

# Blackheat®

## Vacuum Assisted Linear, Double Linear, U-Tube, and Multi-Burner Gas Fired Heating Systems

### Installation, Operation & Service Manual

**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. Extinguish any open flame.
6. Leave the building.
7. Immediately call your local gas supplier after leaving the building. Follow the gas supplier's instructions.
8. If you cannot reach your gas supplier, call the Fire Department.

**⚠ WARNING**



**Fire Hazard**

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

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

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

- |           |           |           |
|-----------|-----------|-----------|
| BH15UT    | BH15ST    | BH30DL    |
| BH20UT    | BH20ST    | BH40DL    |
| BH25UT/EF | BH25ST/EF | BH50DL/EF |
| BH30UT/EF | BH30ST/EF | BH60DL/EF |
| BH35UT/EF | BH35ST/EF | BH70DL/EF |
| BH40UT/EF | BH40ST/EF |           |
| BH45UT/EF | BH45ST/EF |           |
| BH50UT/EF | BH50ST/EF |           |
|           | BH55ST    |           |

**⚠ 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 registered installer/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 in order to provide your serviceman with necessary information.



Authorised User No. 00184

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**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 registered installer/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.

Protective gear is to be worn during installation, operation and service. 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.

For additional copies of the Installation, Operation and Service Manual, please contact Roberts-Gordon LLC.

**1.1 Manpower Requirements**

To prevent personal injury and damage to the heater, two persons will be required for installation.

**1.2 Safety Labels and Their Placement**

Product safety signs or labels should be replaced by the product user when they are no longer legible. Contact Roberts-Gordon for obtaining replacement signs or labels. See Page 2, Figure 1 through Page 3, Figure 2.

**Figure 1: Side and Back Panel Label Placement**

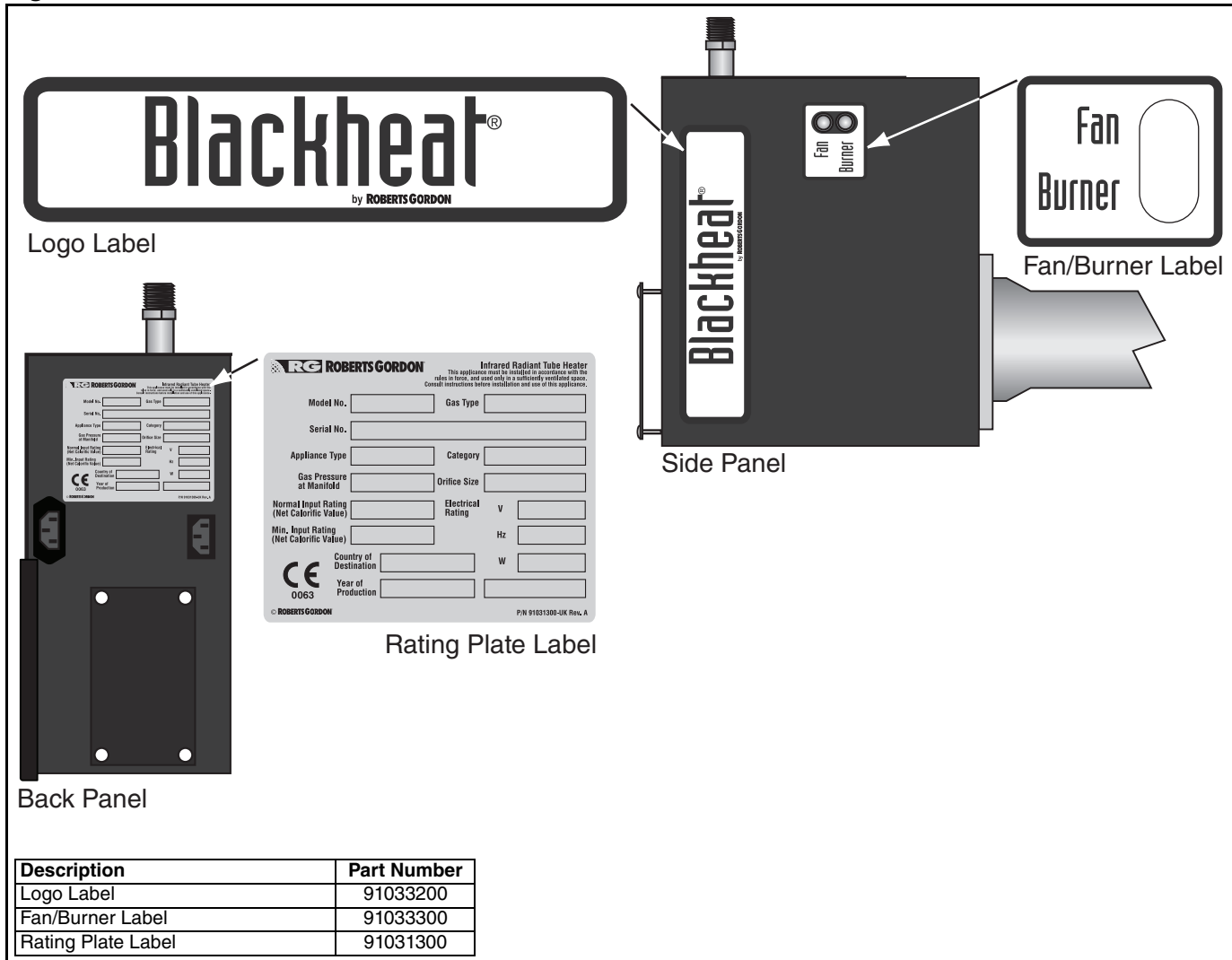
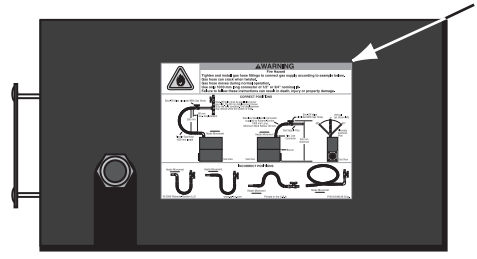
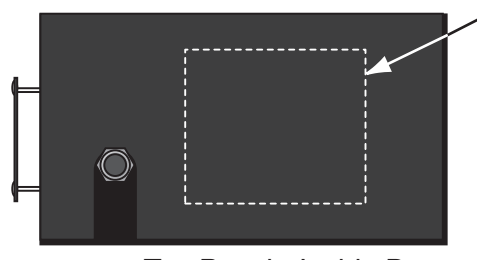


