivolt Heater

Millivolt heaters are controlled by a 24V thermostat (P/N 90440000).

8.3 Thermostat and Location

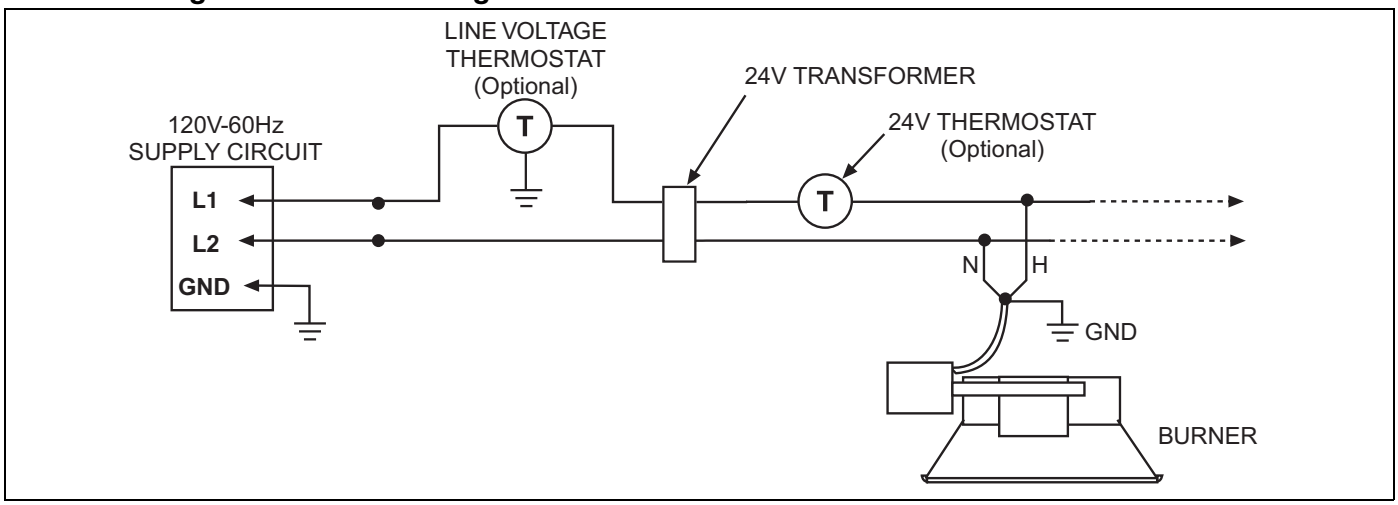
Make sure that the electrical characteristics of the thermostat match those of the heater controls. For best results, the thermostat should be positioned 5' (1.5 m) above the floor where air can circulate freely around it. DO NOT mount the thermostat directly to the cold-side wall, in direct drafts or directly beneath the infrared heater.

The distance that the 24V thermostat or the millivolt thermostat may be located from the gas valve is limited by the size of wire that is run between the two devices. DO NOT exceed the maximum distance given below:

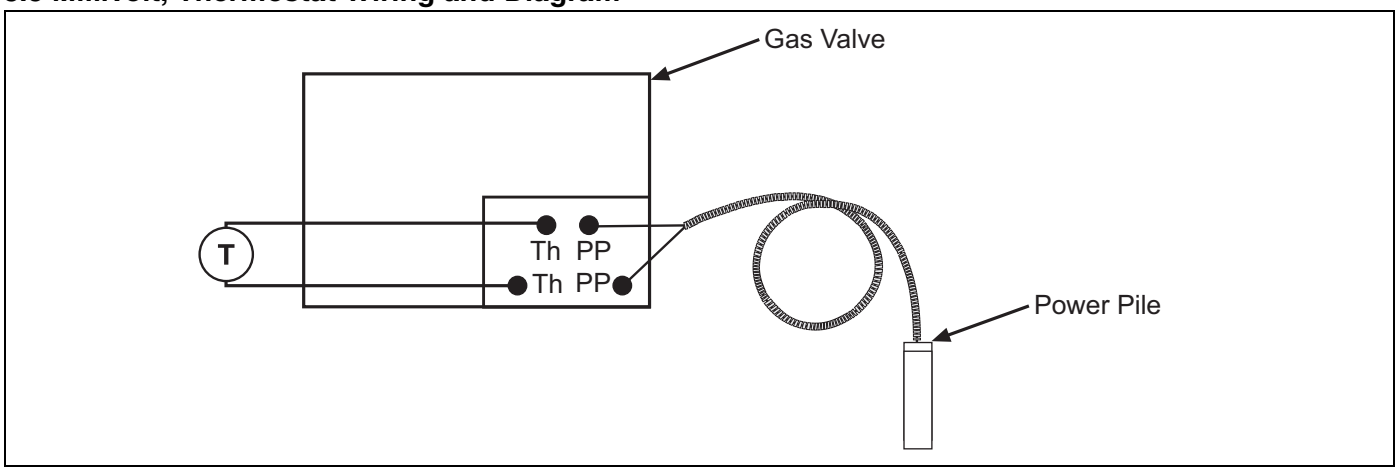
24 VOLT SYSTEM OR MILLIVOLT SYSTEM WIRE SIZES / DISTANCE:

