

# BEACON/MORRIS "RBD" SERIES INFRARED RADIANT HEATER



RBDS-1

RBD SERIES CERAMIC HEATERS

NATURAL GAS    PROPANE GAS  
*(Check One)*



## EQUIPMENT USED:

---

---

---

---

---

---

---

---

---

---

---

---

## ACCESSORIES:

- |  |  |
|--|--|
| <input type="checkbox"/> Chain Mounting Kit: _____     | <input type="checkbox"/> Gas Shut-Off Valve: _____ |
| <input type="checkbox"/> Thermostat: _____             | <input type="checkbox"/> Reverb Screen: _____      |
| <input type="checkbox"/> Gas Pressure Regulator: _____ | <input type="checkbox"/> Other: _____              |
| <input type="checkbox"/> Parabolic Extension: _____    | <input type="checkbox"/> Other: _____              |



07/14

260 North Elm Street • Westfield, MA 01085  
Tel: (413) 562-5423 Fax: (413) 572-3764  
www.beacon-morris.com



PROJECT: \_\_\_\_\_

UNIT TAG: \_\_\_\_\_

# BEACON/MORRIS “RBD” SERIES INFRARED RADIANT HEATER



## 1) GENERAL INFORMATION

This heater complies with ANSI Z83.19 (current Standard) and CSA 2-35.

This heater is a self-contained infrared radiant ceramic heater for use in locations where flammable gases or vapors are not generally present (as defined by OSHA acceptable limits) 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. In Canada, the installation must conform to current CAN/CGA-B149.1/2 Installation Code in the absence of local codes. Heaters shall be installed by a licensed contractor or licensed installer. Clearances to combustibles as outlined in this manual should always be observed. In areas used for storage of combustible materials where they may be stacked below the heater, NFPA54 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.”

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 quality installation practices when locating the heater and must give consideration to clearances to combustible materials, vehicles parked below, lights, overhead doors, storage areas with stacked materials, sprinkler heads, gas and electrical lines, and any other possible obstructions or hazards. Consideration also must be given 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 that may be housed in the hangar and at least 8 feet above the floor in shops, offices, and other sections of hangars communicating with aircraft storage or service areas.

- b. 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.

### FOR CANADA ONLY

- a. Installation of this appliance is to be in accordance with the latest edition of CAN 1-B149.1 (Installation Code for Natural Gas Burning Appliances and Equipment), and/or CAN B149.2 (Installation Code for Propane Gas Burning Appliances and Equipment).
- b. For installation in public garages or aircraft hangars, the minimum clearances from the bottom of the heater to the upper surface of the highest aircraft or vehicle shall be 50 percent greater than the certified minimum clearance, but the clearance shall not be less than 8 feet.

Although these heaters may be used in many applications other than space heating (e.g., process heating), we 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.

This heater is not an explosion proof heater. Where the possibility of exposure to volatile and low flash point materials exists, it could result in property damage or death. This heater must not be installed in a spray booth where the heater can operate during the spraying process. Consult your local fire marshal or insurance company.

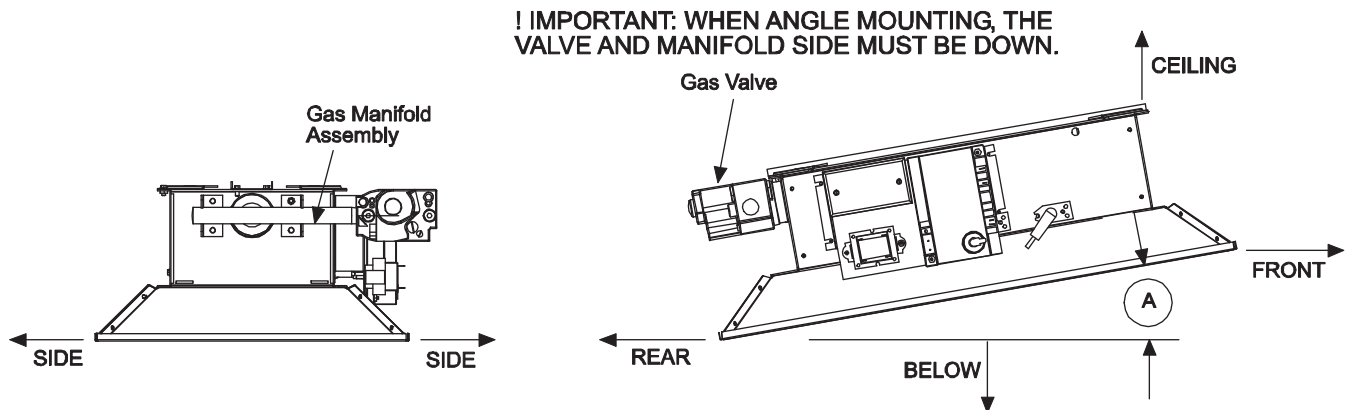
**▲ WARNING** Certain materials or objects, when stored under the heater, will be subjected to radiant heat and could be seriously damaged. Observe the Minimum Clearances to Combustibles listed in the manual and on the heater at all times.