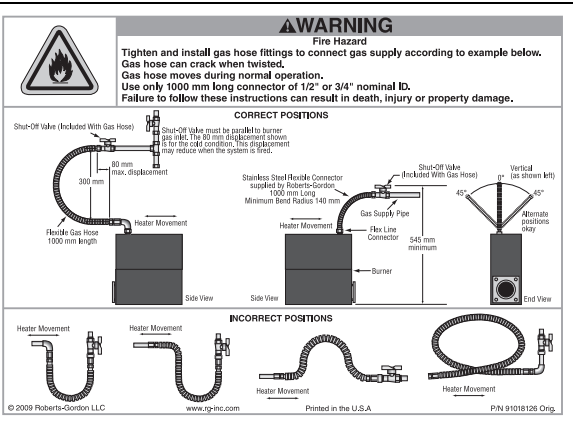
Figure 2: Top Panel Label Placement



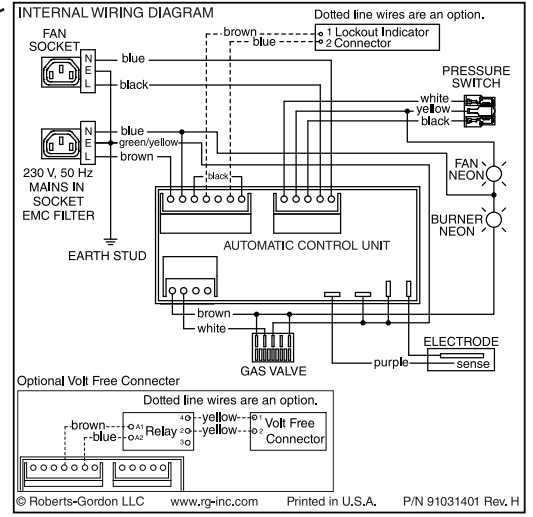
Top Panel



Top Panel - Inside Door



Gas Connection Label



Internal Wiring Label

| Description           | Part Number |
|-----------------------|-------------|
| Gas Connection Label  | 91018126    |
| Internal Wiring Label | 91031401    |

## SECTION 2: INSTALLER RESPONSIBILITY

- 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 a ladder or other access equipment and never hang or suspend anything from heater.
- To ensure there is adequate air circulation around the heater and to supply air for combustion, ventilation and distribution in accordance with local codes.
- To safely and adequately install heater using materials with a minimal working load of 33 kg.
- To ensure the heater is placed in an approved application.

### 2.1 Low Level User Instructions

In all situations, clearances to combustibles must be maintained. Signs should be posted in storage areas to specify the maximum stacking height of items placed below heater to maintain required clearances to combustibles. Minimum clearances must be maintained from vehicles parked below the heater. Caution should be used when running the system near combustible materials such as wood, paper, rubber, etc. Consideration should be given to partitions, storage racks, hoists, building construction, etc.

A laminated wall tag is available for the 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. 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 heater (e.g. thermostat or ROBERTS GORDON® Controller).

A copy of the wall tag (P/N 91037912) is illustrated on the back cover. This copy of the wall tag can be affixed on the wall near the heater. Know your model number and installed configuration. Model number and installed configuration are 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 and configuration in the open spaces on the tag.

### 2.2 Corrosive Chemicals

|   |
|---|
|    |
| <p><b>Product Damage Hazard</b></p> <p><b>Do not use heater in area containing corrosive chemicals.</b></p> <p><b>Refer to appropriate Material Safety Data Sheets (MSDS).</b></p> <p><b>Failure to follow these instructions can result in product damage.</b></p> |


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: CLEARANCES TO COMBUSTIBLES

|   |
|---|
| <b>! WARNING</b>  |
|                                        |
| <b>Fire Hazard</b>  |
| <b>Keep all flammable objects, liquids and vapors the minimum required clearances to combustibles away from heater.</b> |
| <b>Some objects will catch fire or explode when placed close to heater.</b>   |
| <b>Failure to follow these instructions can result in death, injury or property damage.</b>                             |

- Consult local Building Inspector, Fire Insurance Carrier or other authorities for approval of proposed installation when there is a possibility of exposure to combustible airborne materials or vapours.
- Hang heater in accordance to the minimum suspension requirements on *Page 73, Section 18.6 through Section 18.8.*
- If the radiant tubes must pass through the building structure, be sure that adequate sleeving and fire stop is installed to prevent scorching and/or fire hazard.

