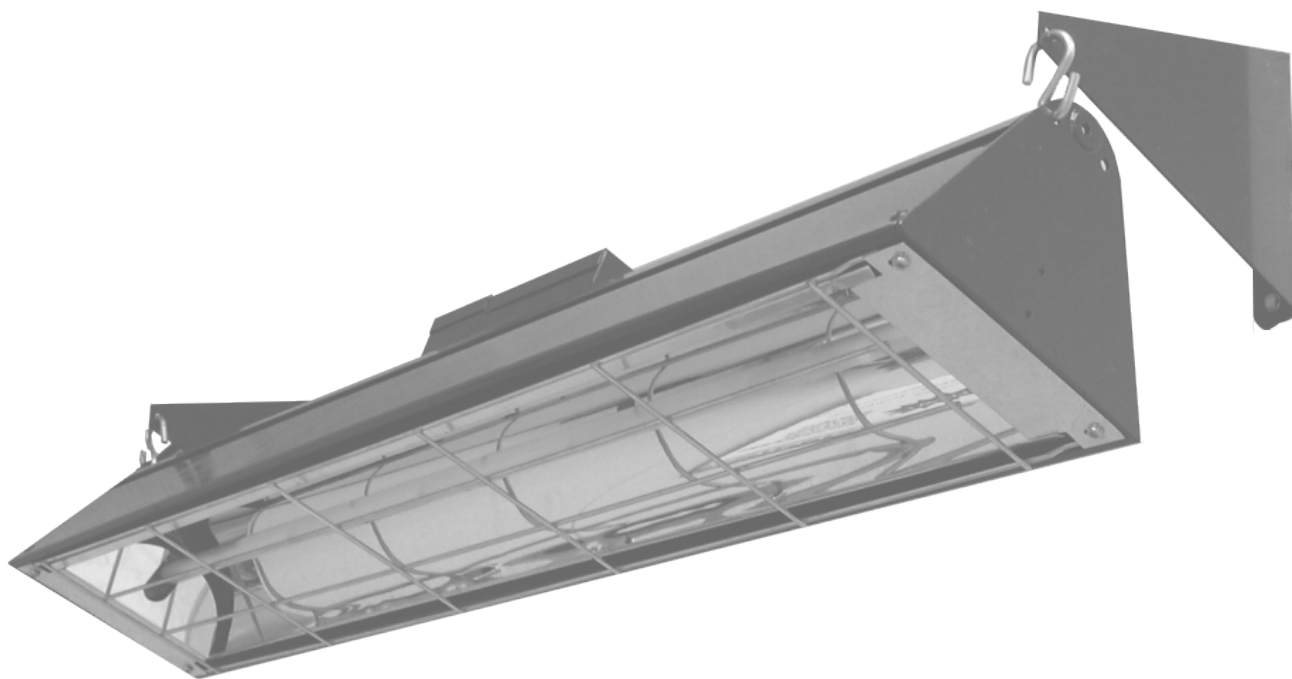


Brant Radiant Heaters Limited

BAH Series Manual

Overhead Electric Infrared Heater

Installation, Operation, Maintenance, and Parts



All persons involved with the installation, operation, and maintenance of the heater system must read and understand the information in this manual.

⚠ WARNING



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

L'installation incorrecte, l'ajustement, le changement, le service ou le maintien peuvent causer des dégâts de propriété, la blessure ou la mort. Lisez et comprenez l'installation, opérant et des instructions de maintien à fond avant l'installation ou l'entretien de cet équipement.

Keep these instructions for future reference.

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1.0 Safety

⚠ WARNING



Improper installation, adjustment, alteration, service, or maintenance can cause property damage, serious injury, or death. Read and understand the installation, operating, and maintenance instructions thoroughly before installing or servicing this equipment. Only trained, qualified personnel with proper electrical experience may install or service this equipment.

Safety Symbols

Safety is the most important consideration during installation, operation, and maintenance of the infrared heater. You will see the following symbols and signal words when there is a hazard related to safety or property damage.

⚠ WARNING

Warning indicates a potentially hazardous situation which, if not avoided, could result in death or injury.

⚠ CAUTION

Caution indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Notice indicates a potentially hazardous situation which, if not avoided, could result in property damage.

Applications

Commercial / Industrial (Indoors)

Infrared heaters are designed and certified for use in industrial and commercial buildings such as warehouses, manufacturing plants, aircraft hangars, and vehicle maintenance shops. For maximum safety, the building must be evaluated for potential hazards before installing the heater system. A critical safety factor to consider before installation is the clearances to combustibles.

Garage Only

This heater is **NOT** approved for use in an indoor residential application. This includes, but is not limited to, living quarters, solariums, home offices, etc. Consult the local fire marshal and/or insurance provider if unsure of your application.

⚠ WARNING



Not For Indoor Residential Use.

Installation of this infrared heater system in residential indoor spaces, RVs, mobile homes, etc. may result in property damage, fire, serious injury, or death.

Model Number Designation Chart

Series	Length	Voltage Code	Lamp Wattage Code
BAH	18	A = 120 VAC B = 208 VAC C = 240 VAC G = 480 VAC D = 575 VAC	05 = 500 W 10 = 1,000 W 17 = 1,750 W 25 = 2,500 W 30 = 3,000 W 40 = 4,000 W
	25		
	35		
	45		
	60		

Model Configuration Examples:
BAH-25-B-10

Available Models and Operational Specifications

Series	Voltage; Phase	kW	Watts	Amp	BTU/h	Weight	Length	Width	Height
BAH-18-A-05	120; 1ph	0.5	500	4.2	1,700	8 lbs.	18"	6.75"	6.4"
BAH-25-A-10	120; 1ph	1.0	1,000	8.3	3,400	10 lbs.	25"		
BAH-25-B-10	208; 1ph			4.8					
BAH-25-C-10	240; 1ph			4.2					
BAH-35-A-17	120; 1ph	1.7	1,750	14.0	5,900	13 lbs	35"		
BAH-35-B-17	208; 1ph			8.3					
BAH-35-C-17	240; 1ph			7.0					
BAH-35-G-17	480; 1ph			3.6					
BAH-45-B-25	208; 1ph	2.5	2,500	12.0	8,500	16 lbs.	45"		
BAH-45-C-25	240; 1ph			10.0					
BAH-45-G-25	480; 1ph			5.2					
BAH-60-B-30	208; 1ph	3.0	3,000	14.0	10,200	20 lbs.	60"		
BAH-60-C-30	240; 1ph			12.0					
BAH-60-G-30	480; 1ph			6.2					
BAH-60-C-40	240; 1ph	4.0	4,000	16.5	13,500	20 lbs.	60"		
BAH-60-G-40	480; 1ph			8.3					
BAH-60-D-40	575; 1ph			7.0					

Clearances to Combustibles

⚠ WARNING



Placement of explosive objects, flammable objects, liquids, and vapours close to the heater may result in explosion, fire, property damage, serious injury, or death. Do not store, or use, explosive objects, liquids, and vapour in the vicinity of the heater.



