



INSTALLATION AND OPERATION INSTRUCTIONS

RSCA Series **INFRARED RADIANT CERAMIC HEATER**

Models

RSCA 3
RSCA 6
RSCA 10

UNVENTED
(For Indoor Installation Only)

INSTALLER: This manual is the property of the owner. Please present this manual to the owner when you leave the jobsite.

WARNING: Improper installation, adjustment, alteration, service, or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.



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1. GENERAL INFORMATION

This heater is a self-contained infrared radiant ceramic heater for use in locations where flammable gases or vapors are not generally present and is intended for the heating of nonresidential spaces.

INSTALLATION REQUIREMENTS

Installation of this heater must be in accordance with all applicable codes shown in the instructions and/or the local codes and authorities having jurisdiction. Heaters shall be installed by a licensed contractor or licensed installer. Clearances to combustibles as outlined in this manual should always be observed.

Every heater shall be located with respect to building construction and other equipment so as to permit access to the heater. Each installer shall use good installation practices when locating the heater and must give consideration to service accessibility.

The heater, when installed in aircraft hangars and public garages, must be installed in accordance with ANSI/NFPA 409-latest edition (Standard for Aircraft Hangars), ANSI/NFPA 88a-latest edition (Standard for Parking Structures), and ANSI/NFPA 88b-latest edition (Standard for Repair Garages) with the following clearances:

- a. At least 10 feet above the upper surfaces of wings or engine enclosures of the highest aircraft which may be housed in the hangar.
- b. At least 8 feet above the floor in shops, offices, and other sections of hangars communicating with aircraft storage or service areas.
- c. At least 8 feet above the floor in public garages. **WARNING**...Minimum clearances marked on the heater must be maintained from vehicles parked below the heater.

Although these heaters may find use for many applications other than space heating, the American Gas Association has not tested and does not certify these heaters for any use other than space heating as defined in this manual. For this reason, Gas-Fired Products, Inc., will not recognize the warranty for any use other than space heating.

This heater is for Indoor Installation Only and can be used in Unvented mode. The term Unvented actually means Indirect Vented. While the products of combustion are expelled into the building, national codes require ventilation in the building to dilute these products of combustion. This ventilation may be provided by gravity or mechanical means.

Copies of the National Fuel Gas Code (ANSI Z223.1-latest edition) are available from the American Gas Association Laboratories, 8501 E. Pleasant Valley Rd, Cleveland, OH 44131. All NFPA codes are available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

ATTENTION : Save this manual for future reference.

2. SPECIFICATIONS

Model No.	BTU/Hr Input	Orifice Size		Shipping Weight
		Natural Gas	Propane Gas	
RSCA 3	26,000	#42 (.0935)	#53 (.0595)	30
RSCA 6	52,000	#32 (.1160)	#45 (.0820)	40
RSCA 10	104,000	#32 (.1160)	#45 (.0820)	70

Gas Pipe Connection: 1/2" NPT Female

Model Suffix

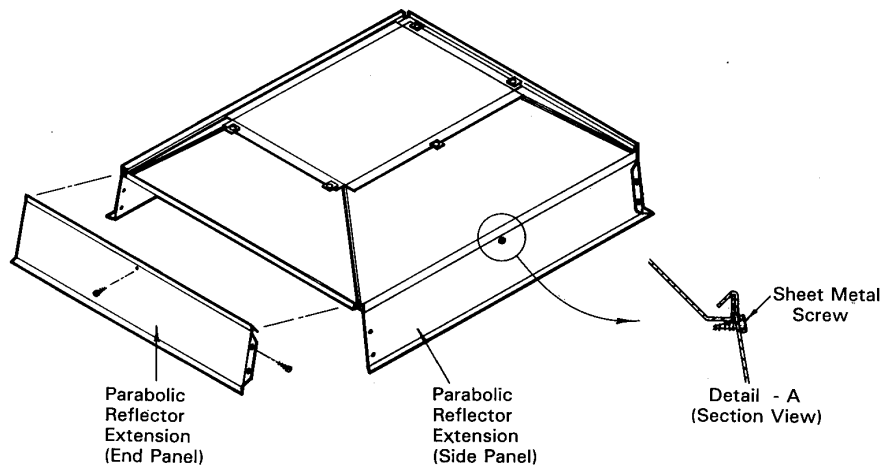
Gas Type: N - Natural
L - LP

Type Ignition: 1 - Standing Pilot (Millivolt)
2 - Standing Pilot (24 Volt .10 Amp 60 Hz.)
5 - Direct Spark (115 Volt .40 Amp 60 Hz.)