No. 18 / 15' (5 m)
No. 16 / 30' (9 m)
No. 14 / 50' (15 m)

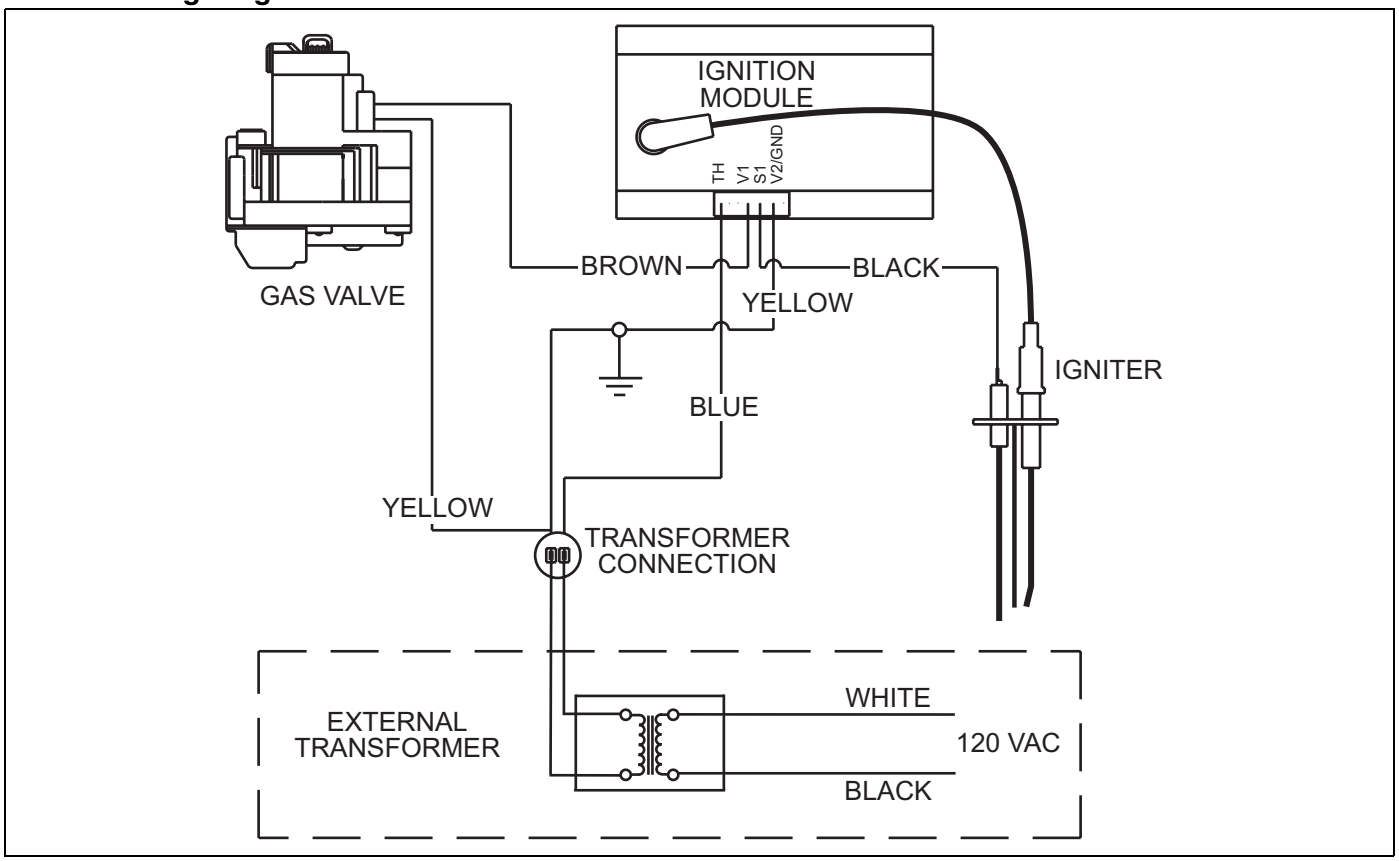
8.4 Line Voltage Thermostat Wiring



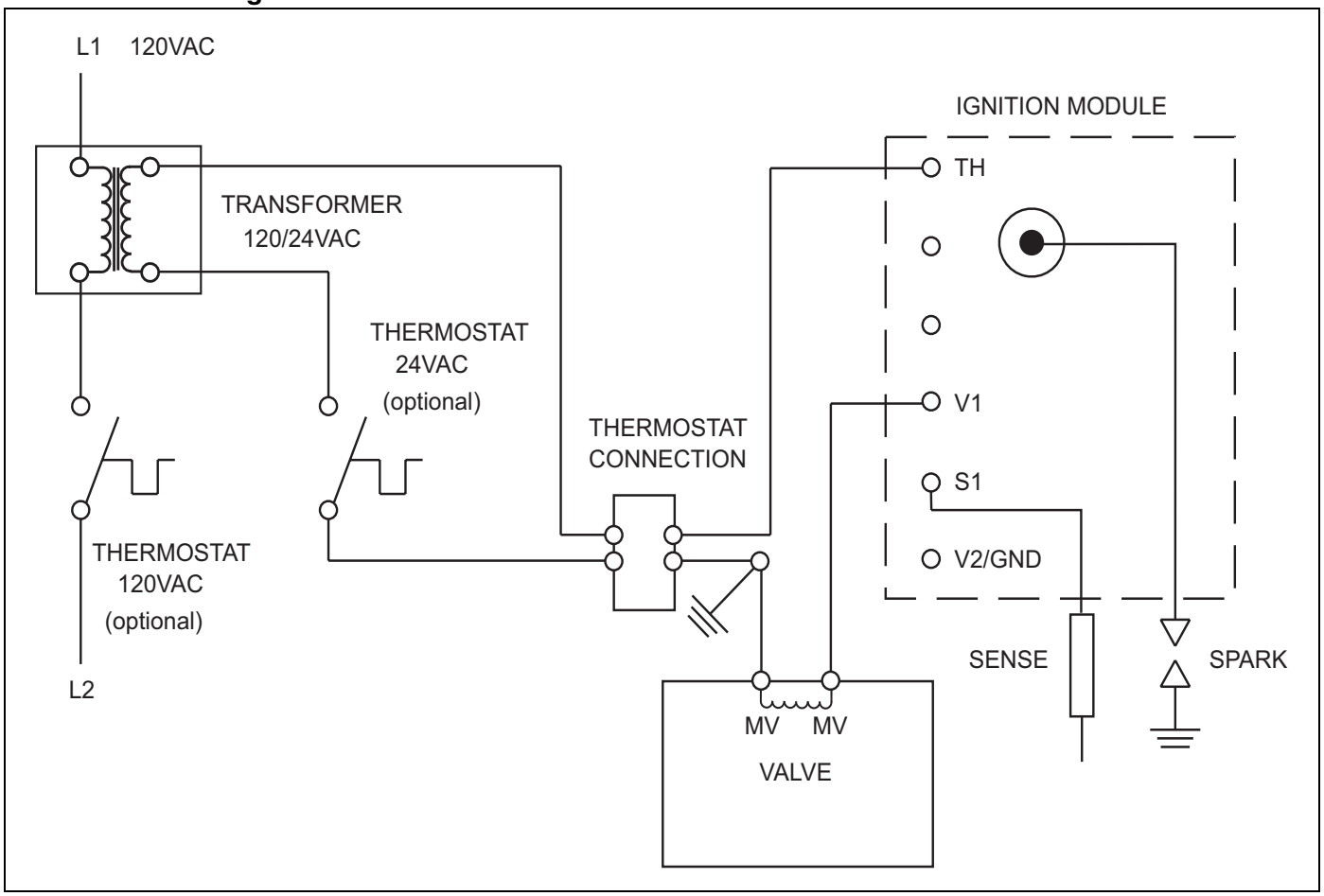
8.5 Millivolt, Thermostat Wiring and Diagram



8.6 DSI Wiring Diagram



8.7 DSI Ladder Diagram



SECTION 9: OPERATION AND MAINTENANCE

9.1 Operation-Spark Ignition System

The GG-Series™ heater is equipped with a spark ignition system. When the system calls for heat, the following sequence occurs:

1. After a 45 second pre-purge, the ignition module opens the gas valve and energizes the electrode.
2. When the flame is established, the sparking sequence ceases.
3. If the flame is not established during the ignition sequence, the ignition module closes the gas valve and purge begins. The ignition module will try 2 additional times for ignition (with purge between). If ignition is not established, the module will lock-out.