Failure to comply with the published clearances to combustibles could result in personal injury, death, and/or property damage.



The outside surfaces of the heater are hot during operation and after operation. If contact is made, permanent skin damage may occur. Do not move, handle, or service the unit during operation or while hot.

⚠ CAUTION



Signs shall be posted specifying the maximum permissible stacking height in order to maintain clearances to combustibles.

Hazards Include:

For maximum safety the building must be evaluated for hazards before installing the heater system. Examples include, but are not limited to:

- Gas and electrical lines
- Combustible and explosive materials
- Chemical storage areas
- Areas of high chemical fume concentrations
- Provisions for accessibility to the heater
- Adequate clearances around air openings
- Vehicle parking areas
- Vehicles with lifts or cranes
- Storage areas with stacked materials
- Lights
- Sprinkler heads
- Overhead doors and tracks
- Dirty, contaminated environment

A critical safety factor to consider before installation is the clearances to combustibles. **Clearance to combustibles** is defined as the *minimum distance you must have between the indicated surface and the combustible item*. Considerations must also be made for moving objects around the infrared heater. The following is a partial list of items to maintain clearances from:

Combustible Items Include:

- Wood
- Paper
- Fabric
- Chemicals
- Wall or roof insulation

Moving Objects Include:

- Overhead doors
- Vehicles on lifts
- Cranes
- Hoists
- Car wash equipment

When installing the infrared heater system, the minimum clearances to combustibles must be maintained. These distances are shown in Chart 1.1 and on page 6. If you are unsure of the potential hazards, consult your local fire marshal, fire insurance carrier, or other qualified authorities on the installation of infrared heaters for approval of the proposed installation.

Chart 1.1 • Clearances to Combustibles in Inches (cm) (see Figure 1.1)

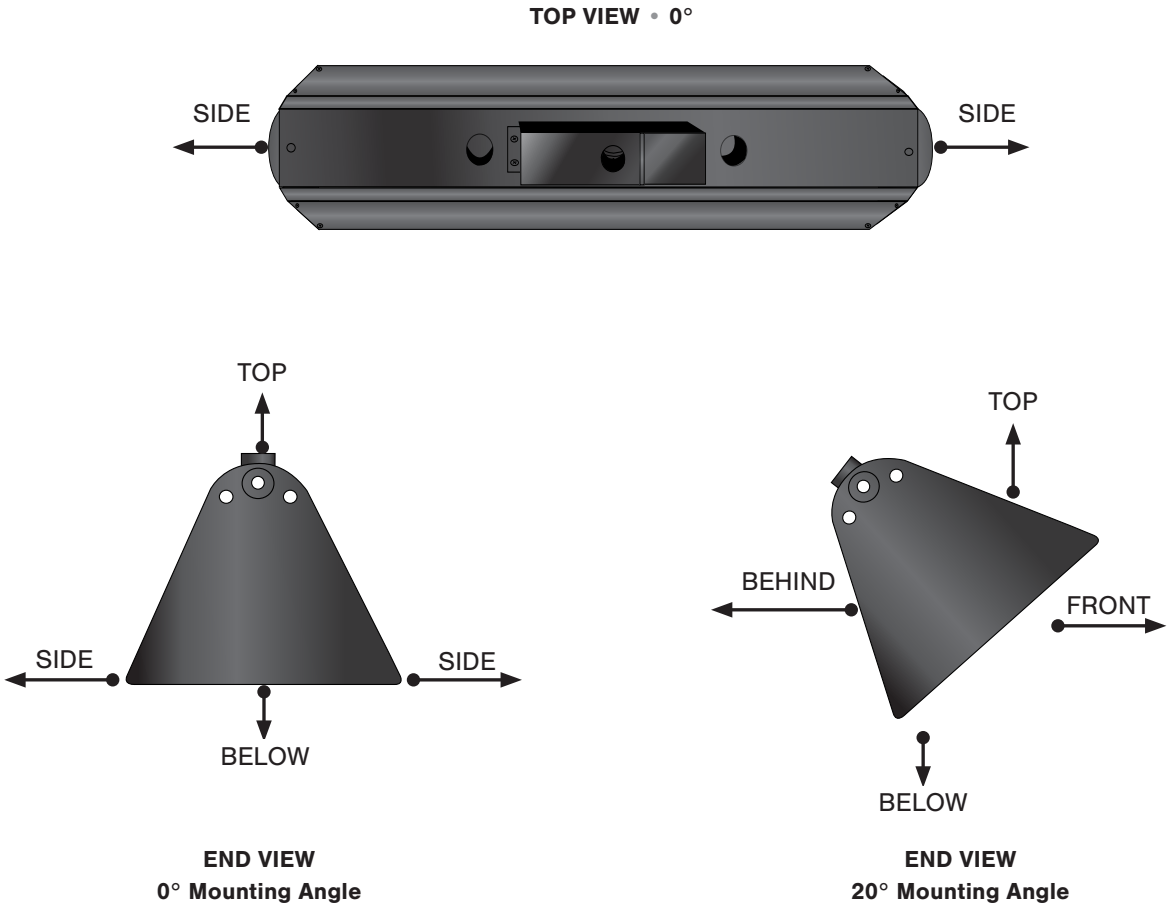
Model Wattage	Mounting Angle	Side		End	Top	Below
		Front	Behind			
All Models	0°	18" (46)	18" (46)	24 (61)	12 (30)	24 (61)
	20°	18" (46)	18" (46)	24 (61)	12 (30)	24 (61)

Space Heating: Mount bottom of heater 8 feet above grade or floor.