Type Reflector: Standard
Option - Parabolic Reflector Extension

3. OPTIONAL PARABOLIC REFLECTOR EXTENSION ASSEMBLY

The heater is completely factory assembled and requires no field assembly. If the optional parabolic reflector extension is utilized, locate and identify the end panels and side panels as shown in the following diagram. Attach the side panels as shown. Attach the end panels so that the end flanges of the end panels overlap the side panels. Attach the side panels and end panels together with the screws provided in the kit. Attach the remaining screws as shown in Detail - A. This is to ensure that the Parabolic Reflector Extension is securely attached to the reflector. The clearances to combustibles (shown on the clearance label which is secured to the reflector on the controls end of the heater and in Section 5 of these instructions) must be closely observed.



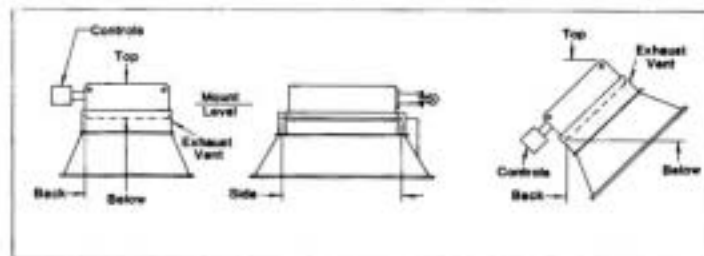
4. INSTALLATION REQUIREMENTS

The heater can be mounted with the reflector horizontal or angled up to 45° off the horizontal. When the heater is to be angle mounted, make sure the controls are on the lower side of the heater. Coil chains (No. 2 or larger) or rigid supports may be used to mount the heater. The long axis of the heater should be level whether the heater is mounted horizontally or angled.

5. MINIMUM CLEARANCES TO COMBUSTIBLES

Minimum clearances shall be measured from the outer surfaces as shown below:

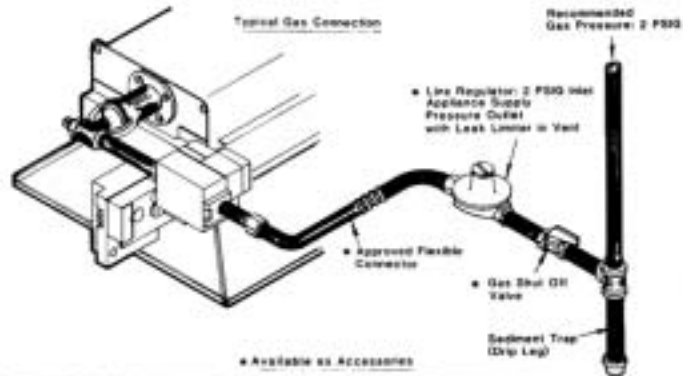
Reflector Type	Mounting	RSCA 3				RSCA 6				RSCA 10			
		Back	Side	Top	Below	Back	Side	Top	Below	Back	Side	Top	Below
Standard	Horizontal	24"	34"	24"	48"	38"	30"	36"	72"	48"	48"	36"	96"
	Angled 45° Max.	8"		32"		12"				18"			
Parabolic Extension	Horizontal	36"	36"	36"	126"	36"	36"	36"	126"	48"	60"	36"	180"
	Angled 45° Max.	12"		12"		12"							



NOTE: The clearances specified above must be maintained to combustibles and other materials which may be damaged by temperatures 90°F above ambient temperature. Clearances to combustibles are posted on the reflector near the control end of the heater. In locations used for storage of combustible materials where they may be stacked below the heater, NFPA 54 requires that the installer must post signs that will "specify the maximum permissible stacking height to maintain the required clearances from the heater to combustibles".