# BEACON/MORRIS “RBD” SERIES INFRARED RADIANT HEATER



## 2) MINIMUM CLEARANCES TO COMBUSTIBLES

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



MINIMUM CLEARANCES TO COMBUSTIBLES											
Model	Mounted Horizontally				Mounted at 35° Angle					Rear	Angle Mounting
	Sides	Ceiling	Below		Below		Front				
			w/Standard Reflector	w/Reflector Extension	w/Standard Reflector	w/Reflector Extension	w/Standard Reflector	w/Reflector Extension			
RBD30 RBD35											0° min
RBD33 RBD40	30"	36"	72"	100"	72"	100"	36"	50"	30"	35° max	
RBD60 RBD70										0° min	
RBD66 RBD80	48"	48"	98"	137"	98"	137"	48"	68"	36"	35° max	
RBD100										0° min	
RBD120	48"	64"	128"	180"	128"	180"	60"	84"	48"	35° max	
RBD132 RBD160										10° min	
RBD140	60"	64"	136"	190"	136"	190"	64"	90"	48"	35° max	

**NOTE:** The clearances specified above must be maintained to combustibles and other materials that may be damaged by temperatures 90°F above ambient temperature. It is the installer’s responsibility to ensure that building materials with a low heat tolerance which may degrade at lower temperatures are protected to prevent degradation. 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.” Manufacturer recommends posting these signs adjacent to the heater thermostat or other suitable location that will provide enhanced visibility.

# BEACON/MORRIS "RBD" SERIES INFRARED RADIANT HEATER



## 3) SPECIFICATIONS

Model No.	BTU/HR Input	Number of Burners	Orifice Size $\Psi$		Shipping Weight	Minimum Mounting Height (feet)
			Natural Gas	Propane Gas		
RBD30-N1C	33,000	1	3/32"	n/a	30 lbs.	11
RBD35-N1C	35,000	1	#41	n/a	30 lbs.	12
RBD40-N1C	40,000	1	#38	n/a	30 lbs.	12
RBD60-N1C	65,000	2	3/32"	n/a	35 lbs.	13
RBD70-N1C	70,000	2	#41	n/a	35 lbs.	13
RBD80-N1C	80,000	2	#38	n/a	35 lbs.	14
RBD100-N1C	100,000	3	#41	n/a	48 lbs.	15
RBD120-N1C	120,000	3	#38	n/a	48 lbs.	16
RBD140-N1C	140,000	4	#41	n/a	58 lbs.	17
RBD160-N1C	160,000	4	#38	n/a	58 lbs.	18
RBD33-L1C	33,000	1	n/a	#52	30 lbs.	11
RBD66-L1C	66,000	2	n/a	#52	35 lbs.	13
RBD100-L1C	99,000	3	n/a	#52	48 lbs.	15
RBD132-L1C	132,000	4	n/a	#52	58 lbs.	17