** Mounting angles exceeding 0° must use the angle brackets or additional field-supplied brackets, spacers, chains, etc. as necessary to maintain clearances to combustables.

NOTE: Ensure that building materials with a low heat tolerance (i.e, awnings, fabrics, plastics, sprinklers, insulation, etc.) are protected against degradation. This may require the heater to be mounted at a distance in excess of the published clearances to combustibles. Contact the material manufacturer for specific details.

Figure 1.1 • Clearances to Combustibles

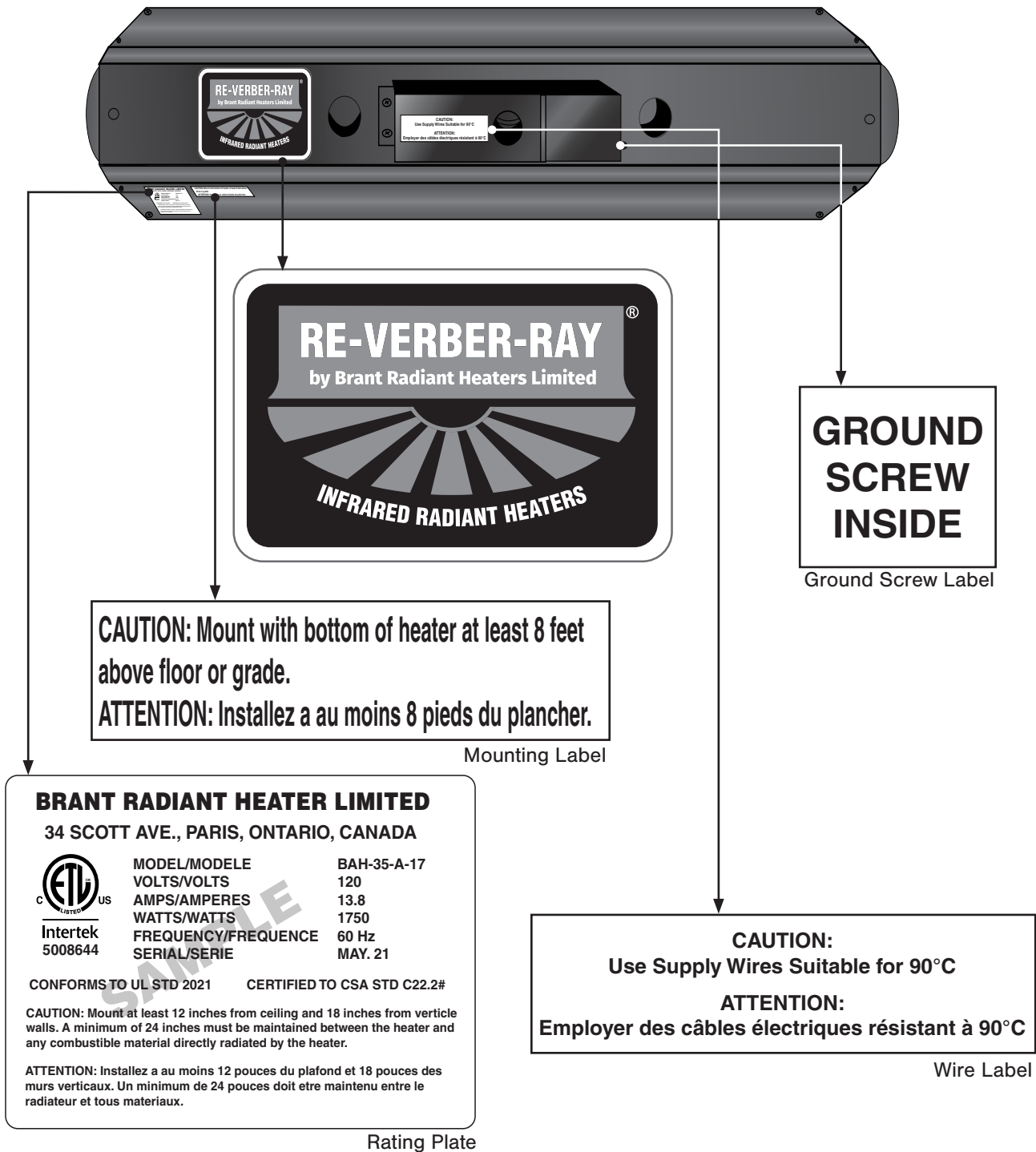


Safety Signs and Labels

It is important to provide warnings to alert individuals to potential hazards and safety actions. Signs should state the hazards for the particular application and be legible to the building occupants. Consult the factory or a factory representative for additional information on signage compliance.

Safety warning labels must be maintained on the infrared heater. Illustrations of the safety labels, and their locations, are pictured below. When no longer legible, they must be replaced. Contact either your local distributor or the product manufacturer for obtaining replacement signs or labels.

Top View



Standards, Certifications, and Government Regulations

Installation of this infrared heater must comply with all applicable local, province, and national specifications, regulations, and building codes. Contact the local building inspector and/or fire marshal for guidance.

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

Canada: Refer to Canadian Electrical Code CSA C22.1 Part 1 (latest edition).

United States: Refer to National Electrical Code®, ANSI/NFPA 70 (latest edition).
Wiring must conform to the latest edition of National Electrical Code®, local ordinances, and any special diagrams from the manufacturer.

Brant Radiant Heaters Limited's units comply or are certified by one or more of the following organizations or standards:

- CSA STD 22.2
- UL STD 2021

2.0 Installation

WARNING



Read and understand, the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.

Design

To ensure a safe, properly designed heating system, a layout should be developed for the correct placement of the infrared heater(s).

Aside from safety factors such as clearances to combustibles (see Chart 1.1 on page 6), you should also take into consideration the environment (e.g., cold/drafty, average, protected), heat coverage (sq. ft.) needed, heater centers, and the distance behind a person or work station(s). Also, the effective infrared surface temperature of a person or object may be diminished with wind above 5 mph. Wind barrier(s) may be required. Most importantly, clearances to combustibles **must** always be maintained! Refer to hazards on page 5.

When positioning the heaters, keep in mind combustible materials, lights, sprinkler heads, overhead doors, storage areas with stacked materials, gas and electrical lines, parked vehicles, cranes, etc. Refer to Page 6 for minimum clearances to verify that a safe installation exists.