6. GAS CONNECTIONS AND REGULATION

1. Connect to the supply tank or manifold in accordance with the latest edition of National Fuel Gas Code (ANSI Z223.1), and local building codes. Authorities having jurisdiction should be consulted before the installation is made.
2. Pipe joint compounds must be resistant to the action of liquefied petroleum gases.
3. Where local codes do not prohibit, an A.G.A. or U.L. approved flexible connector (minimum 5/8" I.D.) is recommended between the rigid piping and the heater. A union and an approved shut-off valve should be installed before the control valve inlet. The shut-off valve should be installed within 6 feet of the union.
4. This appliance is equipped with a snap-opening, combination gas valve. The maximum supply pressure to the appliance is 14" W.C. or 1/2 P.S.I. If the line pressure is more than the maximum supply pressure, then use a line regulator as indicated on the next page, or a line regulator which corresponds to the supply pressure.
5. If a 2nd stage regulator is used and gas seeps through it, the redundant combination gas valve is designed to lock out. Pressure build-up in the supply lines prior to the heaters must be released before proper heater operation.



6. After all gas connections have been made, make sure the heater and all gas outlets are turned off before the main gas supply is turned on. Turn the gas pressure on and check for leaks. To check for leaks, apply a soap suds solution to all connections and joints or check by one of the methods listed in Appendix D of ANSI Z223.1 (latest edition) National Fuel Gas Code. **DO NOT USE AN OPEN FLAME OF ANY KIND TO TEST FOR LEAKS.**

7. INSTRUCTIONS FOR PRESSURE TEST GAUGE CONNECTION

Supply Pressure: Installer to provide a 1/8" N.P.T. plugged tapping, accessible for test gauge connection immediately upstream of the gas supply connection to the heater.

Manifold Pressure: Turn gas valve to "OFF" position. Remove 1/8" plug from manifold downstream from the valve and connect 1/8" nipple to the tapped hole. Connect gauge to nipple. Turn on the gas supply.

With the main burner operating, check burner manifold pressure using a water manometer. If adjustment is required, remove cover screw. Using a small screwdriver, turn adjustment screw clockwise ↻ to increase or counter-clockwise ↻ to decrease gas pressure to burner. Replace cover screw.

Gauges which measure in pounds per square inch are not accurate enough to measure or set the manifold pressure. Use a water manometer.

Heater Models	Gas Type	Manifold Pressure	Supply Pressure	
			*Minimum	Maximum
RSCA 3	Natural Gas	3.5" W.C.	4.5" W.C.	14" W.C.
	Propane Gas	10" W.C.	11" W.C.	14" W.C.
RSCA 6 & RSCA 10	Natural Gas	6" W.C.	7" W.C.	14" W.C.
	Propane Gas	10" W.C.	11" W.C.	14" W.C.

*Minimum permissible gas supply pressure for purpose of input adjustment.

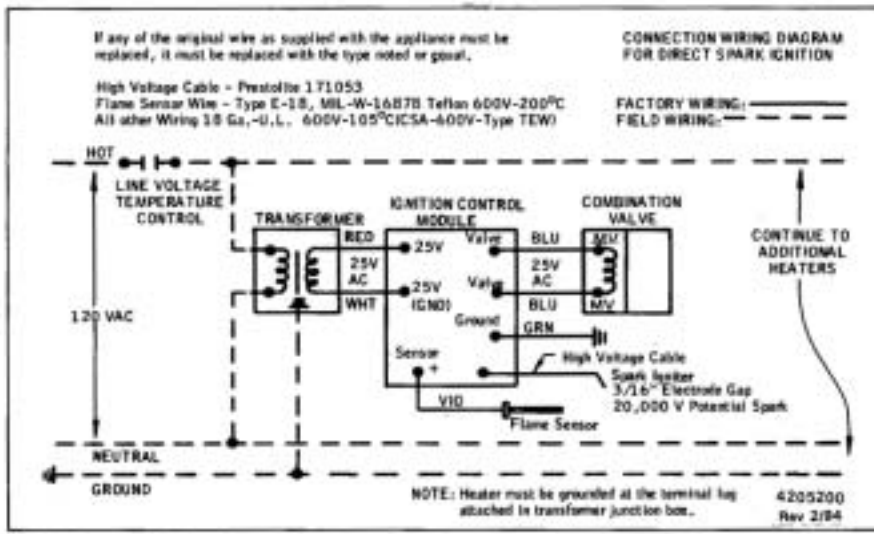
8. ELECTRICAL CONNECTIONS

All electric wiring shall conform with the rules of the National Code ANSI/NFPA 70 (latest edition) and/or the code legally authorized in the locality where the installation is made.