   NOTE: After 1 hour, the module will re-set automatically and return to steps 1,2 and 3.

5. If a flame is detected, the gas valve remains open. When the thermostat is satisfied, power (120 or 24 VAC) is shut off and the gas valve closes.

9.1.1 To Shut Off Heater

Turn thermostat to lowest setting.

Turn OFF electric current to heater.

Turn OFF manual gas valve.

9.1.2 To Start Heater

Before lighting, turn gas valve and electric current OFF and wait five minutes for unburned gas to vent from heater. After five minutes:

Turn ON manual gas valve.

Turn ON electric current to heater.

Turn thermostat above room temperature and burner should light automatically.

Set thermostat to desired temperature.

9.2 Operation-Millivolt System

9.2.1 To Shut Off Heater

Turn thermostat to lowest setting. Push in gas control knob slightly and turn clockwise to "OFF."

NOTE: Knob cannot be turned from "PILOT" to "OFF" unless knob is pushed in slightly. Do not force.

9.2.2 To Start Heater

Before lighting, turn gas valve OFF and wait five minutes for unburned gas to vent from heater. After five minutes:

Turn knob on gas control counterclockwise to "PILOT."

Push in control knob all the way and hold in. Immediately light the pilot with a match. Continue to hold the control knob in for about one minute after the pilot is lit. Release knob and it will pop back up. Pilot should remain lit. If it goes out, repeat Section 9.2.2.

- If knob does not pop up when released, stop and immediately call your service technician or gas supplier.
- If pilot will not stay lit after several tries, turn the gas control knob to "OFF" and call your service technician or gas supplier.

Turn gas control knob counterclockwise to "ON."

Set thermostat to desired setting

Once heater is operating, keep away from the heater. Do not touch any part of the heater because it is very hot.

9.3 Pre-Season Maintenance and Annual Inspection

To ensure your safety and years of trouble-free operation of the heating system, service and annual inspections must be done by a contractor qualified in the installation and service of gas-fired heating equipment.

Disconnect gas and electric supplies before performing service or maintenance. Allow heater to cool before servicing.

To obtain the maximum performance from your heater each year, we recommend the following be performed at the start of the heating season.

1. With an air hose regulated to 25 PSIG, blow off any dust and dirt that has accumulated on the heater.
2. From the front of the heater, direct the air hose from a distance of approximately 12" (30 cm) over the entire exposed area of the ceramic tile.
3. Do not insert the air hose into the inlet of the venturi tube.
4. Remove, clean and re-install each gas orifice.

5. If additional service to the heater is required, contact the factory or your local representative.

Before every heating season, a contractor qualified in the installation and service of gas-fired heating equipment must perform a thorough safety inspection of the heater.

For safety and best performance, the gas, electrical, thermostat connections, suspensions and overall heater condition are some of the areas requiring inspection.

NOTE: Gas flow and burner ignition are among the first things that should be inspected. Please *See Page 14, Section 9.4* for suggested items to inspect.

9.4 Maintenance Checklist

Installation, Service and Annual Inspection of the 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.

The Vicinity of the Heater	Do not store or use flammable objects, liquids or vapors near the heater. Immediately remove these items if they are present. *See Page 3, Section 3*
Vehicles and Other Objects	Maintain the clearances to combustibles. Do not hang anything from, or place anything on, the heater. Make sure nothing is lodged between the reflector, pods, and gas manifold or laying on top of the heater. Immediately remove objects in violation of the clearances to combustibles. *See Page 3, Section 3*
Reflector	Make sure there is no dirt, sagging, cracking or distortion. Do not operate if there is sagging, cracking or distortion. Clean surface with a damp cloth.
Gas Line	Check for gas leaks. *See Page 10, Section 7*.
Orifice	Clear of obstructions (even spider webs will cause problems). Carefully remove any dust and debris from the burner.
Direct Spark Igniter	Replace if cracked or if rod shows signs of wear.
Thermostat	There should be no exposed wire or damage to the thermostat. *See Page 11, Section 8*

Suspension Points	Make sure the heater is properly secured on all hanging points. Look for signs of wear on the chain or ceiling. *See Page 3, Section 3 and Page 7, Figure 2.*
Wire Mesh and Support Rods	Make sure the support rods are in their original position and have not moved out of the locating holes. The rods are affixed with a pushnut at the bottom of the heater. The wire mesh is affixed on two places to the support rods.
Ceramic and Burner Pods	Make sure that there are no cracks in the ceramics. Make sure the gaskets are between the ceramics, and between the ceramics and metal pod.