**3.1 Required Clearances to Combustibles**

Clearances are the required distances that combustible objects must be away from the heater to prevent fire hazards. Caution should be used when running the system near combustibles. 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 safety.**

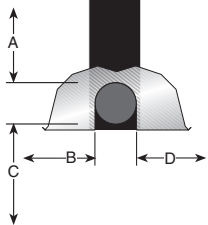
Clearances for all heater models are located on *Page 6, Figure 3 through Page 9, Figure 17* in this manual. Check the clearances on each burner for the model heater being installed to make sure the product is suitable for your application and the clearances are maintained. Read and follow the safety guidelines below:

- Keep petrol or other combustible materials including flammable objects, liquids, dust or vapours away from this heater or any other appliance.
- The stated clearances to combustibles represents a surface temperature of 32°C (90° F) above room temperature. Building materials with a low heat tolerance (such as plastics, vinyl siding, canvas, tri-ply, etc) may be subject to degradation at lower temperatures. It is the installer's responsibility to assure that adjacent materials are protected from degradation.
- Maintain clearances from heat sensitive 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.

### 3.2 Clearance Data - Linear and Double Linear

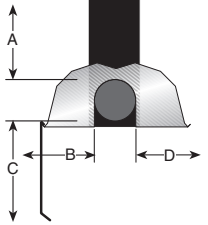
- NOTE:**
1. All dimensions are from the surfaces of all tubes, couplings, tees, elbows and crosses.
  2. Clearances B, C and D can be reduced by 50% after 7500 mm of tubing downstream from the burner.
  3. All measurements are in millimeters.

**FIGURE 3: LINEAR & DOUBLE LINEAR, HORIZONTAL MOUNTS**



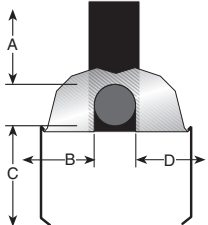
| Model | BH15ST<br>BH30DL | BH20ST<br>BH40DL | BH25ST/EF<br>BH50DL/EF | BH30ST/EF<br>BH60DL/EF | BH35ST/EF<br>BH70DL/EF | BH40ST/EF | BH45ST/EF | BH50ST/EF<br>& BH55ST* |
|-------|------------------|------------------|------------------------|------------------------|------------------------|-----------|-----------|------------------------|
| A     | 150              | 150              | 150                    | 150                    | 150                    | 150       | 200       | 200                    |
| B     | 890              | 970              | 970                    | 1020                   | 1170                   | 1220      | 1280      | 1330                   |
| C     | 1570             | 1650             | 1650                   | 1780                   | 1930                   | 1970      | 2010      | 2080                   |
| D     | 890              | 970              | 970                    | 1020                   | 1170                   | 1220      | 1280      | 1330                   |

**FIGURE 4: LINEAR & DOUBLE LINEAR, ONE SIDE REFLECTOR**



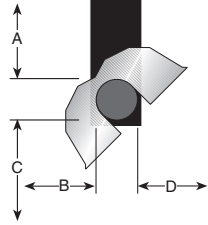
| Model | BH15ST<br>BH30DL | BH20ST<br>BH40DL | BH25ST/EF<br>BH50DL/EF | BH30ST/EF<br>BH60DL/EF | BH35ST/EF<br>BH70DL/EF | BH40ST/EF | BH45ST/EF | BH50ST/EF<br>& BH55ST* |
|-------|------------------|------------------|------------------------|------------------------|------------------------|-----------|-----------|------------------------|
| A     | 150              | 150              | 150                    | 150                    | 150                    | 150       | 200       | 200                    |
| B     | 230              | 230              | 230                    | 230                    | 230                    | 230       | 230       | 230                    |
| C     | 1580             | 1760             | 1760                   | 1930                   | 2090                   | 2130      | 2160      | 2240                   |
| D     | 1200             | 1380             | 1380                   | 1500                   | 1660                   | 1710      | 1760      | 1860                   |

**FIGURE 5: LINEAR & DOUBLE LINEAR, TWO SIDE REFLECTORS**



| Model | BH15ST<br>BH30DL | BH20ST<br>BH40DL | BH25ST/EF<br>BH50DL/EF | BH30ST/EF<br>BH60DL/EF | BH35ST/EF<br>BH70DL/EF | BH40ST/EF | BH45ST/EF | BH50ST/EF<br>& BH55ST* |
|-------|------------------|------------------|------------------------|------------------------|------------------------|-----------|-----------|------------------------|
| A     | 150              | 150              | 150                    | 150                    | 150                    | 150       | 200       | 200                    |
| B     | 590              | 640              | 640                    | 690                    | 820                    | 860       | 890       | 1020                   |
| C     | 1660             | 1810             | 1810                   | 1960                   | 2110                   | 2160      | 2210      | 2320                   |
| D     | 590              | 640              | 640                    | 690                    | 820                    | 860       | 890       | 1020                   |

**FIGURE 6: LINEAR & DOUBLE LINEAR, 45° MOUNT**



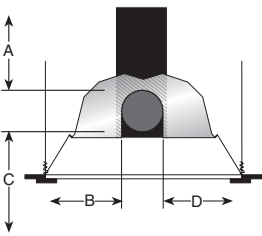
| Model | BH15ST<br>BH30DL | BH20ST<br>BH40DL | BH25ST/EF<br>BH50DL/EF | BH30ST/EF<br>BH60DL/EF | BH35ST/EF<br>BH70DL/EF | BH40ST/EF | BH45ST/EF | BH50ST/EF<br>& BH55ST* |
|-------|------------------|------------------|------------------------|------------------------|------------------------|-----------|-----------|------------------------|
| A     | 200              | 200              | 200                    | 250                    | 250                    | 275       | 300       | 300                    |
| B     | 200              | 200              | 200                    | 200                    | 200                    | 200       | 200       | 200                    |
| C     | 1500             | 1660             | 1660                   | 1860                   | 1960                   | 2030      | 2110      | 2160                   |
| D     | 1370             | 1520             | 1520                   | 1630                   | 1750                   | 1820      | 1880      | 2000                   |

\* BH55ST only available in multiburner.