The wiring providing power to the heater shall be connected to a permanently live electrical circuit, i.e., one that is not controlled by a light switch. The electrical power to the heater shall be through an approved fused disconnect switch. The switch shall be located in the vicinity of the heater (check local codes for allowable distances) and should be identified as the heater control switch. In the absence of local codes, multiple conductor cable for control circuits should be no lighter than No.18 American wire gauge having Type "T" insulation or equivalent. The unit must be electrically grounded in accordance with the National Electrical Code ANSI/NFPA 70 (latest edition) when installed, if an external electrical source is utilized.

An unmounted transformer is furnished with each 24 volt controlled heater with the suffix N2 or L2. All 24 volt and direct spark controlled heaters must be grounded at the transformer junction box.

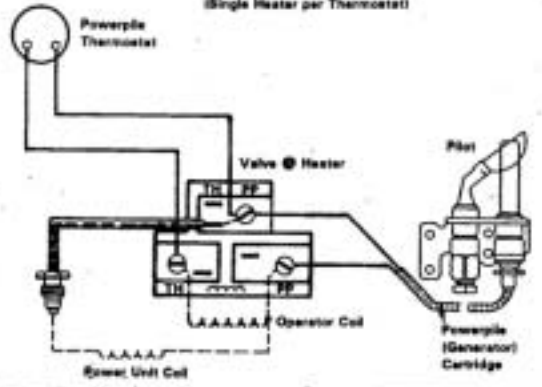
TYPICAL HEATER WIRING DIAGRAM FOR DIRECT SPARK IGNITION SYSTEM



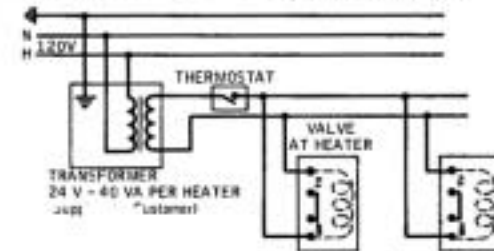
Note: A replaceable 3 amp fuse (1-1/4 in. long.) is fitted to the ignition control module.

TYPICAL THERMOSTAT WIRING INSTALLATIONS

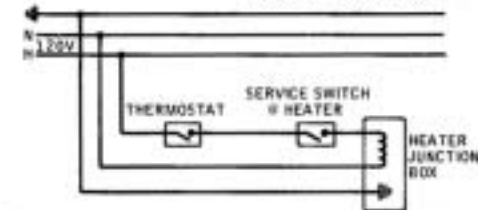
* Model No. Suffix: N1, L1 - Self Generating, Millivolt Standing Pilot (Single Heater per Thermostat)



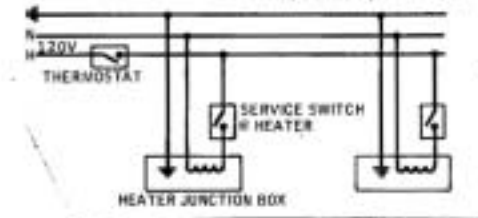
MODEL NO. SUFFIX: N2, L2 - 24 VOLT STANDING PILOT (Multiple Heaters per Thermostat)



MODEL NO. SUFFIX: N5, L5 - 120 VOLT DIRECT SPARK (Single Heater per Thermostat)



MODEL NO. SUFFIX: N5, L5 - 120 VOLT DIRECT SPARK (Multiple Heaters per Thermostat)



*CAUTION: A millivolt type thermostat is required for use on self-generating pilot model heaters N1 & L1.