This installation manual, along with national, state, provincial, and local codes, address these issues. It is critical that you read, understand, and follow all guidelines and instructions. Always inspect and evaluate the mounting conditions, application, and wiring.

When heated, materials high in hydrocarbons (solvents, paint thinner, mineral spirits, formaldehydes, etc.) can evaporate and/or degrade. This may result in odors or fumes being emitted into the environment. To correct this problem, clean the area and/or introduce additional ventilation. Heaters installed and serviced in accordance with the installation manual do not emit foul odors into the environment.

IMPORTANT: Fire sprinkler heads must be located at an appropriate distance from the heater to avoid an inadvertent discharge. This distance may exceed the published clearances to combustibles. Certain applications may require the use of high temperature sprinkler heads or relocation of the heaters.

CAUTION

Fire sprinkler systems containing propylene glycol, antifreeze, or other potentially flammable substances shall not be used in conjunction with this heater without careful consideration for and avoidance of inadvertent discharge hazards. For further information consult NFPA 13. Always observe applicable state and local codes.

Chart 2.1 • Outdoor Comfort Heating Application Chart

Heat Pattern				
Mounting Height	Areas Heated in Feet			
	1 kW	1.75 kW	2.5 kW	3 & 4 kW
7 feet	8 x 10	8 x 11	8 x 12	8 x 13
8 feet	9½ x 11½	9½ x 12	9½ x 13	9½ x 14½
9 feet	10½ x 12½	10½ x 13	10½ x 14	10½ x 15½
10 feet	-	11½ x 14½	11½ x 15½	11½ x 16½
11 feet	-	12½ x 15	12½ x 16	12½ x 17½
12 feet	-	-	14 x 18	14 x 19
13 feet	-	-	15 x 18.9	15 x 20
14 feet	-	-	-	16 x 21
15 feet	-	-	-	17½ x 22½

Watts Density At Floor Level					
Mounting Height	Density in Watts				
	1 kW	1.75 kW	2.5 kW	3 kW	4 kW
7 feet	12.4	20.0	26.5	28.8	38.4
8 feet	9.2	16.1	20.1	22.0	29.4
9 feet	7.6	13.4	16.8	18.6	24.9
10 feet	-	11.1	14.5	16.0	21.6
11 feet	-	9.3	12.5	14.0	18.7
12 feet	-	-	10.0	11.2	15.0
13 feet	-	-	8.8	10.0	13.3
14 feet	-	-	-	8.9	11.9
15 feet	-	-	-	-	10.9

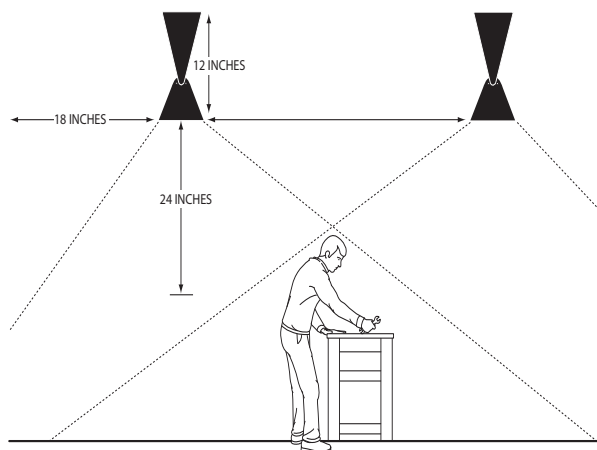
Estimating Required Loading	
Type of Building	Watts Required Per Square Foot At Floor Level
Insulated building	10
Uninsulated	16
Outdoor Sheltered	25-30
Outdoor Unsheltered	45

Chart 2.2 • Indoor Spot Heating Application Chart



Heater installation shall comply with all IOPM, NEC, ANSI/NFPA-70, CEC, and local restrictions.

When comfort heating people, two heaters should be used to heat both sides of the individual. Heater installation shall comply with all IOPM, NEC, ANSI/NFPA-70, CEC, and local restrictions.

*Clearances to combustibles must be maintained at all times. If infrared heaters are mounted too low or too high, they may result in discomfort or lack of heat.

Figure 2.1 • Heating Application

Heater Mounting



WARNING

Improper suspension of the infrared heater may result in collapse and being crushed. Always suspend from a permanent part of the building structure that can support the total force and weight of the heater.

Failure to maintain minimum clearances to combustibles may result in fire and/or explosion, property damage, serious injury, or death. Always maintain minimum clearances and post signs adjacent to heaters controller. Signs should state the hazards for the particular application and be legible to the building occupants. Consult the factory or a factory representative for additional information on signage compliance.

The heater can be suspended with chains or bracket mounting. When chain mounting, the off-center holes may be used to adjust the mounting angle by 20°. Optional brackets are available for wall or ceiling surface mounting. Consult all applicable codes before installation.

The heater must be level from side to side and may be 0° to 20° on horizontal. Refer to figures 2.2 and 2.3.

Figure 2.2 • Heater Dimensions in Inches (cm)