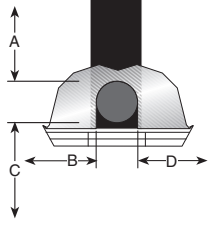


- NOTE:**
1. All dimensions are from the surfaces of all tubes, couplings, tees, elbows and crosses.
  2. Clearances B, C and D can be reduced by 50% after 7500 mm of tubing downstream from the burner.
  3. All measurements are in millimeters.

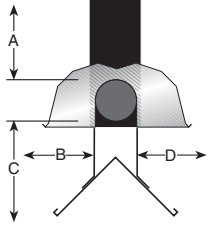
**FIGURE 7: LINEAR & DOUBLE LINEAR, 2 FOOT DECO GRILLE**

|  | Model | BH15ST<br>BH30DL | BH20ST<br>BH40DL | BH25ST/EF<br>BH50DL/EF | BH30ST/EF<br>BH60DL/EF | BH35ST/EF<br>BH70DL/EF | BH40ST/EF | BH45ST/EF | BH50ST/EF<br>& BH55ST* |
|---|-------|------------------|------------------|------------------------|------------------------|------------------------|-----------|-----------|------------------------|
|   | A     | 150              | 150              | 150                    | 150                    | 150                    | 150       | 150       | 200                    |
| B   | 890   | 970              | 970              | 970                    | 1020                   | 1170                   | 1220      | 1280      | 1330                   |
| C   | 1570  | 1650             | 1650             | 1650                   | 1780                   | 1930                   | 1970      | 2010      | 2080                   |
| D   | 890   | 970              | 970              | 970                    | 1020                   | 1170                   | 1220      | 1280      | 1330                   |

**FIGURE 8: LINEAR & DOUBLE LINEAR, PROTECTIVE GRILLE**

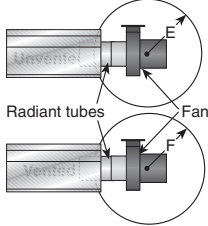
|  | Model | BH15ST<br>BH30DL | BH20ST<br>BH40DL | BH25ST/EF<br>BH50DL/EF | BH30ST/EF<br>BH60DL/EF | BH35ST/EF<br>BH70DL/EF | BH40ST/EF | BH45ST/EF | BH50ST/EF<br>& BH55ST* |
|--|-------|------------------|------------------|------------------------|------------------------|------------------------|-----------|-----------|------------------------|
|  | A     | 150              | 150              | 150                    | 150                    | 150                    | 150       | 150       | 200                    |
| B  | 890   | 970              | 970              | 970                    | 1020                   | 1170                   | 1220      | 1280      | 1330                   |
| C  | 1570  | 1650             | 1650             | 1650                   | 1780                   | 1930                   | 1970      | 2010      | 2080                   |
| D  | 890   | 970              | 970              | 970                    | 1020                   | 1170                   | 1220      | 1280      | 1330                   |

**FIGURE 9: UNDERSHIELD \*\***

|  | Model | BH15ST<br>BH30DL | BH20ST<br>BH40DL | BH25ST/EF<br>BH50DL/EF | BH30ST/EF<br>BH60DL/EF | BH35ST/EF<br>BH70DL/EF | BH40ST/EF | BH45ST/EF | BH50ST/EF<br>& BH55ST* |
|---|-------|------------------|------------------|------------------------|------------------------|------------------------|-----------|-----------|------------------------|
|   | A     | 150              | 150              | 150                    | 150                    | 150                    | 150       | 150       | -                      |
| B   | 990   | 1020             | 1020             | 1270                   | 1270                   | 1370                   | 1400      | -         | -                      |
| C   | 840   | 965              | 965              | 1120                   | 1120                   | 1220                   | 1270      | -         | -                      |
| D   | 990   | 1020             | 1020             | 1270                   | 1270                   | 1370                   | 1400      | -         | -                      |

\*\* When installed in the first 6 m - Not for use on EF models.

**FIGURE 10: LINEAR & DOUBLE LINEAR, VENTING**

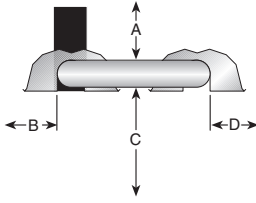
|  | Model | BH15ST<br>BH30DL | BH20ST<br>BH40DL | BH25ST/EF<br>BH50DL/EF | BH30ST/EF<br>BH60DL/EF | BH35ST/EF<br>BH70DL/EF | BH40ST/EF | BH45ST/EF | BH50ST/EF<br>& BH55ST* |
|---|-------|------------------|------------------|------------------------|------------------------|------------------------|-----------|-----------|------------------------|
|   | E     | 1000             | 1000             | 1000                   | 1000                   | 1000                   | 1000      | 1000      | 1000                   |
| F   | 500   | 500              | 500              | 500                    | 500                    | 500                    | 500       | 500       | 500                    |

\* BH55ST only available in multiburner.

### 3.3 Clearance Data -U Tube

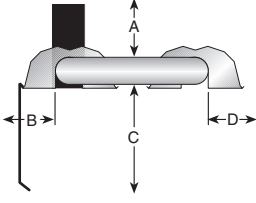
- NOTE:**
1. All dimensions are from the surfaces of all tubes, couplings, tees, elbows and crosses.
  2. Clearances B, C and D can be reduced by 50% after 7500 mm of tubing downstream from the burner.
  3. All measurements are in millimeters.
  4. Add 60 mm clearance to uncovered U-tube.

