

# SR-SERIES Specifications, Installation, Operation Service and Spare Parts Manual



Low Intensity Infrared Heater/Radiateur à infrarouge a faible intensité  
 For either indoor or outdoor installation/Installer à l'intérieur ou à l'extérieur  
 Also for Brooder Use/Aussi pour l'éveage des poules  
 For Industrial, Commercial, Agricultural Applications.



**! WARNING:** Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read (refer to) the installation operating and maintenance instructions thoroughly before installing or servicing this equipment. For assistance or additional information consult a qualified installer, service agency or the gas supplier.

**! ADVERTISSEMENT.** L'installation déplacée, l'ajustement, le changement, le service ou l'entretien peuvent causer les dommages de propriété, la blessure ou la mort. Lire (se référer à) l'installation qui fonctionne et les instructions d'entretien à fond avant d'installer ou entretenir cet équipement. Pour obtenir de l'aide ou les informations supplémentaires consultez un programme d'installation, une agence de service ou le fournisseur de gaz qualifié.

**! WARNING:** If the information in these instructions is not followed exactly, a fire or explosion may result; causing property damage, personal injury or loss of life.

**! ADVERTISSEMENT:** Assurez-vous de bien suivre les instructions données dans cette notice pour réduire au minimum le risqué d'incendie ou d'explosion ou pour éviter tout dommage matériel, toute blessure ou la mort.

-Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

**! DANGER: WHAT TO DO IF YOU SMELL GAS:**

- 1) Extinguish any open flame
- 2) DO NOT try to light any appliance.
- 3) DO NOT use or touch any electrical switches.
- 4) DO NOT use any phone in your building
- 5) Turn off gas.
- 6) Open Windows
- 7) Leave the building
- 8) Immediately call your gas supplier from a neighbor's phone or after you have left the building. Follow the gas supplier's instructions.
- 9) If you cannot reach your gas supplier, call the fire department.

- Installation and service must be performed by a qualified installer, service agency or the gas supplier

- Ne pas entreposer ni utiliser d'essence ni d'autres vapeurs ou liquidés inflammables à proximité de cet appareil ou de tout autre appareil.

**! DANGER: QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ:**

- 1) Éteindre la flamme ouverte
- 2) Ne pas tenter d'allumer d'appareils
- 3) Ne touchez à aucun interrupteur.
- 4) Ne pas vous servir des téléphones dans le bâtiment ou vous vous trouvez.
- 5) le Virage du gaz.
- 6) Ouvrir Windows
- 7) Part le bâtiment
- 8) Appelez immédiatement votre fournisseur de gaz depuis un voisin ou après que vous êtes parti le bâtiment. Suivez les instructions du fournisseur.
- 9) Si vous ne pouvez rejoindre le service des incendies.

- L'installation et l'entretien doivent être assurés par un installateur ou un service d'entretien qualifié ou par fournisseur de gaz.

**! WARNING:** Heat exchanger surface is hot. Do not touch surface or burn may result. Combustible material or articles should not be placed on or near heater. Observe clearance to combustibles as noted on heater and in this manual.

**INSTALLER:** Leave this manual with the appliance.  
**CONSUMER:** Retain this manual for future reference.

**INSATLLATEUR:** Laissez cette notice avec l' appareil.  
**CONSOMMATEUR:** Conservez cette notice pour consultation ultérieure.

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**1.0 OWNERS RESPONSIBILITY**


Thank you for purchasing our product. We have designed this unit to provide you with years of trouble-free heating enjoyment.

**READ THIS MANUAL IN ITS ENTIRETY!** If you do not understand any of the safety or hazardous warnings contained in this manual, or have questions or concerns about the installation, operation, maintenance or service of this heater, or any other questions or concerns relating to this heater, you **MUST CALL THE FACTORY** at the telephone number noted on the front cover of this manual or as detailed on the rating plate on the heater before operating this heater. Store this manual in a location near the heater, for future reference. Make sure installation is performed by well qualified, licensed contractors in the required field of work. If in doubt, DO NOT allow unit to be installed.

**DO NOT** park vehicles or place combustible objects close to the heater other than specified on the Clearance to Combustible chart located in this manual and on the heater. Failure to observe the clearance to combustibles can result in property damage, injury or death.

**IMPORTANT NOTICE:** The installation portion of these instructions are for the use of qualified individuals specially trained, licensed and experienced in the installation of this type of equipment and related system components.


**NOTE:** - The words "shall" or "must" indicate a requirement which is essential to satisfactory and safe performance.

 **GENERAL HAZARD WARNING:** The heater and related gas piping, fitting & wiring must be installed by individuals or firms qualified, licensed and specially trained and experienced in installation of this type of equipment and related system components.

Only persons who can understand and follow the instructions shall install or service this heater.


Persons not qualified shall not install this equipment nor interpret these instructions.


Failure to comply with the precautions and instructions provided with this heater can result in death, serious bodily injury and property loss or damage from hazards of fire, explosion, burn, asphyxiation, carbon monoxide poisoning or electrical shock.

 **WARNING:** Installation and repair should be done by a qualified service person. The heater should be inspected before use and at least annually by a qualified service person and prior to heating season. Heaters used in dusty locations such as brooder barns, sawmills, woodworking shops, etc. will require maintenance on a more regular basis and more frequent cleaning may be required as necessary. It is imperative that the control compartments, burner(s) and circulating air passageways of the appliance be kept clean. Periodic examination of the venting system is to be performed.

No one should work on a heater unless they are a licensed/qualified gas fitter or contractor. For all repairs, parts **MUST** originate from the manufacturer of this heater in order not to void CGA/AGA certification. Safety devices are not allowed to be rendered inoperative and left unattended as this action can cause property damage, injury or death. Failure to do so will void your warranty.

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 **WARNING:** Do not store or use halogen-emitting substances in the vicinity of this heater. Such substances include chlorine based cleaners and swimming pool chemicals, water softening chemicals, de-icing salts and chemicals, cleaning solvents such as carbon tetrachloride or perchloroethylene, halogen type refrigerants, printing inks, paint and paint removers, varnishes, hydrochloric acid, cements and glues, and masonry acid washing materials, The air used by the burner for combustion must be free of halogens to avoid possible corrosion to the heating surfaces, which could result in asphyxiation, fire and/or death.

 **WARNING:** Children and adults should be alerted to the hazards of high surface temperatures and should stay away to avoid burns or clothing ignition.

Young children should be carefully supervised when they are in the same place as the heater.

Clothing or other flammable materials should not be hung from the heater, or placed on or near the heater.

Any safety screen, guard or other protective device removed for servicing a heater must be replaced prior to operating the heater.

Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

Ne pas se servir de cet appareil sil a été plongé dans l'eau, complètement ou en partie, Faire inspecter l'appareil par un technicien qualifié et remplacer toute partie du système de control et toute commande qui ont été plongée dans l'eau.

**2.0 INSTALLER RESPONSIBILITY**

** WARNING:**

**FIRE OR EXPLOSION HAZARD**

The heater and related gas piping and wiring must be installed only by individuals or firms well qualified and licensed in the required field of work.

Read and understand this manual in its entirety BEFORE you install this heater. If you have any questions call your local representative. Verify that the fuel on the installation site is the same as what is required for this heater. Check heater for damage or missing parts. If damage has occurred, notify carrier or point of purchase at once for reconciliation of damaged goods. We are not responsible for transit damage. Do not install if heater is damaged.

**If you do not understand any of the safety or hazardous warnings contained in this manual, or have questions or concerns about the installation, operation, maintenance or service of this heater, or any other questions or concerns relating to this heater, you MUST CALL THE FACTORY at the telephone number noted on the front cover of this manual or as detailed on the rating plate on the heater before operating this heater.**

Verify that model, input & length is what was ordered and is appropriate for installation. If heater is too small for the heating load of the building, property damage can occur due to freezing. If unit is too large, severe heat damage can occur to the building and/or its contents, fire, explosion, injury or death. If in doubt compare heat loss of building with unit on site. If you are unable to calculate heat loss, call your local representative for assistance.

Installation shall be in accordance with local codes. (See 'CODE COMPLIANCE').

If installation requires tilting, DO NOT over tilt the unit. Units are certified for installations up to 45°; however the maximum recommended tilt is 25°.

Install unit according to the "Clearance to Combustibles" for that particular heater and type of installation. Make sure that clearances are maintained from vehicles parked below or in front of heater. Take into consideration hoists. Failure to do so could result in property damage, injury or death.

Make sure unit is adequately suspended from ceiling or roof. Select hanging location that has adequate strength to support heater.

If combustion air is contaminated or if there is a negative air pressure in the building, install outside air for combustion (See pages 47 & 48 titled "Optional Outside Air").

If unit is to be sidewall vented, use part #5200210 (Sidewall Vent Kit). Make sure vent cap is past eave. (See pages 49 - 52 titled "VENTING").

Do not render safety devices inoperable. Make sure gas line and/or service have adequate capacity for the increased load of heater.

**3.0 CODE COMPLIANCE**

Installation shall be in accordance with local building codes, or in the absence of local codes, in accordance with:

**A. FUEL SUPPLY:**

**CANADA: *Natural Gas and Propane Installation Code, CSA B149.1 or latest edition.***

**USA: *National Fuel Gas Code, ANSI Z223.1/NFPA 54, or latest edition.***

**B. ELECTRICAL GROUNDING:**

**CANADA: *Canadian Electrical Code, CSA C22.1 or latest edition.***

**USA: *National Electrical Code, ANSI/NFPA 70 or latest edition***

In Canada: Electrical equipment and wiring shall comply with the applicable provisions of the current ***Canadian Electrical Code, CAN/CSA C22.1, Part I and Part II, and CAN/CSA C22.2 No.3, Electrical features of Fuel Burning Equipment.***

**C. PUBLIC GARAGE INSTALLATION:**

Adequate clearances must be maintained according to the following standards:

**CANADA: *Natural Gas and Propane Installation Code, CSA B149.1 or latest edition.***

**USA: *Parking Structures, ANSI/NFPA 88A or the standard for Repair Garages, ANSI/NFPA 88B or latest edition.***

**D. AIRCRAFT HANGERS:**

Adequate clearances must be maintained according to the following standards:

**CANADA: *Enforcing Authority.***

**USA: *Aircraft Hangers, ANSI/NFPA 409***

Check line and manifold pressure with a manometer to confirm unit is set according to the specification on the rating plate. Perform check with all gas-fired appliances operating. (See pages 67, 73 & 74 for further details).

Provide adequate accessibility clearances for servicing.

Leave copy of this manual with owner (or a copy) for future reference.

**DO NOT INSTALL THIS UNIT IN RESIDENTIAL SPACES**

**HEATER OPERATION NOTE:** Heater will have a higher heat output at the burner end as compared to the exhaust end.

**SPACE HEATING:** As a general rule, it is suggested to locate the burner end toward the highest heat-loss area (doors) of the space being heated. If you have any concerns or questions concerning orientation or layout of the heater in your application, contact factory for assistance.

**SPOT HEATING:** On heaters with a straight line configuration as well as units that have the maximum length of radiant tube selected for the input capacity of a given burner, there will be a noticeable and more pronounced perception of greater heat output from the burner end of the heater as compared to the exhaust end. As a general rule, it is suggested for spot heating applications, to use a u-tube configuration to provide a more even source of heat. If you have any concerns or questions concerning orientation or layout of the heater in your application. Contact factory for assistance.

**NOTE:** Condensation from the exhaust may occur from this heater when it starts the heating cycle. The condensation will stop once the heater warms up. Make sure venting is sealed according to section titled "VENTING" on page 49.



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## 4.0 SPECIFICATIONS: GENERAL SPECIFICATIONS

Rating: (Input: Natural and Propane Gas)

In Canada: 0-4500' (1372 m) In USA: 0-2000' (610 m) - De-rate Above 2000' (610 m) (see page 67)

MODEL	BURNER INPUT BTU/hr		TUBE LENGTH	
	MIN	MAX	MIN	MAX
SR-40	N/A	40,000	10' (3 m)	20' (6.1 m)
SR-40HL	20,000	40,000	10' (3 m)	20' (6.1 m)
SR-40M	20,000	40,000	10' (3 m)	20' (6.1 m)
SR-50	N/A	50,000	20' (6.1 m)	20' (6.1 m)
SR-50HL	25,000	50,000	20' (6.1 m)	20' (6.1 m)
SR-50M	25,000	50,000	20' (6.1 m)	20' (6.1 m)
SR-60	N/A	60,000	20' (6.1 m)	40' (12.2m)
SR-60HL	30,000	60,000	20' (6.1 m)	40' (12.2m)
SR-60M	30,000	60,000	20' (6.1 m)	40' (12.2m)
SR-75	N/A	75,000	20' (6.1 m)	40' (12.2m)
SR-75HL	37,500	75,000	20' (6.1 m)	40' (12.2m)
SR-75M	37,500	75,000	20' (6.1 m)	40' (12.2m)
SR-80	N/A	80,000	20' (6.1 m)	40' (12.2m)
SR-80HL	40,000	80,000	20' (6.1 m)	40' (12.2m)
SR-80M	40,000	80,000	20' (6.1 m)	40' (12.2m)
SR-100	N/A	100,000	20' (6.1 m)	50' (15.2m)
SR-100HL	50,000	100,000	20' (6.1 m)	50' (15.2m)
SR-100M	50,000	100,000	20' (6.1 m)	50' (15.2m)
SR-125	N/A	125,000	30' (9.14m)	50' (15.2m)
SR-125HL	62,500	125,000	30' (9.14m)	50' (15.2m)
SR-125M	62,500	125,000	30' (9.14m)	50' (15.2m)
SR-150	N/A	150,000	40' (12.2m)	60' (18.3m)
SR-150HL	75,000	150,000	40' (12.2m)	60' (18.3m)
SR-150M	75,000	150,000	40' (12.2m)	60' (18.3m)
SR-175	N/A	175,000	40' (12.2m)	70, (21.3m)
SR-175HL	87,500	175,000	40' (12.2m)	70, (21.3m)
SR-175M	87,500	175,000	40' (12.2m)	70, (21.3m)
SR-200	N/A	200,000	50' (15.2m)	80' (24.2)
SR-200HL	100,000	200,000	50' (15.2m)	80' (24.2)
SR-200M	100,000	200,000	50' (15.2m)	80' (24.2)
SR-225	N/A	225,000	60' (18.3m)	80' (24.2)
SR-225HL	125,000	225,000	60' (18.3m)	80' (24.2)
SR-225M	125,000	225,000	60' (18.3m)	80' (24.2)

## SR-SERIES

### GAS PRESSURE at MANIFOLD:

#### **GAS:**

Natural Gas: 3.5" (8.89 cm) W.C.  
L.P. Gas: 10.5" (26.67 cm) W.C.

**Gas Connection** 0.5" (1.27 cm) N.P.T.

### GAS INLET PRESSURE:

<b>GAS:</b>	<b>MINIMUM:</b>	<b>MAXIMUM:</b>
Natural	4.5" (11.43 cm) W.C.	14.0" (35.56 cm) W.C.
L.P.	11.5" (29.21 cm) W.C.	14.0" (35.56 cm) W.C.

**Flue Connection:** 4" (10.16 cm)

### COMBUSTION AIR INTAKE:

40,000 TO 80,000 Btu/hr input 4" (10.16 cm)  
100,000 TO 200,000 Btu/hr input 6" (15.24 cm)

### ELECTRICAL RATING:

DSI Ignition 120v 60Hz  
1.0 Amps 40,000 to 80,000 Btu/hr input  
2.25 Amps 100,000 to 200,000 Btu/hr input  
Appliance  
3 Prong Plug Connection  
24 Volt Low Voltage Thermostat

### ELECTRICAL RATING:

Appliance, 3 prong plug connection, 24 volt low voltage thermostat.

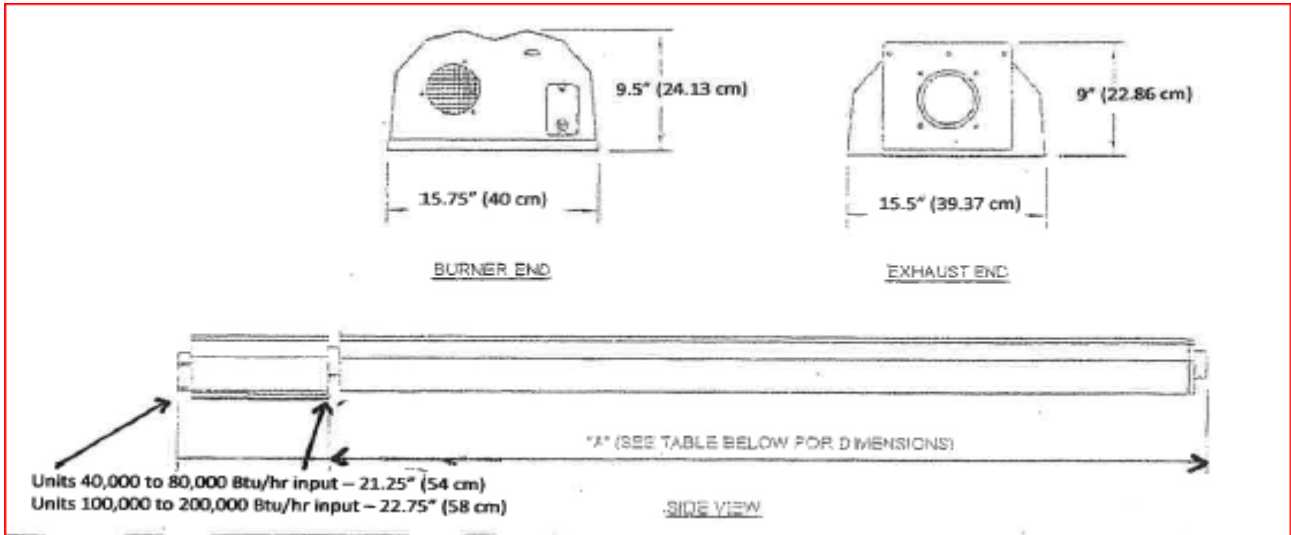
### STANDARD EQUIPMENT:

Burner control housing is pre-assembled and pre-wired; unit comes complete with the following: industry standard gas, electrical and venting connections, balanced air rotor, thermal overload protected motor, visual burner inspection sight glass, combustion and air proving safety switches, 3-try spark ignition control, low voltage thermostat connection, 4" aluminized steel combustion tube, polished aluminum standard reflector, 4" mild steel radiant heat exchanger, tube couplers, joint/hanger pieces, heat economizer baffle/turbulator, low/line voltage thermostat, and hanging chain kit.

<b>Optional Equipment:</b>	
- Side Reflectors	- Stainless Steel Construction
- Aluminized Steel Tube	- 90° Elbow Kit
- Side Wall Vent Kit	- Thermostat
- 180° U-Bend Kit	- Outdoor Installation Kit

**SR-SERIES**

**5.0 DIMENSIONS**



SIDE VIEW

Figure 1. EQUIPMENT DIMENSION

**Table of Dimensions:**

UNITS BURNER INPUT:	DIMENSION "A" LENGTH	
	MIN	MAX
40,000 Btu/hr	10'-4" (3.15 m)	20'-4" (6.4 m)
50,000 Btu/hr	20'-4" (6.4 m)	20'-4" (6.4 m)
60,000 Btu/hr	20'-4" (6.4m)	40'-4" (12.3 m)
75,000 Btu/hr	20'-4" (6.4m)	40'-4" (12.3 m)
80,000 Btu/hr	20'-4" (6.4m)	40'-4" (12.3 m)
100,000 Btu/hr	20'-4" (6.4m)	50'-4" (15.3m)
125,000 Btu/hr	30'-4" (9.25m)	50'-4" (15.3m)
150,000 Btu/hr	40'-4" (12.3m)	60'-4" (18.4m)
175,000 Btu/hr	40'-4" (12.3m)	70'-4" (21.5m)
200,000 Btu/hr	50'-4" (15.3m)	80'-4" (24.5m)
225,000 Btu/hr	60'-4" (18.4m)	80'-4" (24.5m)

# SR-SERIES

## 6.0 INSTALLATION CLEARANCES AND CLEARANCE TO COMBUSTIBLES

Installation of overhead heaters in garages or hangars MUST meet the requirements for bottom (below) clearances detailed in **CANADA: Natural Gas and Propane Installation Code, CSA B149.1** or latest edition or **USA: National Fuel Gas Code, ANSI Z223.1/NFPA 54**, or latest edition.

**⚠ WARNING:** In all situations, clearances to combustibles must be maintained. Minimum clearance from heater must be maintained from vehicles parked below heater. The posting of signs may be required in storage areas referring to clearances to combustibles to the heater and/or limiting the stacking height of stored items near the heater specifying a maximum height. Clearances are not for use in four (4) sided enclosures. Certain materials or items, when stored under the heater, will be subjected to radiant heat and could be seriously damaged.

**⚠ WARNING:** The stated clearance to combustibles represents a surface temperature of 90°F (32°C) above room temperature. Building material with 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. When in doubt, check heat tolerance of building material(s) with their manufacturer.

### END CLEARANCES

#### (BURNER HEAD END)

Minimum clearances from air intake end of burner head to object is 12" (30.5 cm).

Provide adequate accessibility clearances for servicing and proper operation. Do not install unit in such a manner that the combustion air entering the heater is reduced in any manner

### OUTDOOR APPLICATIONS ONLY

#### UNVENTED

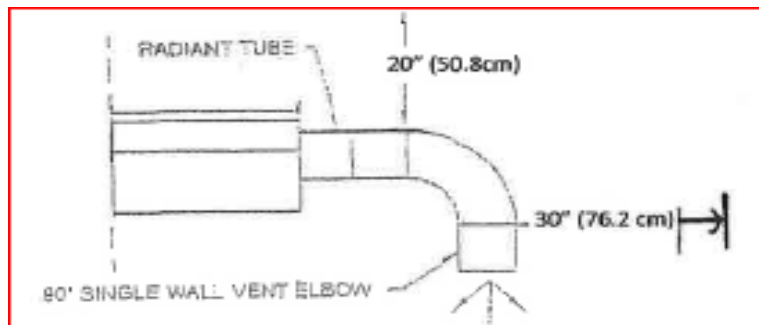


Figure 2. UNVENTED CLEARANCES

#### VENTED

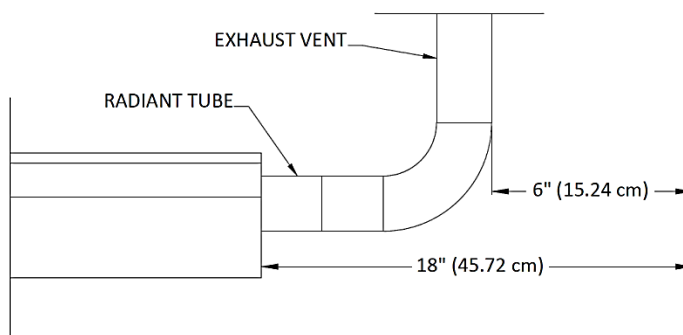
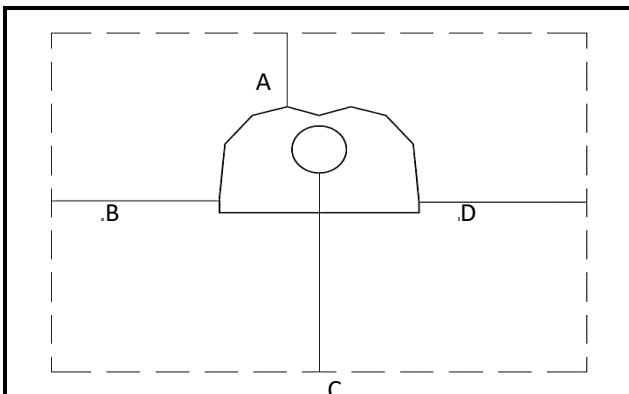


Figure 3. VENTED CLEARANCES

**6.1 CLEARANCE TO COMBUSTIBLES FOR SPACE HEATING AND BROODER INSTALLATION**

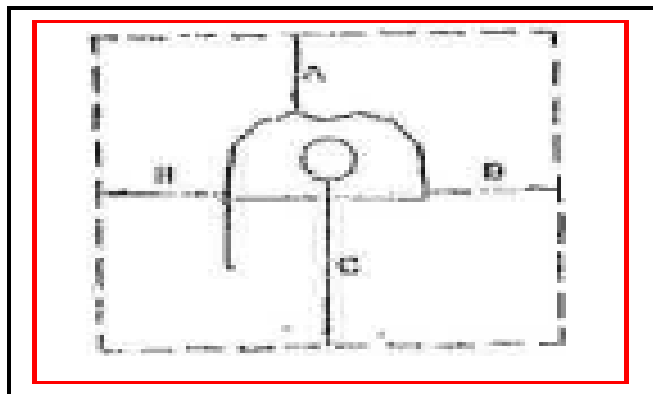
**⚠ WARNING:** In all situations, clearances to combustibles must be maintained. Minimum clearance from heater must be maintained from vehicles parked below heater. The posting of signs may be required in storage areas referring to clearances to combustibles to the heater and/or limiting the stacking height of stored items near the heater specifying a maximum height. Clearances are not for use in four (4) sided enclosures. Certain materials or items, when stored under the heater, will be subjected to radiant heat and could be seriously damaged.

**⚠ WARNING:** The stated clearance to combustibles represents a surface temperature of 90°F (32°C) above room temperature. Building material with 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. When in doubt, check heat tolerance of building material(s) with their manufacturer.



INSTALLATION TYPE 1 - (inches) (cm)				
Input*	A	B	C	D
40	6" (16cm)	12" (31cm)	36" (92cm)	12" (31cm)
50	6" (16cm)	12" (31cm)	36" (92cm)	12" (31cm)
60	6" (16cm)	15" (39cm)	44" (112cm)	15" (39cm)
75	6" (16cm)	20" (51cm)	50" (127cm)	20" (51cm)
80	6" (16cm)	20" (51cm)	53" (135cm)	20" (51cm)
100	6" (16cm)	22" (56cm)	55" (140cm)	22" (56cm)
125	6" (16cm)	22" (56cm)	55" (140cm)	22" (56cm)
150	6" (16cm)	24" (70cm)	60" (152cm)	24" (70cm)
175	6" (16cm)	24" (70cm)	65" (152cm)	24" (70cm)
175+20' **	6" (16cm)	20" (51cm)	45" (115cm)	20" (51cm)
200	6" (16cm)	27" (69cm)	65" (165cm)	27" (69cm)
225	6" (16cm)	27" (69cm)	65" (165cm)	27" (69cm)
200 225+20' **	6" (16cm)	20" (51cm)	45" (115cm)	20" (51cm)

**Figure 4. STANDARD REFLECTOR**



INSTALLATION TYPE 2 - (inches) (cm)				
Input*	A	B	C	D
40	6" (16cm)	12" (31cm)	36" (92 cm)	36" (92 cm)
50	6" (16cm)	12" (31cm)	36" (92 cm)	36" (92 cm)
60	6" (16cm)	12" (31cm)	44" (112cm)	36" (92 cm))
75	6" (16cm)	12" (31cm)	50" (127cm)	36" (92 cm)
80	6" (16cm)	20" (51cm)	53" (135cm)	40" (102cm)
100	6" (16cm)	22" (56cm)	55" (140cm)	40" (102cm)
125	6" (16cm)	22" (56cm)	55" (140cm)	40" (102cm)
150	6" (16cm)	24" (70cm)	60" (152cm)	40" (102cm)
175	6" (16cm)	24" (70cm)	65" (165cm)	40" (102cm)
175+20' **	6" (16cm)	16" (41cm)	45" (115cm)	36" (92 cm)
200	6" (16cm)	27" (69cm)	65" (165cm)	40" (102cm)
225	6" (16cm)	27" (69cm)	65" (165cm)	40" (102cm)
200 225+20' **	6" (16cm)	16" (41cm))	45" (115cm)	36" (92 cm)

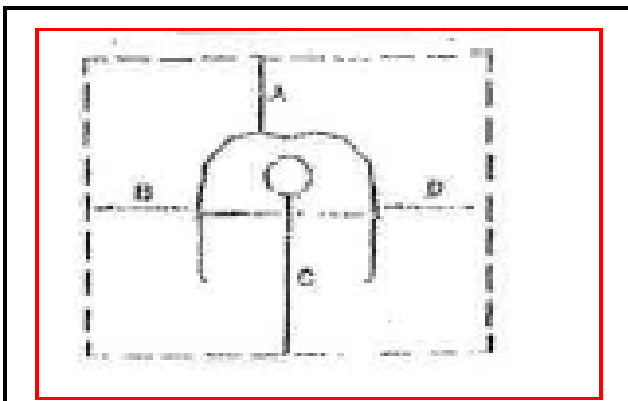
**Figure 5. ONE SIDE REFLECTOR**

\* per 1,000 Btu/hr input    \*\* Clearance 20' (6.1m) downstream from burner

**6.2 CLEARANCE TO COMBUSTIBLES FOR SPACE HEATING AND BROODER INSTALLATION**

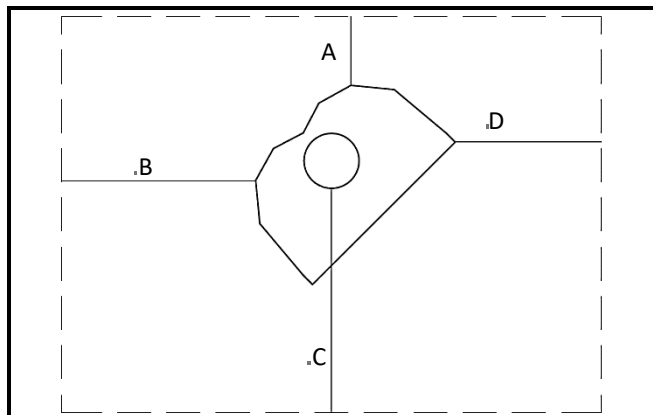
**! WARNING:** In all situations, clearances to combustibles must be maintained. Minimum clearance from heater must be maintained from vehicles parked below heater. The posting of signs may be required in storage areas referring to clearances to combustibles to the heater and/or limiting the stacking height of stored items near the heater specifying a maximum height. Clearances are not for use in four (4) sided enclosures. Certain materials or items, when stored under the heater, will be subjected to radiant heat and could be seriously damaged.

**! WARNING:** The stated clearance to combustibles represents a surface temperature of 90°F (32°C) above room temperature. Building material with 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. When in doubt, check heat tolerance of building material(s) with their manufacturer.



INSTALLATION TYPE 3 - (inches) (cm)				
Input*	A	B	C	D
40	6" (16cm)	15" (39cm)	53" (135 cm)	15" (39cm)
50	6" (16cm)	20" (51cm)	60" (152 cm)	20" (51cm)
60	6" (16cm)	23" (59cm)	66" (168cm)	23" (59cm)
75	6" (16cm)	25" (64cm)	72" (183cm)	25" (64cm)
80	6" (16cm)	25" (64cm)	72" (183cm)	25" (64cm)
100	6" (16cm)	27" (69cm)	78" (199cm)	27" (69cm)
125	6" (16cm)	32" (82cm)	84" (214cm)	32" (82cm)
150	6" (16cm)	32" (82cm)	88" (224cm)	32" (82cm)
175	6" (16cm)	32" (82cm)	88" (224cm)	32" (82cm)
175+20' **	6" (16cm)	24" (70cm)	48" (122cm)	24" (70cm)
200	6" (16cm)	32" (82cm)	88" (224cm)	32" (82cm)
225	6" (16cm)	32" (82cm)	88" (224cm)	32" (82cm)
200	6" (16cm)	24" (70cm)	48" (122cm)	24" (70cm)
225+20' **	6" (16cm)	24" (70cm)	48" (122cm)	24" (70cm)

**Figure 6. TWO SIDE REFLECTOR**



INSTALLATION TYPE 4 - (inches) (cm)				
Input*	A	B	C	D
40	6" (16cm)	6" (16cm)	36" (92 cm)	36" (92 cm)
50	6" (16cm)	6" (16cm)	36" (92 cm)	36" (92 cm)
60	6" (16cm)	6" (16cm)	44" (112cm)	44" (112cm)
75	6" (16cm)	6" (16cm)	50" (127cm)	50" (127cm)
80	6" (16cm)	6" (16cm)	53" (135cm)	53" (135cm)
100	6" (16cm)	6" (16cm)	55" (140cm)	55" (140cm)
125	6" (16cm)	6" (16cm)	55" (140cm)	55" (140cm)
150	6" (16cm)	6" (16cm)	60" (152cm)	60" (152cm)
175	6" (16cm)	6" (16cm)	65" (152cm)	65" (152cm)
175+20' **	6" (16cm)	6" (16cm)	45" (115cm)	45" (115cm)
200	6" (16cm)	6" (16cm)	65" (165cm)	65" (165cm)
225	6" (16cm)	6" (16cm)	65" (165cm)	65" (165cm)
200	6" (16cm)	6" (16cm)	45" (115cm)	45" (115cm)
225+20' **	6" (16cm)	6" (16cm)	45" (115cm)	45" (115cm)

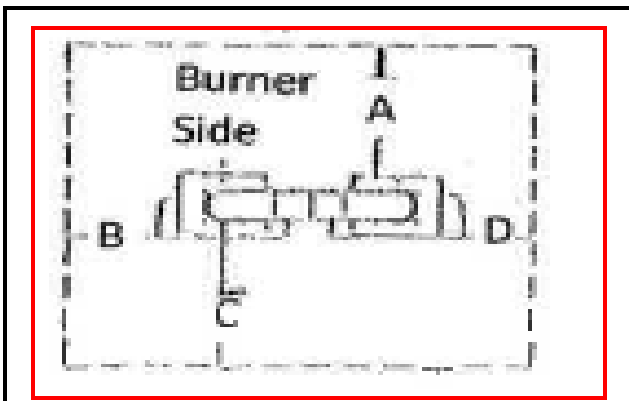
**Figure 7. 25° TO 45° TILT**

\* per 1,000 Btu/hr input    \*\* Clearance 20' (6.1m) downstream from burner

**6.3 CLEARANCE TO COMBUSTIBLES FOR SPACE HEATING AND BROODER INSTALLATION**

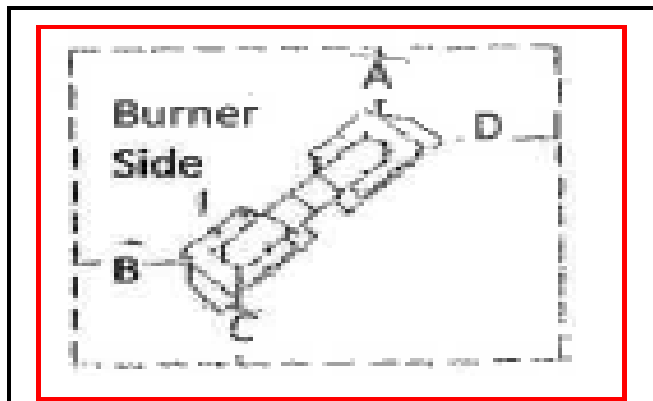
**! WARNING:** In all situations, clearances to combustibles must be maintained. Minimum clearance from heater must be maintained from vehicles parked below heater. The posting of signs may be required in storage areas referring to clearances to combustibles to the heater and/or limiting the stacking height of stored items near the heater specifying a maximum height. Clearances are not for use in four (4) sided enclosures. Certain materials or items, when stored under the heater, will be subjected to radiant heat and could be seriously damaged.