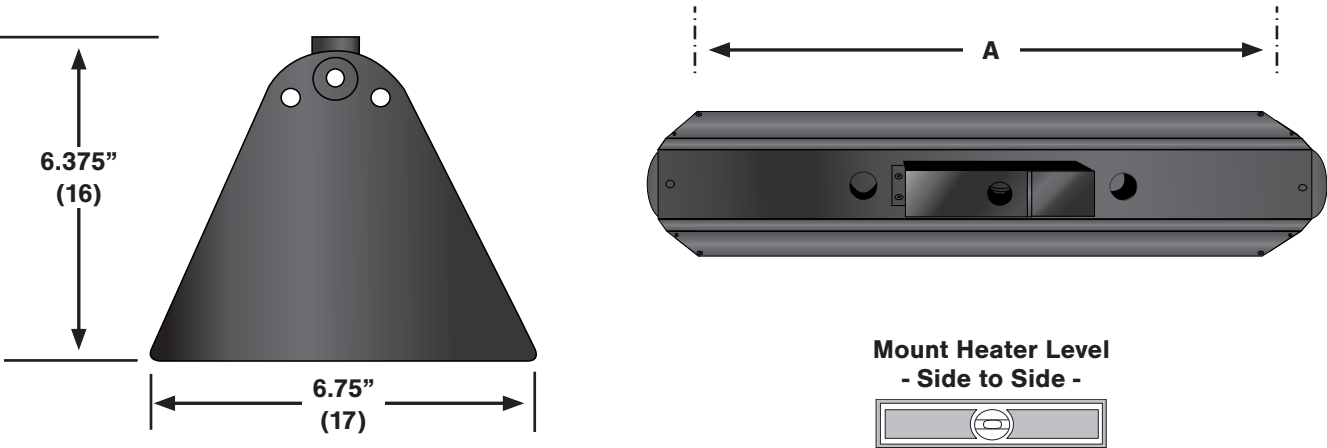
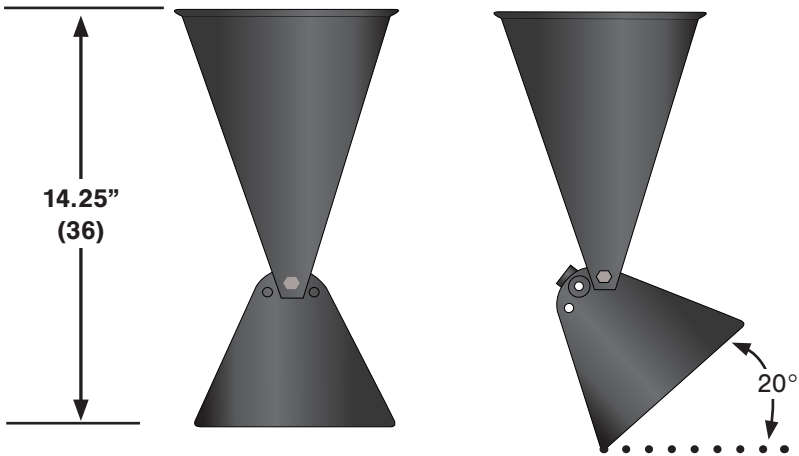


Chart 2.2 • Physical Dimensions in Inches (cm)

Model No.	A
BAH-18	18" (46)
BAH-25	25" (63)
BAH-35	35" (89)
BAH-45	45" (114)
BAH-60	60" (152)

Figure 2.3 • Heater Dimensions



Lamp Installation

⚠ CAUTION

Disconnect power prior to installing or replacing supplied quartz lamp(s). The elements can and should be installed prior to mounting the heater.

- ❶ Do **NOT** remove element from cardboard tubing by pulling on ceramic end cap. It may crack and/or cause damage to the element.