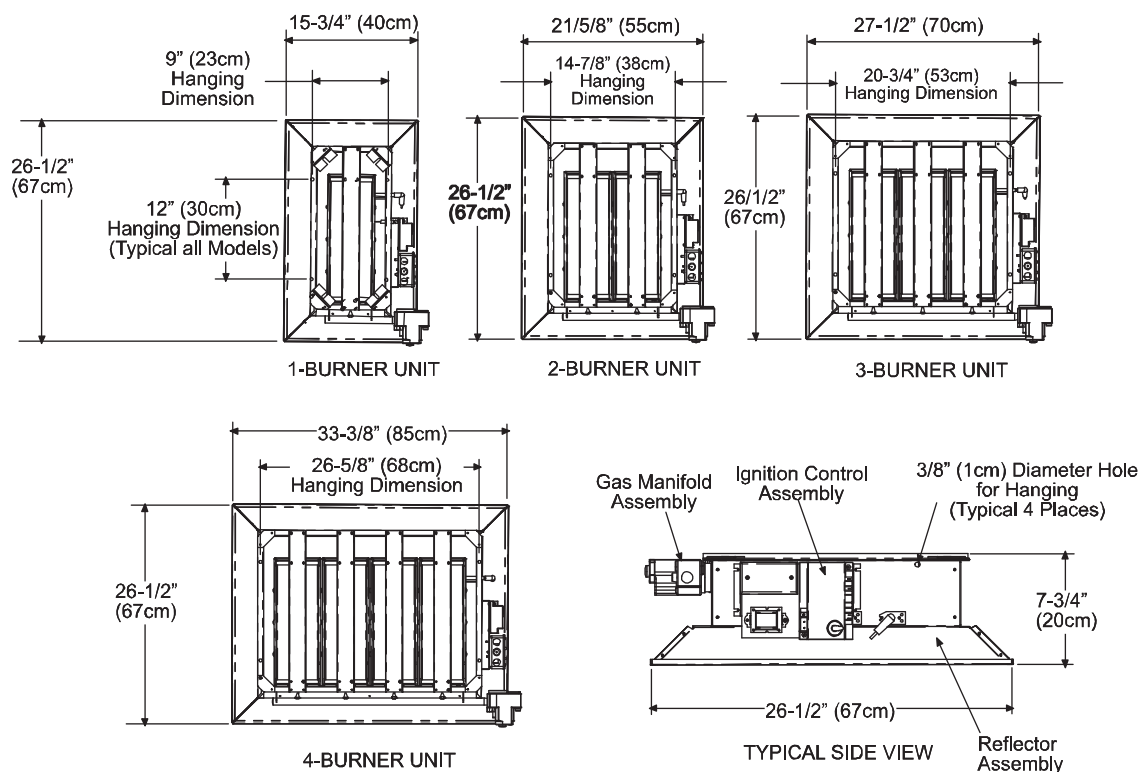
MODEL SUFFIX	
Gas Type:	Ignition System:
N = Natural	1 = Direct Spark (115 Volt / 0.40 Amp / 60 Hz)
L = Propane	

GAS-PIPE CONNECTION:
1/2" NPT (Female)

$\Psi$  One Orifice Per Burner

\*MOUNT HEATERS AS HIGH AS POSSIBLE. Minimums are shown as a guideline for human comfort and uniform energy distribution for complete building heating applications. Consult your manufacturer's representative for the particulars of your installation requirements.