**FIGURE 11: U-TUBE, HORIZONTAL MOUNT**



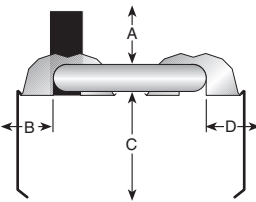
| Model | BH15UT | BH20UT | BH25UT/EF | BH30UT/EF | BH35UT/EF | BH40UT/EF | BH45UT/EF | BH50UT/EF |
|-------|--------|--------|-----------|-----------|-----------|-----------|-----------|-----------|
| A     | 150    | 150    | 150       | 150       | 150       | 150       | 200       | 200       |
| B     | 890    | 970    | 970       | 1020      | 1170      | 1220      | 1270      | 1380      |
| C     | 1580   | 1730   | 1730      | 1910      | 1980      | 2050      | 2110      | 2210      |
| D     | 760    | 940    | 940       | 1000      | 1090      | 1150      | 1200      | 1300      |

**FIGURE 12: U-TUBE, ONE SIDE REFLECTOR**



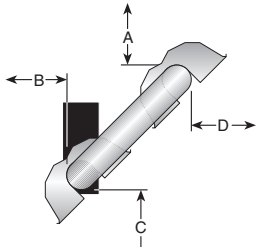
| Model | BH15UT | BH20UT | BH25UT/EF | BH30UT/EF | BH35UT/EF | BH40UT/EF | BH45UT/EF | BH50UT/EF |
|-------|--------|--------|-----------|-----------|-----------|-----------|-----------|-----------|
| A     | 150    | 150    | 150       | 150       | 150       | 150       | 200       | 200       |
| B     | 230    | 230    | 230       | 230       | 230       | 230       | 230       | 230       |
| C     | 1580   | 1760   | 1760      | 1930      | 2090      | 2130      | 2160      | 2240      |
| D     | 1200   | 1380   | 1380      | 1500      | 1660      | 1710      | 1760      | 1860      |

**FIGURE 13: U-TUBE, TWO SIDE REFLECTORS**



| Model | BH15UT | BH20UT | BH25UT/EF | BH30UT/EF | BH35UT/EF | BH40UT/EF | BH45UT/EF | BH50UT/EF |
|-------|--------|--------|-----------|-----------|-----------|-----------|-----------|-----------|
| A     | 150    | 150    | 150       | 150       | 150       | 150       | 200       | 200       |
| B     | 590    | 640    | 640       | 690       | 820       | 860       | 890       | 1020      |
| C     | 1660   | 1810   | 1810      | 1960      | 2110      | 2160      | 2210      | 2320      |
| D     | 590    | 640    | 640       | 690       | 820       | 860       | 890       | 1020      |

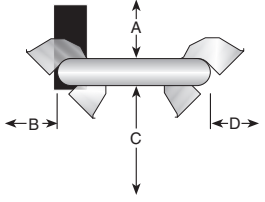
**FIGURE 14: U-TUBE, FULL 45° MOUNT**



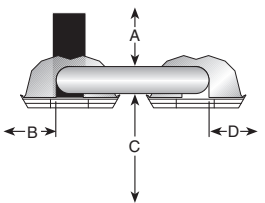
| Model | BH15UT | BH20UT | BH25UT/EF | BH30UT/EF | BH35UT/EF | BH40UT/EF | BH45UT/EF | BH50UT/EF |
|-------|--------|--------|-----------|-----------|-----------|-----------|-----------|-----------|
| A     | 200    | 200    | 200       | 200       | 200       | 200       | 200       | 200       |
| B     | 200    | 200    | 200       | 200       | 200       | 200       | 200       | 200       |
| C     | 1500   | 1650   | 1650      | 1860      | 1960      | 2040      | 2110      | 2160      |
| D     | 1070   | 1170   | 1170      | 1320      | 1550      | 1620      | 1680      | 1780      |

- NOTE:**
1. All dimensions are from the surfaces of all tubes, couplings, tees, elbows and crosses.
  2. Clearances B, C and D can be reduced by 50% after 7500 mm of tubing downstream from the burner.
  3. All measurements are in millimeters.
  4. Add 60 mm clearance to uncovered U-tube.

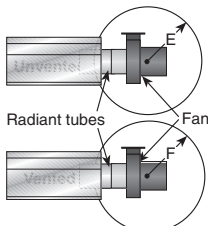
**FIGURE 15: U-TUBE, OPPOSITE 45° TILT**

|  | Model | BH15UT | BH20UT | BH25UT/EF | BH30UT/EF | BH35UT/EF | BH40UT/EF | BH45UT/EF | BH50UT/EF |
|---|-------|--------|--------|-----------|-----------|-----------|-----------|-----------|-----------|
|   | A     |        | 200    | 200       | 200       | 250       | 250       | 275       | 300       |
| B   |       | 1370   | 1530   | 1530      | 1630      | 1780      | 1830      | 1880      | 1930      |
| C   |       | 1500   | 1650   | 1650      | 1860      | 1960      | 2040      | 2110      | 2160      |
| D   |       | 560    | 560    | 560       | 560       | 560       | 560       | 560       | 560       |