**! WARNING:** The stated clearance to combustibles represents a surface temperature of 90°F (32°C) above room temperature. Building material with 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. When in doubt, check heat tolerance of building material(s) with their manufacturer.



INSTALLATION TYPE 5 - (inches) (cm)				
Input*	A	B	C	D
40	6" (16cm)	12" (31cm)	60" (152cm)	12" (31cm)
50	6" (16cm)	12" (31cm)	63" (161cm)	12" (31cm)
60	6" (16cm)	12" (31cm)	63" (161cm)	12" (31cm)
75	6" (16cm)	12" (31cm)	69" (176cm)	12" (31cm)
80	6" (16cm)	20" (51cm)	69" (176cm)	20" (51cm)
100	6" (16cm)	22" (56cm)	76" (194cm)	22" (56cm)
125	6" (16cm)	22" (56cm)	79" (201cm)	22" (56cm)
150	6" (16cm)	24" (70cm)	84" (214cm)	24" (70cm)
175	6" (16cm)	24" (70cm)	86" (219cm)	24" (70cm)
200	6" (16cm)	27" (69cm)	86" (219cm)	27" (69cm)
225	6" (16cm)	27" (69cm)	86" (219cm)	27" (69cm)

**Figure 8. U-Tube Standard**



INSTALLATION TYPE 6 - (inches) (cm)				
Input*	A	B	C	D
40	6" (16cm)	6" (16cm)	51" (130 cm)	40" (102cm)
50	6" (16cm)	6" (16cm)	57" (145 cm)	40" (102cm)
60	6" (16cm)	6" (16cm)	60" (152cm)	43" (110cm)
75	6" (16cm)	6" (16cm)	66" (168cm)	47" (120cm)
80	6" (16cm)	6" (16cm)	66" (168cm)	47" (120cm)
100	6" (16cm)	6" (16cm)	71" (181cm)	53" (135cm)
125	6" (16cm)	6" (16cm)	77" (196cm)	62" (158cm)
150	6" (16cm)	6" (16cm)	80" (204cm)	67" (171cm)
175	6" (16cm)	6" (16cm)	84" (214cm)	70" (178cm)
200	6" (16cm)	6" (16cm)	94" (214cm)	70" (178cm)
225	6" (16cm)	6" (16cm)	94" (214cm)	70" (178cm)

**Figure 9. 25° TO 45° TILT U-Tube**

\* per 1,000 Btu/hr input    \*\* Clearance 20' (6.1m) downstream from burner

**7.0 PRE-INSTALLATION INSPECTION:**

Refer to pages 13 to **Error! Bookmark not defined.** for packaging contents.

Inspect the shipping container and heater for any evidence of shipping damage. If heater damage is found, notify freight carrier and file a claim.

<b>⚠ WARNING:</b>
<b>IF HEATER IS DAMAGED, DO NOT INSTALL</b>

Check that all parts and pieces are present and accounted for. Report any missing items to carrier or point of purchase at once.

Check that overall general appearance, source of fuel required and model numbers match unit requested. Report any discrepancy to carrier or point of purchase at once.

**THOROUGHLY INSPECT THE EQUIPMENT  
IMMEDIATELY UPON ARRIVAL**

**OUR RESPONSIBILITY FOR THIS SHIPMENT CEASED WHEN THE CARRIER SIGNED THE WAYBILL.**

If goods are received short or in damaged condition, it is important that you notify the carrier and insist on a notation of the loss or damage across the face of the freight bill; otherwise no claim can be enforced against the transportation company.

If concealed loss or damage is discovered, notify your carrier at once and request an inspection. This is absolutely necessary. A concealed damage report must be made within 15-days of delivery of shipment. Unless you do this, the carrier will not entertain any claim for loss or damage. The Agent will make an inspection and grant a concealed damage notation. If you give the Transportation Company a clear receipt for goods that have been damaged or lost in transit, you do so at your own risk and expense.

WE ARE WILLING TO ASSIST YOU IN EVERY POSSIBLE MANNER TO COLLECT CLAIMS FOR LOSS OR DAMAGE, BUT THIS WILLINGNESS ON OUR PART DOES NOT MAKE US RESPONSIBLE FOR COLLECTION OF CLAIMS OR REPLACEMENT OF MATERIAL. THE ACTUAL FILING AND PROCESSING OF THE CLAIM IS YOUR RESPONSIBILITY.

<p><b>WE ARE NOT RESPONSIBLE FOR FREIGHT DAMAGED IN TRANSIT!</b></p> <p><b>IF CONTENTS ARE DAMAGED:</b></p> <p><b><u>EVEN THOUGH CARTON DOES NOT LOOK DAMAGED:</u></b></p> <p><b>A. MAKE CLAIM TO DELIVERY CARRIER AT ONCE</b></p> <p><b>B. <u>SAVE CARTONS</u> FOR INSPECTION BY CARRIER</b></p>
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## SR-SERIES

### **8.0 PACKAGING CONTENTS & DESCRIPTION OF PARTS:**

#### **A. BURNER PACKAGE**

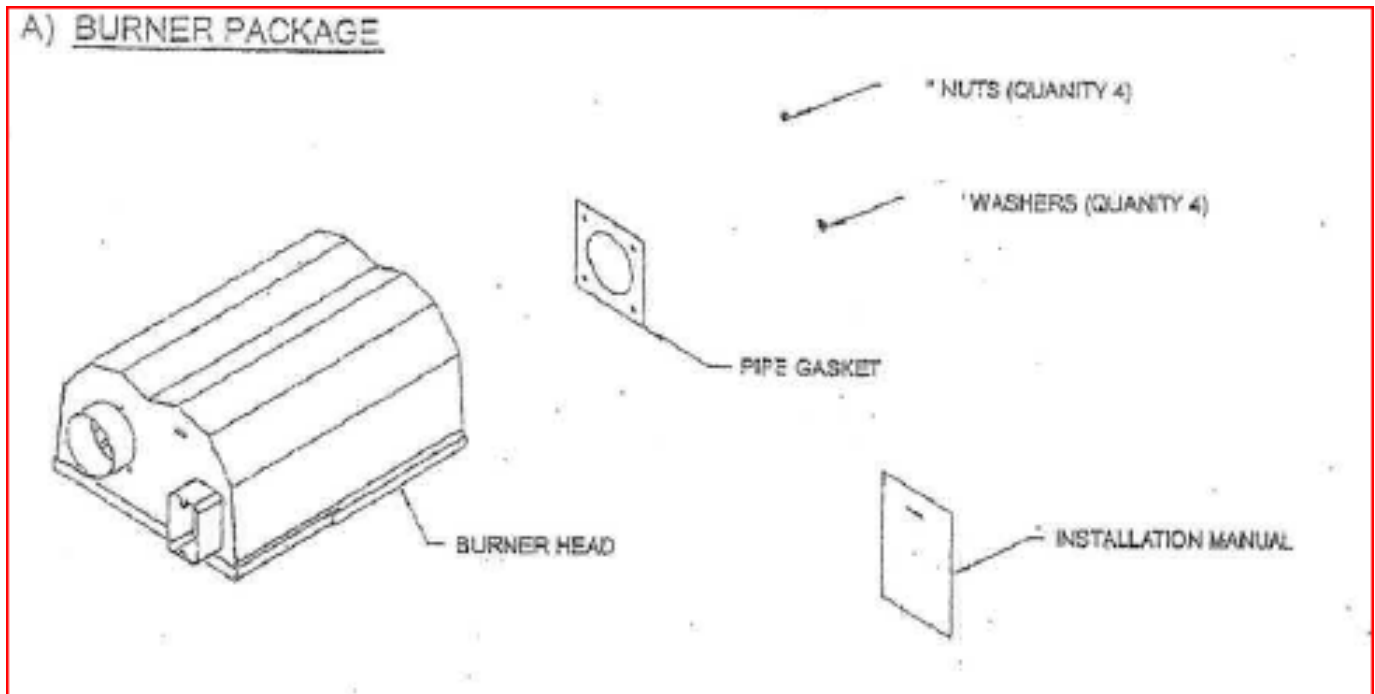


Figure 10. BURNER PACKAGE CONTENTS

# SR-SERIES

## B. PIPE BOXES

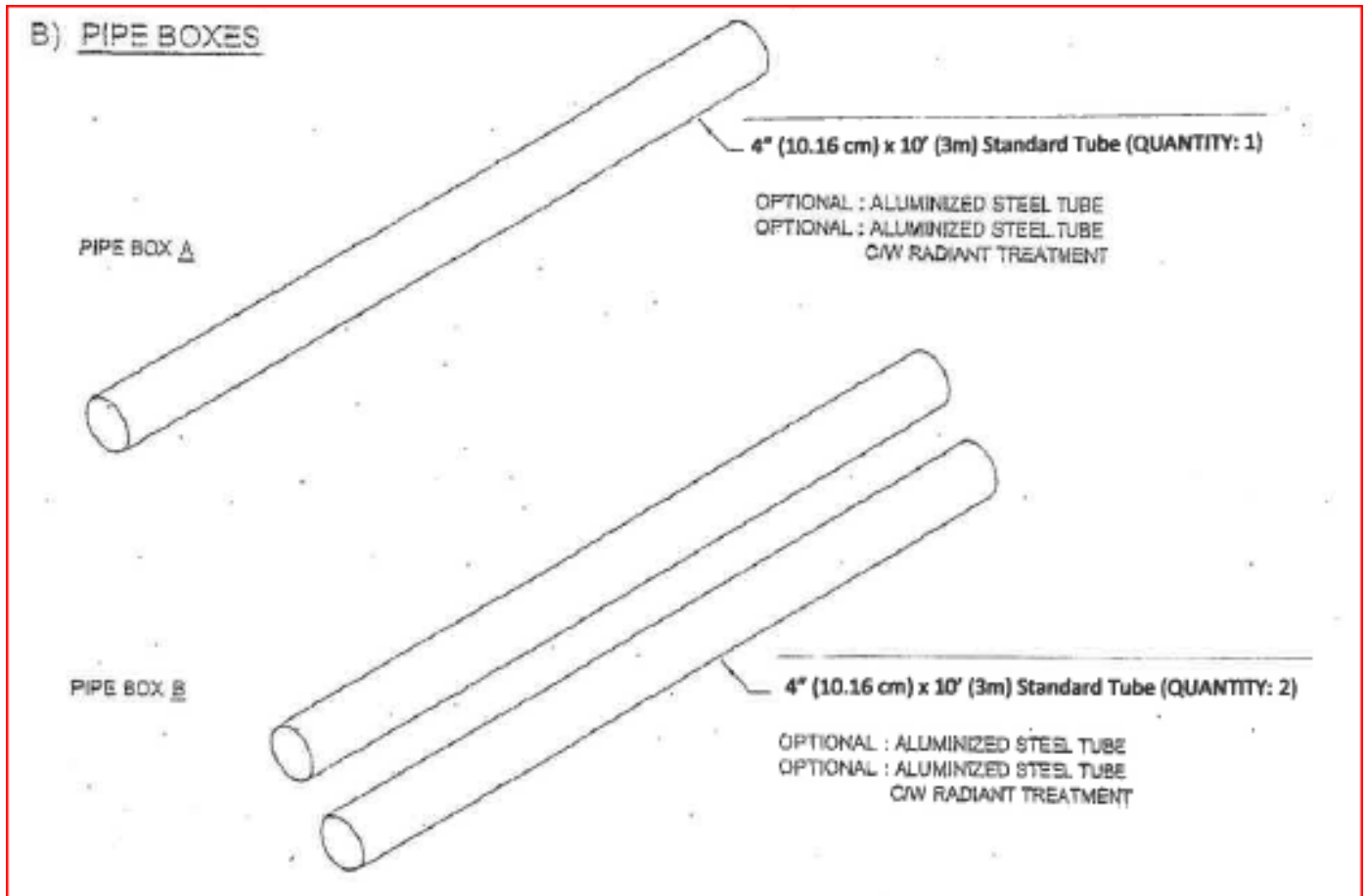
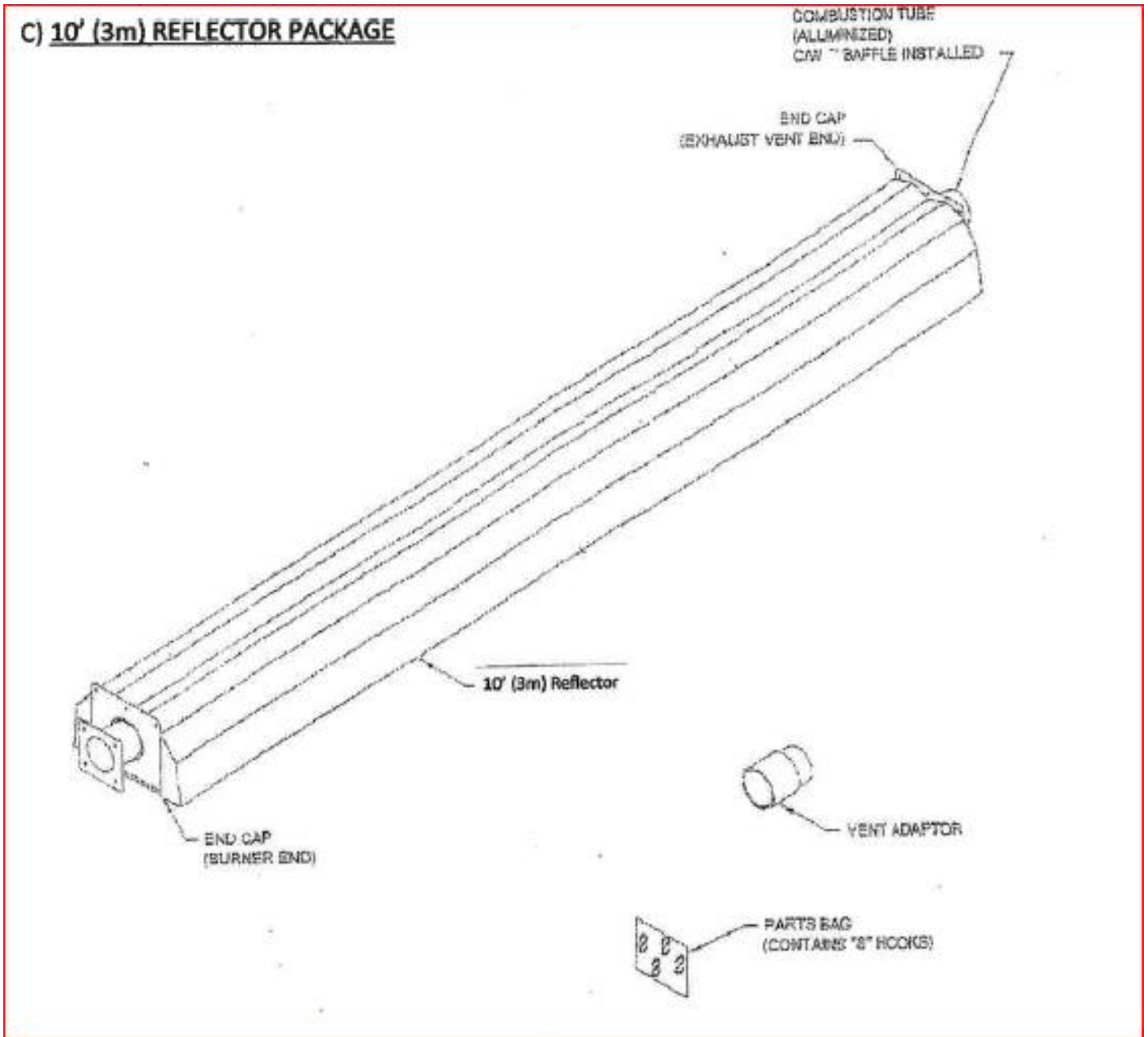