## 4) DIMENSIONS



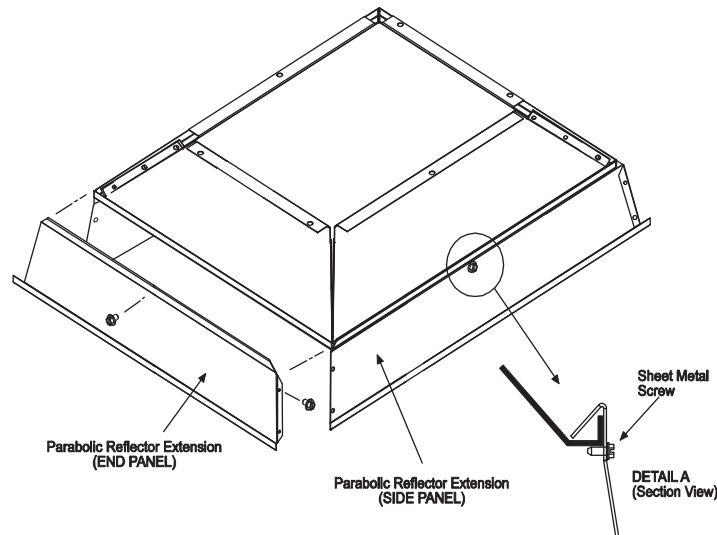
# BEACON/MORRIS "RBD" SERIES INFRARED RADIANT HEATER



## 5) OPTIONAL PARABOLIC REFLECTOR EXTENSION ASSEMBLY

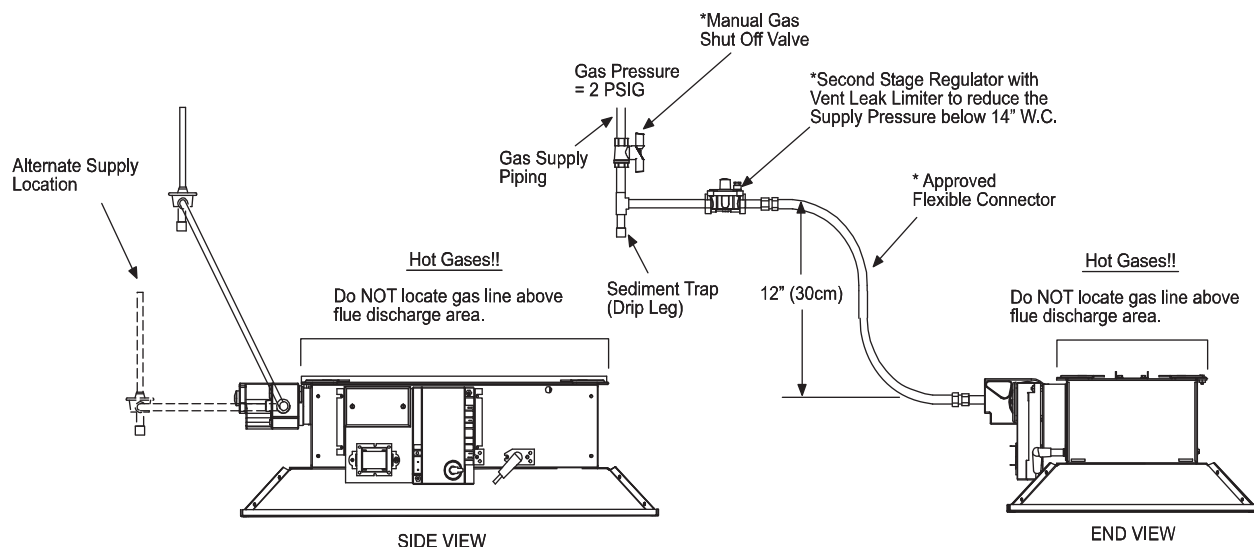
The heater is completely factory assembled and requires no field assembly. If the optional parabolic reflector extension is utilized, locate and identify the end panels and side panels as shown in the following diagram. Attach the side panels as shown. Attach the end panels so that the end flanges of 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 that is secured to the reflector on the control end of the heater and in Section 4 of these instructions) must be closely observed.



## 6) GAS CONNECTION

If the maximum supply pressure is less than 1/2 psig, a second stage regulator is not required.