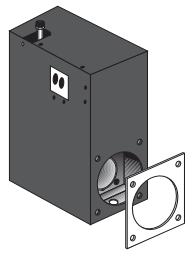
**FIGURE 16: U-TUBE, PROTECTIVE GRILLE**

|  | Model | BH15UT | BH20UT | BH25UT/EF | BH30UT/EF | BH35UT/EF | BH40UT/EF | BH45UT/EF | BH50UT/EF |
|--|-------|--------|--------|-----------|-----------|-----------|-----------|-----------|-----------|
|  | A     |        | 150    | 150       | 150       | 150       | 150       | 150       | 200       |
| B  |       | 890    | 970    | 970       | 1020      | 1170      | 1220      | 1270      | 1380      |
| C  |       | 1580   | 1730   | 1730      | 1910      | 1980      | 2050      | 2110      | 2210      |
| D  |       | 760    | 940    | 940       | 1000      | 1090      | 1150      | 1200      | 1300      |

**FIGURE 17: U-TUBE, VENTING**

|  | Model | BH15UT | BH20UT | BH25UT/EF | BH30UT/EF | BH35UT/EF | BH40UT/EF | BH45UT/EF | BH50UT/EF |
|---|-------|--------|--------|-----------|-----------|-----------|-----------|-----------|-----------|
|   | E     |        | 1000   | 1000      | 1000      | 1000      | 1000      | 1000      | 1000      |
| F   |       | 500    | 500    | 500       | 500       | 500       | 500       | 500       | 500       |

**SECTION 4: MAJOR COMPONENT DESCRIPTIONS**

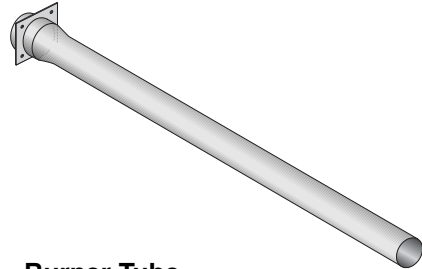
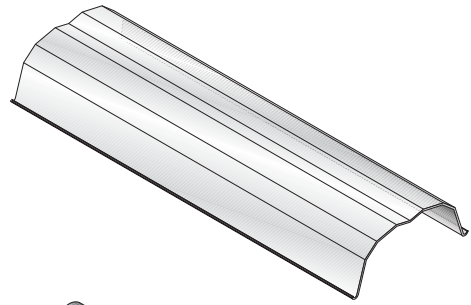


**Burner (shown with Tube Gasket)**

Must be installed with the flame observation window facing down.

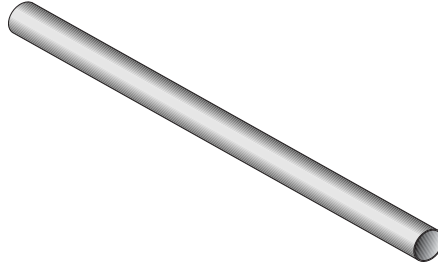
**Reflector (Aluminium or Stainless Steel)**

Alternate overlap as shown on overview. Minimum overlap is 160 mm.



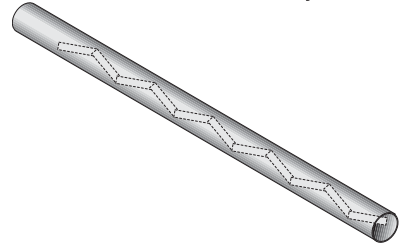
**Burner Tube**

Supplied in 3,000 mm lengths. Burner tube is always the first tube after the burner.



**Tube**

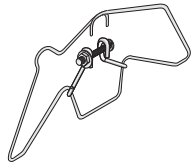
Heat treated aluminised tube supplied in 3,000 mm lengths.



**Fan Tube with Internal Swirler**

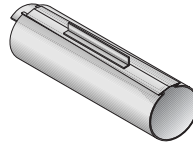
Supplied in 3,000 mm lengths. Fan tube is always the last tube on the heater where the fan is attached.

The swirler is welded to the inside of the tube end.

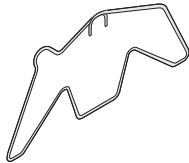


**Tube and Reflector Hanger with Clamp Package**

Position this hanger no more than 100 mm away from the burner assembly.

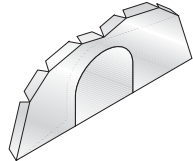


**Coupling Assembly with Lock**



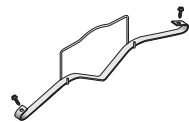
**Tube and Reflector Hanger**

Suspend system from these hangers.

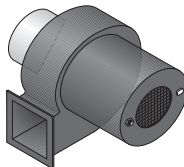


**Reflector End Cap**

Punch out center section to accommodate tube.

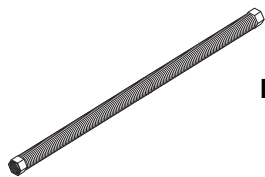


**Reflector Support Strap, Wire Form & #8 x 3/4 (3.9 x 19mm) Screw**

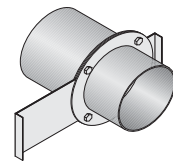


**Fan Assembly (Includes Flange)**

Fan Assembly is attached to the last section of heat exchanger tubing (Fan Tube).

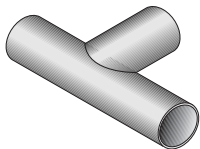


**Flex Gas Line**

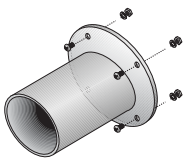


**Damper Flange Assembly**

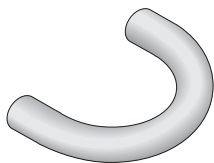
For use on Multiburner Systems.