SECTION 10: TROUBLESHOOTING

10.1 DSI

10.1.1 No Spark

1. If the ignition fails to spark after completion of the purge cycle, ensure line voltage is present at the transformer.
2. Measure output of the transformer - is it 24V?
3. Interrupt line power for 10 seconds and re-establish power to reset the ignition module. If spark is not present after purge, replace the ignition module.

10.1.2 Spark Gap

1. Insure that the flame rod is not grounding and that the spark gap is set between 1/8" (3 mm) and 3/16" (5 mm).

10.1.3 Burner Does Not Stay Lit

1. Ensure flame sensor is not grounding.
2. Measure flame signal - is it minimum 0.9 µA? *See Section 10.1.4 and Figure 4*.
3. Clean flame sensor and check sensor wiring.
4. Verify that the burner is wired per the circuit diagram as polarity of supply connections is critical.
5. Ensure adequate gas supply pressure.

10.1.4 Flame Rod Current Test

The proper flame rod-to-ground area ratio cannot always be determined by visual examination or physical measurement. A positive means of checking the installation is to measure the flame rod current under actual firing conditions. It is definitely recommended that the installer measure the current flow between the lead of the flame rod unit and the terminal in the control terminal board (see Figure 4). Measure the current with a DC Micro-Ammeter or equal. We recommend a steady output of 0.9 µA or more. A steady flow of current in this amount under actual firing conditions will generally indicate adequate flame.

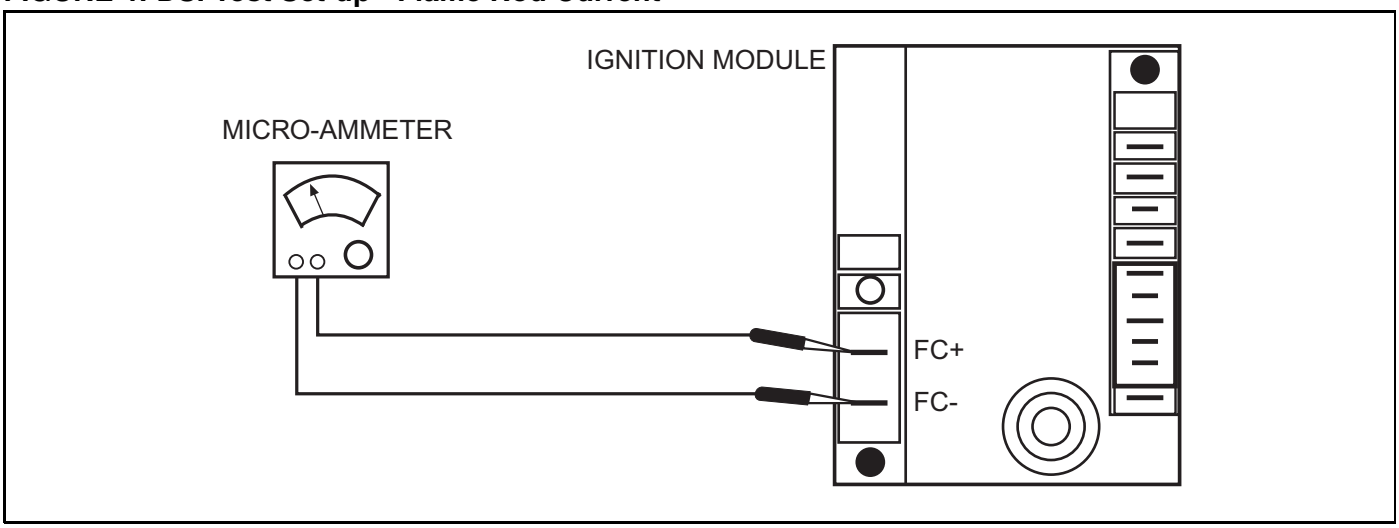
1. Read all control data sheets supplied with this heater.
2. Check flame rod for any contact to heater parts. Flame rod must be free of any contact to heater. Contact with heater will short circuit flame rod.
3. Cracked porcelain on flame rod will short circuit sensor. Replace flame rod.