Figure 11. PIPE BOX CONTENT

**SR-SERIES**

**C. 10' (3 M) REFLECTOR PACKAGE**



**Figure 12. 10' (3 M) REFLECTOR PACKAGE CONTENTS**

**SR-SERIES**

**D. 15' (4.16 M) REFLECTOR PACKAGE**

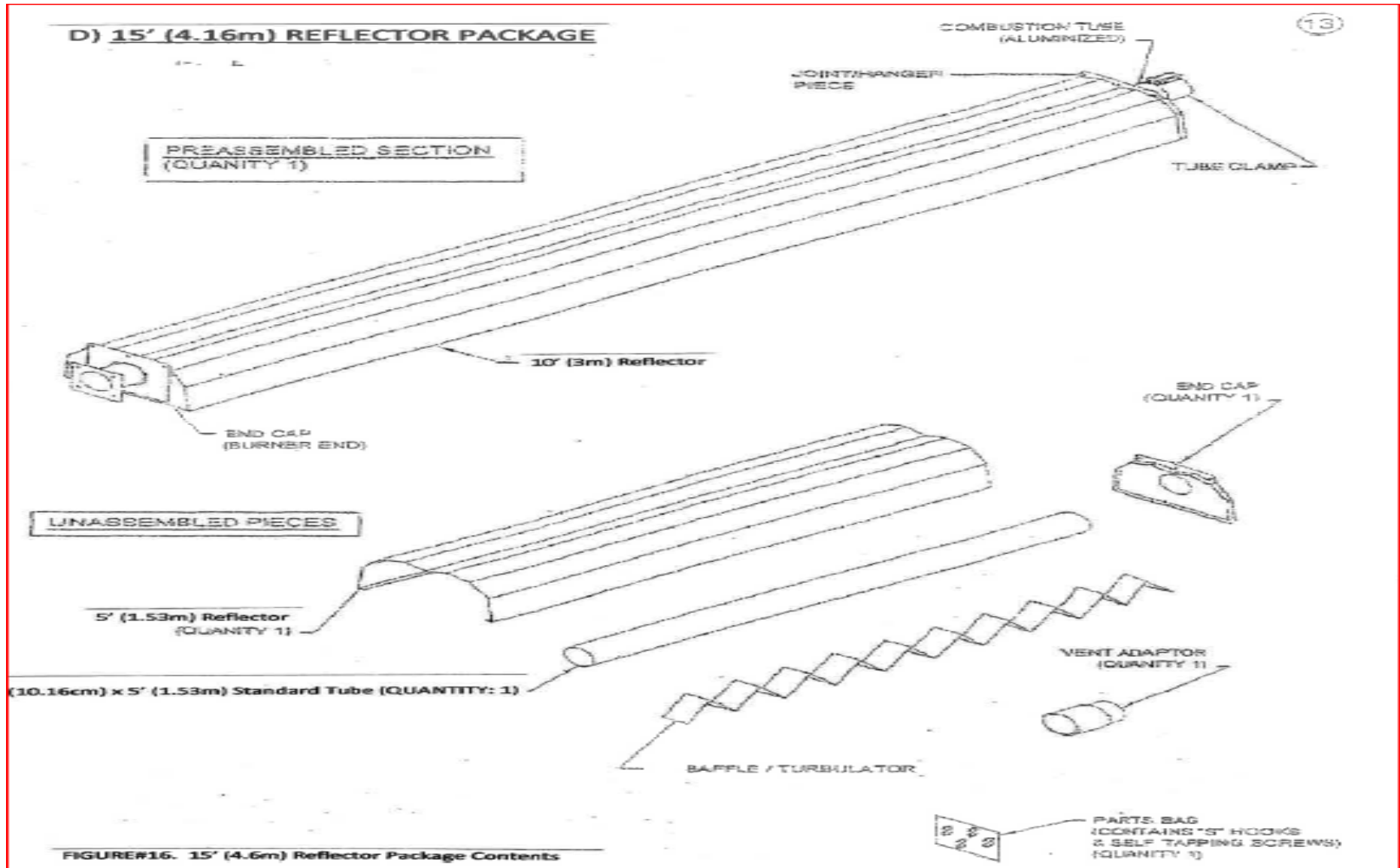


Figure 13. 15' (4.16 M) REFLECTOR PACKAGE CONTENTS

# SR-SERIES

## E. 20' (6.1 M) REFLECTOR PACKAGE

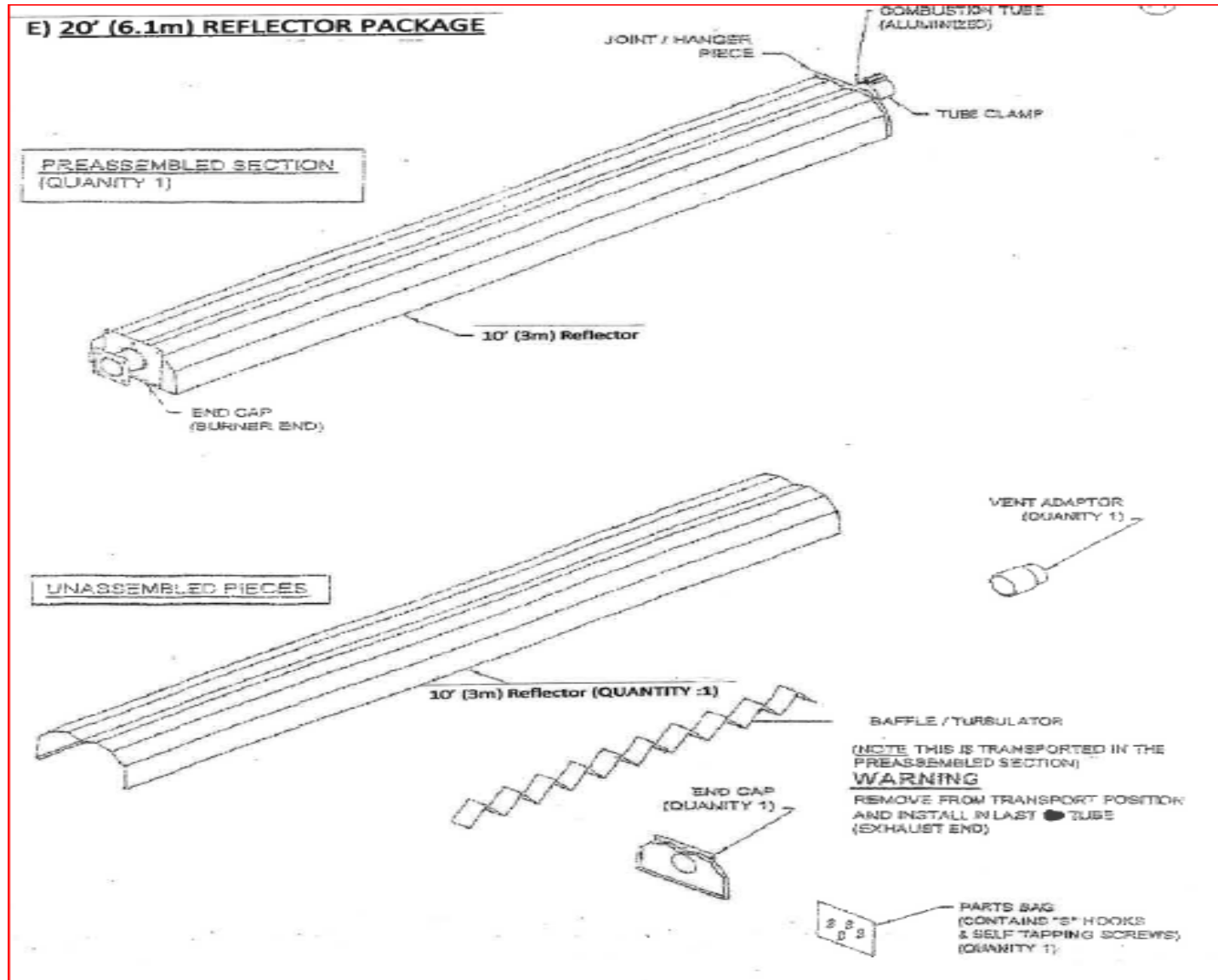


Figure 14. 20' (6.1 M) REFLECTOR PACKAGE CONTENTS

# SR-SERIES

## F. 30' (9.1 M) REFLECTOR PACKAGE

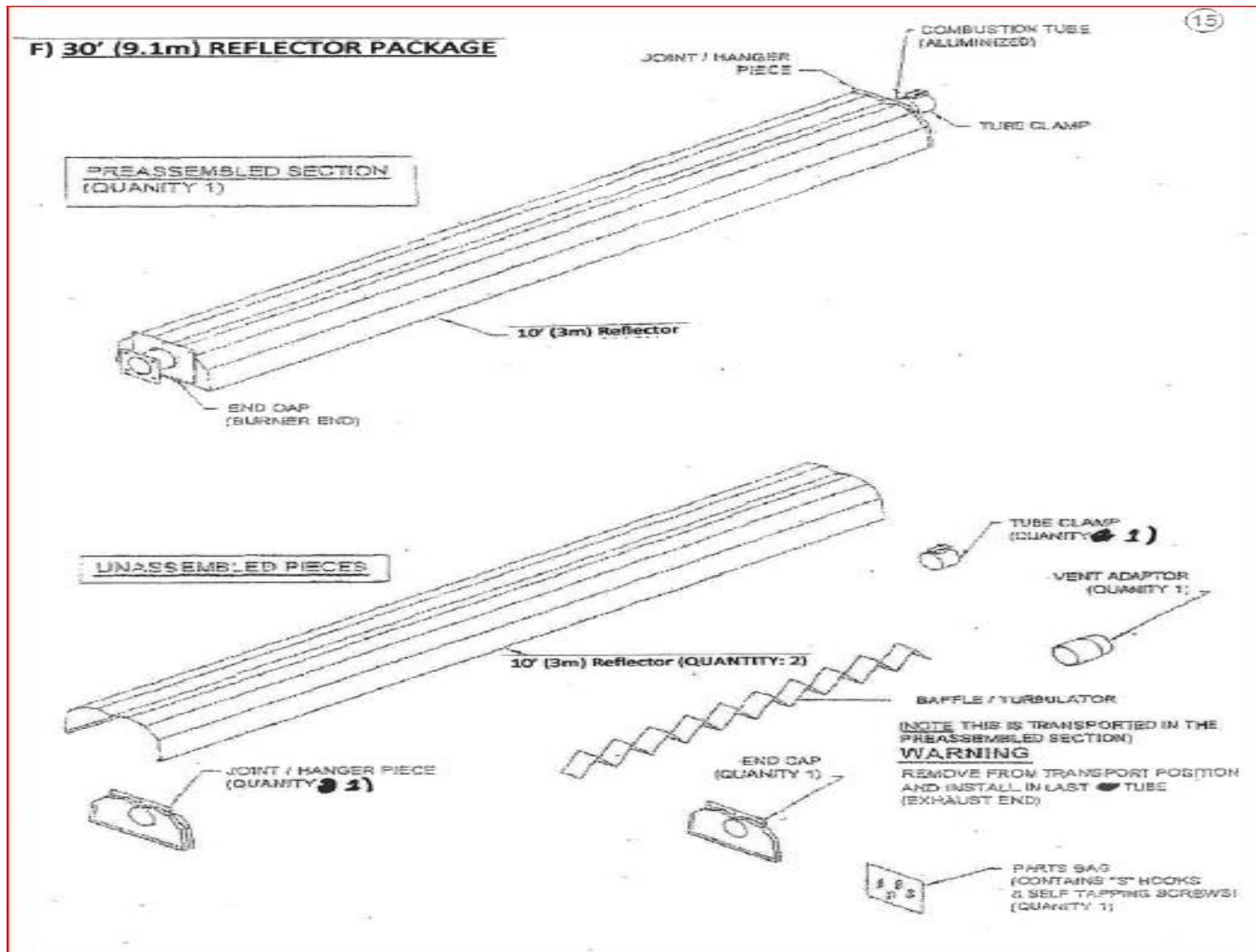


Figure 15. 30' (9.1 M) REFLECTOR PACKAGE CONTENTS

# SR-SERIES

## G. 40' (12.2 M) REFLECTOR PACKAGE

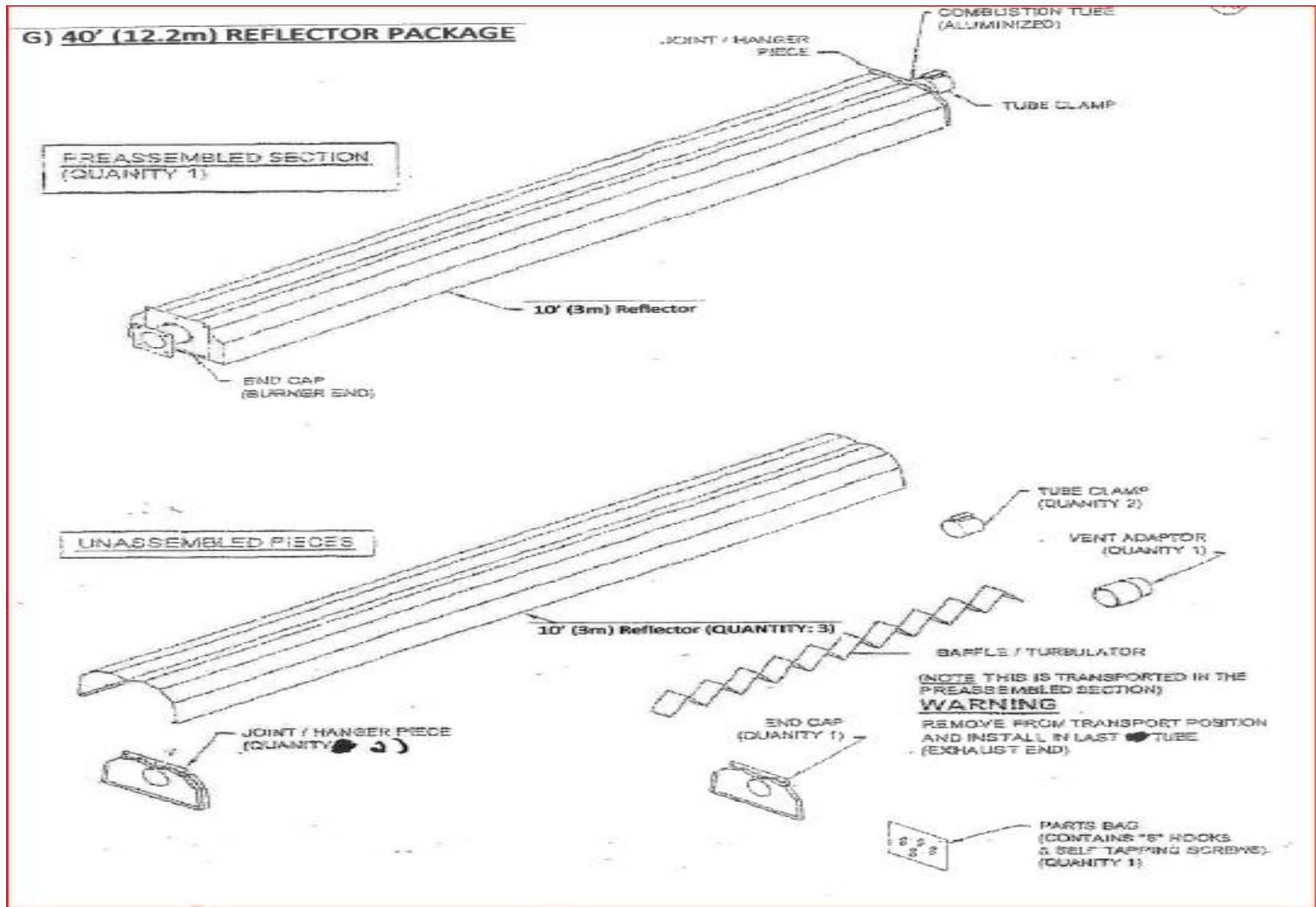


Figure 16. 40' (12.2 M) REFLECTOR PACKAGE CONTENTS

# SR-SERIES

## H. 50' (15.2 M) REFLECTOR PACKAGE

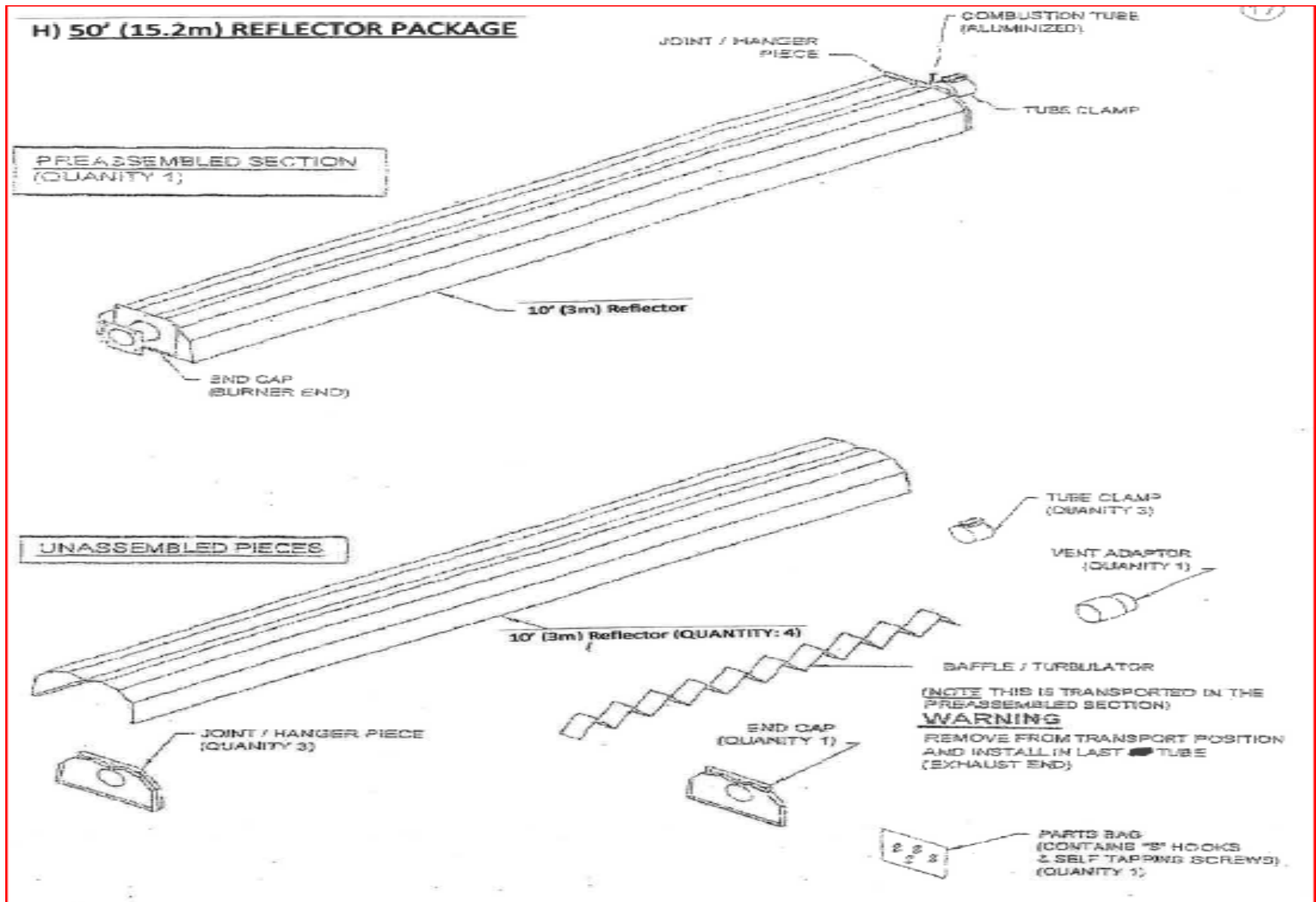


Figure 17. 50' (15.2 M) REFLECTOR PACKAGE CONTENTS



# SR-SERIES

## I. 60' (18.3 M) REFLECTOR PACKAGE

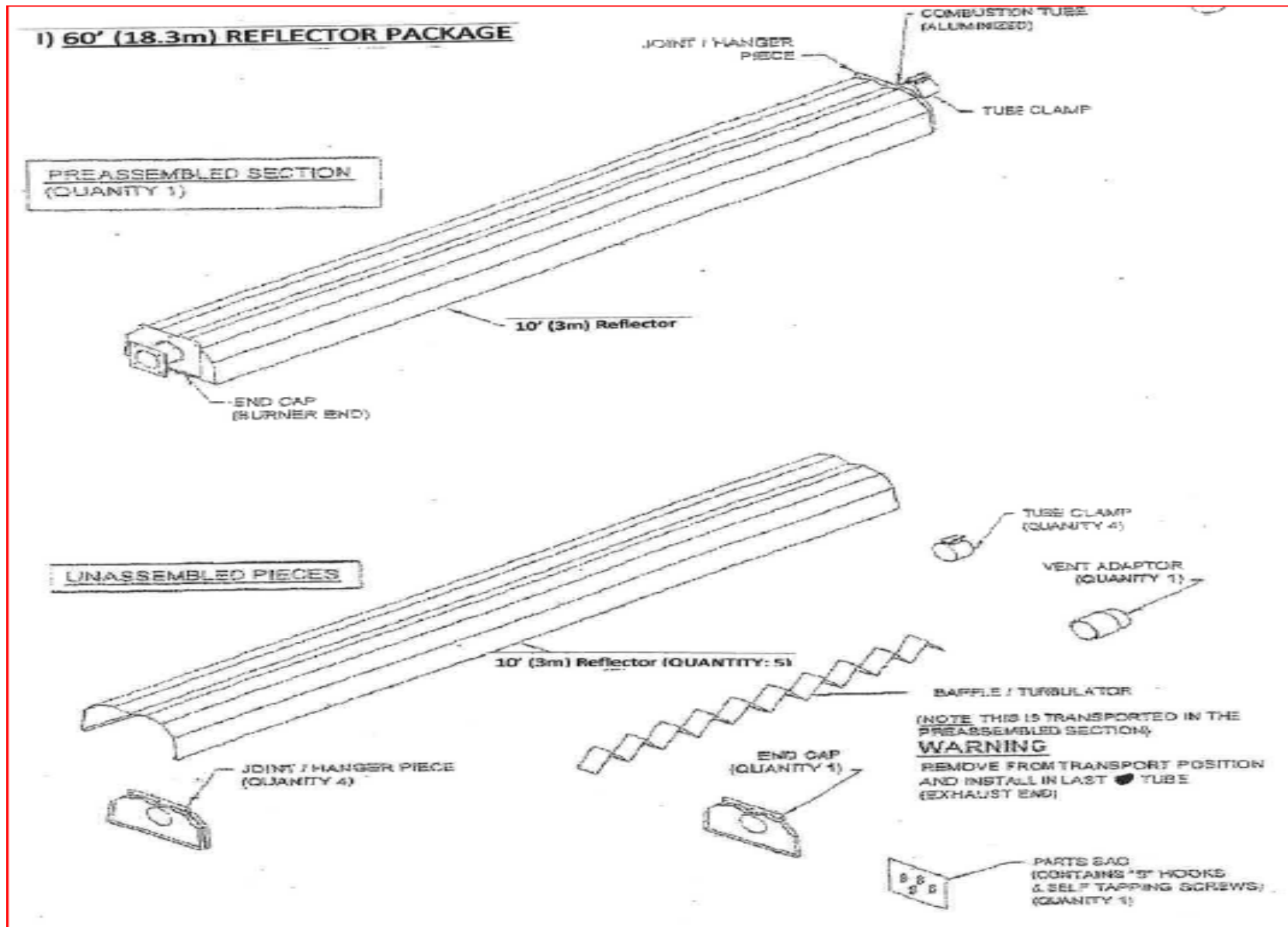


Figure 18. 60' (18.3 M) REFLECTOR PACKAGE CONTENTS

# SR-SERIES

## J. 70' (21.3 M) REFLECTOR PACKAGE

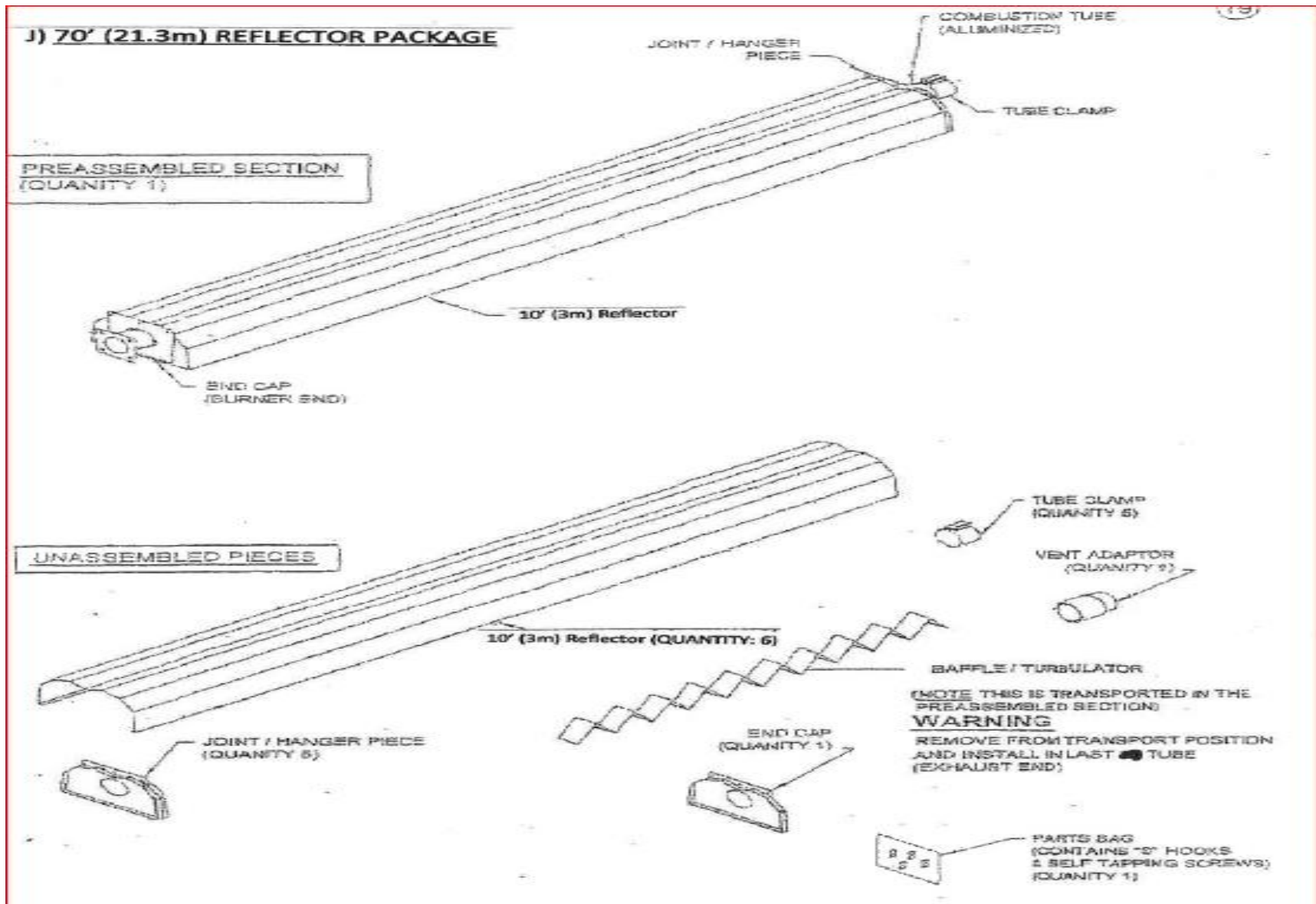


Figure 19. 70' (21.3 M) REFLECTOR PACKAGE CONTENTS

# SR-SERIES

## K. 80' (24.4 M) REFLECTOR PACKAGE

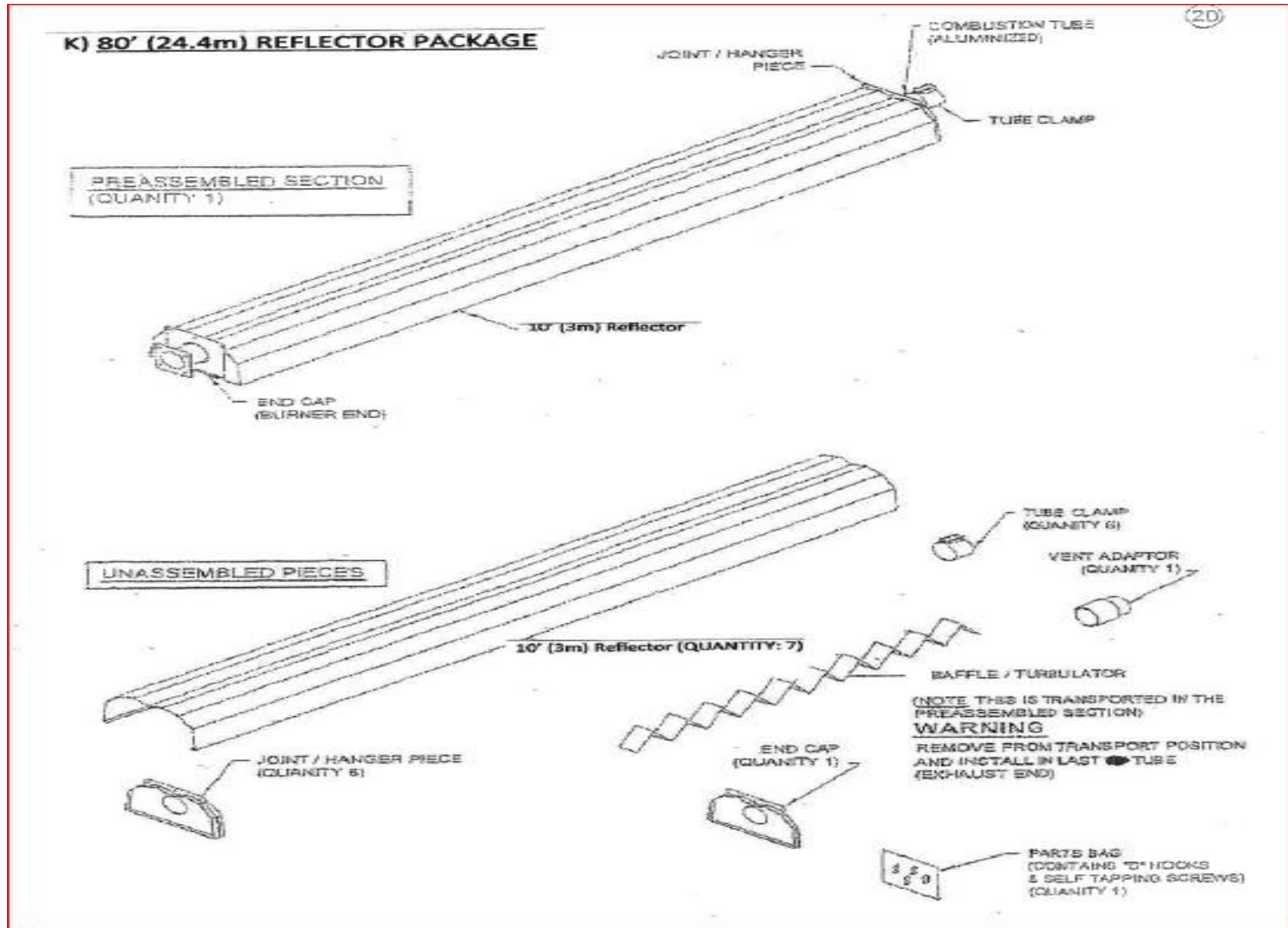


Figure 20. 80' (24.4 M) REFLECTOR PACKAGE CONTENTS

## SR-SERIES

### L. 10' (3 M) EXTENSION KIT

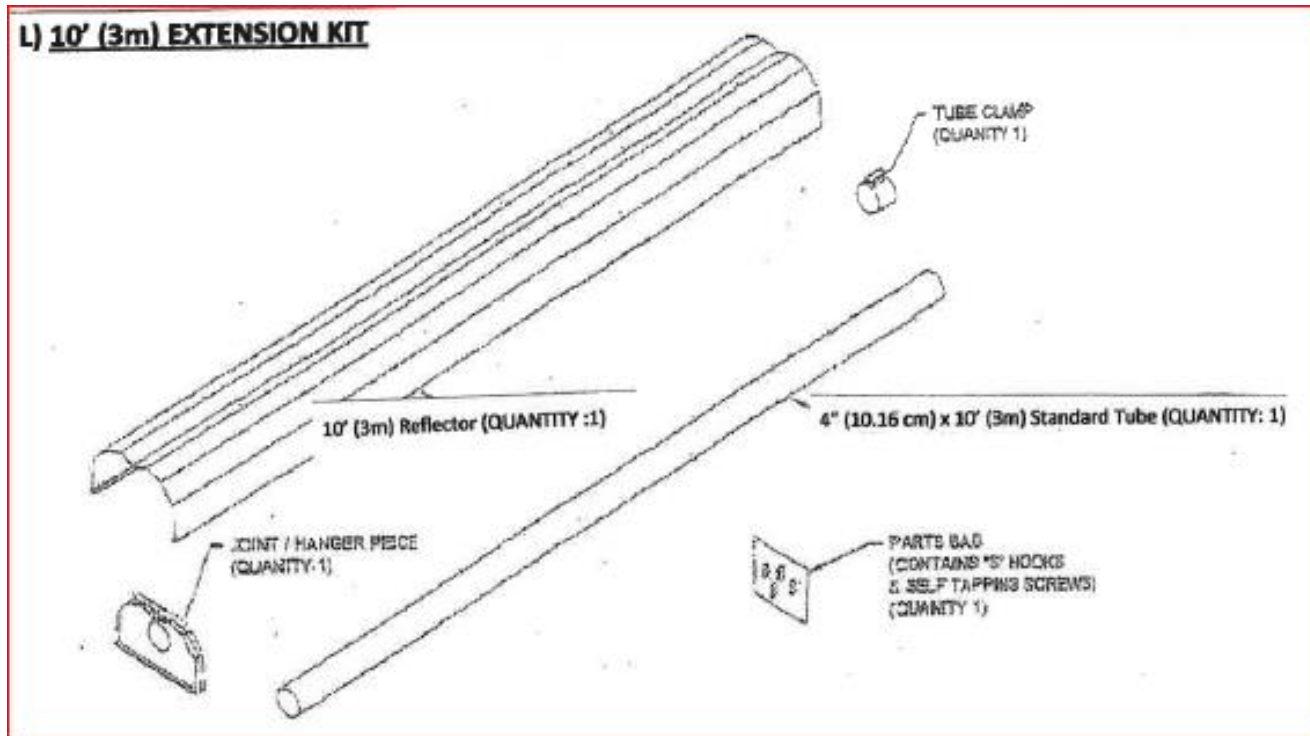


Figure 21. 10' (3 M) EXTENSION PACKAGE CONTENTS

## SR-SERIES

### M. SIDE REFLECTOR PACKAGE

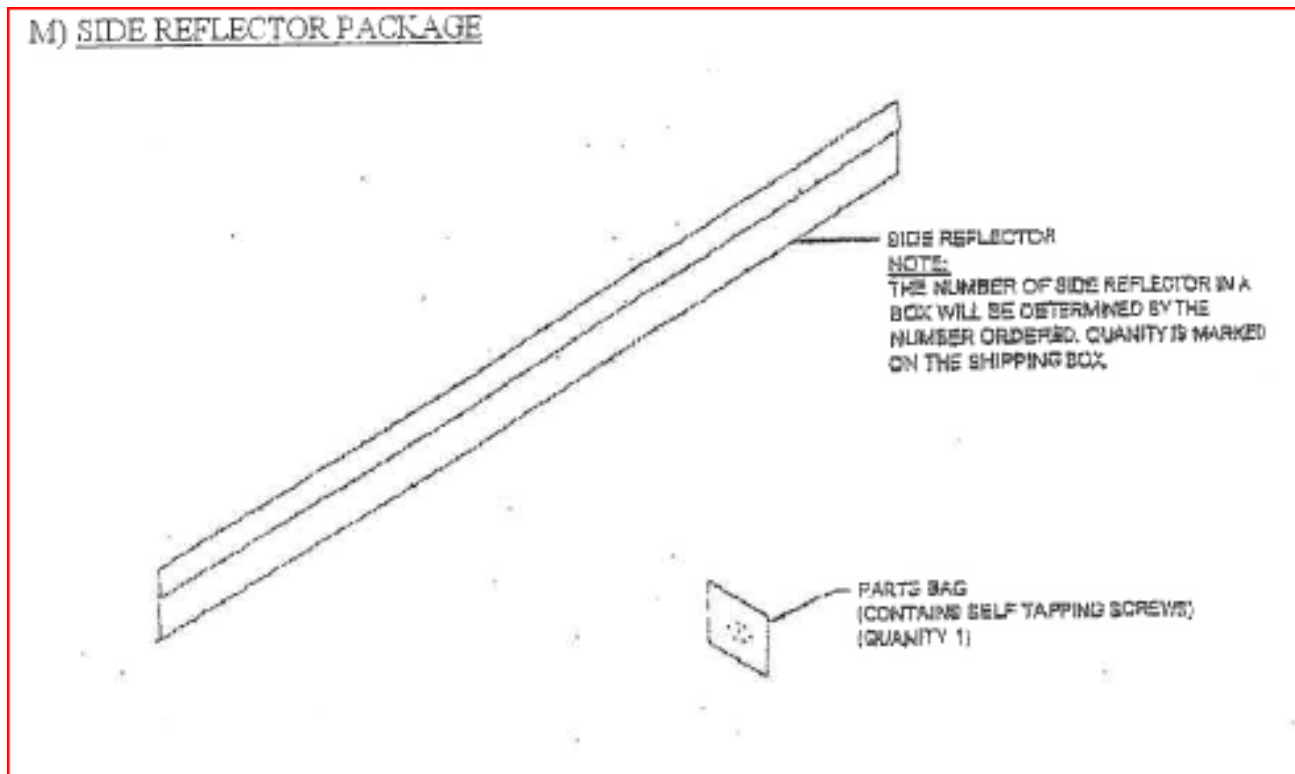
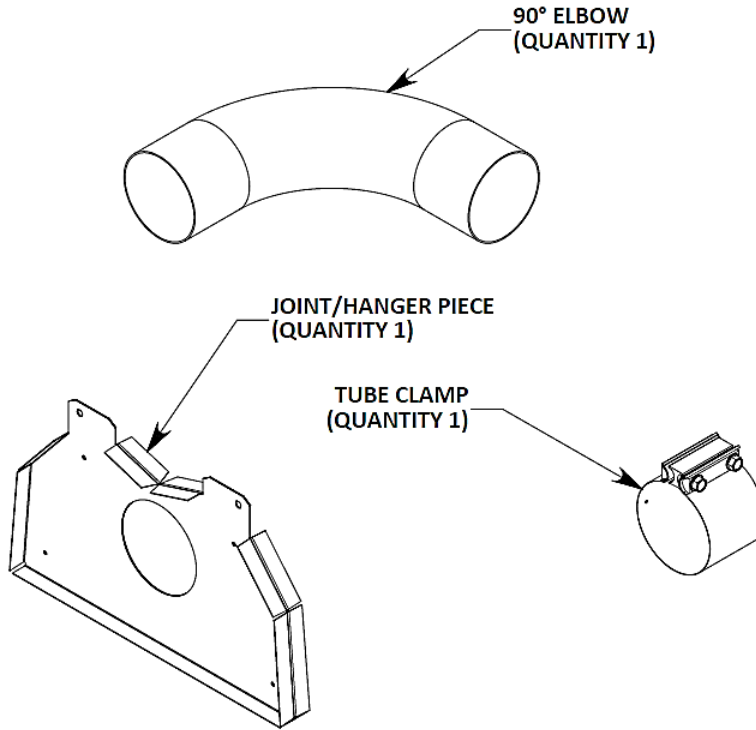


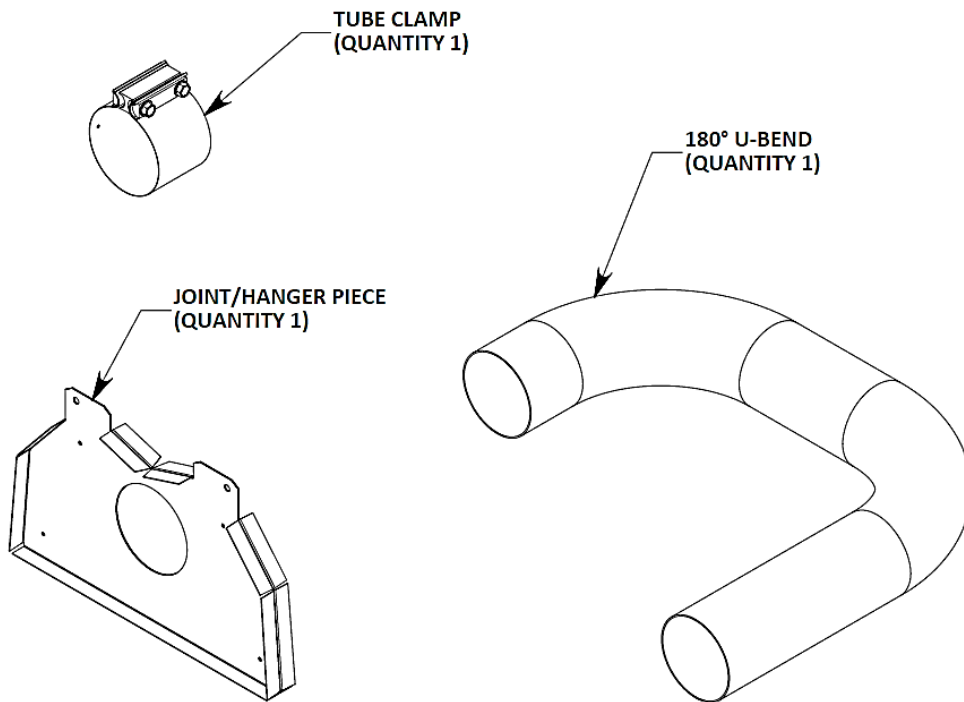
Figure 22. SIDE REFLECTOR PACKAGE CONTENTS

**K. 90° ELBOW PACKAGE**



**Figure 23. 90° ELBOW PACKAGE**

**L. 180° U-BEND PACKAGE**



**Figure 24. 180° U-BEND PACKAGE**

**SR-SERIES**

**M. SIDE WALL VENT KIT**

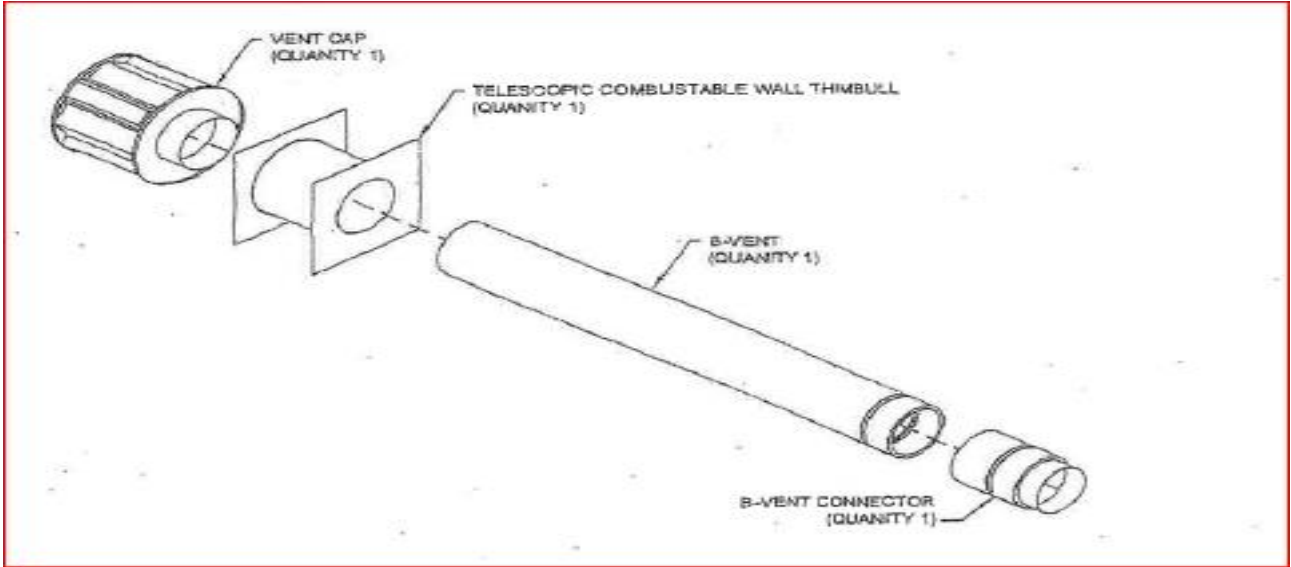


Figure 25. SIDE WALL VENT KIT

**N. OUTDOOR INSTALLATION KIT**

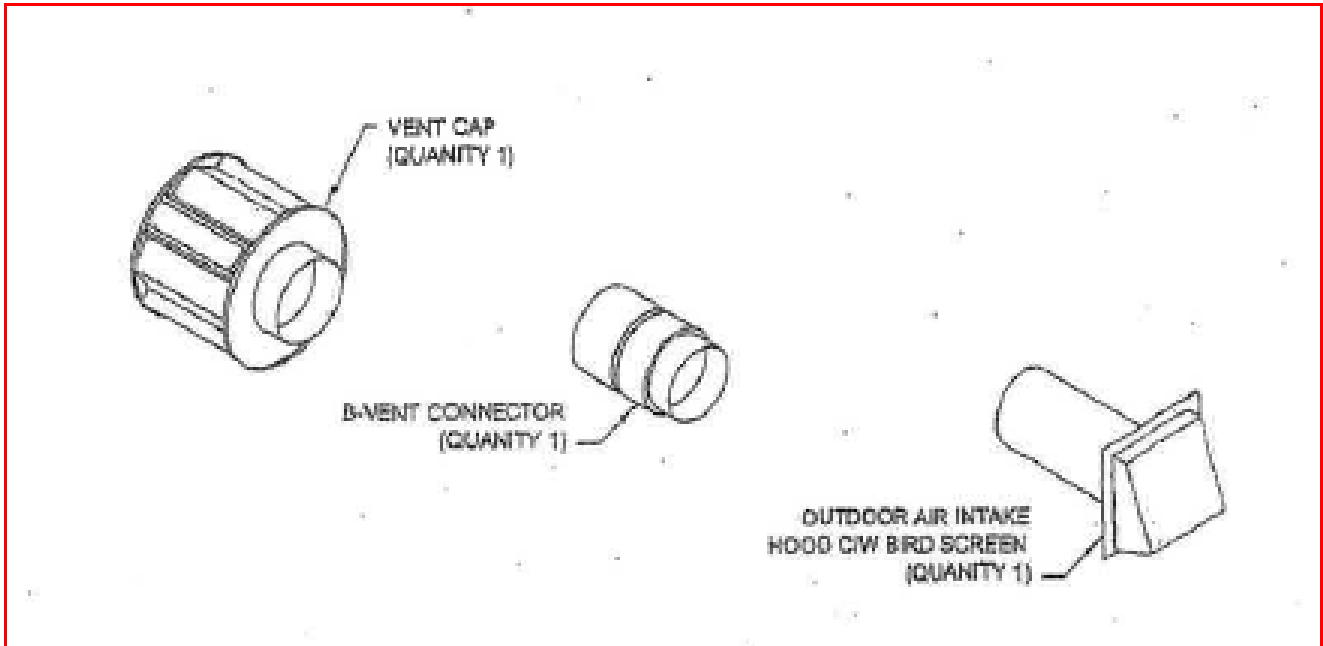


Figure 26. OUTDOOR INSTALLATION PACKAGE CONTENTS


## SR-SERIES

### 9.0 INSTALLATION

Provide for adequate clearance around air openings into the combustion chamber, clearances from combustible material, provisions for accessibility and for combustion and ventilating air supply.

#### 9.1 PLANNING

- Familiarize yourself with the equipment and any accessories that you may require.
- Locate the area where unit is to be installed.
- Locate area where any holes might have to be cut for:
  - a) Venting
  - b) Any gas piping requirements
- Make sure that there is no obstruction such as hidden electrical wiring, water lines etc... in the areas of concern.
- Locate the thermostat location.

 **WARNING:** Observe minimum clearance to combustibles.

- Locate a grounded, three prong electrical source.
- Measure the required amount of the various materials required to do the installation, and have these materials on site in an organized manner prior to commencement.



**10.0 SUSPENSION OF HEATER:**

**10.1 HORIZONTAL INSTALLATION**

Locate suspension points on ceiling or roof. Heater is suspended at standard 10' (3m) intervals (refer to Figure 30). Adequately secure chains to beam Suspension Points. Hang chains down from suspension point to desired level. Heater is to be hung level. **NOTE:** Front & rear end caps are double chained.