9. VENTILATION

This heater requires ventilation in the building to dilute the products of combustion and provide fresh air for efficient combustion. Power ventilation is recommended and the minimum vent flow required is as follows:

RSCA3: 109 cfm RSCA6: 218 cfm RSCA10: 436 cfm

If gravity ventilation is used, the required square feet of inlet and outlet vent area (depending on height and temperature difference) is as follows:

RSCA3:0.4 s/f RSCA6: 0.8 s/f RSCA10: 1.6 s/f

The General Ventilation Rules outlined in ASHRAE GUIDE AND DATA BOOK should be observed when locating vents. Exhaust vents must be located at the highest point above and in the vicinity of the heaters and the inlet vents must be located below the level of the heaters.

10. LIGHTING AND SHUTDOWN INSTRUCTIONS

STANDING PILOT IGNITION SYSTEM (Ignition Suffix "1" or "2")

1. Turn to "Pilot". Press dial in and light pilot. Hold for 60 seconds and release.
2. Turn dial counterclockwise to "On". Use this position for thermostat control. Set thermostat for desired room temperature.
3. To turn off, turn dial clockwise to "Pilot". Depress dial slightly and turn to "Off".
4. If heater does not light, shut off gas completely for 5 minutes before attempting to relight.

DIRECT SPARK IGNITION SYSTEM (Ignition Suffix "5")

1. Turn on gas supply.
2. Set thermostat to call for heat.
3. Ignition should occur immediately.
4. If ignition fails, the unit will spark for approximately 21 seconds and go into safety lockout. Turn thermostat (or power) off for 60 seconds to take out of lockout.
5. If heater does not light, shut off gas completely for 5 minutes before attempting to relight.
6. **CAUTION:** Heater must be grounded. Poor grounding will give nuisance lockouts, particularly during momentary power interruptions.
7. To shut down the heater, turn off the gas and the electrical supply.

NOTE: The lighting and shutdown instructions are also shown on the permanent nameplate attached to the heater.

11. CLEANING AND ANNUAL MAINTENANCE

This heater must be cleaned and serviced at least once before the start of each heating season or at any time the infrared emitter shows signs of collecting any foreign material on its surface or in the ports, or when anything obstructs the venturi or the screen. Maximum heating efficiency and clean combustion will be maintained by keeping the emitter and burner clean. To clean the heater follow these instructions.

1. Turn off all electrical and gas supply to the heater.
2. Clean the reflector.
3. Remove the main burner orifice and the pilot orifice (if so equipped) and clean them thoroughly.
4. Check the venturi opening to be sure it is clean. If there is any evidence of dirt accumulation in the venturi, remove it before cleaning to avoid getting the dirt inside the heater.
5. Inspect the emitter surface to be sure it is clean. Ignite the heater and observe the color of the emitter face. If there are pronounced dark areas on the face, it probably indicates an accumulation of dirt on the inside surface and the following steps must be taken to clean that surface.

DO NOT DIRECT AN AIR HOSE AT THE CERAMIC EMITTER SURFACE AS IT MIGHT DAMAGE THE CERAMIC OR DISLODGE THE HIGH TEMPERATURE GASKET MATERIAL.

- A. Lower the heater to the floor or other suitable working surface.
- B. Remove the reflector from the reflector mounting panels or collar.
- C. Disconnect the electrode cable and flame sensor cable, or pilot burner tubing.
- D. Remove the reflector mounting panels from the heater body.
- E. Remove the emitter face from the heater body. This surface unit is attached by 1/4" Hex Head Machine Screws (10 on the RSCA3, 16 on the RSCA6 and 26 on the RSCA10). Use caution in this operation as the emitter face is fragile.
- F. Carefully brush any foreign material from the back side of the emitter face and the inside of the heater.
- G. The insulation gasket which was between the heater body and the emitter face must be replaced when the heater is reassembled. Order two (2) each of part numbers indicated below:

RSCA 3: 4044608 and 4044613
RSCA 6: 4044608 and 4044609
RSCA10: 4044608 and 4044611

12. REPLACING PARTS

At all times when parts are being replaced, ensure that both gas and electrical supplies are disconnected.

Various parts are available from the factory for replacement by a licensed service person. Refer to separate exploded parts guide for all replacement parts.

13. INSTALLATION DATA

Date of Installation _____

Number of Heaters in System _____

Heater Model Number - RSCA _____ - _____

Heater Serial Number _____

N = Natural Gas
L = Propane Gas