**Tee Assembly**



**Fan Flange Assembly and Screws**



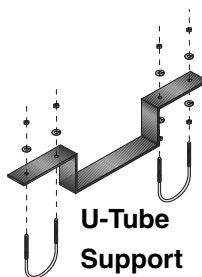
**U-Tube**



**S-hook**



**Height Adjuster**



**U-Tube Support Bracket**



**Spring Hook**



**Bow Shackle**

## SECTION 5: GENERAL SUSPENSION DETAILS

**⚠ WARNING****Severe Injury Hazard**

**Secure burner to burner tube with bolts and lockwashers.**

**Hang heater with materials with a minimum working load of 75 lbs (33 kg).**

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

**⚠ WARNING****Cut/Pinch Hazard**

**Wear protective gear during installation, operation and service.**

**Edges are sharp.**

**Failure to follow these instructions can result in injury.**

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.

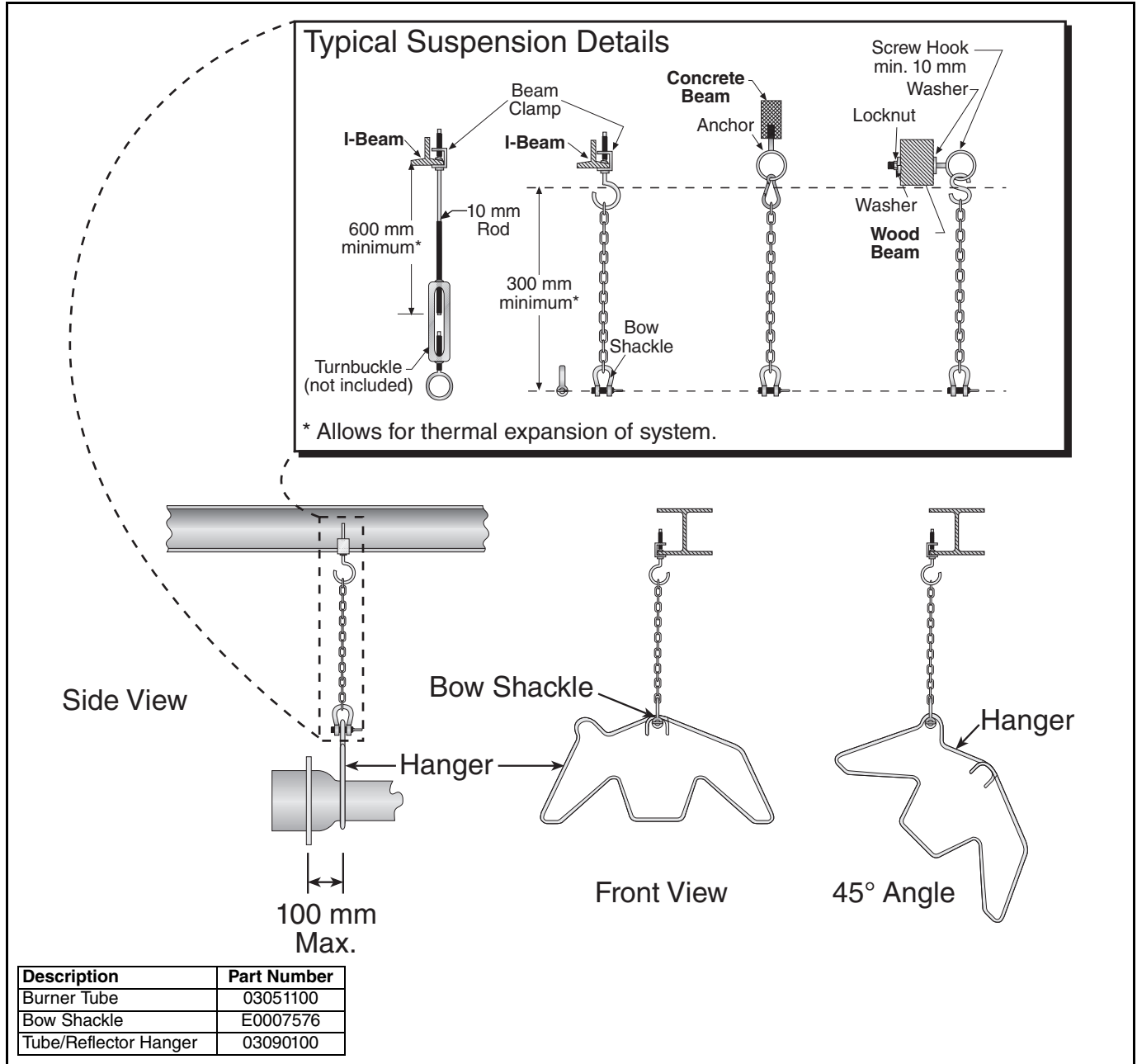
The heater must be installed in a location that it is readily accessible for servicing.

The heater must be installed in accordance with clearances to combustibles as indicated in this manual.

The minimum and maximum gas inlet pressures must be maintained as indicated on the rating plate. Typical installation configurations are shown on *Page 12, Figure 18*.

Note: Some models will receive S-hooks (P/N 91907302) or spring hooks (P/N 91903300), rather than bow shackles.

**Figure 18: Critical Hanger Placement**



## SECTION 6: LINEAR &amp; DOUBLE LINEAR HEATER INSTALLATION

**WARNING****Cut/Pinch Hazard**

**Wear protective gear during installation, operation and service.**

**Edges are sharp.**

**Failure to follow these instructions can result in injury.**

The figures in this section provide a general overview of component placement in a BLACKHEAT® Linear and Double Linear system. The location of some components such as supports and couplings is crucial for proper installation. Assemble the heater components as shown on Page 14, Figure 19.