**A. SUSPENSION POINTS**

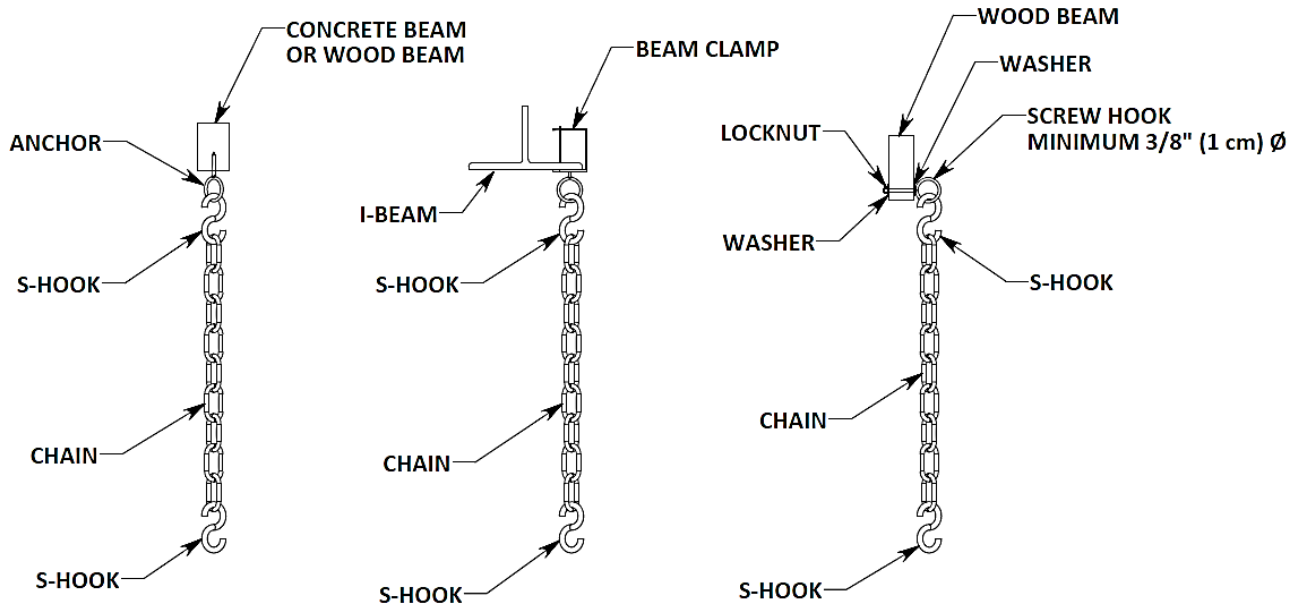


Figure 27. EXAMPLE SUSPENSION DETAILS

**⚠ WARNING:** It is the responsibility of the installer to use hanging chain that is a minimum of 2/0 or with a minimum support capacity of no less than 75 lbs. Also make sure all suspension points are adequate to support weight of heater and any accessories. Also make sure all S-Hooks are affixed properly and the open ends squeezed closed. If the suspension system fails, it is the responsibility of the installer. A failed suspension system can cause property damage, severe injury and/or death.

Refer to page 34 "ASSEMBLY OF COMPONENTS" to page 39 "ASSEMBLY OVERVIEW".

**SR-SERIES**

**B. HORIZONTAL INSTALLATION**  
**10' (3 M) REFLECTOR PACKAGE**

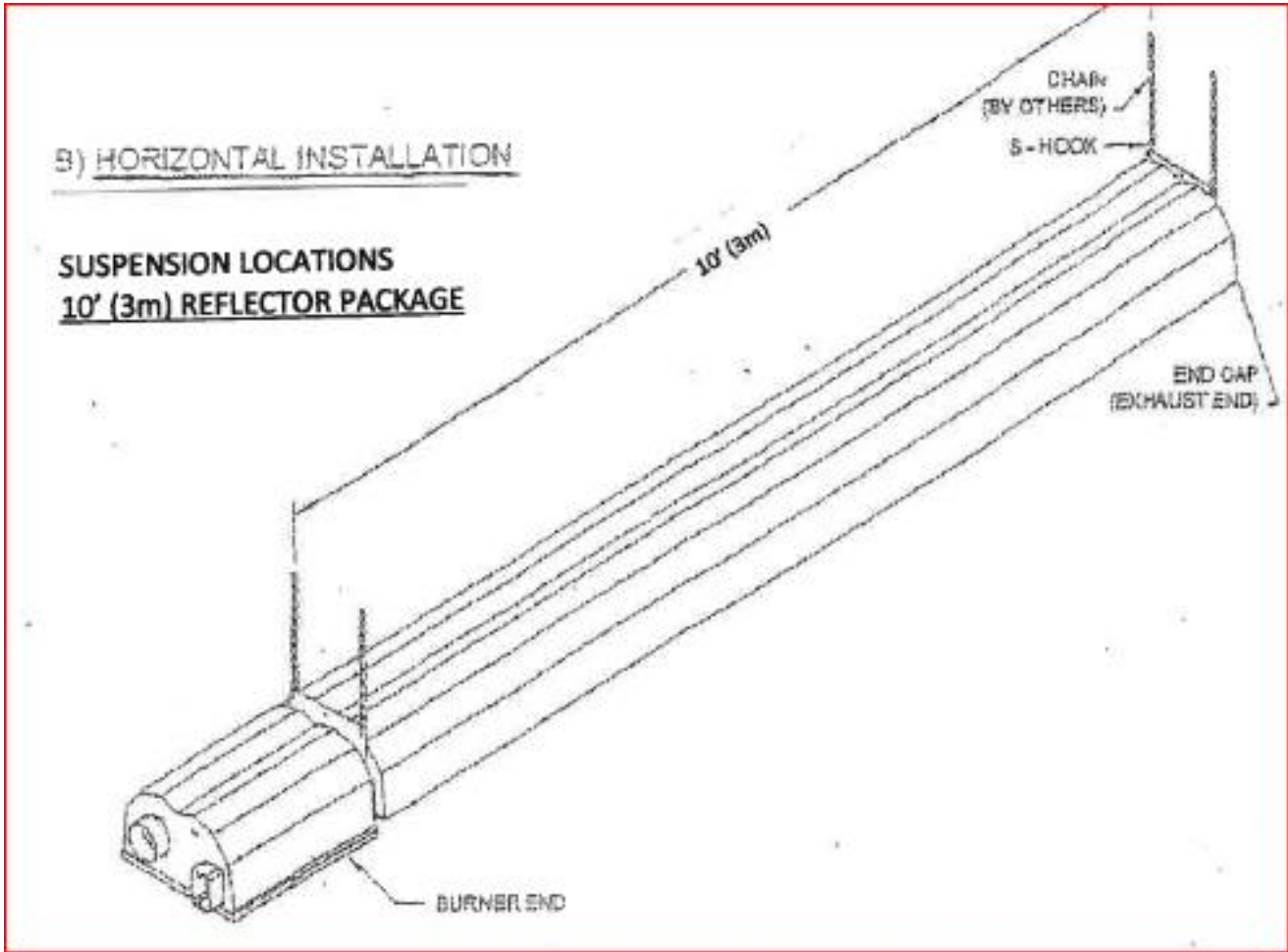


Figure 28. HORIZONTAL INSTALLATION - 10' (3 M) PACKAGE

## SR-SERIES

### C. HORIZONTAL INSTALLATION

#### SUSPENSION LOCATIONS

15' (4.6 M) TO 80' (24.4 M) REFLECTOR PACKAGES

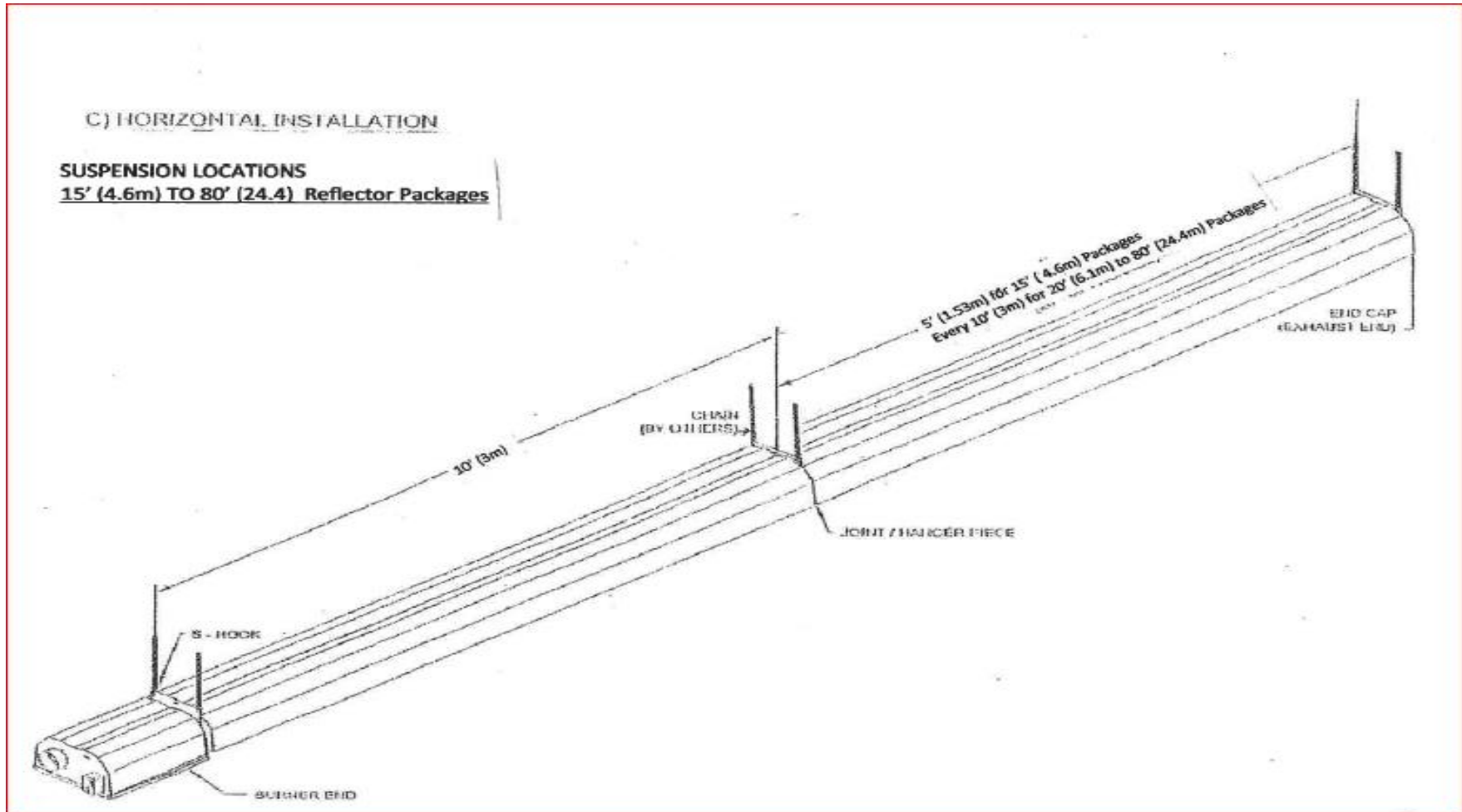


Figure 29. HORIZONTAL INSTALLATIONS – 15' (4.6 M) TO 80' (24.4 M) PACKAGES

**10.2 TILT INSTALLATION**

Refer to Error! Reference source not found. & Error! Reference source not found., for 25° to 45° tilts. Locate suspension points as described above under the title “HORIZONTAL INSTALLATION”. It is important NOT to over-tilt the heater. Units are certified for installation up 45°; however the MAXIMUM recommend tilt is no greater than 25°.

**⚠ WARNING:** It is the responsibility of the installer to use hanging chain that is a minimum of 2/0 or with a minimum support capacity of no less than 75 lbs. Also make sure all suspension points are adequate to support weight of heater and any accessories. Also make sure all S-Hooks are affixed properly and the open ends squeezed closed. If the suspension system fails, it is the responsibility of the installer. A failed suspension system can cause property damage, severe injury and/or death.

Refer to page 34 “ASSEMBLY OF COMPONENTS” to page 39 “ASSEMBLY OVERVIEW”.

**D. 25° TILT (ALL LENGTHS)**

**NOTE:** 25° Tilt is maximum recommended tilt for most installations.

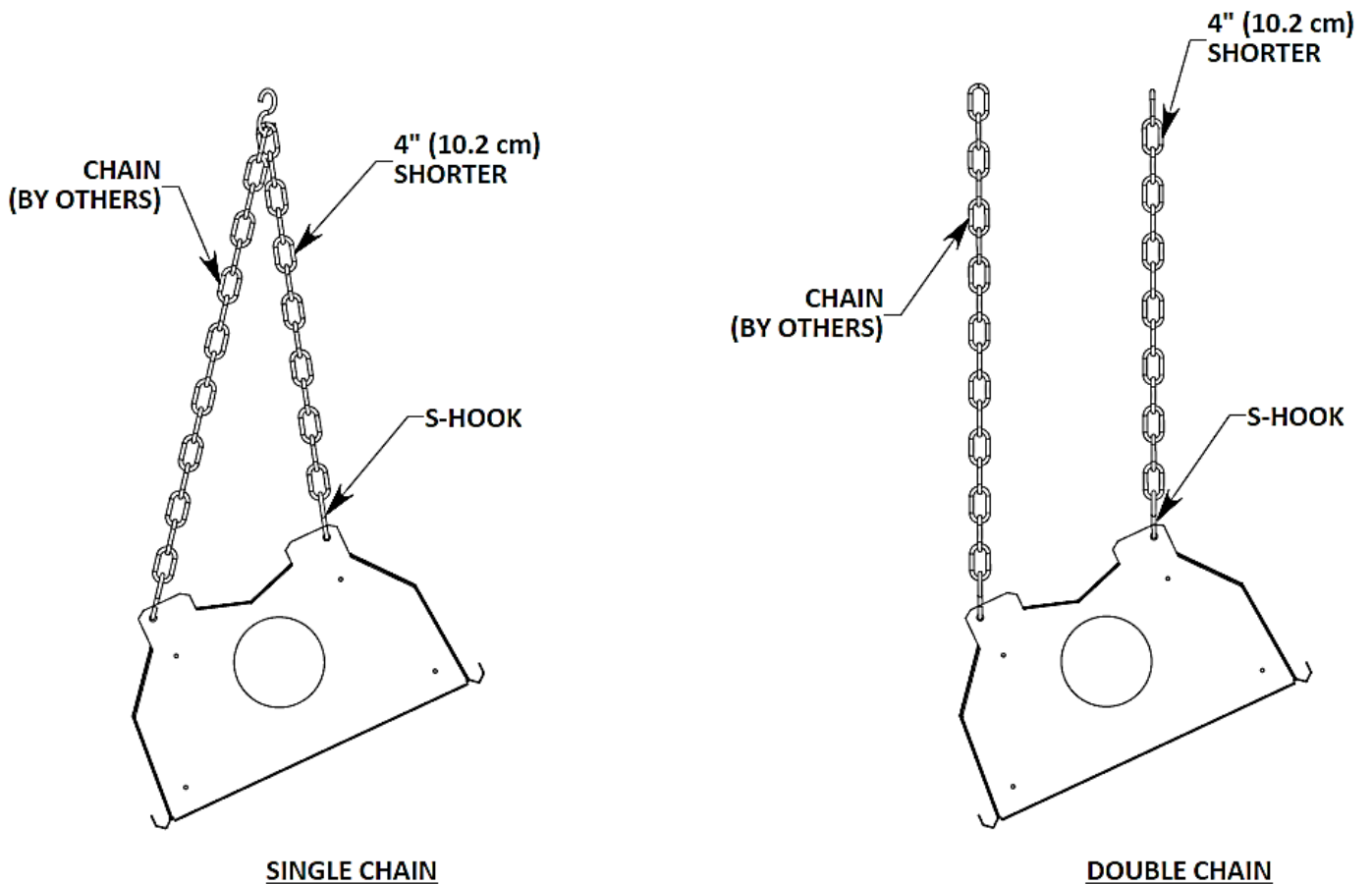
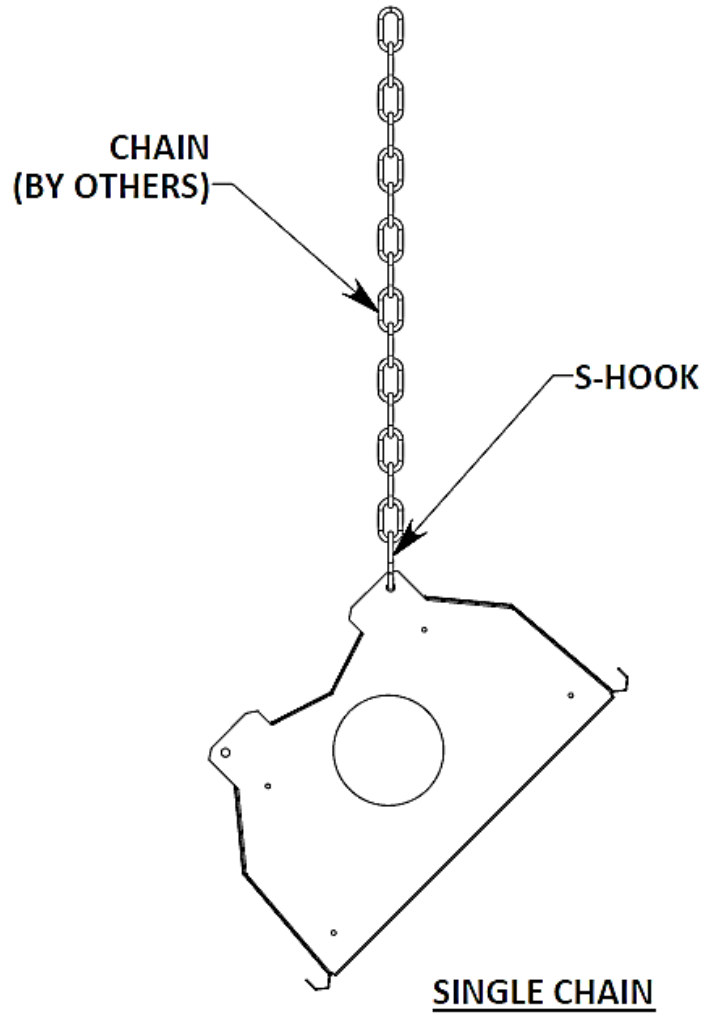


Figure 30. 25° TILT

**SR-SERIES**

**E. 45° TILT (ALL LENGTHS)**

**NOTE: 45° Tilt is NOT RECOMMENDED.** This angle of tilt causes the ambient air to form a convection current over the tube. The net effect of this action is reduced infrared output (decreased heating capacity) as well as decreased exhaust temperature which may increase the chance of condensation of combustion by-products.



**Figure 31. 45° TILT**

**11.0 ASSEMBLY OF COMPONENTS**

**11.1 GENERAL INSTRUCTIONS**

Refer to text & figures in section titled "ASSEMBLY OVERVIEW" (see page 39).

Refer to "COMPONENT ASSEMBLY" (see pages 35 to 38)

- 1) Remove turbulator or baffle from transport location on tube. Set aside as it is to be installed in the last 10' (3m) tube of the heater (see page??). The only exception to this is the 80' (24.5m) reflector package. It does not require the tabulator or baffle.
- 2) Attach burner head to initial 10' (3m) preassembly (see page ??). MAKE SURE WELD SEAM IS AT BOTTOM OF TUBE POINTING TOWARD THE FLOOR WHEN HEATER IS INSTALLED.
- 3) Install S-hooks into joint hangers. Hang preassembled burner box, combustion tube, and reflector (first 10' (3m) of heater from chains with adequate load rating (see warning on page??). NOTE: If you are installing a 40,000 Btu/hr-10' (3m) unit, your installation is complete.
- 4) Secure a joint hanger to one end of the reflector by overlapping reflector onto joint/hanger  $\frac{3}{4}$ " (1.9cm) and secure via provided self-tapping screws.
- 5) Attach the above-assembled reflector to the pre-assembled joint/hanger by overlapping reflector on hanger and securing via provided self-tapping screws. (see page??)
- 6) Hang assembly from suspended chains via 'S' hooks.
- 7) Install radiant tube by positioning one end into joint/hanger and butting the other end to the previously installed radiant tube. Secure tubes with clamp and self-tapping screws.

**IMPORTANT:** Make sure to secure clamp to tube via self-tapping screws. (See Figure 35 on page 37)

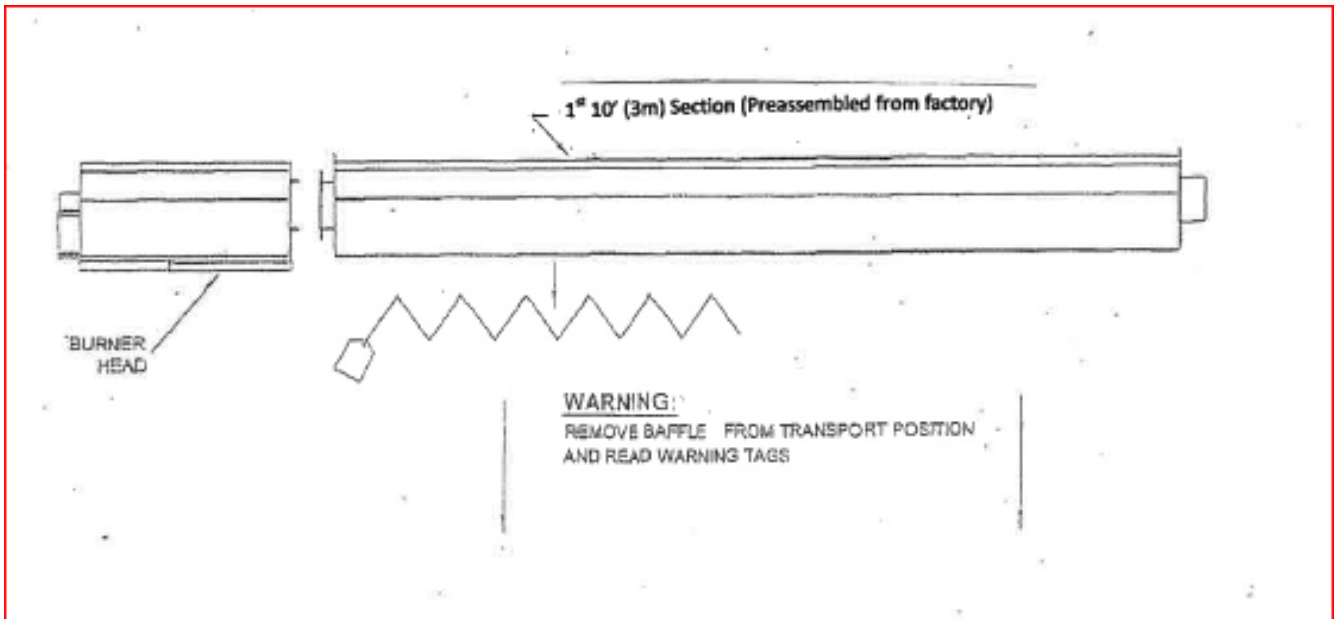
- 8) Secure remaining joint/hanger pieces to reflectors as per item #4.
- 9) Install assembled reflectors by:
  - a) Hanging joint/hanger piece and end from the next chain in line for installation
  - b) Install other end of reflector by overlapping the reflector onto the joint/hanger piece previously assembled and hung, securing via provided self-tapping screws. (see page??)
- 10) Install radiant tubes as per #7
- 11) Install reflector end cap into last reflector securing with self-tapping screws.
- 12) Hang assembled reflector and end cap via double chains onto end cap end. Overlap other end to reflector onto joint/hanger piece on previous section. (see page ??) Secure reflector to joint/hanger via self-tapping screws.
- 13) Install final radiant tube as per #7
- 14) Install baffles in final radiant tube (see page 33), **(not required for 80' (24.5m) reflector package)**

**IMPORTANT: INSTALL BAFFLE INTO LAST PIECE OF RADIANT TUBE**

- 15) Install a flue/vent adaptor. (see page 33)
- 16) Install reflector support strap, as per #8.
- 17) Install any accessories as per their related instruction and illustrations contained in this manual.
- 18) Connect to vent.
- 19) Connect to outside combustion air. (optional)
- 20) Connect gas, electricity and controls.

**11.2 COMPONENT ASSEMBLY**

**A. BAFFLE - TRANSPORT POSITION**



**Figure 32. BAFFLE/TURBULATOR REMOVAL FROM TRANSPORTATION**

**B. BURNER HEAD TO FIRST 10' (3 M) OF REFLECTOR PACKAGE**

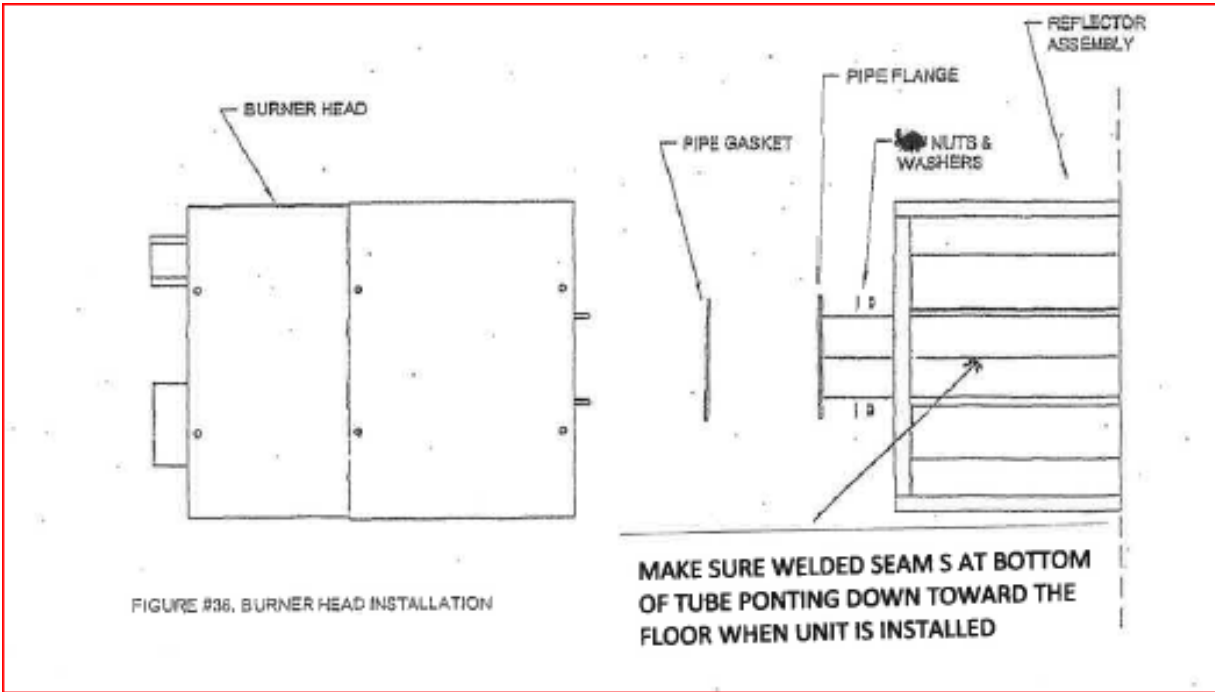


Figure 33. BURNER HEAD INSTALLATION

**C. JOINT HANGER TO REFLECTOR**

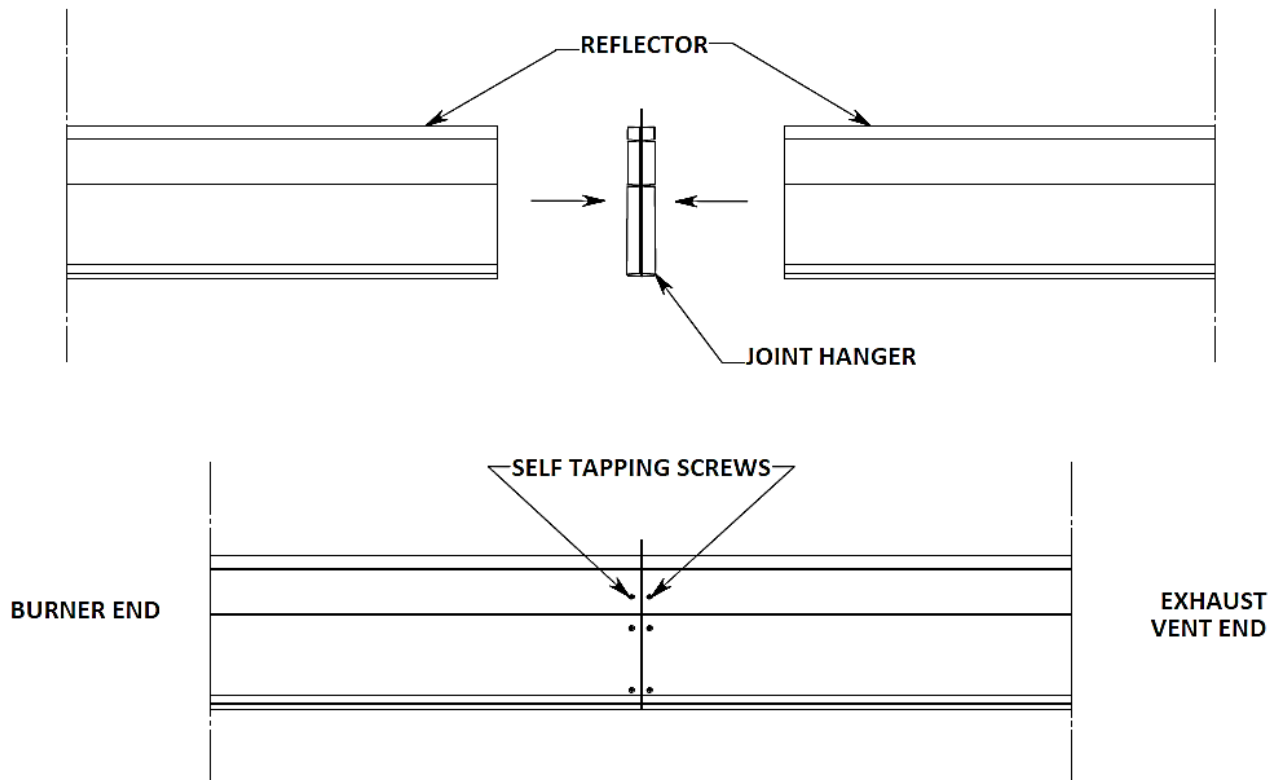


Figure 34. JOINT HANGER INSTALLATION



**D. CLAMP COUPLER**

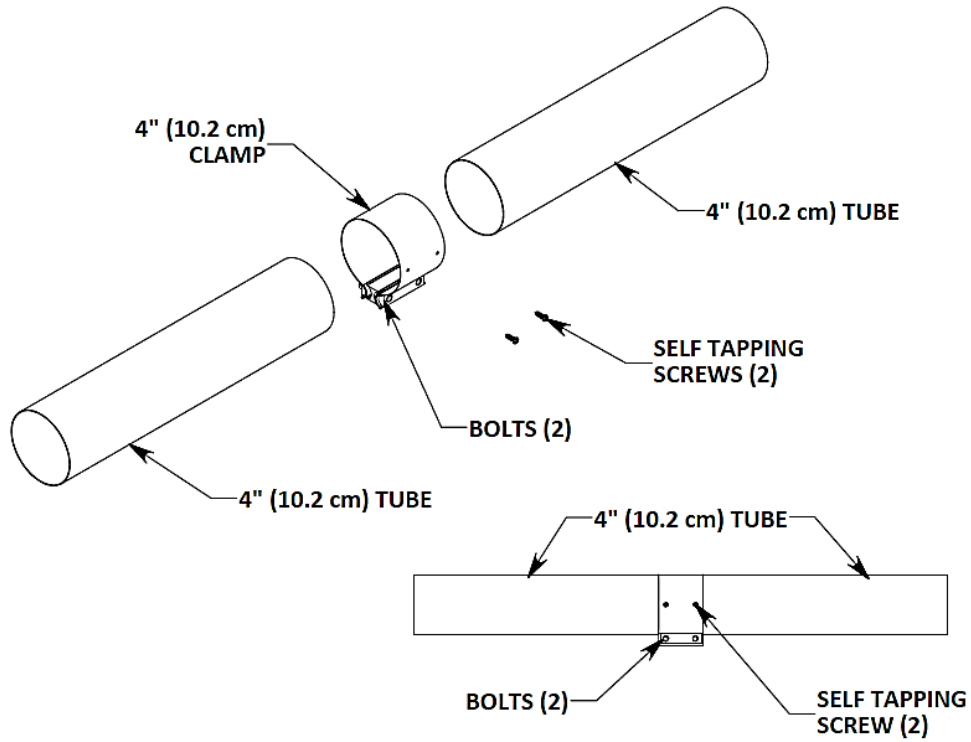


Figure 35. CLAMP COUPLER INSTALLATION

**E. END CAP TO REFLECTOR**

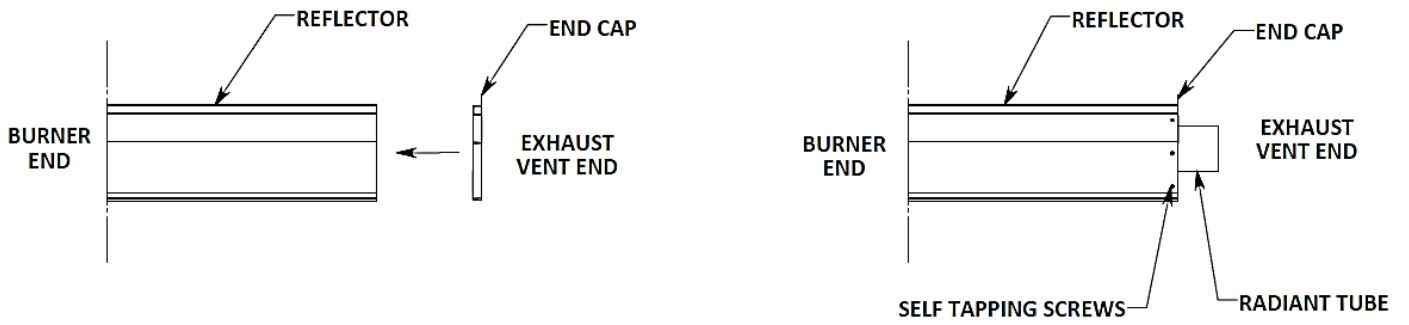
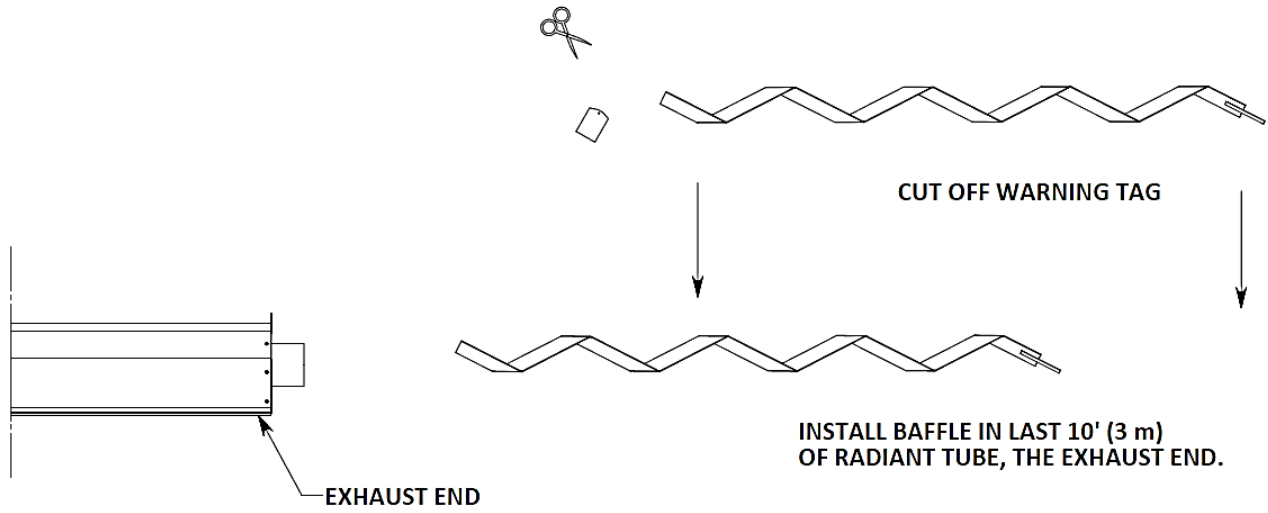