- ❷ Do **NOT** remove protective plastic sleeve from element until it's installed. The plastic sleeve will protect the element from any fingerprints that may happen during installation.
- ❸ Remove the end reflectors and guard to uncover the element clamps and wiring terminals.
- ❹ Press the element into clamps and attach wire terminals. To attach wire terminals, remove nut and washer, slip on wire terminal, washer and nut, then tighten nut by holding ceramic end cap firmly.
- ❺ Do **NOT** over tighten the nut.
- ❻ Remove plastic covering from element. Reinstall guard and end reflectors.

Figure 2.5 • Lamp Installation

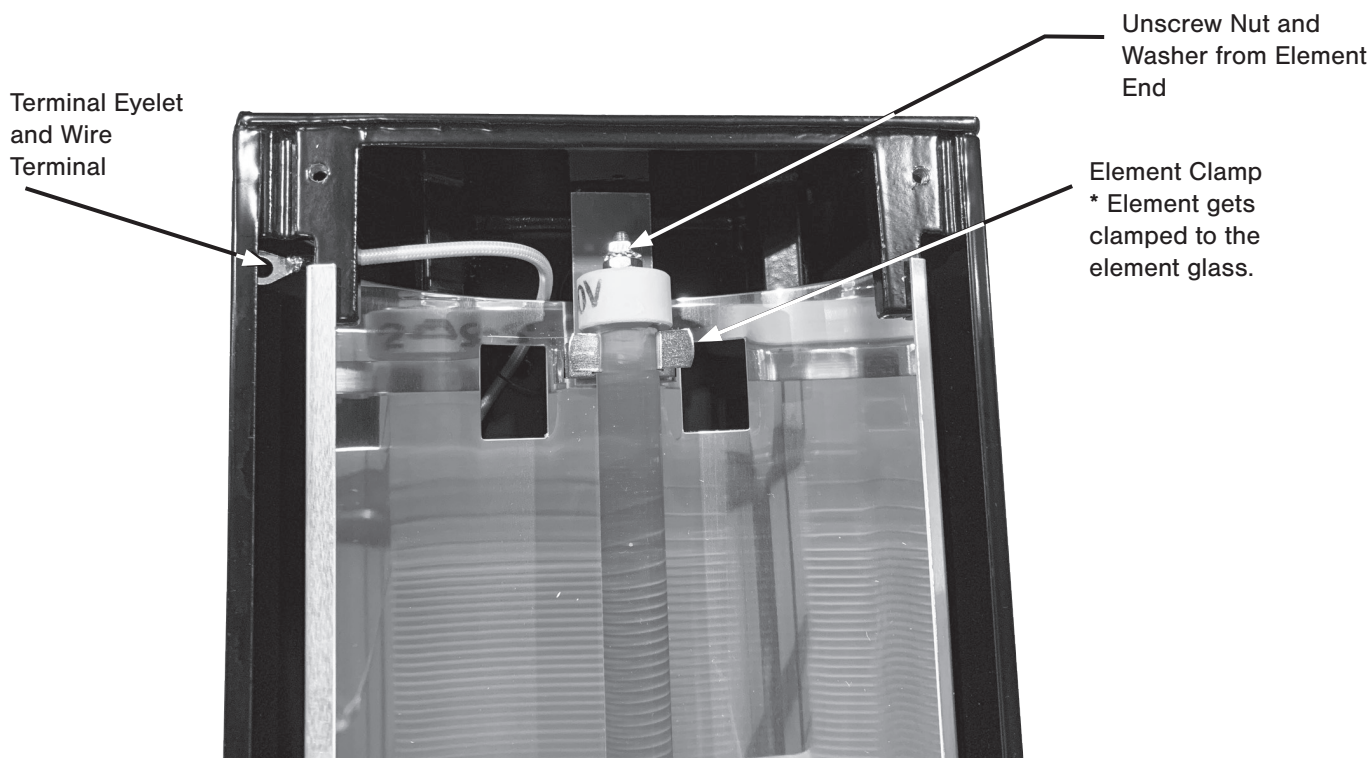
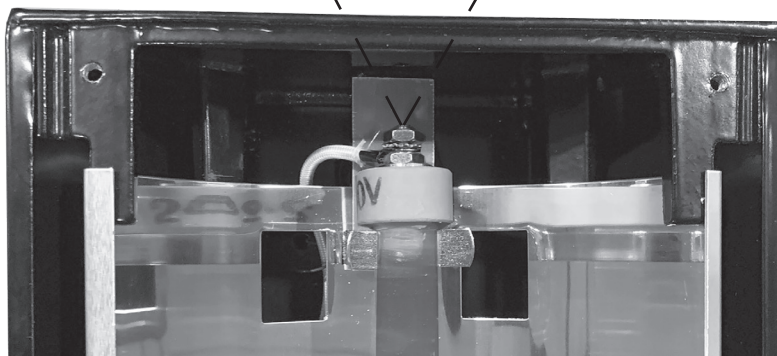
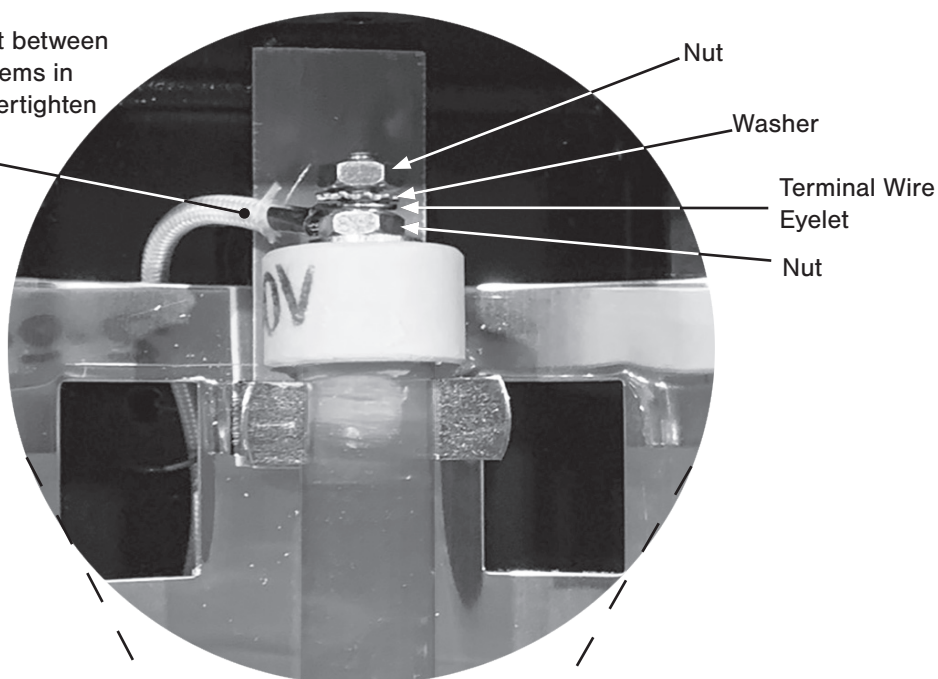