\* Available as Accessories

TYPICAL GAS CONNECTIONS

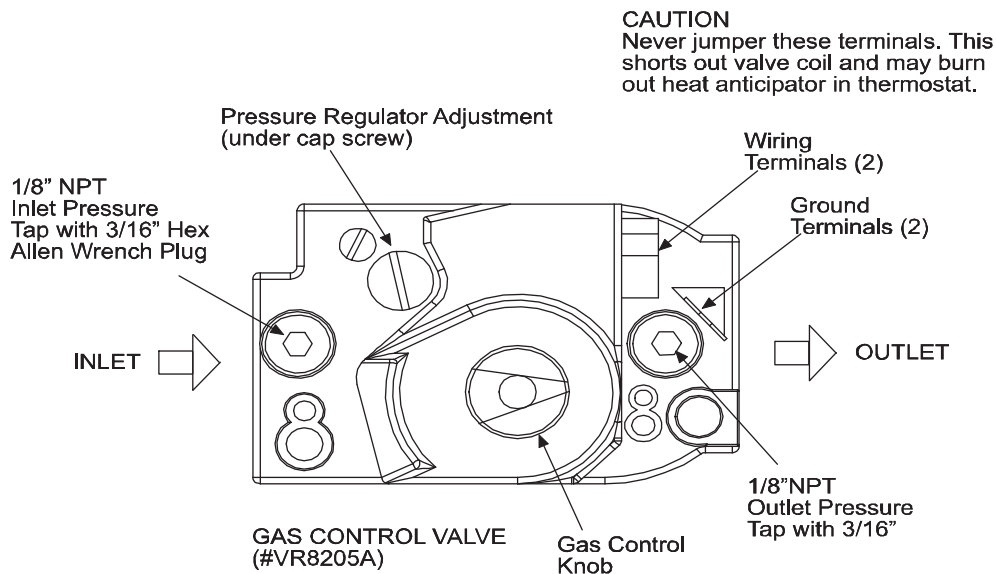
# BEACON/MORRIS "RBD" SERIES INFRARED RADIANT HEATER



## 7) GAS PRESSURE TABLE

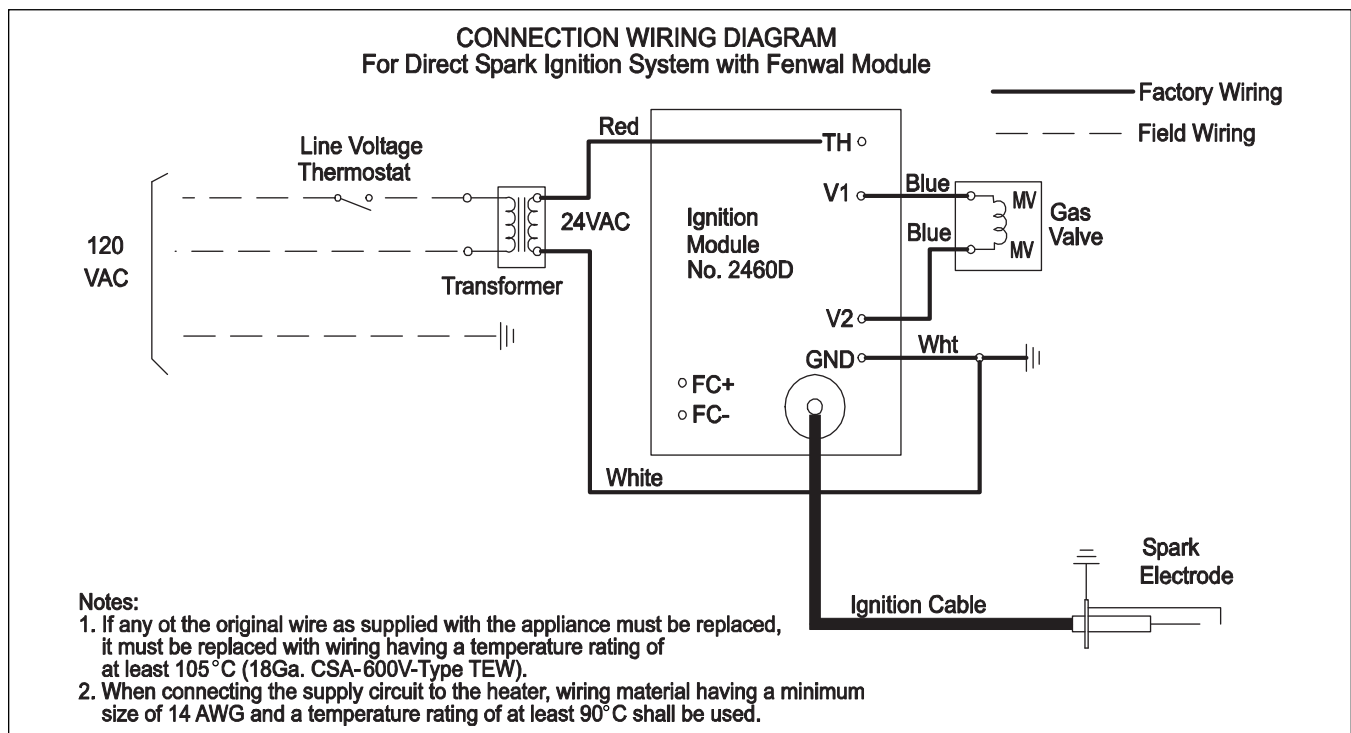
HEATER MODEL	GAS TYPE	MANIFOLD PRESSURE	SUPPLY PRESSURE	
			*Minimum	Maximum
RBD (30, 35, 40, 60, 70, 80, 100, 120, 140 & 160)	Natural	6" W.C.	7" W.C.	14" W.C.
RBD (33, 66, 100 & 132)	Propane	10" W.C.	11" W.C.	14" W.C.