10.2 Millivolt

10.2.1 Pilot Burner/Main Burner Fails to Light

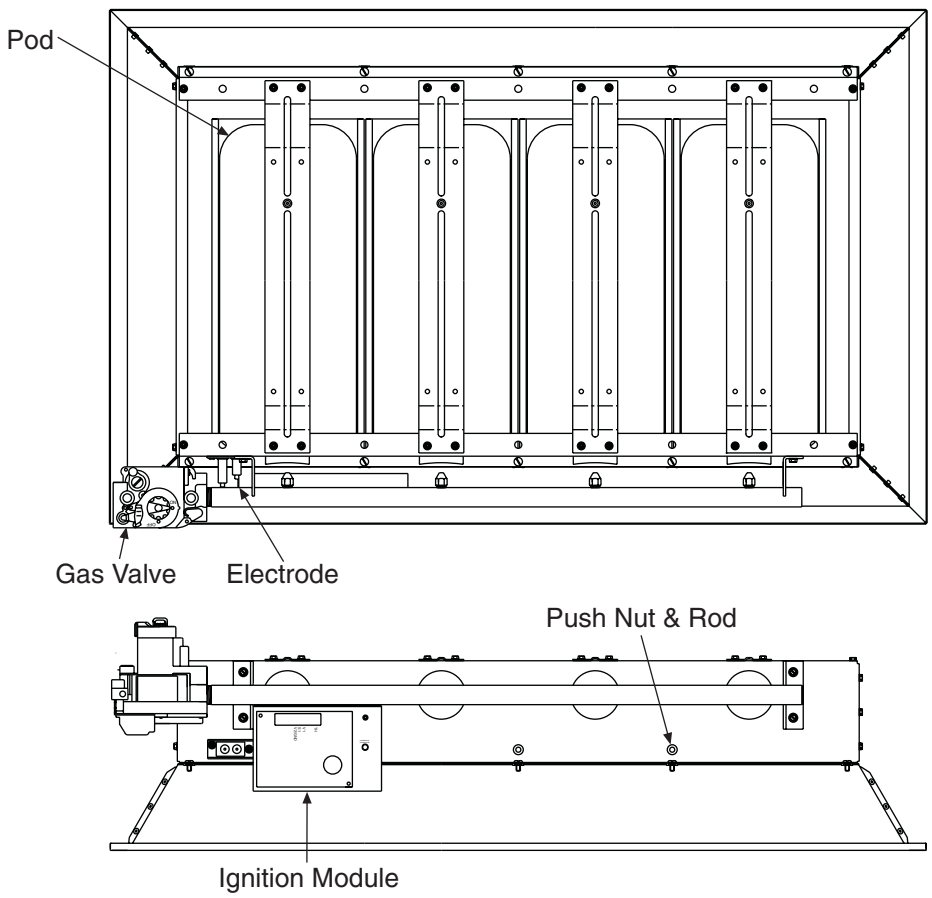
1. Ensure adequate gas supply pressure.
2. Ensure pilot flame.
3. Ensure correct manifold gas pressure is present when valve is energized.

FIGURE 4: DSI Test Set-up - Flame Rod Current



SECTION 11: REPLACEMENT PARTS

Use only genuine ROBERTS GORDON® replacement parts.
Use of parts not specified by Roberts-Gordon voids warranty.
Failure to follow these instructions can result in property damage.



11.1 DSI Replacement Parts

Description	Part Number
Gas Valve (Natural)	90032503
Gas Valve (LP)	90032502
Burner Assembly (POD)	04010000
Electrode	90427410
Ignition Module	90439500
Push Nut	91120104
Rod	91613100
Wire Harness (Not Shown)	04091000
Ignition Cable (Not Shown)	90427710
Wire Mesh (Not Shown):	
GG-30	91613301
GG-60	91613302
GG-100	91613303
GG-130, GG-160	91613304

11.2 Millivolt Replacement Parts

Description	Part Number
Gas Valve (NAT) Millivolt	90068500
Gas Valve (LP) Millivolt	90068700
Pilot Burner (NAT)	90311900
Pilot Burner (LP)	90311801
Thermopile	90311800
Thermostat Powerpile	90440000
Bracket, Millivolt Ignitor	04030100
Burner Assembly (POD)	04010000
Push Nut	91120104
Rod	91613100
Wire Mesh (Not Shown):	
GG-30	91613301
GG-60	91613302
GG-100	91613303
GG-130, GG-160	91613304

SECTION 12: SPECIFICATIONS

12.1 Material Specifications

12.1.1 Reflectors

.040 polished aluminium

12.2 Heater Specifications

12.2.1 Ignition Controller

Fully automatic spark ignition with safety shut-off. (Millivolt heater uses standing pilot.)

12.3 Suspension Specifications

Galvanized straight link welded chain.
Working load of 175 lbs (80 kg).

12.4 Controls Specifications

Time switches, thermostats, etc. can be wired into the electrical supply. External controls supplied as an optional extra.