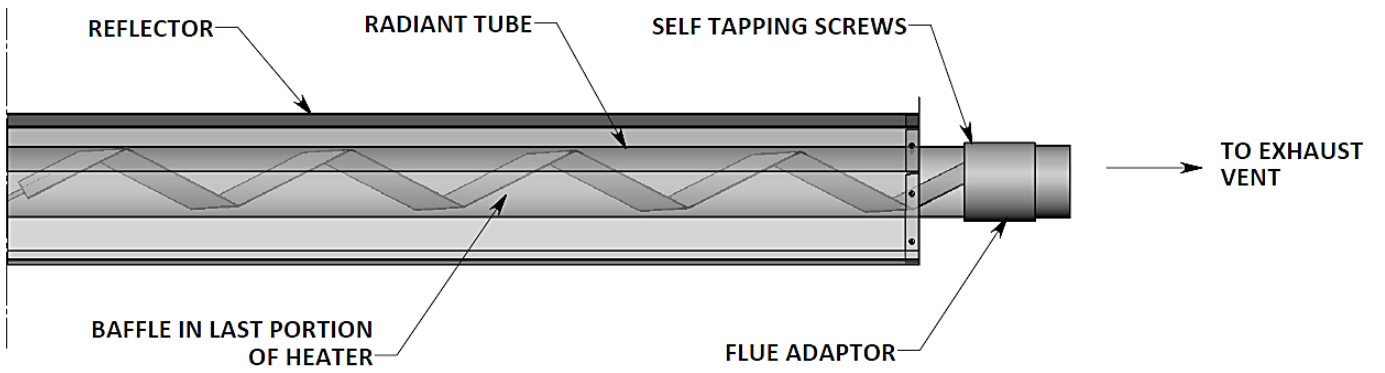
Figure 36. END CAP INSTALLATION

**F. BAFFLE/TURBULATOR INSTALLATION**



**Figure 37. BAFFLE / TURBULATOR INSTALLATION**

**G. VENT ADAPTOR INSTALLATION**



**Figure 38. BAFFLE / TURBULATOR + FLUE ADAPTOR INSTALLATION**

## **SR-SERIES**

### **12.0 ASSEMBLY OVERVIEW**

- 1) Verify length of reflector package to be installed. Read "ASSEMBLY OF COMPONENTS", on page 34 and view related diagrams on pages 35 - 38.
- 2) Locate section of manual that corresponds with length to be installed. View the corresponding exploded view. The illustration contains the details required to install the unit.

<b>REFLECTOR PACKAGE LENGTH</b>	<b>CORRESPONDING PAGE</b>
10' (3m)	<b>40</b>
15' (4.6m)	<b>40</b>
20' (6.1m)	<b>40</b>
30' (9.1m)	<b>40</b>
40' (12.2m)	<b>40</b>
50' (15.2m)	<b>40</b>
60' (18.3m)	<b>40</b>
70' (21.3m)	<b>40</b>
80' (24.4m)	<b>40</b>

### **12.1 ASSEMBLY OF OPTIONS**

Refer to section of manual containing option to be installed.

<b>OPTIONS</b>	<b>CORRESPONDING PAGE</b>
Sidewall Vent Kit	<b>27</b>
Outdoor Installation Kit	<b>62</b>
Combustion Air Kit	<b>54</b>
90° Elbow Kit	<b>50</b>
180° U-Bend Kit	<b>51</b>
Side Reflectors	<b>51</b>
Low Voltage Thermostat	<b>71</b>
Line Voltage Thermostat	<b>72</b>

View exploded illustration, install accordingly.

## SR-SERIES

### 12.2 REFLECTOR ASSEMBLY: ALL LENGTHS

#### A. 10' (3M) REFLECTOR PACKAGE

NOTE :

THIS REFLECTOR PACKAGE CAN ONLY USED WITH THE FOLLOWING INPUTS :

- 40,000 Btu/hr

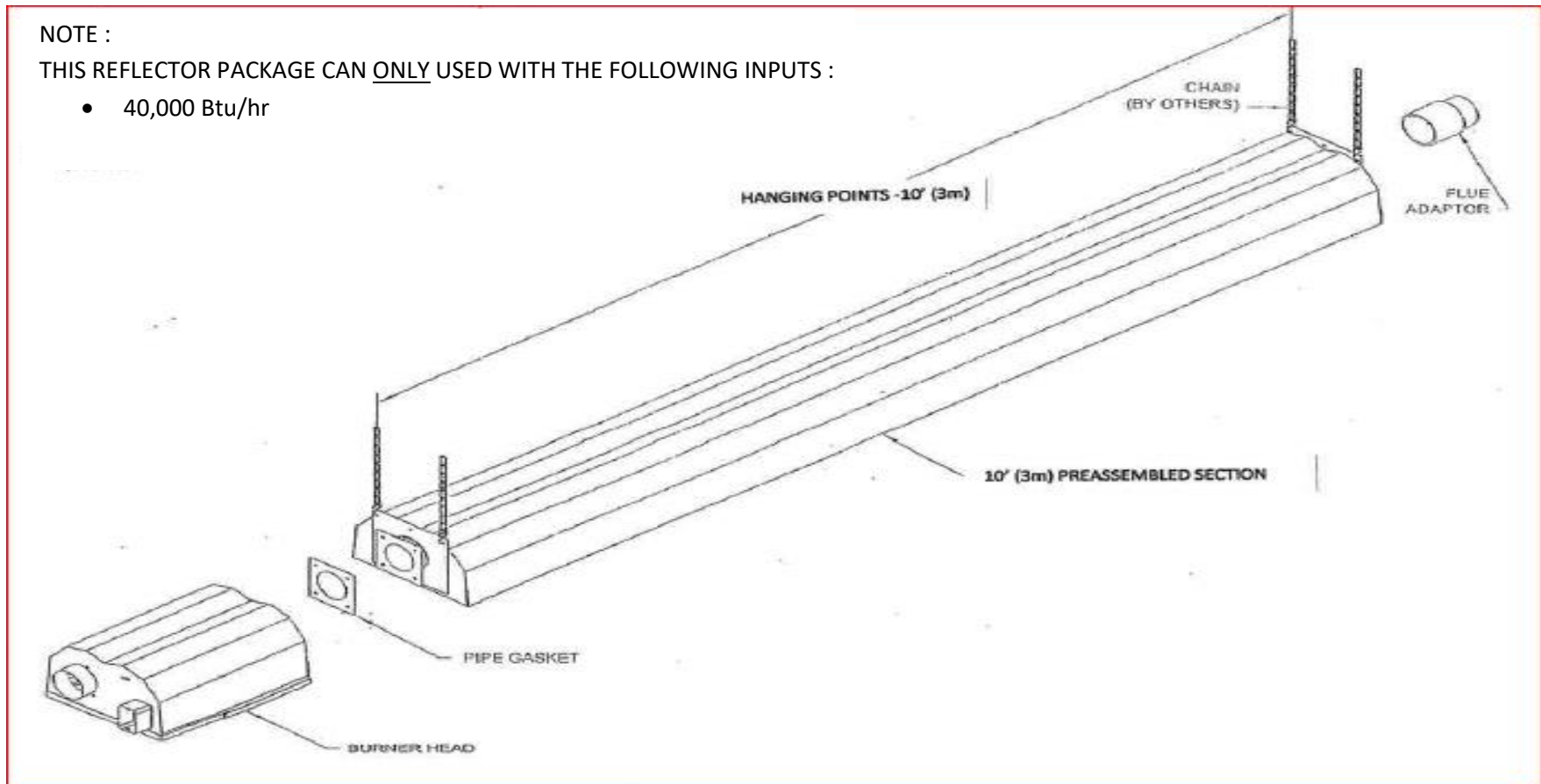


Figure 39. 10' (3m) REFLECTOR PACKAGE INSTALLATION

## SR-SERIES

### B. 15' (4.16M) REFLECTOR PACKAGE

NOTE :

THIS REFLECTOR PACKAGE CAN ONLY USED WITH THE FOLLOWING INPUTS :

- 40,000 Btu/hr

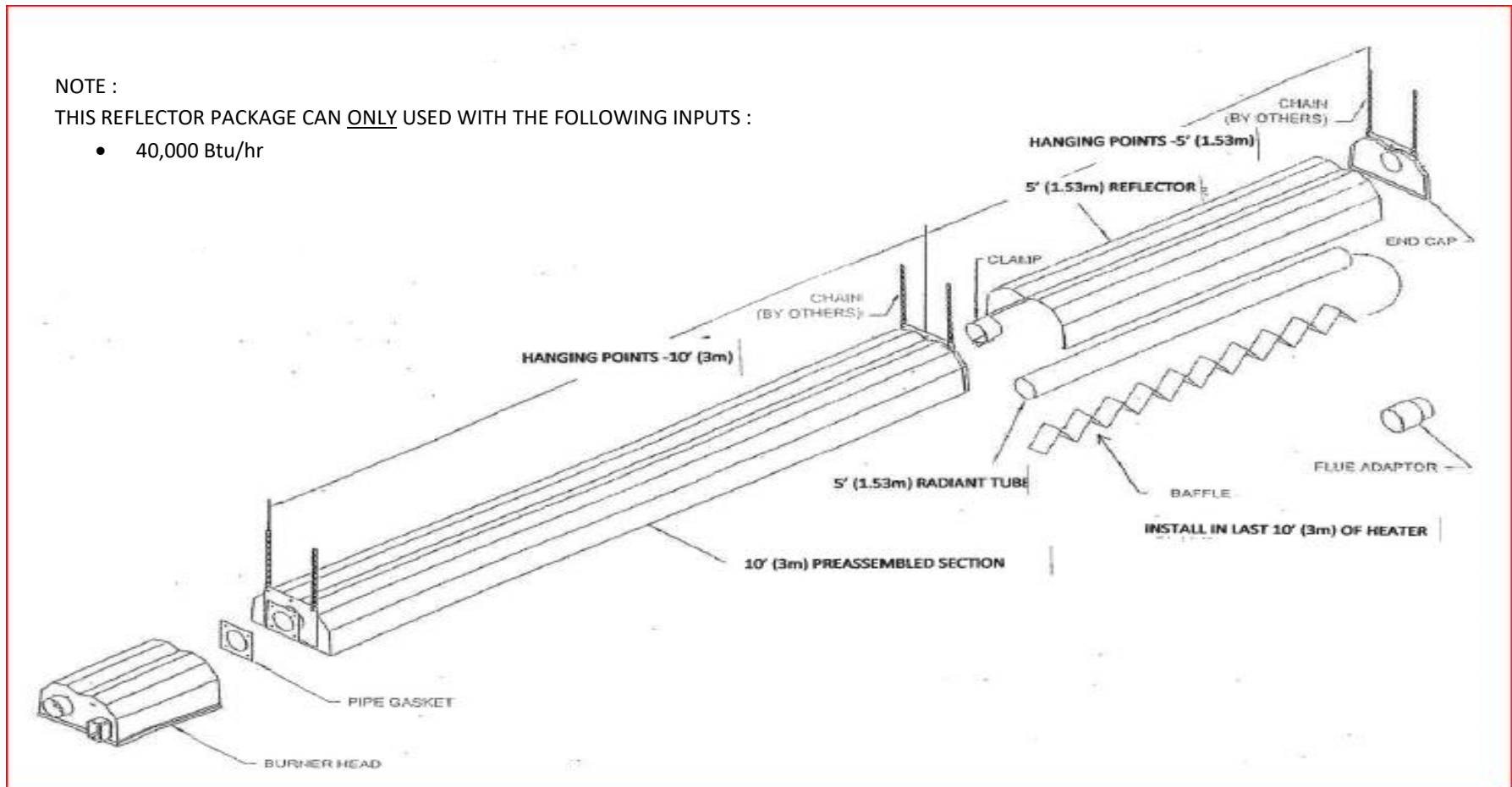


Figure 40. 15' (4.16m) REFLECTOR PACKAGE INSTALLATION

## SR-SERIES

### C. 20' (6.1M) REFLECTOR PACKAGE

NOTE :

THIS REFLECTOR PACKAGE CAN ONLY USED WITH THE FOLLOWING INPUTS :

- 40,000 Btu/hr
- 50,000 Btu/hr
- 60,000 Btu/hr
- 75,000 Btu/hr
- 80,000 Btu/hr and 100,000 Btu/hr

#### **PIPE BOXES REQUIRED**

(RADIANT TUBE)

<u>QUANTITY</u>	<u>TYPE</u>
1	A

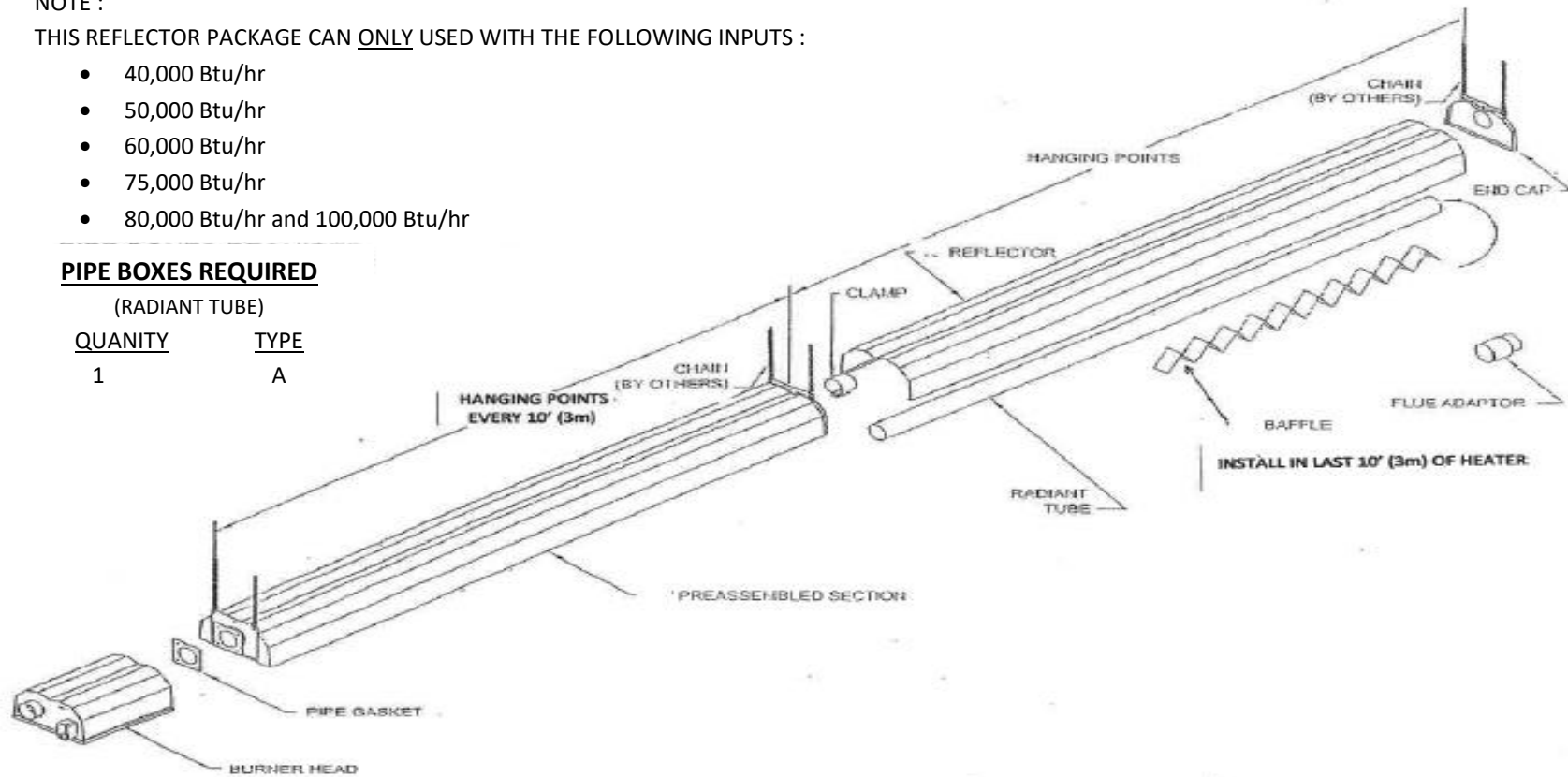


Figure 41. 20' (6.1m) REFLECTOR PACKAGE INSTALLATION

## SR-SERIES

### D. 30' (9.1M) REFLECTOR PACKAGE

NOTE :

THIS REFLECTOR PACKAGE CAN ONLY USED WITH THE FOLLOWING INPUTS :

- 60,000 Btu/hr
- 75,000 Btu/hr
- 80,000 Btu/hr
- 100,000 Btu/hr and 125,000 Btu/hr

#### PIPE BOXES REQUIRED

(RADIANT TUBE)

<u>QUANTITY</u>	<u>TYPE</u>
1	B

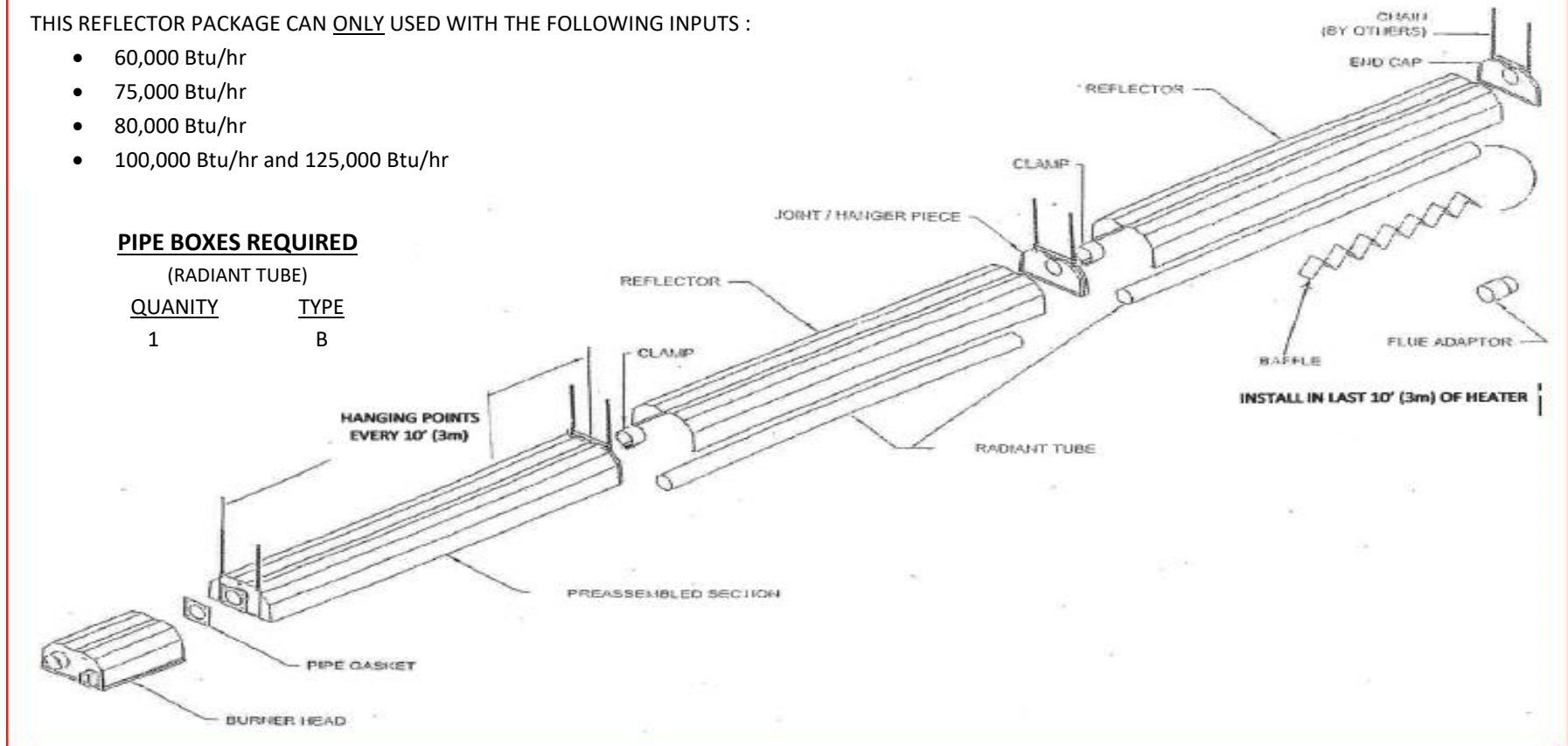


Figure 42. 30' (9.1m) REFLECTOR PACKAGE INSTALLATION

## SR-SERIES

### E. 40' (12.2M) REFLECTOR PACKAGE

NOTE :

THIS REFLECTOR PACKAGE CAN ONLY USED WITH THE FOLLOWING INPUTS :

- 60,000 Btu/hr
- 75,000 Btu/hr
- 80,000 Btu/hr
- 100,000 Btu/hr
- 125,000 Btu/hr
- 150,000 Btu/hr and 175,000 Btu/hr

#### PIPE BOXES REQUIRED

(RADIANT TUBE)

<u>QUANTITY</u>	<u>TYPE</u>
1	A
1	B

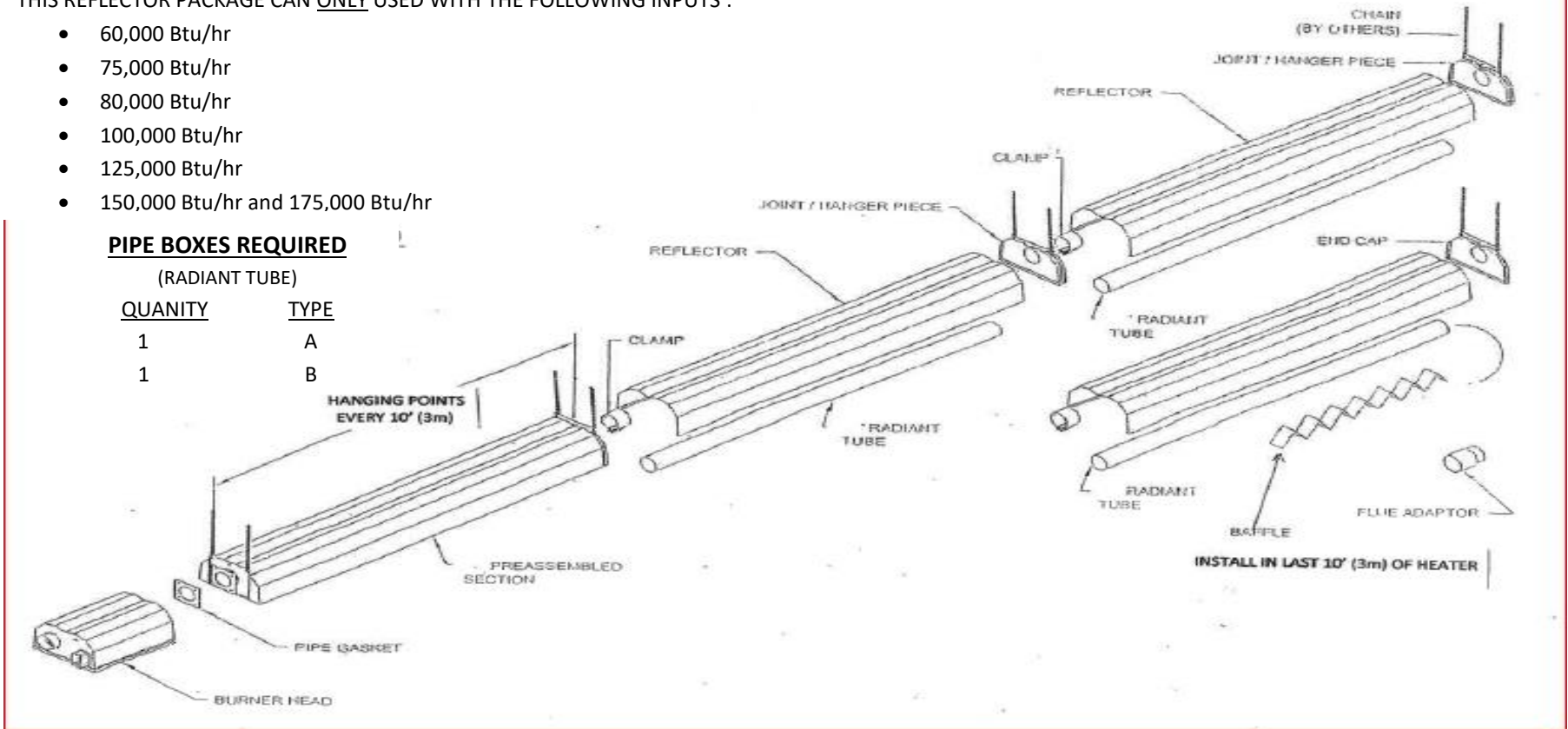


Figure 43. 40' (12.2m) REFLECTOR PACKAGE INSTALLATION



## SR-SERIES

### F. 50' (15.2M) REFLECTOR PACKAGE

NOTE :

THIS REFLECTOR PACKAGE CAN ONLY USED WITH THE FOLLOWING INPUTS :

- 100,000 Btu/hr
- 125,000 Btu/hr
- 150,000 Btu/hr
- 175,000 Btu/hr 200,000 btu/hr

#### PIPE BOXES REQUIRED

(RADIANT TUBE)

<u>QUANTITY</u>	<u>TYPE</u>
2	B

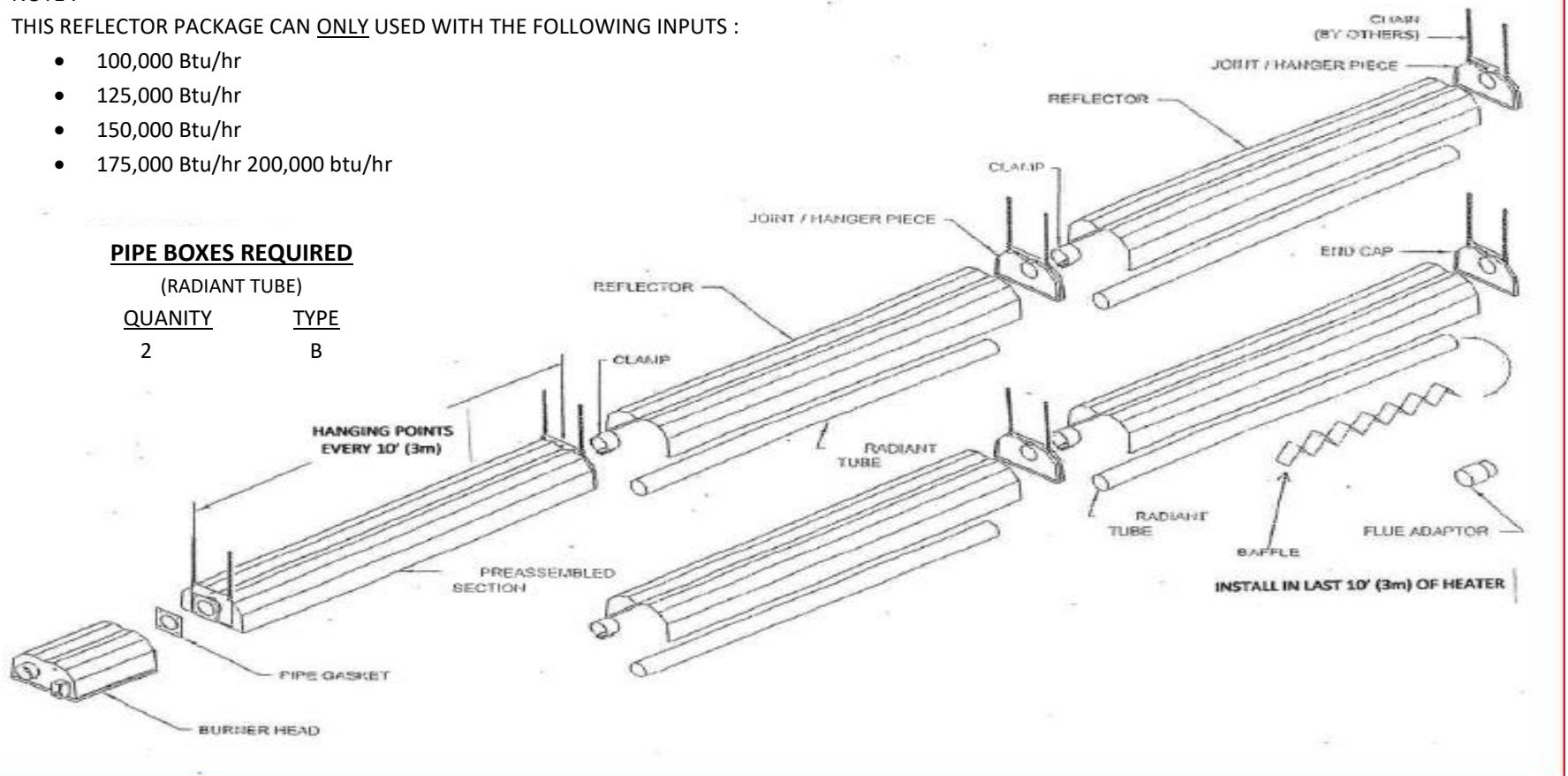


Figure 44. 50' (15.2m) REFLECTOR PACKAGE INSTALLATION

# SR-SERIES

## G. 60' (18.3M) REFLECTOR PACKAGE

NOTE :

THIS REFLECTOR PACKAGE CAN ONLY USED WITH THE FOLLOWING INPUTS :

- 150,000 Btu/hr
- 175,000 Btu/hr
- 200,000 Btu/hr and 225,000 Btu/hr

### PIPE BOXES REQUIRED

(RADIANT TUBE)