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



## 8) ELECTRICAL CONNECTIONS

### TYPICAL HEATER WIRING DIAGRAM FOR DIRECT SPARK IGNITION SYSTEM

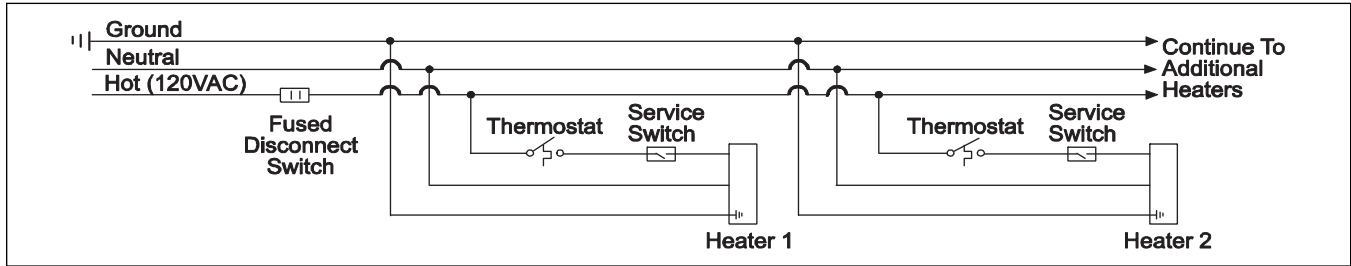


# BEACON/MORRIS "RBD" SERIES INFRARED RADIANT HEATER

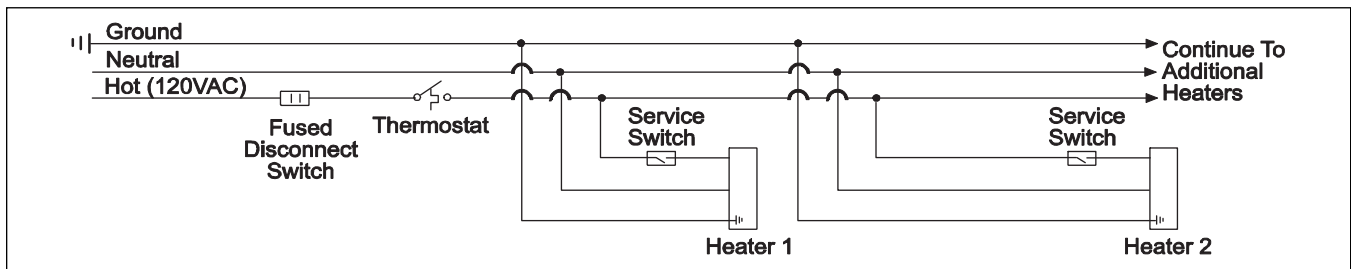


## FIELD CONNECTION AND THERMOSTAT WIRING DIAGRAMS

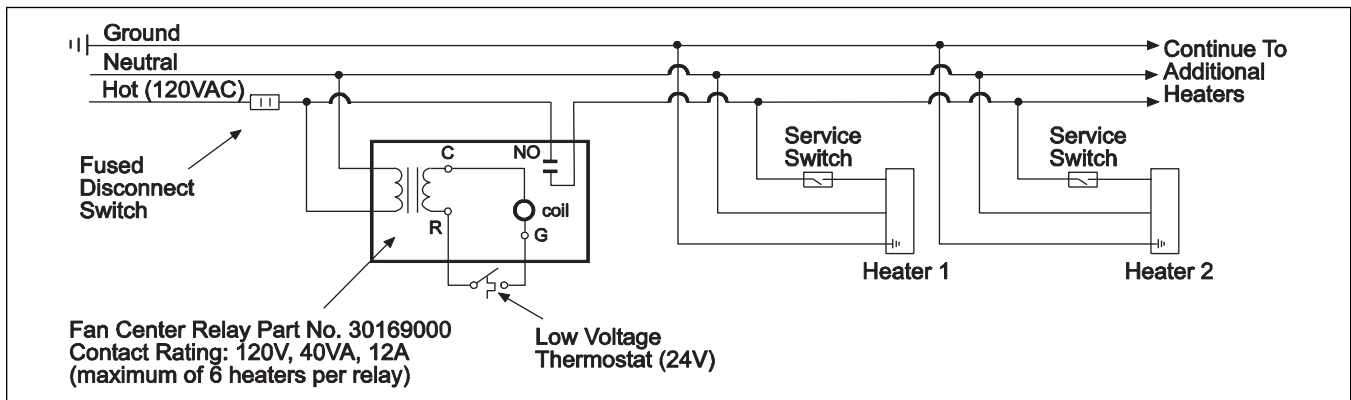
### A. LINE VOLTAGE (120V) THERMOSTAT CONNECTIONS – SINGLE HEATER PER THERMOSTAT