Figure 2.6 • Lamp Installation

Place terminal wire eyelet between nut and washer. Fasten items in place with nut. Do not overtighten nut.



NOTE: BAH Series heaters are designed for use with quartz lamp infrared heating elements only. **They are NOT intended to be used with straight metal rod heating elements. Replace lamps with parts from Brant Radiant Heaters Limited only.**

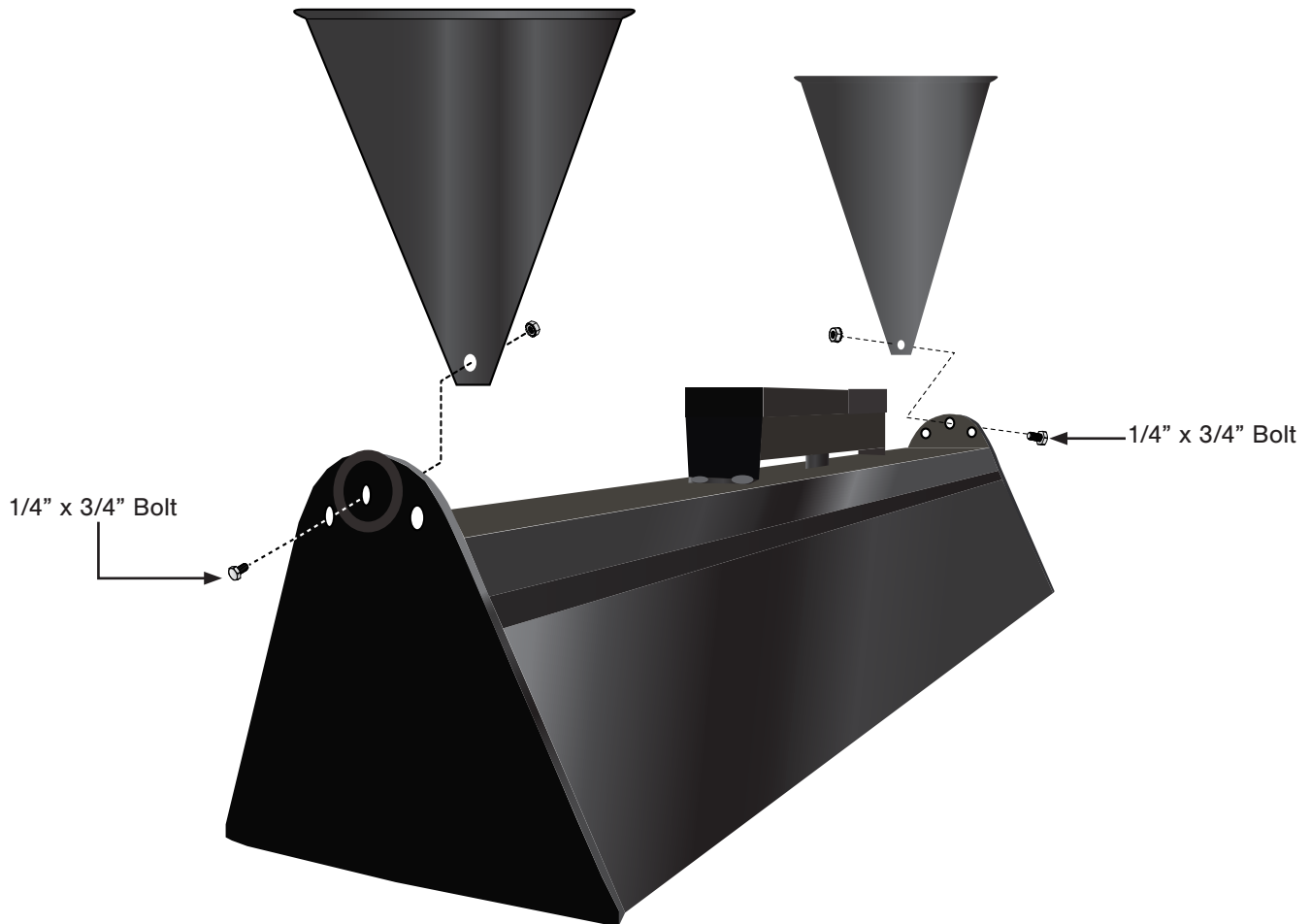
Mounting Bracket Assembly

- 1 Attach the mounting brackets to the top end caps. On each end, place (1) 1/4" x 3/4" bolt through the bottom hole of the mounting bracket and through the top hole of the end cap. Place (1) 1/4" lock washer and (1) 1/4" lock nut on each bolt. Do not tighten completely. Refer to figure 2.4.

NOTE: The mounting brackets are **NOT** required for chain suspension.

- 2 Adjust mounting brackets to desired mounting angle.
- 3 Once desired mounting angle is achieved tighten lock nuts to bolt.

Figure 2.4 • Mounting Bracket Assembly



Electrical Wiring

When installed, the heater must be electrically grounded in accordance with the Canadian Electrical Code C22.1 (latest edition).

Applications in Canada must conform to the Canadian Electrical Code C22.1 (latest edition) when an external electrical source is used.

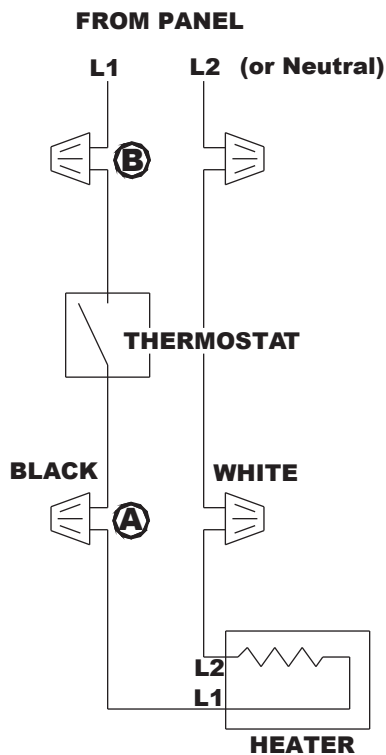
Applications in United States must conform to the National Electrical Code ANSI/NFPA 70 (latest edition).

Refer to rating label on heater for the required amperage rating.

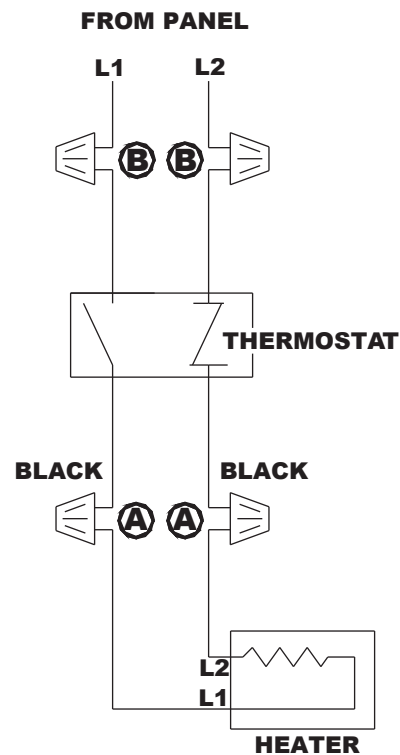
Under no circumstance is the electrical supply line to the heater to provide any assistance in the suspension of the heater.

Neither the electrical supply line or sprinkler heads shall be located within the minimum clearances to combustibles.