QUANTITY	TYPE
1	A
2	B

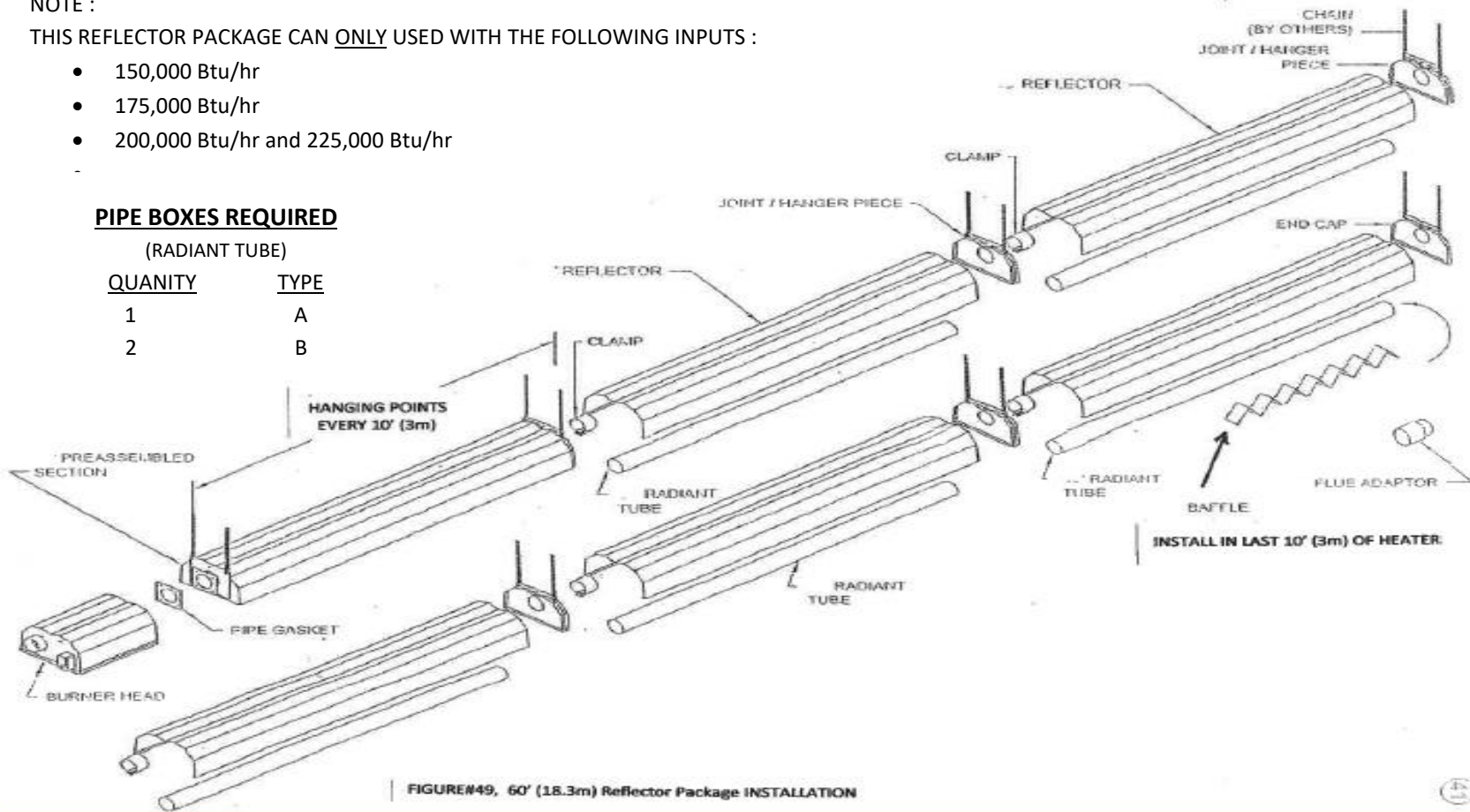


Figure 45. 60' (18.3m) REFLECTOR PACKAGE INSTALLATION

# SR-SERIES

## H. 70' (21.3M) REFLECTOR PACKAGE

NOTE :

THIS REFLECTOR PACKAGE CAN ONLY USED WITH THE FOLLOWING INPUTS :

- 175,000 Btu/hr
- 200,000 Btu/hr
- 225,000 Btu/hr

### PIPE BOXES REQUIRED

(RADIANT TUBE)

<u>QUANTITY</u>	<u>TYPE</u>
3	B

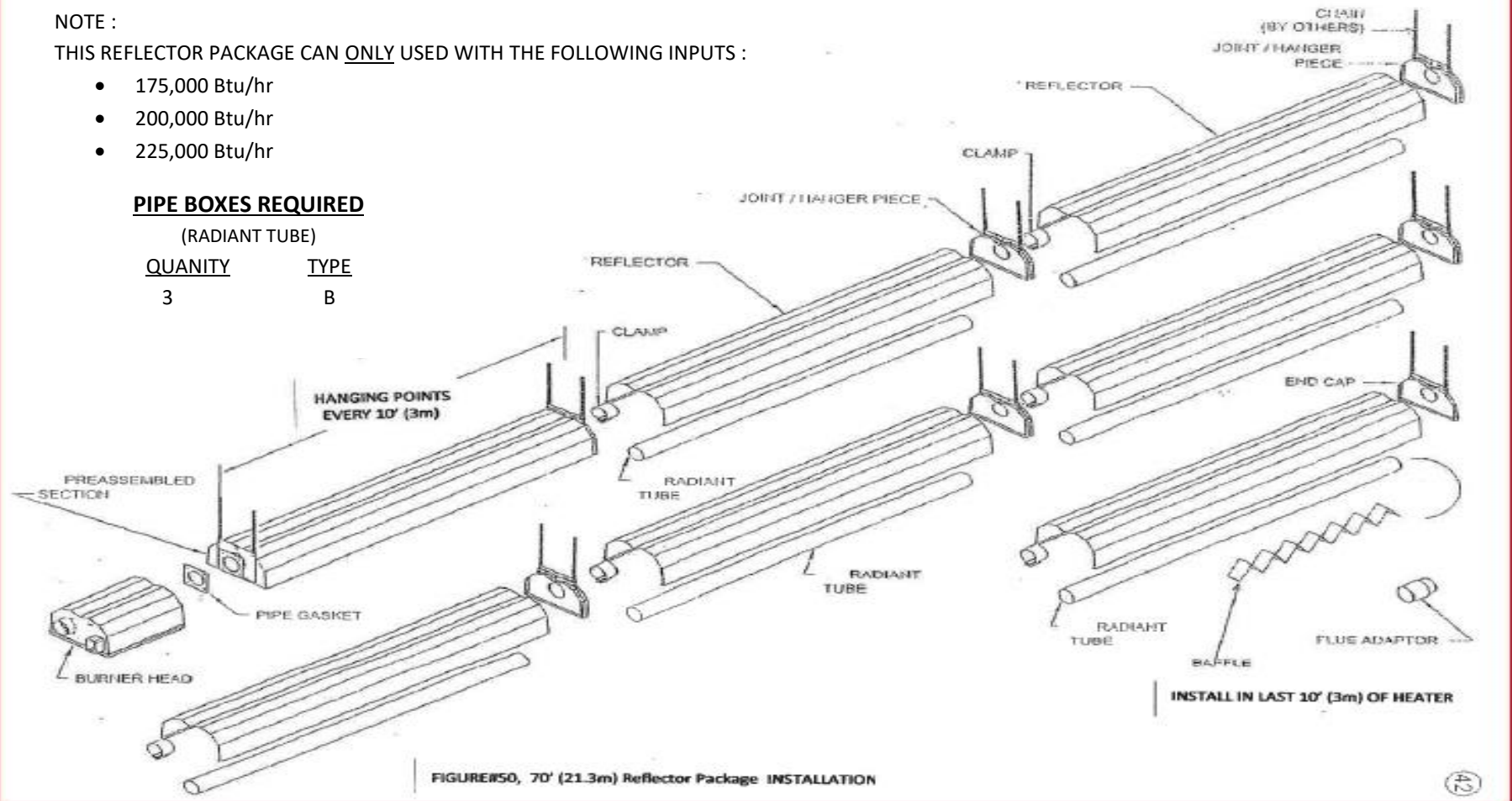


Figure 46. 70' (21.3m) REFLECTOR PACKAGE INSTALLATION

## SR-SERIES

### I. 80' (24.4M) REFLECTOR PACKAGE

NOTE :

THIS REFLECTOR PACKAGE CAN ONLY USED WITH THE FOLLOWING INPUTS :

- 200,000 Btu/hr
- 225,000 Btu/hr

#### PIPE BOXES REQUIRED

(RADIANT TUBE)

<u>QUANTITY</u>	<u>TYPE</u>
1	A
3	B

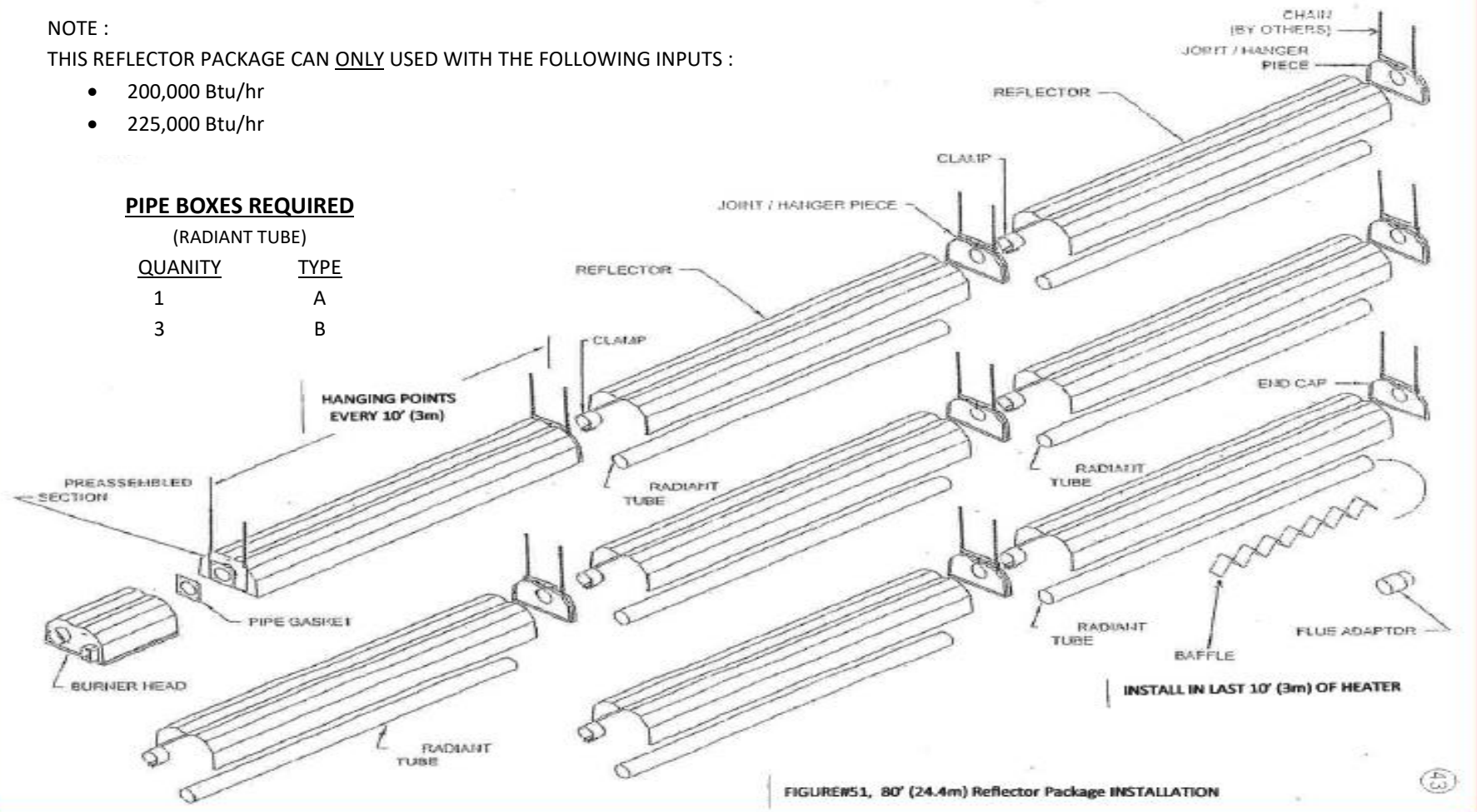


Figure 47. 80' (24.4m) REFLECTOR PACKAGE INSTALLATION

## SR-SERIES

### J. SIDE WALL VENT KIT

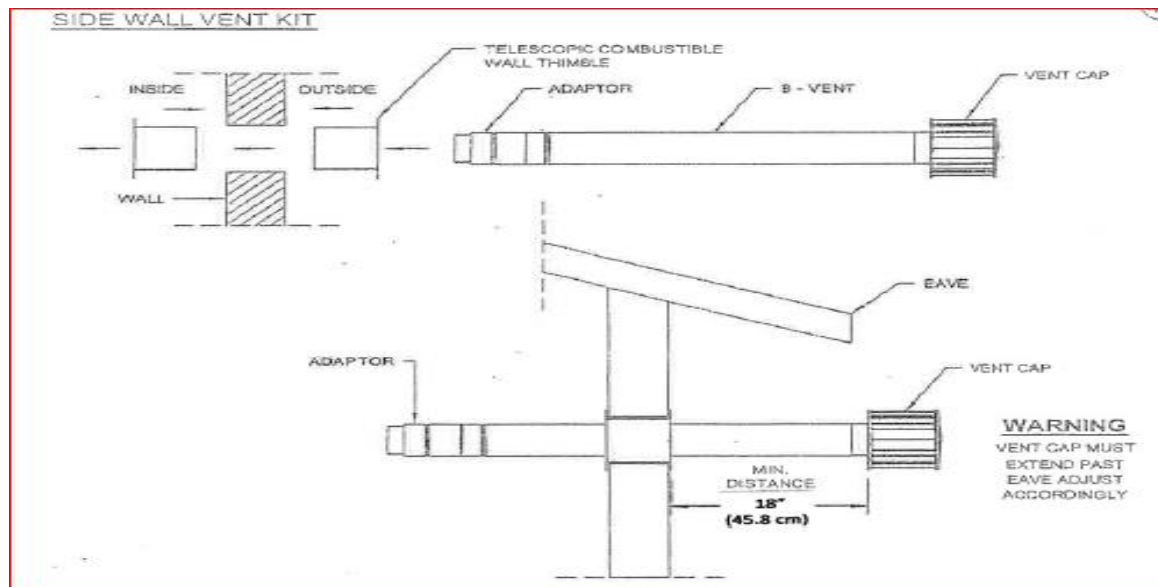


Figure 48. SIDE WALL VENT KIT INSTALLATION

### K. OUTDOOR INSTALLATION KIT

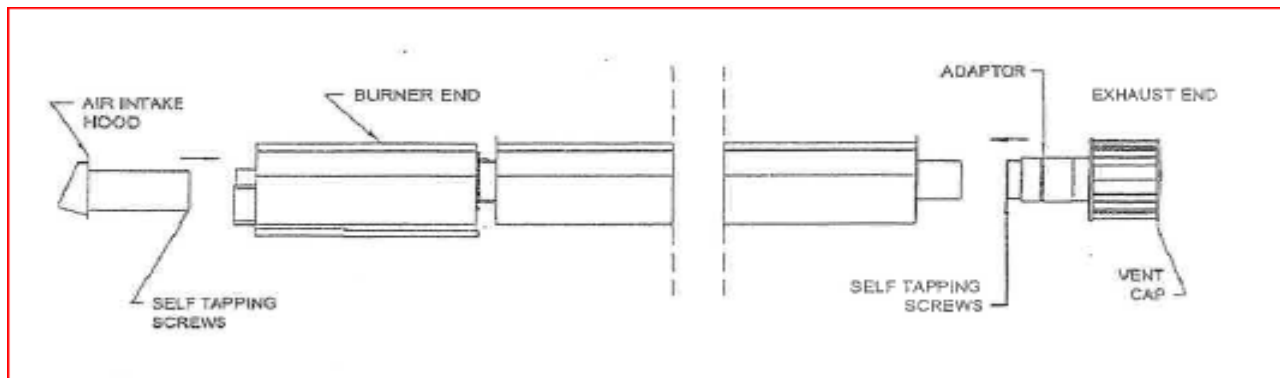
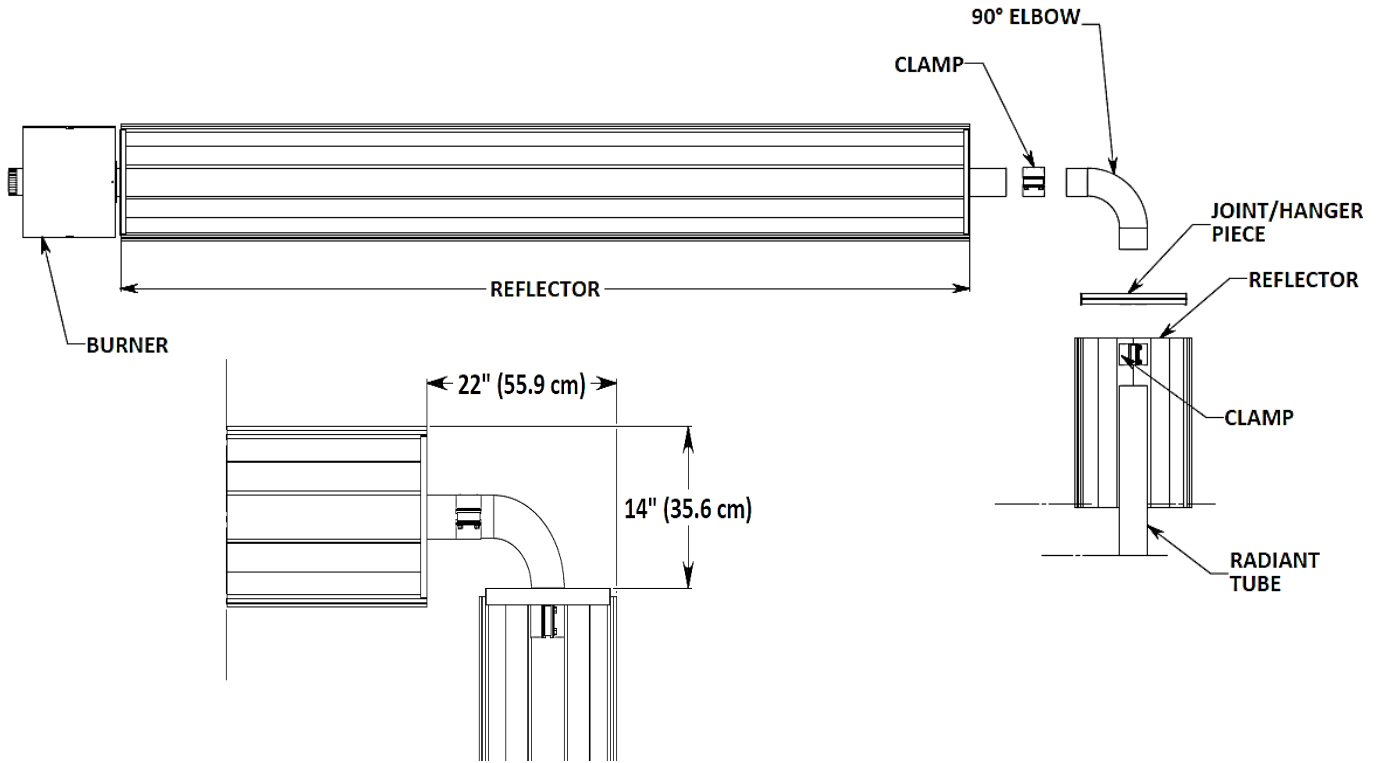


Figure 49. OUTDOOR INSTALLATION KIT

**SR-SERIES**

**L. 90° ELBOW KIT**



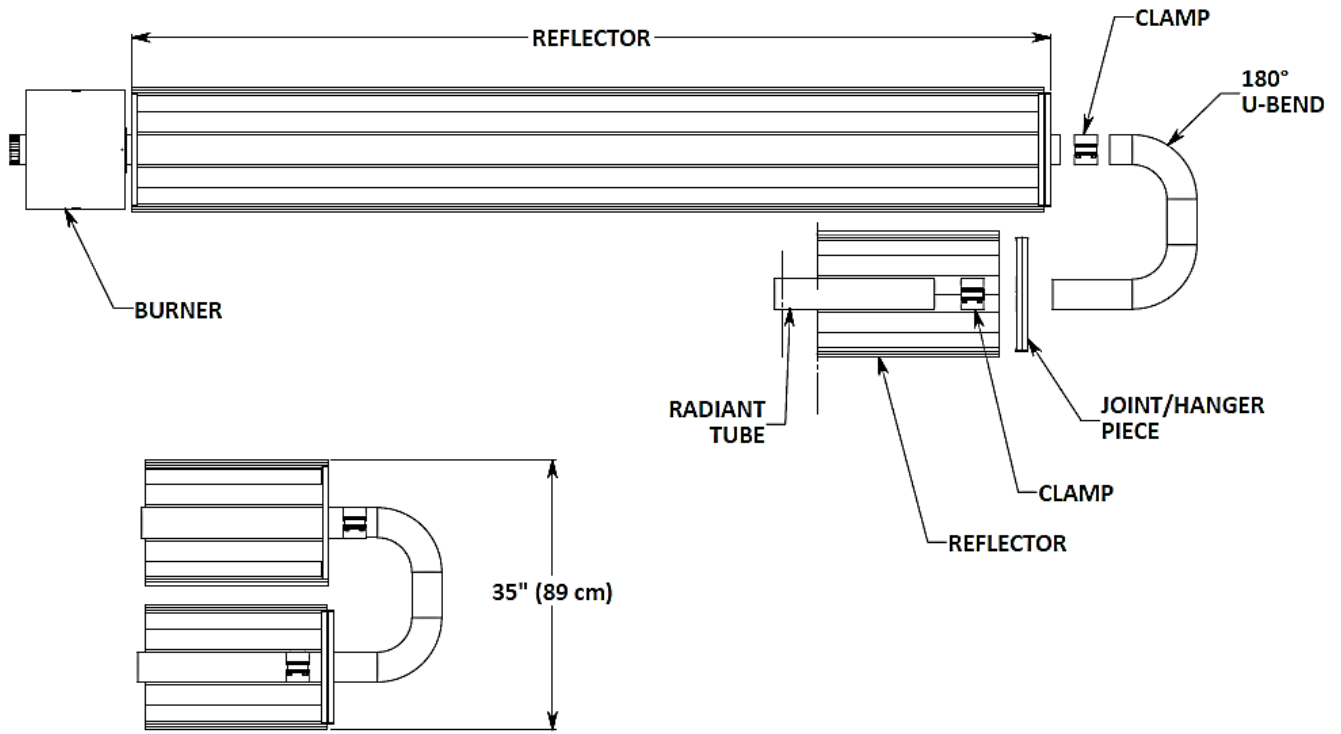
**MODELS 40,000 – 100,000**  
**MINIMUM LENGTH BEFORE ELBOW – 10' (3m)**

**MODELS 125,000 – 200,000**  
**MINIMUM LENGTH BEFORE ELBOW – 20' (6.1m)**

**Figure 50. 90° ELBOW KIT INSTALLATION**

**SR-SERIES**

**M. 180° U-BEND KIT**

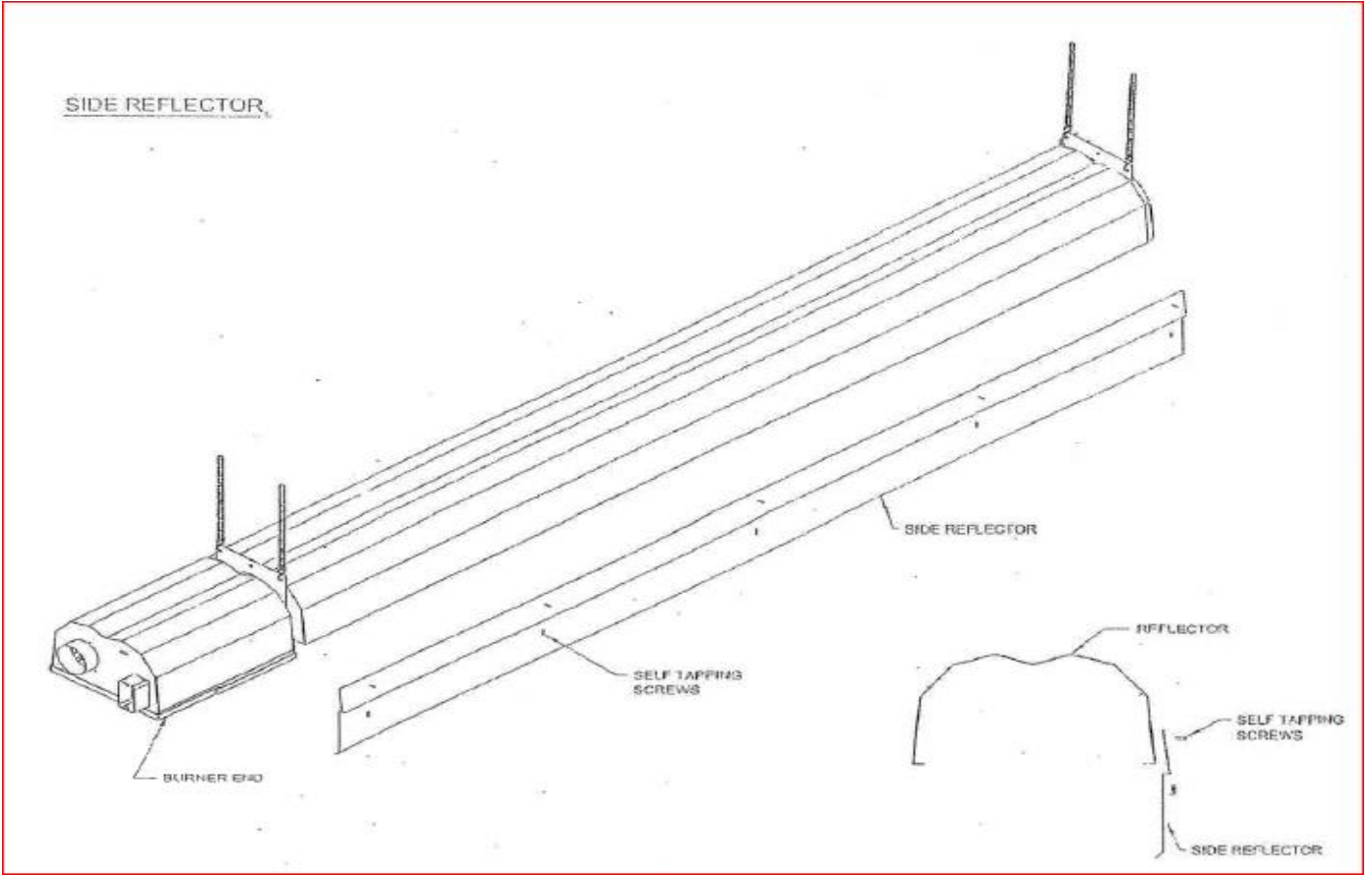


**MODELS 40,000 – 100,000**  
**MINIMUM LENGTH BEFORE ELBOW – 10' (3m)**

**MODELS 125,000 – 200,000**  
**MINIMUM LENGTH BEFORE ELBOW – 20' (6.1m)**

**Figure 51. 180° U-BEND KIT INSTALLATION**

**N. SIDE REFLECTOR**



**Figure 52. SIDE REFLECTOR INSTALLATION**



## SR-SERIES

### **13.0 OPTIONAL COMBUSTION AIR SUPPLY**

(Refer to page 54)

The heater must be installed in a location where there is adequate air supply for combustion to take place. If any of the following conditions are met, outside air must be brought to the unit.

If the heater is: 1.) Installed in a tightly closed building that has less than one (1 sq inch (2.54 sq cm) of free opening for each 1,000 B.T.U input of heater or less than 100 square inches of free opening. Or, 2.) If the building has contaminants in the air or the air is under a slight negative pressure.

**IMPORTANT:** Outside air supply duct is to be no less than 4" (10.2cm) in diameter for Inputs from 40,000 to 80,000 Btu/hr, and 6" (15.24 cm) for inputs from 100,000 to 200,000 Btu/hr. Duct to be smooth, single wall or "B" vent style materials. Flexible materials are acceptable if lengths are no greater than 36" (92 cm) in length. A combination of flexible material attached to the Burner Head with the balance of the air supply duct being rigid, smooth materials, is acceptable. If condensation occurs and becomes a problem, insulate the duct with approved materials.

**NOTE:** Maximum duct length for inputs of 40,000 to 150,000 Btu/hr s 45' (13.7m) minus any exhaust vent length. Deduct 10' (3m) for every 90° elbow and 5' (1.52m) for every 45° elbow used.

Maximum duct length for inputs of 175,000 to 200,000 Btu/hr s 30' (9.1m). Total length of heater including the length of intake and exhaust is not to exceed 110' (33.6 m). Shorten length of intake by 10' (3m) for every 90° elbow and 5' (1.53) for every 45° elbow used.

#### Example A

100,000 Btu/hr input-50' (15.2m) reflector package, with 20' (6.1m) of exhaust vent and 1 - 90° elbow.

#### Calculation:

Maximum duct length is:	45'(13.7m)
Minus exhaust vent length:	-20' (6.1m)
Minus 90° exhaust elbow:	-10' (3m)

#### Conclusion:

The Maximum length of fresh air duct in this example is: **15' (4.6m)**

#### Example B

200,000 Btu/hr input - 80' (24.4m) reflector package, with 10' (3m) of exhaust vent and 1 - 90° elbow.

#### Calculation:

Total maximum length of heater c/w outside air & exhaust vent is:	110' (33.6m)
Total combined length of heater and exhaust in this example is:	
Heater Length:	80' (24.4m)
Exhaust length:	10' (3m)
90° Exhaust vent elbow:	<u>10' (3m)</u>
TOTAL COMBINED LENGTH:	100' (30.5m)
Amount to be deducted from total available length:	-100' (30.5m)

#### Conclusion:

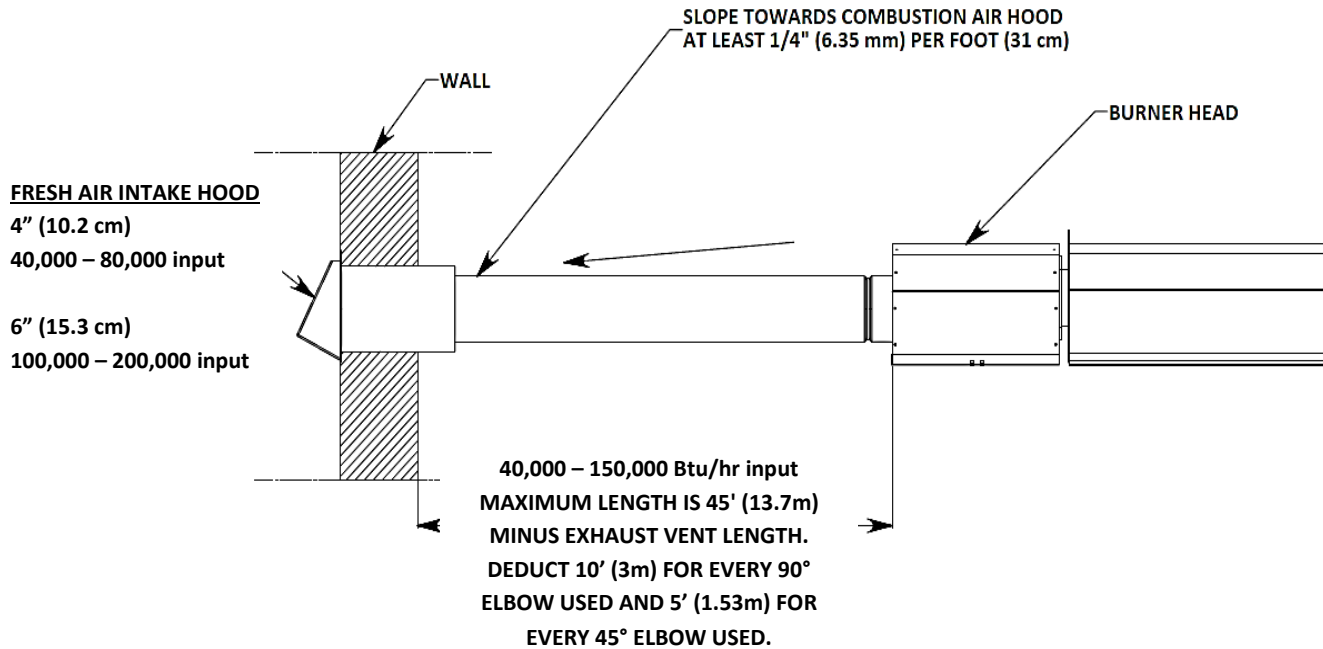
The Maximum length of fresh air duct in this example is: **10' (3m)**

If condensation occurs, insulate duct or contact distributor for alternate methods for your installation. Slope duct down, away from burner box towards the combustion air intake hood. The combustion air intake hood must be installed at a height sufficient enough to prevent any blockage by snow for your area.