For optional reflector configurations for linear heaters see Page 6, Figure 3 through Page 7, Figure 10. Install appropriate suspension hardware, beam clamps, chain or rod at predetermined locations. Adjustments of chain length will provide uniform pitch.

If any step is unclear, please contact Roberts-Gordon at +44 (0)121 506 7700.

**6.1 Linear Standard Parts List**

| Part No. | Description   | BH15ST       | BH20ST                                  | BH25ST | BH25ST/EF | BH30ST | BH30ST/EF | BH35ST | BH35ST/EF | BH40ST | BH40ST/EF | BH45ST | BH45ST/EF | BH50ST | BH50ST/EF | BH55ST |
|----------|---|--------------|---|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|
|          |   | 072XXXXX     | Burner Assembly (Input and Fuel Varies) | 1      | 1         | 1      | 1         | 1      | 1         | 1      | 1         | 1      | 1         | 1      | 1         | 1      |
| 07260001 | Fan Package XP 1  | 1            | 1                                       | 1      | 1         | -      | -         | -      | -         | -      | -         | -      | -         | -      | -         | -      |
| 07260002 | Fan Package XP2   | -            | -                                       | -      | -         | 1      | 1         | 1      | 1         | 1      | 1         | 1      | 1         | 1      | 1         | 1      |
| 07260003 | Fan Package XP 3  | -            | -                                       | -      | -         | -      | -         | -      | -         | -      | -         | -      | -         | 1      | 1         | 1      |
| 03051100 | Burner Tube, 100 mm x 3048 mm                           | 1            | 1                                       | 1      | 1         | 1      | 1         | 1      | 1         | 1      | 1         | 1      | 1         | 1      | 1         | 1      |
| 91409408 | Tube, 100 mm x 3048 mm                                  | -            | 1                                       | 1      | 2         | 2      | 2         | 3      | 3         | 4      | 4         | 5      | 5         | 6      | 6         | 7      |
| S5127W   | Fan Tube, 100 mm x 3048 mm, with 3048 mm Swirler        | -            | 1                                       | 1      | 1         | 1      | 1         | 1      | 1         | 1      | 1         | 1      | 1         | 1      | 1         | 1      |
| S5134W   | Fan Tube, 100 mm x 3048 mm, with 2134 mm Swirler        | 1            | -                                       | -      | -         | -      | -         | -      | -         | -      | -         | -      | -         | -      | -         | -      |
| 01329600 | Standard Coupling Assembly                              | 1            | 2                                       | 2      | 3         | 3      | 3         | 4      | 4         | 5      | 5         | 6      | 6         | 7      | 7         | 8      |
| 01329700 | Coupling Lock   | 1            | 2                                       | 2      | 3         | 3      | 3         | 4      | 4         | 5      | 5         | 6      | 6         | 7      | 7         | 8      |
| 02750303 | Reflector, Aluminium, 2439 mm                           | 3            | 4                                       | 4      | 6         | 6      | 6         | 7      | 7         | 8      | 8         | 9      | 9         | 10     | 10        | 11     |
| 027503SS | Reflector, Stainless Steel, 2439 mm (Optional)*         | 3            | 4                                       | 4      | 6         | 6      | 6         | 7      | 7         | 8      | 8         | 9      | 9         | 10     | 10        | 11     |
| 02750800 | Reflector End Cap, Aluminium                            | 2            | 2                                       | 2      | 2         | 2      | 2         | 2      | 2         | 2      | 2         | 2      | 2         | 2      | 2         | 2      |
| 027508SH | Reflector End Cap, Stainless (Optional)*                | 2            | 2                                       | 2      | 2         | 2      | 2         | 2      | 2         | 2      | 2         | 2      | 2         | 2      | 2         | 2      |
| 03090100 | Tube and Reflector Hanger                               | 3            | 4                                       | 4      | 5         | 5      | 5         | 6      | 6         | 7      | 7         | 8      | 8         | 9      | 9         | 10     |
| 01318901 | Tube Clamp Package (including Nut, Washer & Bolt)       | 1            | 1                                       | 1      | 1         | 1      | 1         | 1      | 1         | 1      | 1         | 1      | 1         | 1      | 1         | 1      |
| 91908004 | Wire Form   | 2            | 3                                       | 3      | 5         | 5      | 5         | 6      | 6         | 7      | 7         | 8      | 8         | 9      | 9         | 10     |
| 94320812 | Screw #8 x 3/4 (3.9mm x 19mm), (goes with 03050000)     | 4            | 6                                       | 6      | 10        | 10     | 10        | 12     | 12        | 14     | 14        | 16     | 16        | 18     | 18        | 20     |
| 03050000 | Reflector Support Strap                                 | 2            | 3                                       | 3      | 5         | 5      | 5         | 6      | 6         | 7      | 7         | 8      | 8         | 9      | 9         | 10     |
| E0007576 | Bow Shackle**   | 3            | 4                                       | 4      | 5         | 5      | 5         | 6      | 6         | 7      | 7         | 8      | 8         | 9      | 9         | 10     |
| 91107720 | U-Clip Package (20 Pieces)                              | 1            | 1                                       | 1      | 1         | 1      | 1         | 1      | 1         | 1      | 1         | 1      | 1         | 1      | 1         | 1      |
| S7199K   | Damper Flange Assembly (For use on Multiburner Systems) | 1 Per Heater |   |        |           |        |           |        |           |        |           |        |           |        |           |        |

\* PVC coating must be removed prior to installation.

\*\* Some models may receive S-hooks (P/N 91907302) or spring hooks (P/N 919003300), rather than bow shackles.

Figure 19: Linear General Assembly Overview