12.5 Altitude Specifications

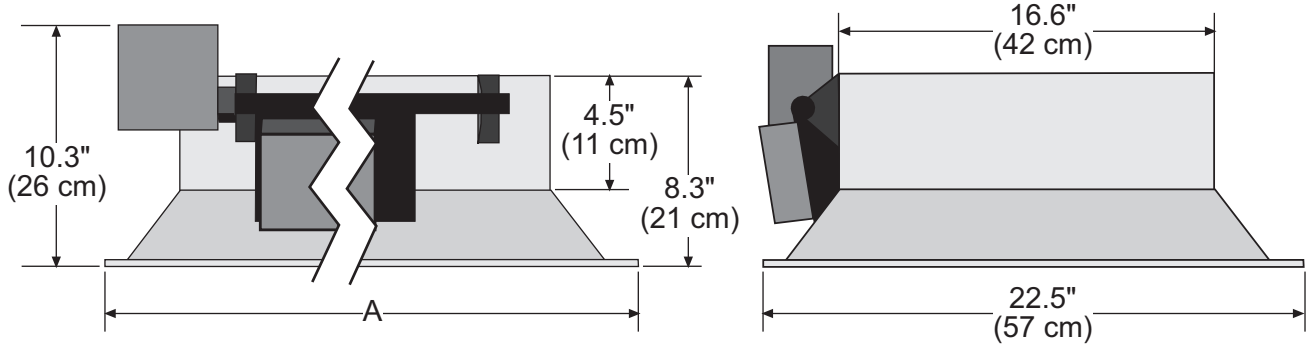
All natural gas heaters are intended for installation at altitudes from 0 to 4,500' above sea level.

All L.P. burners with part numbers 042030LP through 042130LP are intended for installation at altitudes from 0 to 2,000' above sea level.

All L.P. burners with part numbers042030LPHA through 042130LPHA are intended for installation at altitudes from 2,000' to 4,500' above sea level.

For installations higher than 4,500' above sea level consult your ROBERTS GORDON® Independent Distributor.

General Specifications for GG-Series heaters are as follows.



Model	Heat Input Rate (BTUH X1000)	A	Recommended Minimum Mounting Height for Space Heating*
GG-30	30	15.6" (39.6 cm)	8' - 10' (2.4 - 3m)
GG-60	60	22.3" (56.6 cm)	10' - 12' (3 - 3.6m)
GG-100	100	29.1" (74 cm)	12' - 15' (3.6 - 4.5m)
GG-130	130	35.8 (91 cm)	12' - 15' (3.6 - 4.5m)
GG-160	160	35.8" (91 cm)	15'+ (4.5m)

**See Page 3, Section 3* for clearrances to combustibles.

GAS PRESSURE AT MANIFOLD:

Natural Gas:	All Models	6.0" w.c. (14.9 mbar)
LP Gas:	All Models	11.0" w.c. (26.1 mbar)

GAS INLET PRESSURE:

Natural Gas:	7.0" w.c. (17.4 mbar)	Minimum
	14.0" w.c. (34.8 mbar)	Maximum
LP Gas:	12.0" w.c. (27.4 mbar)	Minimum
	14.0" w.c. (34.8 mbar)	Maximum

PIPE CONNECTION:

1/2" NPT (All Models)

ELECTRICAL RATING (DIRECT SPARK IGNITION MODELS):

24V - 60 Hz., 0.67 Amp

(MILLIVOLT MODELS):

No outside source of power required.

SECTION 13: THE ROBERTS GORDON® GG-SERIES™ LIMITED WARRANTY

ROBERTS-GORDON WILL PAY FOR:

ROBERTS GORDON® warrants to the original owner-user that this ROBERTS GORDON® product will be free from defects in material and workmanship. This warranty is limited to twelve (12) months from the date of purchase by the original consumer, or eighteen (18) months from date of shipment by Roberts-Gordon, whichever occurs first.

ROBERTS GORDON® warrants the ceramic grid will be free from defects in material and workmanship. This warranty is limited to ten (10) years from the date of shipment by Roberts-Gordon.

ROBERTS-GORDON WILL NOT PAY FOR:

Service trips, service calls and labor charges.
Shipment of replacement parts.
Damage due to:

Failure to install, operate or maintain the ROBERTS GORDON® GG-Series™ as directed in Installation, Operation and Service Manual. You must follow requirements printed in this manual.

Misuse, abuse, neglect or modification of the ROBERTS GORDON® GG-Series™ in any way.

Improper service, use of replacement parts or accessories that are not specified by Roberts Gordon.