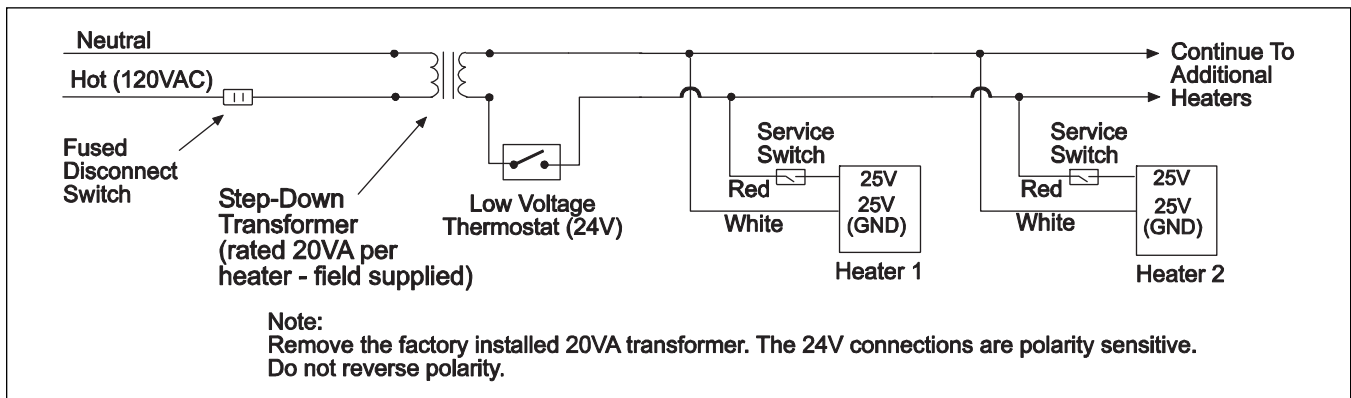
### B. LINE VOLTAGE (120V) THERMOSTAT CONNECTIONS – MULTIPLE HEATERS PER THERMOSTAT



### C. LOW VOLTAGE (24V) THERMOSTAT CONNECTIONS – MULTIPLE HEATERS PER THERMOSTAT – (POWER SUPPLIED FROM FAN CENTER RELAY)



### D. LOW VOLTAGE (24V) THERMOSTAT CONNECTIONS – MULTIPLE HEATERS PER THERMOSTAT – (POWER SUPPLIED FROM STEP-DOWN TRANSFORMER)



# BEACON/MORRIS "RBD" SERIES INFRARED RADIANT HEATER



## 9) VENTILATION

Where unvented infrared heaters are used, natural or mechanical means shall be provided to supply and exhaust at least 4 cfm per 1000 Btu per hr input of installed heaters.

Exhaust openings for removing flue products shall be above the level of the heaters.

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:

RBD30, RBD33, RBD35	140 cfm
RBD40	160 cfm
RBD60, RBD66, RBD70	280 cfm
RBD80	320 cfm
RBD100	400 cfm
RBD120	480 cfm
RBD132, RBD140	560 cfm
RBD160	640 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:

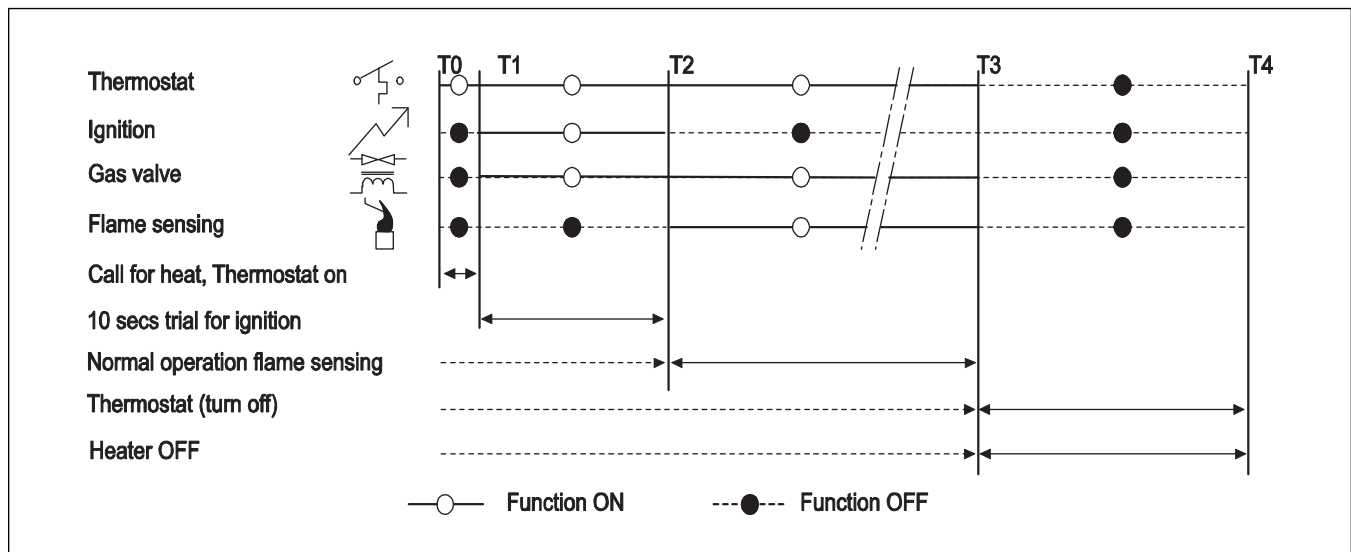
RBD30, RBD33, RBD35	0.49 s/f
RBD40	0.57 s/f
RBD60, RBD66, RBD70	0.98 s/f
RBD80	0.98 s/f
RBD100	1.48 s/f
RBD120	1.72 s/f
RBD132, RBD140	1.97 s/f
RBD160	2.30 s/f