# SR-SERIES

## A. COMBUSTION AIR HORIZONTAL

### HORIZONTAL



## B. COMBUSTION AIR VERTICAL

### VERTICAL

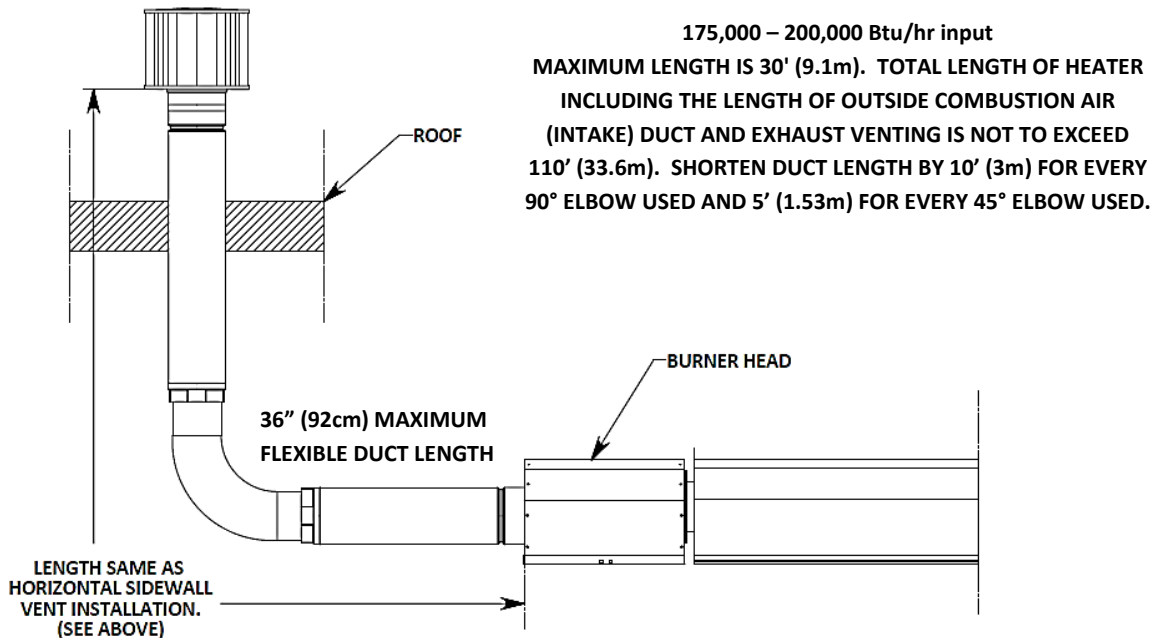


Figure 53. OUTSIDE COMBUSTION AIR SUPPLY

**14.0 VENTING**

**VENTING MANUAL**  
**ANSI Z83.20-2016/CSA 2.34-2016**  
**GAS PRODUCTS NO. 405**  
**JANUARY 1, 2019**

**APPROVED CATEGORY III Venting Method**

In North America (Canada and the USA) the SPECIAL VENTING method, as detail below, is approved as a Category III venting system for Calcana installations where venting is required.

The venting system is to be provided by the installer. The use of readily available, single wall venting materials with a thickness no less than 26 gauge is to be used. If 26 gauge “C-vent” or galvanized “stove pipe” is selected, each joint will need to be sealed with high temperature silicone as prescribed below, as well as the connection will require a minimum of three (3) #8 sheet metal or self tapping screws to be used in a pattern such that each screw is installed at a distance that is equal between the number of fasteners selected. If material other than the aforementioned is employed, connect sections of material in such a fashion that each connection is secure and sealed. A minimum 36” (91 cm) length of 4” (10 cm) single wall material, with a thickness no less than 26 gauge is to be installed at the exhaust end of heater. This length can include elbows. If a portion of venting is to pass through a wall, installer can continue the single wall vent as long as a combustible wall thimble is used to provide adequate clearance to combustibles, or “B-vent (and related accessories) can be used. If a portion of venting is to pass through a roof, installer to use “B-vent” (and related accessories) for these sections. Use approved chimney cap for vertical installations and approved high wind terminal, as described below in subsection B and C for HORIZONTAL VENTING. Installer is to adequately support vent system to prevent sagging in a manner that is in accordance with codes for the area.

Installer is to make sure all flue joints are sealed. Use only suitable products equal to General Electric RTV106 or Permatex 81160 High-Temp Red RTV, Red High Temperature Silicone Adhesive Sealant (not supplied). Apply a minimum of ¼ “ x ¼” (6.35mm x 6.35 mm) bead of silicone to each joint, and to each seam. The bead should be applied to venting material with a smaller diameter as compared to the larger opening of the mating material or in some instances, clamp, in such a fashion that when the joint is secured, the silicone is squeezed between the two materials to form a sealed connection. Apply additional silicone if needed to accomplish a sealed joint or seam.

Follow the silicone manufacturer’s instructions for curing, and after the material has cured, the installer is to perform a leak test on the venting system. A soap and water solution test, on the venting installed inside the occupied space, can be used. If seamed, 26 gauge “C-vent” material is used, seal seam(s) with RTV high temperature silicone. Once the installer is satisfied that the venting system is sealed, the heater can be placed in permanent operation.

**HORIZONTAL AND VERTICAL VENTING APPLICATIONS**

Venting of the unit(s) must comply in Canada with the ***Natural Gas and Propane Installation Code, CSA B149.1*** or latest edition and in the USA, the ***National Fuel Gas Code, ANSI Z223.1/NFPA 54*** or latest edition. In Canada, vent terminal clearances shall be in accordance with the Canadian ***CSA B149.1, Natural Gas and Propane Gas Installation Code.***

**A. Select exhaust point:**

A vent shall not terminate:

- 1) within 6 feet (1.9m) of a mechanical air supply inlet to a building;
- 2) above a meter/regulator assembly within 3 feet (92cm) horizontally of the vertical line of the regulator;
- 3) within 6 feet (1.9m) of any gas service regulator vent outlet;
- 4) less than 1 foot (31 cm) above grade level;
- 5) less than 7 feet (2.2) above a paved sidewalk or a paved highway;
- 6) within 3 feet (92 cm) of a window or door which can be opened in any building, any non-mechanical air supply inlet to any building or the combustion air inlet or any other appliance.

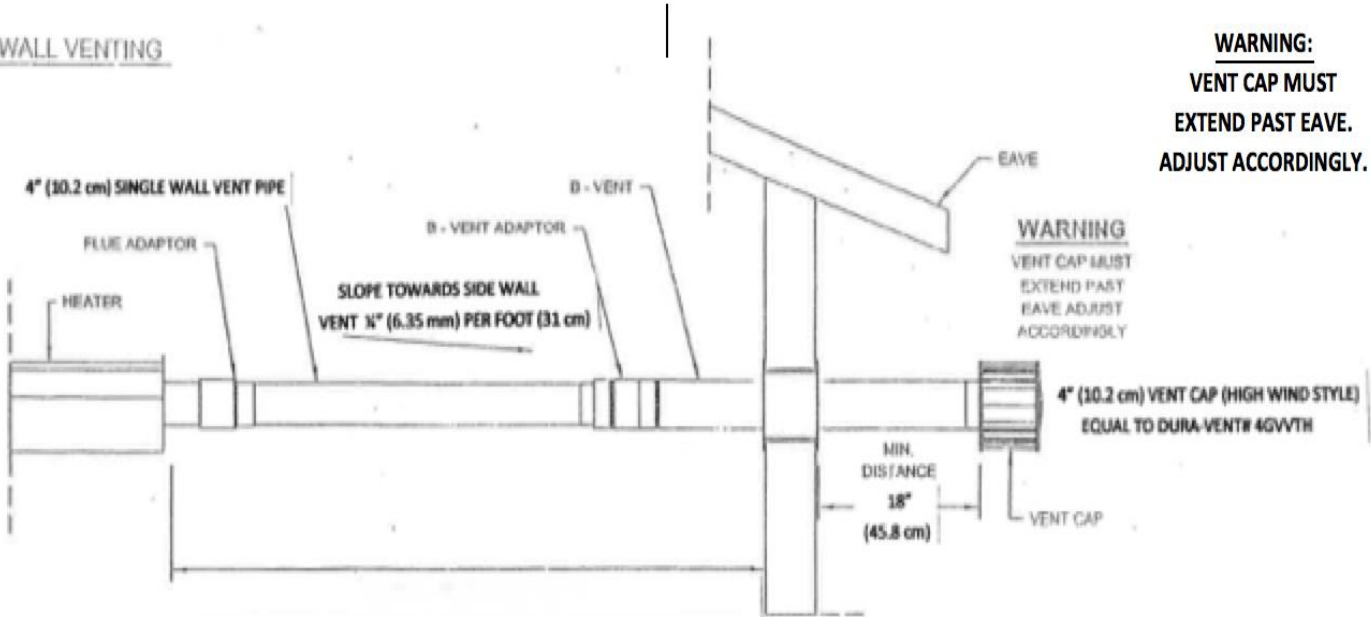
**NOTE:** May be reduced to 1 foot (31cm) for inputs up to 100,000 Btu/hr (30kW) and 3 feet (1m) for inputs exceeding 100,000 Btu/hr.

In the USA, the ***National Fuel Gas code, ANSI Z223.1/NFPA 54,*** specifies a 4 ft. (1.22 m) horizontal vent terminal clearance from gas and electrical meters, regulators and relief equipment.

# SR-SERIES

**B. HORIZONTAL VENTING – SINGLE UNIT:** For horizontal, sidewall venting a single unit, use 4" (10.16 cm) "B-Vent" equal to DuraVent PIN# 4GV36 in combination with a combustible wall thimble, a "B-vent" to "C-Vent" (single wall) adaptor equal to DuraVent PIN#4GVC, and HIGH WIND VENT TERMINAL equal to DuraVent PIN# 4GVVTH.

## SIDE WALL VENTING



40,000 - 150,000 Btu/hr input

MAXIMUM VENT LENGTH IS 45' (13.7m) MINUS OUTSIDE AIR INTAKE DUCT LENGTH. DEDUCT 10' (3m) FOR EVERY 90° ELBOW USED AND 5' (1.53m) FOR EVERY 45° ELBOW USED

175,000 - 200,000 Btu/hr input

MAXIMUM VENT LENGTH IS 50" (15.2m) MINUS ANY AIR INTAKE LENGTH OR ANY AMOUNT OF OPTOANL LENGTH OF ACTUAL HEATER.

TOTAL LENGTH OF HEATER INCLUDING THE LENGTH OF OUTSIDE COMBUSTION AIR (INTAKE) DUCT AND EXHAUST VENTING IS NOT TO EXCEED 110" (33.6m). SHORTEN DUCT LENGTH BY 10' (3m)

FOR EVERY 90° ELBOW USED AND 5' (1.53m)

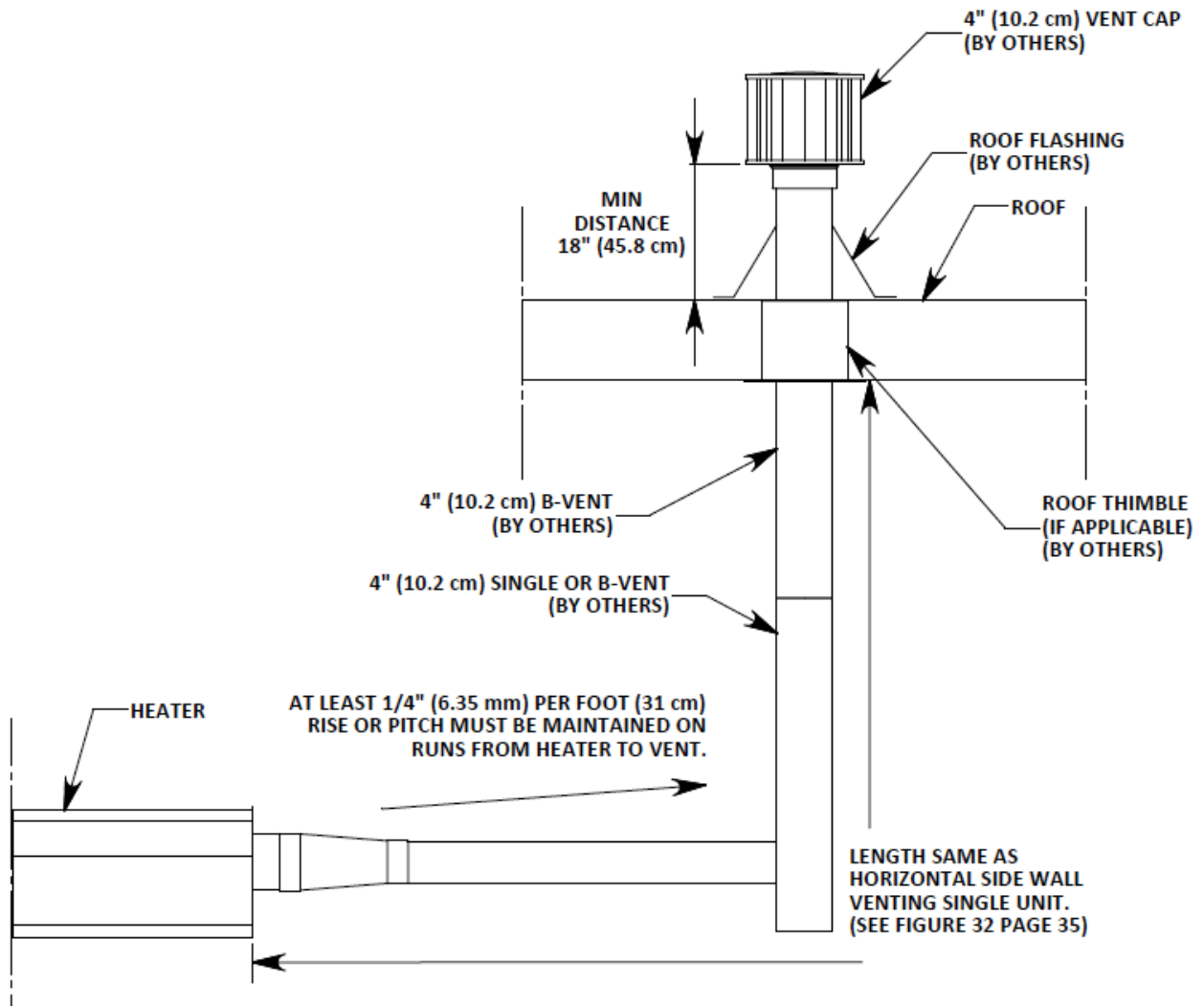
FOR EVERY 45° ELBOW USED

(SEE PAGE 50 FOR EXAMPLE CALCULATIONS)

**NOTE: MAKE SURE THAT ALL FLUE/EXHAUST JOINTS (AND SEAMS IF NECESSARY) INSIDE AN OCCUPIED BUILDING ARE SEALED. USE ONLY SUITABLE PRODUCTS EQUAL TO GENERAL ELECTRIC RTU 106 OR PERMATX FORM A GASKET RED HIGH TEMPERATURE SILICONE ADHESIVE SEALANT. (NOT SUPPLIED)**

Figure 54. SIDE WALL VENTING, SINGLE UNIT

**C. ROOF EXHAUST: Single Unit - Use 'B' style chimney.**



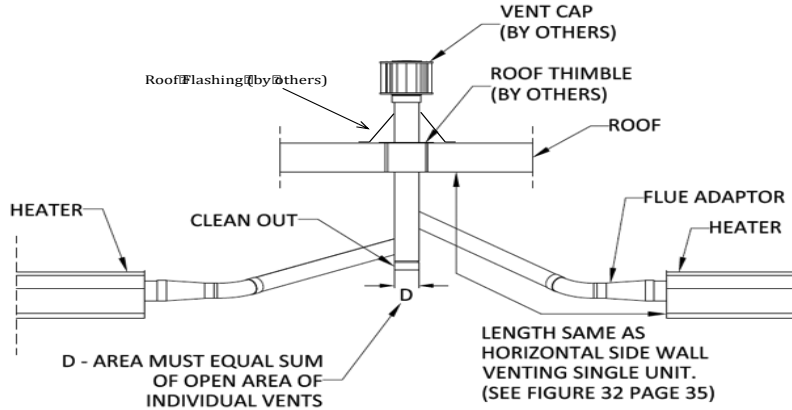
**SINGLE UNIT INTO ONE (1) "B-Vent" Chimney**

**D. (CONTINUED) ROOF EXHAUST: TWO OR MORE UNITS - USE 'B' STYLE CHIMNEY.**

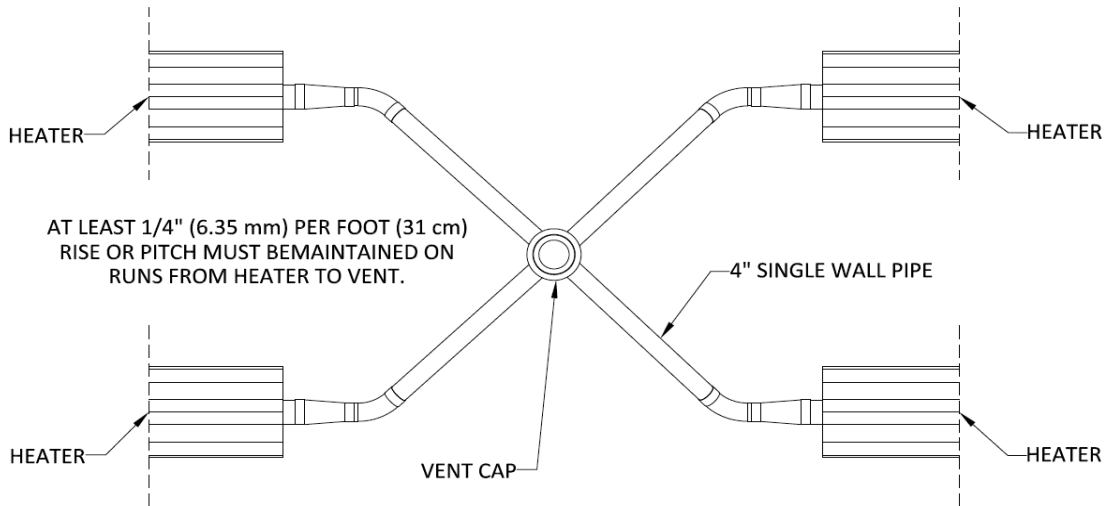
**TWO OR MORE UNITS INTO A COMMON CHIMNEY – SIDE VIEW**

NOTE: For venting of two or more heaters into one common chimney, in Canada refer to the *Natural Gas and Propane Installation Code, CSA B149.1* or latest edition and in the USA, the *National Fuel Gas Code, ANSI Z223.1/NFPA 54* or latest edition.

Units that are commonly vented must be controlled by the same line voltage thermostat.



**TWO OR MORE UNITS INTO A COMMON CHIMNEY – TOP VIEW**



## SR-SERIES

- D. **Vent terminal** must be installed at a height sufficient to prevent any blockage by snow for your area where this product is installed.
- E. **Protect building materials** from any degradation that may be caused by flue gases.

Alternative venting systems: At the choice of the installer, a S636 or UL1738 Listed Category III venting system can be used.

If condensation in venting is present then venting should be insulated or shortened. In Canada, install according to the **Natural Gas and Propane Installation Code, CSA B149.1** or latest edition and in the USA, the **National Fuel Gas Code, ANSI Z223.1/NFPA 54** or latest edition.

NOTE: A small amount of condensation may occur from the heater when it starts the heating cycle. The condensation should stop once the heater warms up. Make sure venting is sealed as previously noted.

### **VENTING LENGTHS**

**NOTE:** Maximum duct length for inputs of 40,000 to 150,000 Btu/hr s 45' (13.7m) minus any outside air intake duct length. Deduct 10' (3m) for every 90° elbow and 5' (1.52m) for every 45° elbow used.

Maximum duct length for inputs of 175,000 to 200,000 Btu/hr s 50' (15.2m) minus any outside air intake duct length or any amount of optional length of actual heater. Total length of heater including the length of intake and exhaust is not to exceed 110' (33.6 m). Shorten length of exhaust vent by 10' (3m) for every 90° elbow and 5' (1.53m) for every 45° elbow used.

#### Example A

200,000 Btu/hr input - 60' (18.3m) reflector package, no outside air (therefore no intake duct length to take into consideration) or optional length of heater.

#### Calculation:

Maximum combined length of heater, intake duct and venting: 110' (33.6m)

Heater length is 60' (18.3m) -60' (18.3m)

#### Conclusion:

Maximum exhaust vent length in a straight line (no elbows): **50' (15.2m)**



## SR-SERIES

### Example B

200,000 Btu/hr input - 80' (24.4m) reflector package, with 10' (3m) of outside air intake duct and 1 - 90° elbow in the exhaust vent.

### Calculation:

Total maximum length of heater c/w outside air & exhaust vent is:	110' (33.6m)
Total combined length of heater and exhaust in this example is:	
Heater Length:	80' (24.4m)
Exhaust length:	10' (3m)
90° Exhaust vent elbow:	<u>10' (3m)</u>
TOTAL COMBINED LENGTH:	100' (30.5m)
Amount to be deducted from total available length:	-100' (30.5m)

### Conclusion:

The Maximum length of fresh air duct in this example is: **10\* (3m)**

If condensation in exhaust venting is present then venting should be insulated or shortened. In Canada, install according to the ***Natural Gas and Propane Installation Code, CSA B149.1*** or latest edition and in the USA, the ***National Fuel Gas Code, ANSI Z223.1/NFPA 54*** or latest edition.

NOTE: For venting of two or more heaters into one common chimney, in Canada refer to the ***Natural Gas and Propane Installation Code, CSA B149.1*** or latest edition and in the USA, the ***National Fuel Gas Code, ANSIZ223.1/NFPA 54*** or latest edition.

NOTE: A small amount of condensation may occur from the heater when it starts the heating cycle. The condensation should stop once the heater warms up. Make sure venting is sealed as previously noted. The amount of condensation will increase the lower the ambient temperature is in the environment the heater is operated

**15.0 OUTDOOR APPLICATIONS**

Units can be installed in outdoor locations by ordering the following options:

Part Number	Description
5200312	Outdoor Installation Upgrade Kit for 40,000 to 100,000 BTU units
5200313	Outdoor Installation Upgrade Kit for 125,000 to 200,000 BTU units

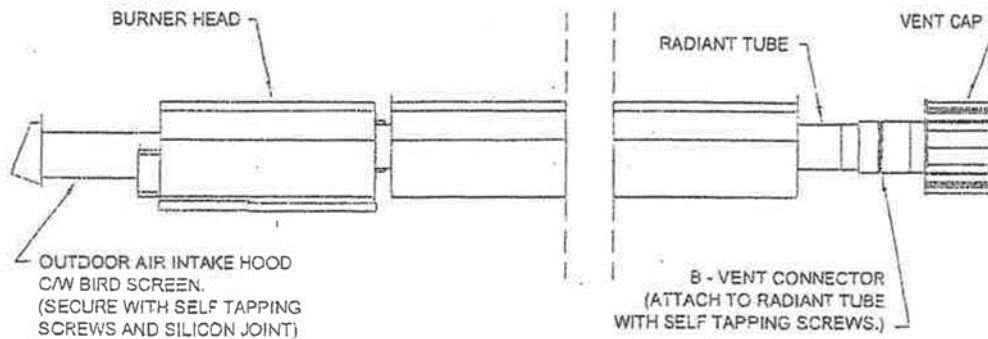
Procedure:

- Attach Outdoor Air Intake Hood to air intake collar located on end of burner box with three (3) screws. Apply silicone adhesive to seal joint.
- Attach vent cap to exhaust end of heater with two (3) screws.
- Electrical connections for outdoor locations must be made in accordance with **CSA 022.1 CANADIAN ELECTRICAL CODE PART 1** as well as/or local codes, conditions and authorities. In the USA, refer to **NATIONAL ELECTRIC CODE ANSI/NFPA 70 1987** or most current edition.

Gas connection is to be via an approved stainless steel gas flex. Refer to CAN/CGA B149-M86.1 and .2 INSTALLATION CODES and/or local codes, conditions, and authorities. In the USA, refer to ANSI/NFPA 54 NATIONAL FUEL GAS CODE or current edition.

**A. OUTDOOR INSTALLATIONS**

OUTDOOR INSTALLATIONS



**Figure 54. OUTDOOR INSTALLATIONS**

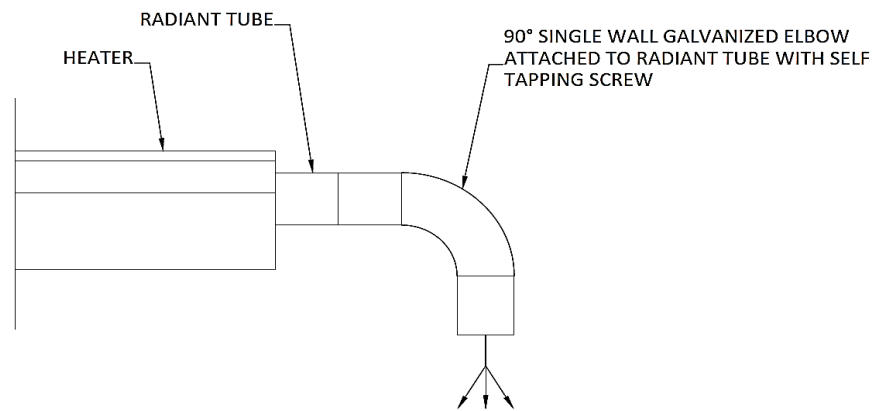
## SR-SERIES

### **16.0 UNVENTED APPLICATIONS**

Units may **ONLY** be installed in unvented installations such as brooder barns or industrial buildings if the following conditions are met:

- 1) A 4" (10.2 cm) diameter by 90° elbow must be attached to the flue, vent or exhaust end of heater and turned down pointing towards the floor. (see Figure 55)
- 2) The heater must be interlocked with an exhaust fan sized at 4 (four) CFM (114 Liters) for every 1000 Btu/hr input.
- 3) For BROODER INSTALLATION ONLY, the fan interlock is not required only if the maximum input does not exceed 30 Btu/hr per cubic foot (28.32 Liters) of volume of air in the building or the input specified by local codes or authorities.
- 4) Maintain clearance to combustibles at exhaust (vent) end as noted below.


#### **A. UNVENTED INSTALLATIONS**




**Figure 55. UNVENTED INSTALLATIONS**

## SR-SERIES

### 17.0 GAS PIPING


 **WARNING:** All gas work MUST be performed by qualified/licensed personnel with adequate training and experience in this field.

 **WARNING:** Use only the type of gas for which the heater is equipped. Using the wrong gas could create a hazard, resulting in damage, personal injury or death.

In Canada refer to the *Natural Gas and Propane Installation Code, CSA B149.1* or latest edition and in the USA, the *National Fuel Gas Code, ANSI Z223.1/NFPA 54* or latest edition.

- a) Adequate supply of gas to the heater is required for it to produce the designed amount of heat output. The gas meter must have a large enough capacity to handle the extra consumption required by the heater.
- b) The gas line must be of an adequate size to deliver the necessary amount of fuel to the unit.
- c) If there is any question concerning a) or b) call your local gas company for further assistance.
- d) Make sure that all piping is supported properly.
- e) All connections must have special sealing compound applied to them.
- f) A drip leg must be installed before the heater to prevent contaminating matter interfering with the operation of the unit.
- g) Check piping for leaks via pressure test. **Install a 1/8" (3.175 mm) N.P.T plugged tapping** immediately ahead of heater in gas supply. Use this location for test gauge. A soap and water test can be used to verify location of any possible leak.

 **WARNING:** Do not use an open flame for testing!

 **WARNING:** For high pressure testing, disconnect heater(s) and shut-off cocks and cap off pipe for test. Failure to do so will damage pressure ratings on the above mentioned equipment and cause a complete replacement of these parts.

## **WARNING:**

The heater and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing for that system at test pressures in excess of ½ psig.

The heater must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than ½ psig.

Refer to pages 65 & 66 for gas connection to heater.

**18.0 GAS CONNECTION**

**A. FLEX CONNECTOR**

**⚠ WARNING:**

**FIRE AND/OR EXPLOSION HAZARD**

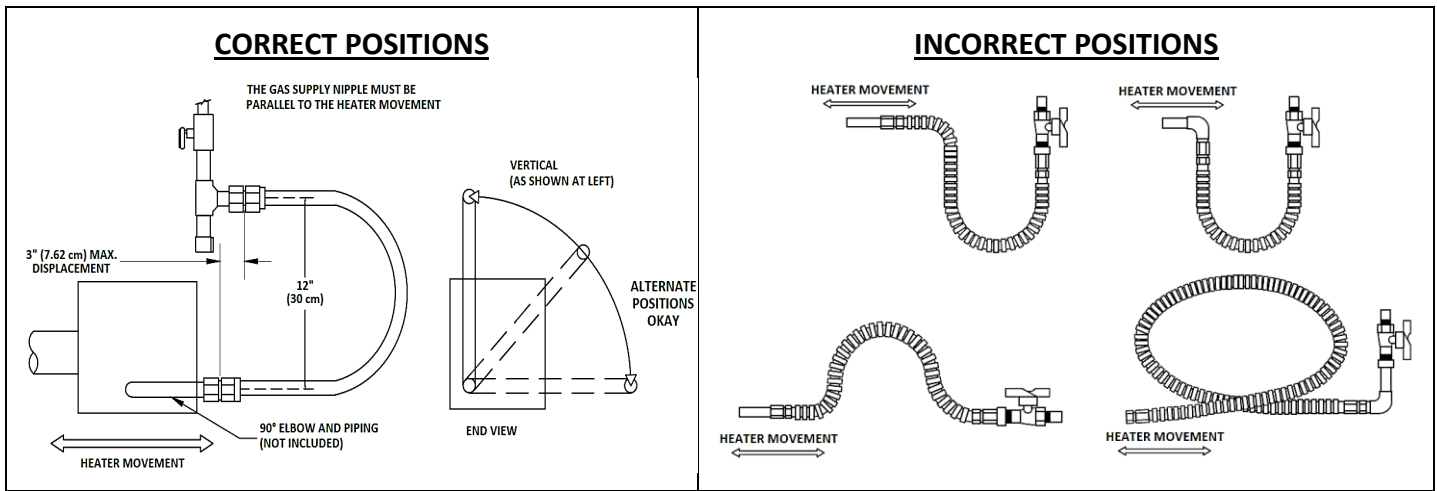
***Can cause property damage, severe injury or death.***

With each firing cycle, the radiant pipe will expand and contract which can cause the burner head to move horizontally with reference to the gas supply line.

If the gas connection is not installed in strict accordance as shown in Figure 56, a gas leak can occur resulting in an extreme unsafe condition.

**"Certified connectors are recommended to be installed as shown, (Figure 56, page 66) in one plane, and without sharp bends, kinks, or twists. The gas take off must be parallel to the burner gas inlet connection. "**

**(CSA)**



**⚠ WARNING:**

**CONNECTOR MUST BE INSTALLED AS PER THE CONFIGURATION ILLUSTRATED ABOVE.**

**USE ONLY THE 36" (90 cm) CONNECTOR OF ½" (1.27 cm) NOMINAL ID FOR LENGTHS FROM 10' (3m) TO 70' (21.3 m) AND A 36" (90 cm) CONNECTOR OF ¾" (1.905 cm) NOMINAL ID FOR LENGTHS GREATER THAN 70' (21.3m).**

**IN CANADA:** "A radiant tube-type infrared heater shall only be connected with a Type 1 hose connector that is (a) certified as being in compliance with the Standard for Elastomeric Composite Hose and Hose couplings for Conducting Propane and Natural Gas, CAN/CGA 8.1 and (b) of a length of 36 +/- 6" (90 +/-15 cm)."

**IN USA:** Flexible Metallic connectors must be certified for use on a radiant tube-type infrared heater as per the Standard for Connectors for Gas Appliances, ANSI Z21.24/CSA 6.10.

**Connector is available from manufacturer.**

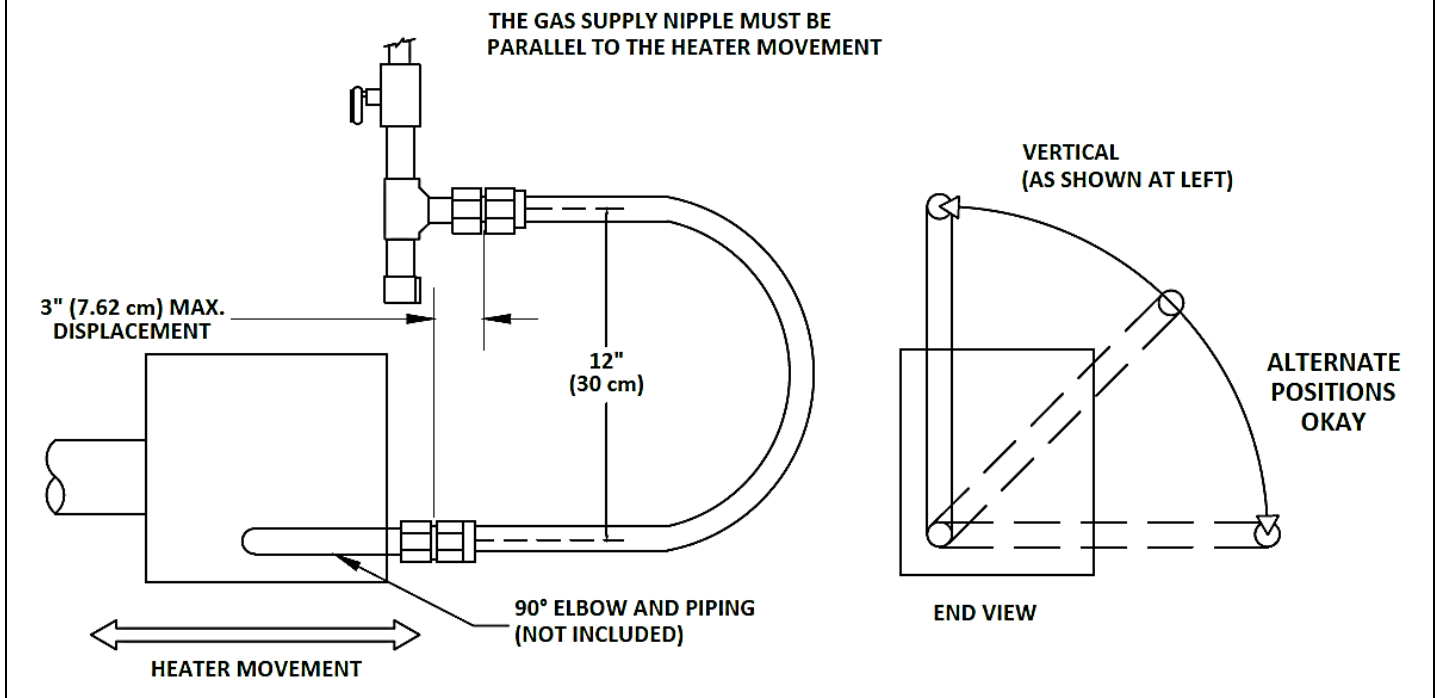


Figure 56. GAS LINE CONNECTION WITH CERTIFIED FLEXIBLE GAS CONNECTION

**19.0 GAS INPUT RATE**

**⚠ WARNING:**

Natural gas heating values can vary widely. It is the responsibility of the Installer to make sure that the input rate to the heater as installed does not exceed the nameplate rating of the heater. Failure to do so can cause radiant tube failure, resulting in injury or death.