Improper installation, or any relocation of the ROBERTS GORDON® GG-Series™ after initial installation.

Incorrect supply, accident, fire, flood, acts of God or other casualty.

Use of the ROBERTS GORDON® GG-Series™ for other than its intended purpose.

Use of the ROBERTS GORDON® GG-Series™ in a corrosive atmosphere or any atmosphere containing contaminants.

Shipping. Claim must be filed with carrier.

Use of the ROBERTS GORDON® GG-Series™ in the vicinity of combustible or explosive materials.

Any defect in the ROBERTS GORDON® GG-Series™ arising from a drawing, design or specification supplied by or on behalf of the consumer.

Failure of parts not manufactured by Roberts Gordon in respect of any claim where the total price of the goods has not been paid.

WARRANTY IS VOID IF:

The ROBERTS GORDON® GG-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 ROBERTS GORDON® GG-Series™ is transferred. This warranty is nontransferable.

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

READ YOUR INSTALLATION MANUAL

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

Canada
76 Main Street West, Unit 10
Grimsby, Ontario L3M 1R6
905.945.5403

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® GG-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 fire, flood, strike, government or court orders, 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.

Millivolt Ignition Wall Tag - Attach this information to a wall near the ROBERTS GORDON® heater.

ROBERTS GORDON®
Infrared Heating

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

Know your model number and installed configuration. Model number is found on the burner and in the Installation, Operation and Service Manual.

Write the largest clearance dimensions with permanent ink according to your model number in the open spaces below.

OPERATING INSTRUCTIONS

1. STOP! Read all safety instructions on this information sheet.
2. Turn gas valve to OFF and wait five minutes for unburned gases to vent from heater.
3. Turn the control knob on the gas valve to the PILOT position. Push in control knob and light pilot with a match while continuing to depress knob.
4. Hold knob in for one minute, millivolt generator will heat sufficiently to keep the pilot valve open.
5. Turn gas control knob to ON.
6. Upon a call for heat, the millivolt thermostat contacts close, completing the circuit to the gas valve. The gas valve will open and standing pilot will light the heater.
7. Once the millivolt thermostat is satisfied, the main gas valve will close and the heater shuts off leaving the standing pilot valve open.
8. If the standing pilot goes out, the millivolt generator will cool and interrupt the circuit to the pilot valve. Both the pilot and main gas valves are closed. The heater remains inactive until steps 1, 2, 3 and 4 are repeated.

TO TURN OFF THE HEATER

1. Set the thermostat to off or the lowest setting.

⚠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.

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 registered installer/contractor qualified in the installation and service of gas-fired heating equipment.

Maintain _____ clearance to the side and _____ clearance below the heater from vehicles and combustible materials.

Roberts-Gordon
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

Roberts-Gordon
Telephone: 905.945.5403
Fax: 905.945.0511

Roberts-Gordon
Oxford Street
Bilston, West Midlands WV14 7EG UK
Telephone: +44(0) 1902 494425
Fax: +44(0) 1902 403200
E-mail: uksales@rg-inc.com
E-mail: export@rg-inc.com

Service Telephone: +44(0) 1902 498733
Service Fax: +44(0) 1902 401464
Export Telephone: +44(0) 1794 521562
Export Fax: +44(0) 1794 521387

Installation Code: ROBERTS GORDON® products are to be installed only in accordance with local laws, codes and regulations, and only by a contractor qualified in the installation and service of gas-fired heating equipment.

For optimum product performance and safety, installation, service and annual inspections must be completed by a contractor qualified in the installation and service of gas-fired heating equipment.

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Direct Spark Ignition Wall Tag - Attach this information to a wall near the ROBERTS GORDON® heater.

ROBERTS GORDON®
Infrared Heating

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

Know your model number and installed configuration. Model number is found on the burner and in the Installation, Operation and Service Manual.

Write the largest clearance dimensions with permanent ink according to your model number in the open spaces below.

OPERATING INSTRUCTIONS

1. STOP! Read all safety instructions on this information sheet.
2. Turn gas valve and electric power OFF and wait five minutes for unburned gases to vent from heater.
3. Turn ON main gas valve.
4. Turn ON electric power.
5. Set thermostat to desired temperature, burner should light automatically.

TO TURN OFF THE HEATER

1. Set the thermostat to off or the lowest setting.

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 registered 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.

Maintain _____ clearance to the side and _____ clearance below the heater from vehicles and combustible materials.

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Service Telephone: +44(0) 1902 498733
Service Fax: +44(0) 1902 401464
Export Telephone: +44(0) 1794 521562
Export Fax: +44(0) 1794 521387

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