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. Local codes may require that mechanical exhaust systems be interlocked with the function simultaneously or allow control of exhausters to humidistat.

## 10) SEQUENCE OF OPERATION

The chart below shows the sequence of operation for the normal operating cycle of the heater when connected to a permanent 120V power supply and the heater is turned on and off by a remote 120V thermostat. (See Section 10)

If the flame is not sensed during sequence T2 then the burner will automatically begin re-ignition sequence T1. The ignition sequence will be repeated three times with a 15 second inter-purge. If the flame is not reestablished the heater will go to lockout.





# Warranty

## INFRARED HEATER

Beacon/Morris ("the Manufacturer") warrants to the original owner at the original installation site that the Beacon/Morris Model Infrared Heater will be free from defects in material and workmanship for one (1) year from the date of shipment from the factory. If upon examination by the Manufacturer the Product is shown to have a defect in material or workmanship during the warranty period, the Manufacturer will repair or replace, at its option, that part of the product which is shown to be defective.

### Extended warranty:

In addition to the warranty stated above the following models will have:

- RBD –Burner Head shall be free from defects in material and workmanship for five (5) years from the date of shipment from the factory.

### This limited warranty does not apply:

- a) If the Product has been subjected to misuse or neglect, has been accidentally or intentionally damaged, has not been installed, maintained or operated in accordance with the furnished written instructions, or has been altered or modified in any way by an unauthorized person.
- b) To any expenses, including labor or material, incurred during removal or reinstallation of the Product.
- c) To any damage due to corrosion by chemicals, including halogenated hydrocarbons, precipitated in the air.
- d) To any workmanship of the installer of the Product.

### This limited warranty is conditional upon:

- a) Advising the installing contractor, who will in turn notify the distributor or manufacturer.
- b) Shipment to the Manufacturer of that part of the Product thought to be defective. Goods can only be returned with prior written approval of the Manufacturer. All returns must be freight prepaid.
- c) Determination in the reasonable opinion of the Manufacturer that there exists a defect in material or workmanship.

Repair or replacement of any part under this Limited Warranty shall not extend the duration of the warranty with respect to such repaired or replaced part beyond the stated warranty period.

**THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, AND ALL SUCH OTHER WARRANTIES, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED AND EXCLUDED FROM THIS LIMITED WARRANTY. IN NO EVENT SHALL THE MANUFACTURER BE LIABLE IN ANY WAY FOR ANY CONSEQUENTIAL, SPECIAL, OR INCIDENTAL DAMAGES OF ANY NATURE WHATSOEVER, OR FOR ANY AMOUNTS IN EXCESS OF THE SELLING PRICE OF THE PRODUCT OR ANY PARTS THEREOF FOUND TO BE DEFECTIVE. THIS LIMITED WARRANTY GIVES THE ORIGINAL OWNER OF THE PRODUCT SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY BY EACH JURISDICTION.**



260 North Elm St., Westfield, MA 01085  
(413) 562-5423 Fax: (413) 572-3764  
[www.beacon-morris.com](http://www.beacon-morris.com)