**Typical 120 Volt Installation For
Single Line Break Thermostat.
Single Phase**



**Typical 240, 208 Volt Installation
For Double Line Break Thermostat
Single Phase**



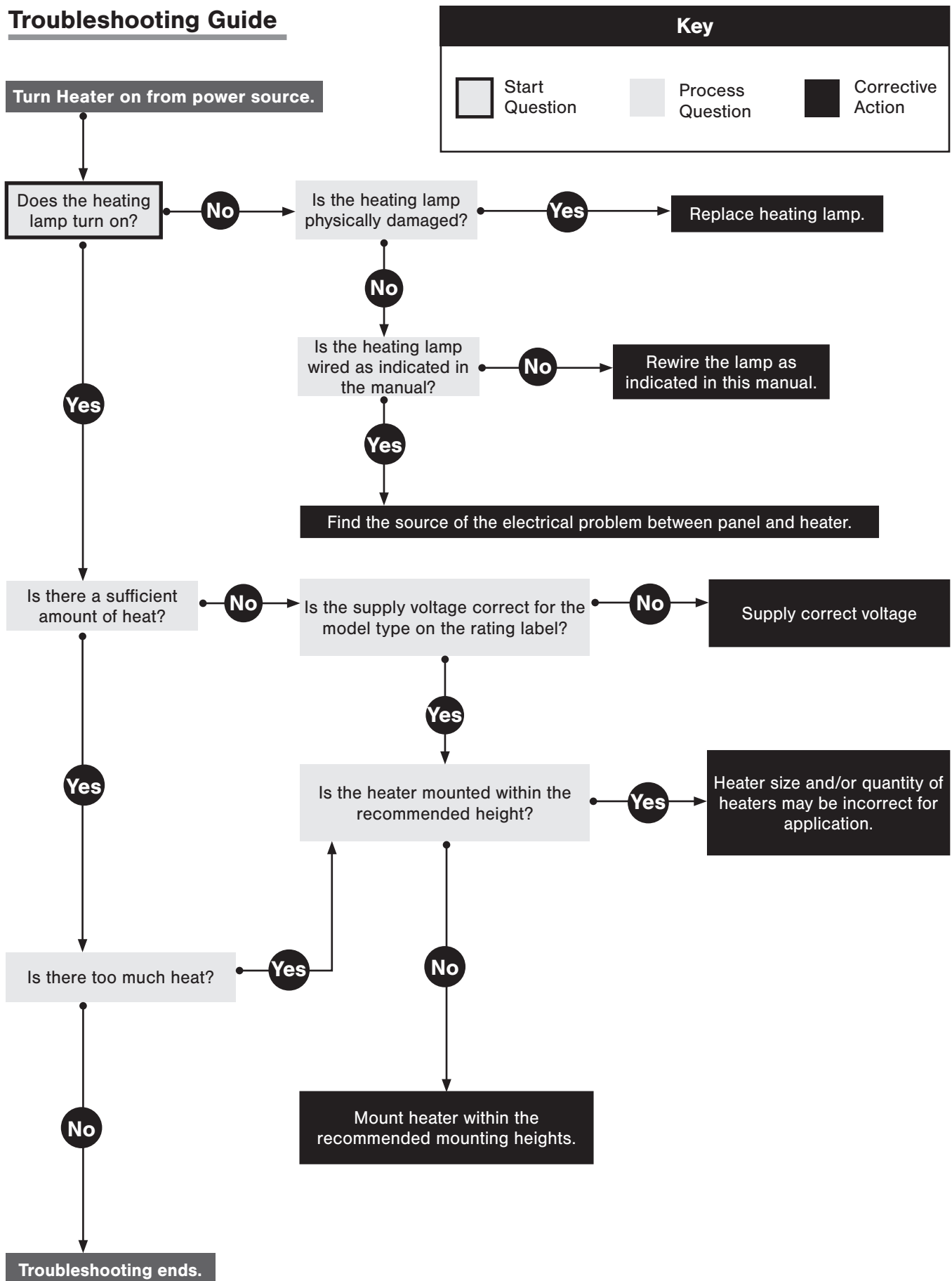
3.0 Maintenance

It is recommended that the following become a standard yearly procedure to obtain maximum operating efficiency and trouble free operation.

During long periods of non-usage, remove or cover heater with a polyethylene bag and disconnect from power supply. If further service to the heater is desired, contact your representative or the factory.

- ❶ Clean reflector surface with a damp cloth.
- ❷ Ensure heater is secure on all hanging points.
- ❸ Maintain clearances to combustibles at all times. Immediately remove objects in violations of the published clearances to combustibles.
- ❹ Check electrical wires and connections for wear or any kind of damage.

Troubleshooting Guide



Replacement Element Chart

Heater Model	Watts	Volts	BTU	Amps	Replacement Element
BAH-18-A-05	500	120	1,700	4.2	QT-18-A-05
BAH-25-A-10	1,000	120	3,400	8.3	QT-25-A-10
BAH-25-B-10	1,000	208	3,400	4.8	QT-25-B-10
BAH-25-C-10	1,000	240	3,400	4.2	QT-25-C-10
BAH-35-A-17	1,750	120	5,900	14.0	QT-35-A-17
BAH-35-B-17	1,750	208	5,900	8.3	QT-35-B-17
BAH-35-C-17	1,750	240	5,900	7.0	QT-35-C-17
BAH-35-G-17	1,750	480	5,900	3.6	QT-35-G-17
BAH-45-B-25	2,500	208	8,500	12.0	QT-45-B-25
BAH-45-C-25	2,500	240	8,500	10.0	QT-45-C-25
BAH-45-G-25	2,500	480	8,500	5.2	QT-45-G-25
BAH-60-B-30	3,000	208	10,200	14.0	QT-60-B-30
BAH-60-C-30	3,000	240	10,200	12.0	QT-60-C-30
BAH-60-G-30	3,000	480	10,200	6.2	QT-60-G-30
BAH-60-C-40	4,000	240	13,500	16.5	QT-60-C-40
BAH-60-G-40	4,000	480	13,500	8.3	QT-60-G-40
BAH-60-D-40	4,000	575	13,500	7.0	QT-60-D-40

Notes

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

4.0 Limited Warranty

One-Year Limited Warranty. Brant Radiant Heaters Limited (hereinafter referred to as the Company) warrants to the original purchaser or original user that all Brant Radiant Gas Infrared Heaters sold by it and all parts thereof are free from defects in material or workmanship under normal use and service. The Company's sole obligation under this warranty shall be limited to furnishing replacement parts, F.O.B. Paris, Ontario, for 12 months from the date of initial installation of the heater, but not to exceed 18 months from the date of shipment by the Company of the heaters, for any parts which the Company's examination shall disclose to its satisfaction to be defective. Defective parts are to be returned to the Company, transportation charges prepaid.

General Conditions. The warranties set out in this certificate are the exclusive remedy of the original owner or user in lieu of all other warranties written, oral or implied (including any warranty of merchantability or fitness for the purpose) and all other obligations or liabilities on the part of the Company, and the Company neither assumes nor authorizes any person to assume for it any other obligation or liabilities on the part of the Company, and the Company neither assumes nor authorizes any person to assume for it any other obligation or liability in connection with the sale, installation or use of the heater or any parts thereof.

The Company will not be responsible for labour charges for the analysis of a defective condition in the heater or for the installation of replacement parts. The warranties provided herein will not apply if the input of the heater exceeds the rated input at time of manufacturing or if the heater in the judgment of the Company has been subjected to misuse, excessive dust, improper conversion, negligence, accident, corrosive atmospheres, excessive thermal shock, excessive vibration, physical damage to the heater, alterations by unauthorized service personnel, operation contrary to the Company's instructions or if the serial number has been altered, defaced, or removed. The Company shall not be liable for any default or delay in the performance of these warranties caused by contingency beyond its control, including war, government restriction or restraints, strikes, fire, flood, short or reduced supply of raw materials, or parts.

The warranties herein shall be null and void if the heater is not installed by a competent heating contractor and/or if the heater is not installed according to Company instructions, normal industry practices and/or if the heater is not maintained and repaired according to Company's instructions. Normal product degradation and wear (rust, oxidation, etc.) does not constitute a material defect and applicable warranty claim.

Written permission is required for the return of any parts or equipment and any such return must be made on the basis of transportation charges prepaid. Shipment may be refused unless prior written permission is obtained and goods returned prepaid.