The maximum BTUH input capacity for each model is shown on the heater's rating plate and in the specification table. This input must not be exceeded.

The input shown may be used in geographic area where the elevation is from 0 to 4,500 feet (1372m) above sea level (Canada only) in accordance with CGA 2.17-M91 (R2003), no change required to main orifice. For installations above 4,500 (1372 m) refer to **Natural Gas and Propane Installation Code, CSA B149.1** or latest edition, or contact the factory. In the USA: For installations above 2000 feet (610 m), the appliance shall be de-rated 4 percent (%) for each 1000 feet (305 m) of elevation above sea level. The Btu/hr input depends on the calorific heating value of the gas, orifice size, and manifold pressure. Orifice sizes are based upon values of 1000 Btu/hr/cu. ft (.028316 cubic meter) and 2500 Btu/hr/cu. ft. (.028316 cubic meter) for L.P.G. (propane).

**⚠ WARNING:**

**NEVER ATTEMPT TO MODIFY THIS HEATER - FIRE, EXPLOSION, OR ASPHYXIATION MAY RESULT.** If malfunction is apparent, contact qualified service agency and or gas utility for assistance.

**How to Determine Gas Input Rate:**

Where gas is metered, the input rate may be determined by the following method, Contact the gas supplier, Public Utility Company or LP (propane) gas distributor to obtain the calorific gas value of the gas being used. When checking the gas input rate, any other gas burning appliances connected to the same meter must be completely off. The heater should be allowed to operate for 5 minutes before attempting to check the gas input rate.

To check flow rate, observe the one cubic foot dial on the gas meter and determine the number of seconds required for the dial hand to complete one revolution (seconds to flow one cubic foot).

To determine the number of seconds per cubic foot that is necessary to achieve the correct input rate, use the following formula:

$$\text{GAS VALUE X 3600 / DESIRED INPUT = SECONDS NEEDED}$$

**Example: 1000 BTU gas, heater input 100,000 BTUH**

**Seconds for one cubic foot = 1000 X 3600 /100,000 = 36 seconds**

If when clocking the meter, the one cubic foot dial makes a complete revolution in less time than was calculated that it should be de-rated. If it takes more time for the meter to make one revolution than was calculated, the unit is under-fired.

The orifice size must be changed to correct an over-fired or under-fired condition. If it is determined that different orifices are needed, please contact your distributor for assistance in selecting the correct replacement.

## SR-SERIES

### 20.0 ELECTRICAL CONNECTION

Refer to rating plate on heater for electrical specifications. All electrical connections must be made by a qualified/licensed experienced electrician.

Supply grounded, adequate electricity to the three prong electrical cord attached to the burner head.

**⚠ WARNING:** DO NOT operate heater until it has been thoroughly installed, inspected and is ready for initial fire-up.

**NOTE:** All electrical connections and wiring must be made in accordance as follows:

**CANADA:** *Canadian Electrical Code, CSA C22.1* or latest edition.

**USA:** *National Electrical Code, ANSI/NFPA 70* or latest edition

In Canada: Electrical equipment and wiring shall comply with the applicable provisions of the current *Canadian Electrical Code, CAN/CSA C22.1, Part I and Part II, and CAN/CSA C22.2 No.3, Electrical features of Fuel Burning Equipment.*

If any of the original wire as supplied with the appliance must be replaced, it must be replaced with wiring material having a temperature rating of at least 105 degrees C (221 °F).

#### A. ELECTRICAL CONNECTION BURNER HEAD

### ELECTRICAL CONNECTION BURNER HEAD

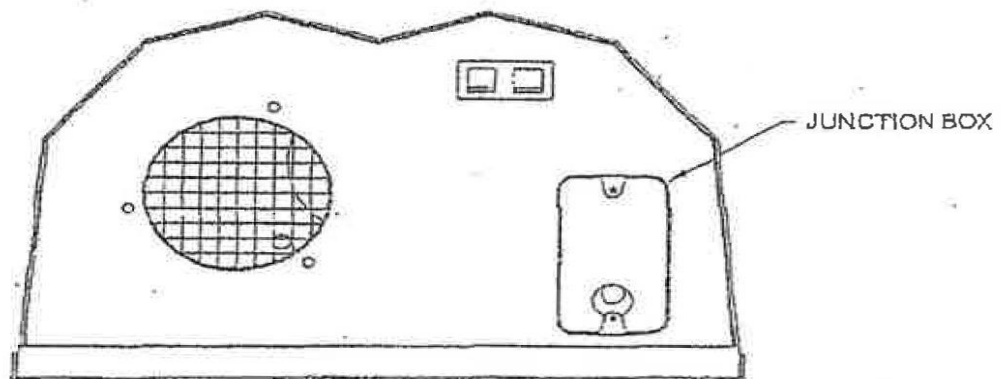


Figure 57. ELECTRICAL JUNCTION BOX



# SR-SERIES

If any of the original wire as supplied with the appliance must be replaced, it must be *replaced* with wiring material having a temperature rating of at *least* 105 degrees C (221 °F).

## 21.0 WIRING DIAGRAM

### 21.1 BURNER ASSEMBLY WIRING DIAGRAM

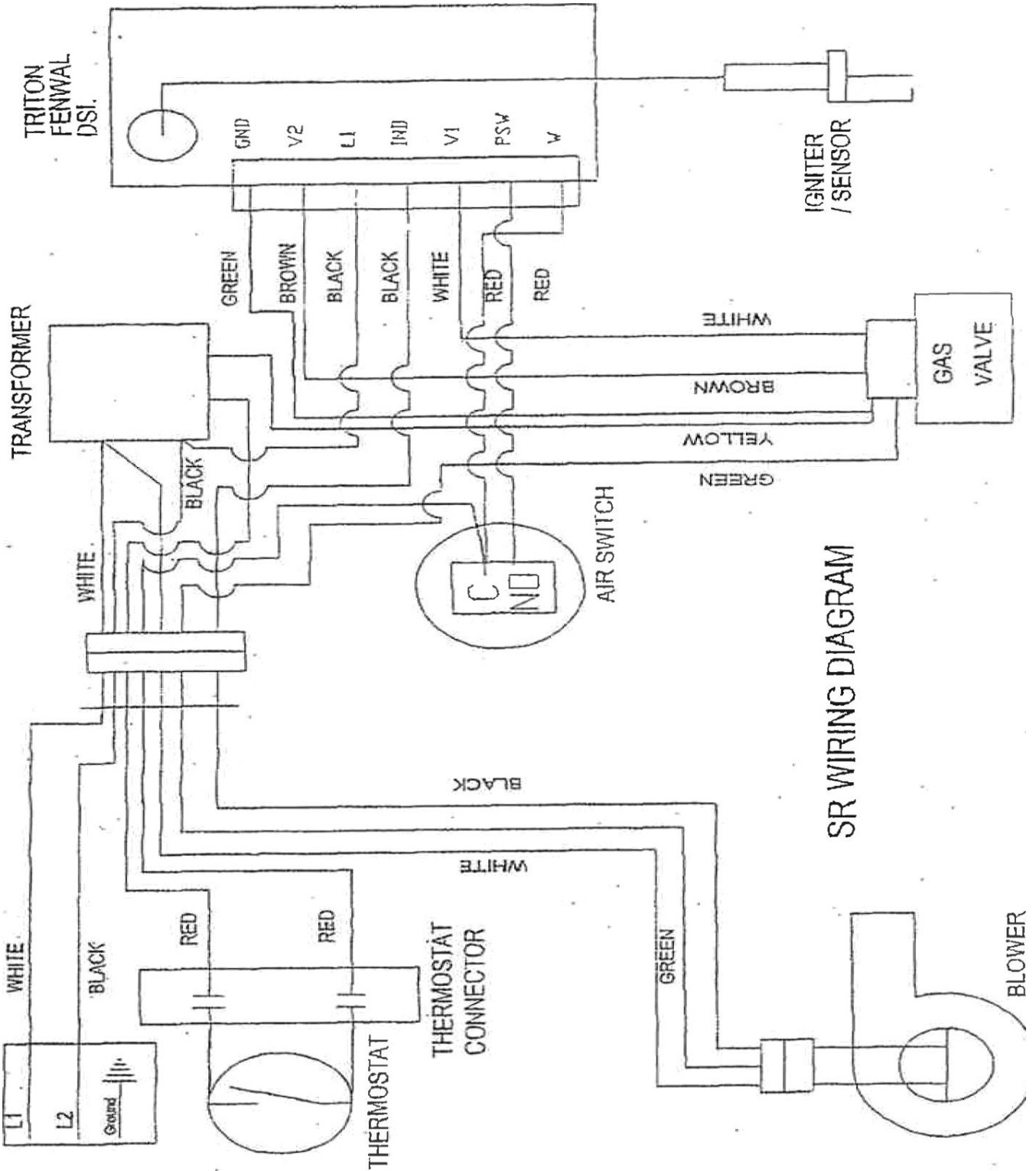


Figure 58. BURNER ASSEMBLY WIRING DIAGRAM

# SR-SERIES

If any of the original wire as supplied with the appliance must be replaced, it must be *replaced* with wiring material having a temperature rating of at *least* 105 degrees C (221 °F).

## 21.2 BURNER ASSEMBLY WIRING DIAGRAM. LADDER DIAGRAM

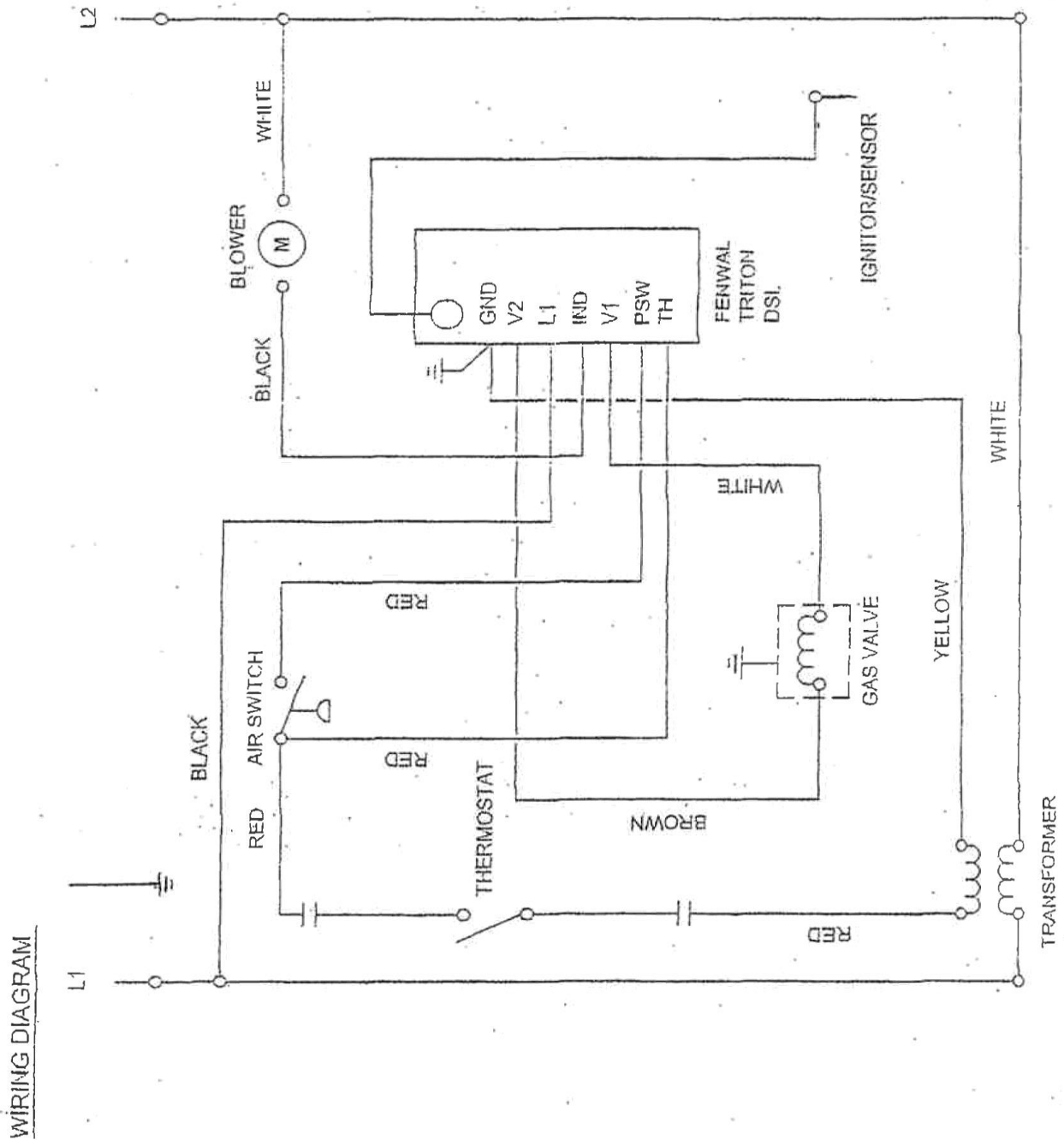


Figure 59. BURNER ASSEMBLY WIRING DIAGRAM. LADDER DIAGRAM

## SR-SERIES

### 22.0 THERMOSTATS

#### 22.1 LOW VOLTAGE (SINGLE HEATER)

(For wiring diagrams, refer to pages 69 to 72)

DO NOT use thermostats that have heat anticipators in them. The heat anticipators **will** cause the unit to cycle unnecessarily reducing its heating capacity, which can cause incomplete combustion and tile combustion by products to condensate. **A suitable thermostat can be purchased from Calcana.**

**Use (part # 3060225) for this heater.**

- a) Locate thermostat in a convenient location away from drafts.
- b) Mount thermostat to wall with hardware supplied.
- c) Attach low voltage wire to connector block on heater.
- d) Run wire from unit to thermostat securing wire to joists or studs along the way.
- e) Trim excess wire and attach to thermostat accordingly.

**NOTE: Thermostat part #3060225 can be used for line or low voltage applications. For low voltage applications, simply connect the two wire leads on the thermostat to the low voltage wiring that is attached to the low voltage thermostat connector on heater and ignore the line voltage wiring diagram on the thermostat packaging. DO NOT CONNECT LINE VOLTAGE TO THE THERMOSTAT WHEN USING THE LOW VOLTAGE OPTION TO CONTROL THE HEATER OTHERWISE SEVERE, UNWARANTABLE DAMAGE WILL RESULT.**

#### A. LOW VOLTAGE: ONE THERMOSTAT - ONE HEATER

#### LOW VOLTAGE ONE THERMOSTAT - ONE HEATER

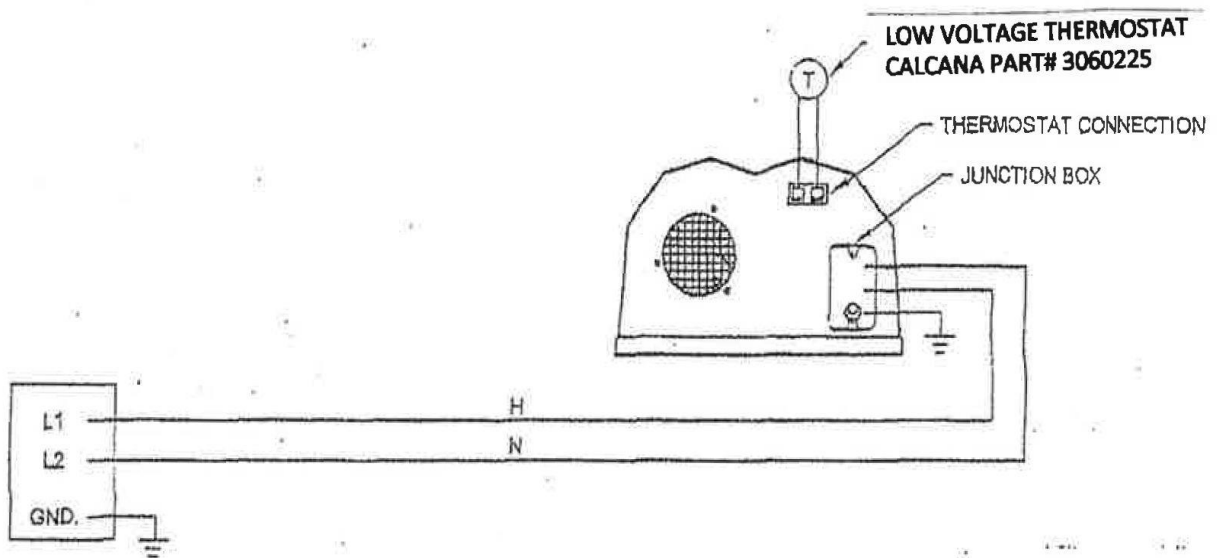


Figure 60. LOW VOLTAGE THERMOSTAT WIRING

## SR-SERIES

### 22.2 LINE VOLTAGE (TWO OR MORE HEATERS)

If two or more heaters are to be controlled by one common thermostat, proceed as follows:

(For wiring diagrams, refer to pages 69 to 72)

- a) Provide a common switched line voltage circuit to heaters controlled by a line voltage thermostat.
- b) Connect a short piece of wire between the two low voltage thermostat connections to close low voltage circuit.

Recommended line voltage thermostats are as follows:

Honeywell (or equivalent):

- T631
- T409BA
- T410A

Thermostat part (#3060225) can be purchased from Calcana.

#### B. LINE VOLTAGE: ONE THERMOSTAT – TWO OR MORE HEATERS

### LINE VOLTAGE ONE THERMOSTAT - 2 OR MORE HEATERS

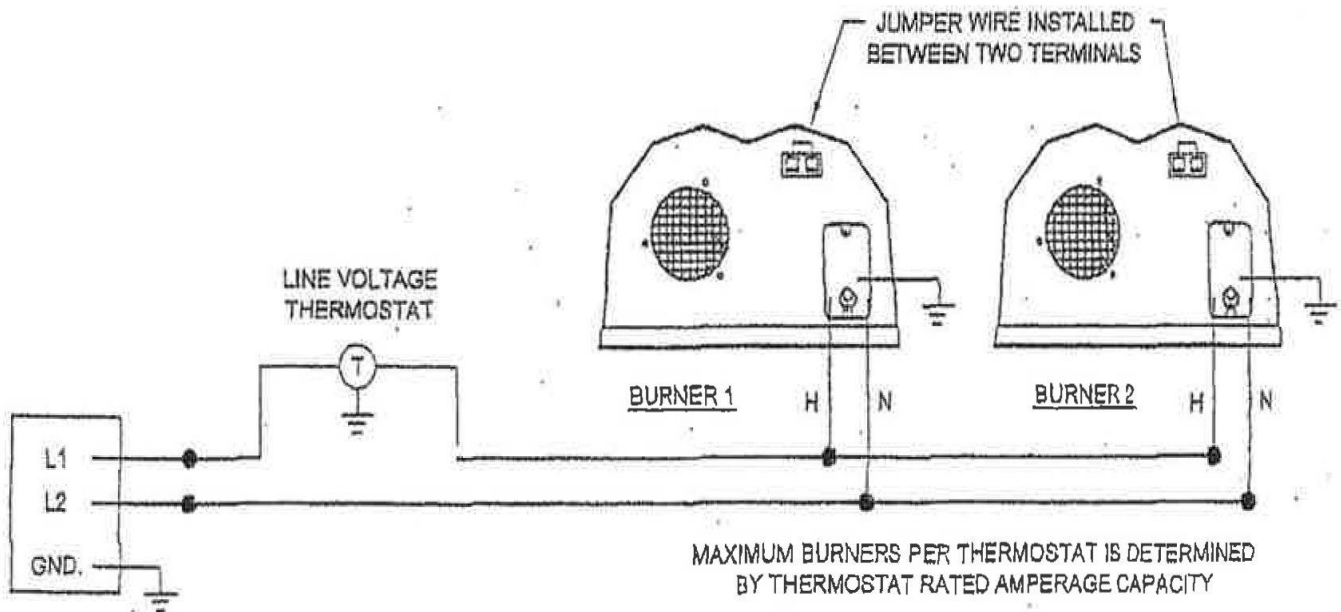


Figure 61. LINE VOLTAGE THERMOSTAT WIRING

**23.0 INITIAL START-UP**

**⚠ WARNING:**

**DO NOT ATTEMPT TO IGNITE HEATER BY HAND!!**

**IMPORTANT NOTICE:** This heater is not to be used as a construction heater to supply heat to an unfinished building during the finishing phases of Construction. This practice exposes the unit to an abnormally corrosive atmosphere from sources such as paint, varnish and adhesives, which can lead to premature radiant tube exchanger or vent failure. The practice also allows foreign materials such as sawdust or sheet rock dust to enter the combustion blower, burner, heat exchanger and vent system, resulting in shorter life of the unit.

**Use of the heater as a construction heater will void the warranty.**

**Procedure:**

- a) Make sure gas is turned on.
- b) Check for any possible blockages in combustion air intake and exhaust areas of unit.
- c) Make sure that venting material is properly fastened to the unit.
- d) Make sure all options are attached securely.
- e) Make sure electricity is on to unit.
- f) Turn thermostat up past room temperature.
- g) Check the flame port to see flame has established,
- h) If flame is not established, turn the thermostat down for 5 seconds then turn back up or interrupt electrical supply to unit for 5 seconds, and allow unit to try again.
- i) Verify that the manifold pressure (outlet pressure tap) on the gas valve is the same pressure as stated on the rating plate of the unit. Use a manometer that measures inches of water column for this procedure. If adjustment is required, remove the cap-screw from the pressure regulator housing. Adjust the white pressure regulator adjusting screw clockwise (in) to increase pressure, counterclockwise (out) to reduce pressure. Replace cap-screw. After measurement has been taken, replace pipe plug in outlet pressure tap. Check for leaks. (see pages 3, 4 & 74)
- j) Verify gas input rate. (see page 67)

**NOTE:** Oil smoke might appear off of exchanger tube after it heats up for initial firing. Do not be alarmed. The smoke is just a small amount of oil on the surface of the tube from manufacturing. If smoke is excessive, open door and 'air out' the building until smoke is removed.

**NOTE: Heater will have a higher heat output at the burner end as compared to the exhaust end. This is normal. See page 5 for details.**

**NOTE: A small amount of condensation may occur from the heater when it starts the heating cycle. The condensation will stop once the heater warms up. Make sure venting is sealed according to page 49.**

24.0 GAS VALVES

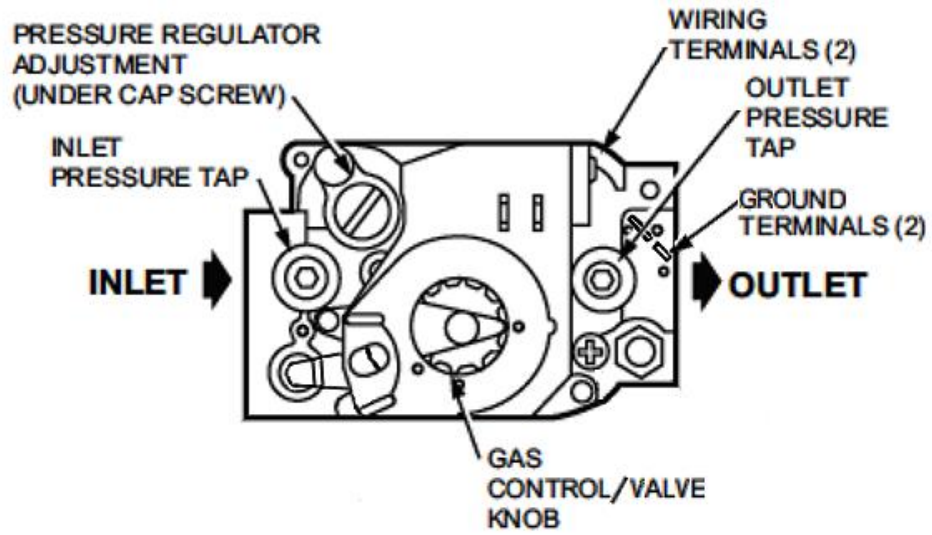


Figure 62. GAS VALVE

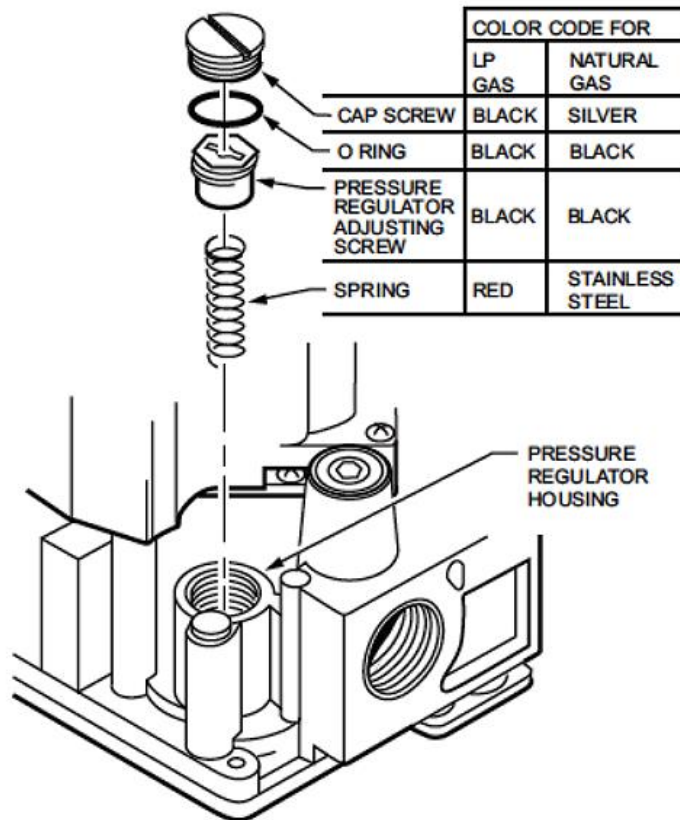


Figure 63. PRESSURE REGULATOR

**25.0 SEQUENCE OPERATION**

**25.1 DESCRIPTION OF 3-TRY DIRECT SPARK IGNITION SYSTEM:**

The TRITON 2461D is a 24 VAC Microprocessor Based Direct Spark Ignition Control designed for use in all types of heating applications such as gas furnaces, boilers, water heaters and other similar appliances: The control utilizes a microprocessor to continually and safely monitor, analyze and control the proper operation of the gas burner. Value added features such as: combustion blower control, LED diagnostics, automatic one hour reset, and flame current test pins highlight the controls benefits.

**25.2 OPERATIONS:**

**A. POWER UP/STANDBY**

- Upon applying power (24 volts) to 24 VAC/R, the control will reset, perform a self-check routine, initiate fulltime flame sensing, flash the diagnostic LED for up to four seconds, and enter the thermostat scan state.

**B. HEAT MODE**

- When a call for heat is received from the thermostat supplying 24 volts to TH/W, the control will check the pressure switch for normally open contacts. The combustion blower is then energized and once the pressure switch contacts close, a pre-purge delay begins. Following the pre-purge period the gas valve is energized and sparks commence for the trial for ignition period.
- When flame is detected during the trial for ignition, sparks are shut off immediately and the gas valve and combustion blower remains energized. The thermostat, pressure switch, and main burner flame are constantly monitored to assure the system continues to operate properly. When the thermostat is satisfied and the demand for heat ends, the main valve is de-energized immediately, the control senses the loss of flame signal and de-energizes the combustion blower.

**C. FLAME FAILURE - RE-IGNITION**

- If the established flame signal is lost while the burner is operating, the control will respond within 0.8 seconds. The HV spark will be energized for a trial for ignition period in an attempt to re-light the burner. If the burner does not light, the control will make two more attempts to re-light the burner. If the burner does not re-light, the control will go into lockout and flash the LED 3-times. If flame is re-established, normal operation resumes.

## SR-SERIES

### 26.0 TROUBLESHOOTING

#### A. NO POWER TO HEATER

**CAUTION:** Prior to performing any service or maintenance work on the unit:

- a) disconnect the electrical supply
- b) shut off gas to supply unit
- c) make sure unit has cooled down before opening service panel

 **Warning:**

Only allow qualified, licensed, service people trained to service gas fired heating equipment to perform any repairs on this unit. All replacement parts **MUST** originate from the manufacturer of this heater in order not to void CGA/AGA certification.

Safety devices are not allowed to be rendered inoperative and left unattended. Failure to do any of the above can cause property damage, injury or death.

#### B. INITIAL ELECTRICAL CHECKS

- a) Make sure thermostat is calling for heat.
- b) Make sure electrical connection is secure.
- c) Check electrical supply for blown fuse or breaker.
- d) Test for power to burner head.
- e) Check wiring to components. Refer to wiring diagrams on pages 69 to 72. Also refer to legend below; this legend is located on the control module.

#### TERMINAL DESIGNATIONS

S1	NOT USED
GND	SYSTEM GROUND (GREEN)
V2	VALVE GROUND (BROWN)
R	NOT USED
L1	120/240 VAC INPUT (HOT) (BLACK)
IND	INDUCER FAX OUTPUT (BLACK)
V1	VALVE POWER (WHITE)
PSW	PRESSURE SWITCH INPUT (RED)
W	THERMOSTAT INPUT (RED)

**CAUTION:** Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. A functional checkout of a replacement control is recommended. Verify proper operation after servicing.

*Attention. Au moment de l'entretien commandes, étiquetez tous les fils avant le débranchement. D'erreurs de câblage peuvent entraîner un fonctionnement inadéquat et dangereux. S'assurer que l'appareil fonctionne adéquatement une fois l'entretien terminé.*



## SR-SERIES

### C. INITIAL GAS CHECKS

- a) Make sure manual valve is turned on.
- b) Make sure gas valve knob is turned on.
- c) Check for gas supply and proper pressure to valve.
- d) Check wires and make sure that they and their connections are in good condition.
- e) Check for power to valve.
- f) If no power, check control board. (see page 78)

### D. ELECTRICITY AND GAS TO HEATER, BUT STILL INOPERATIVE

If after confirming that adequate gas and electricity are present and unit still does not operate, review the symptoms below. After the symptom has been identified, refer to the corresponding cause/cure, Review CHECK CONTROL BOARD section, and finalize troubleshooting procedure.

Symptom	Cause/Cure
1. Dead	A) Miswired B) Transformer bad C) Fuse/circuit breaker bad D) Bad control (check LED for steady on)
2. Thermostat on - No Blower Output	A) Miswired (check PSW terminal voltage) B) Bad thermostat - Do voltage @terminal W C) Bad control (check LED for steady on)
3. Pressure Switch input okay but no Trial for Ignition after purge delay	A) Miswired (check PSW terminal voltage) B) Flame sense problem (existing flame-check LED-2 Flashes) C) Bad control (check voltage between L1 & IND)
4. Valve on, no spark	A) Shorted electrode B) Open HV cable C) Bad Control
5. Spark on, no valve	A) Valve coil open B) Open valve wire C) Bad control (check voltage between V1 &V2)
6, Flame okay during TFI, no flame sense (after TFI)	A) Bad electrode B) Bad S1 or HV wire C) Poor ground at burner D) Poor flame (check flame current)

NOTE: TFI = Trial For Ignition

**E. CHECK CONTROL BOARD**

Open access door and view the diagnostic red LED, located on the grey direct spark ignition module.

**F. FAULT CONDITIONS**

<b>Error Mode</b>	<b>LED Indication</b>
Internal Control Failure	Steady On
Air Flow Fault	1 flash
Flame with No Call for Heat	2 flashes
Ignition Lock Out	3 flashes

The LED will flash on for ¼ second, then off for ¼ second during a fault condition. The pause between fault codes is 3-seconds.

**G. INTERNAL CONTROL FAULT**

- If power supply cycles are fluctuating beyond 50/60 cycles such as with an un-stabilized power supply from a generator, unit will not operate. If the circuit board is faulty the unit will not operate.

**H. AIRFLOW FAULT - LOCK OUT (COMBUSTION AIR FLOW PROBLEMS)**

- Combustion airflow is continually monitored during an ignition sequence by the airflow switch (PSW). If during the initial call for heat the pressure switch contacts are in the closed position for 30-seconds without an output to the Combustion Blower, an airflow fault will be declared and the control will remain in this mode with the combustion blower off.
- If the airflow switch remains open for more than 30-seconds after the combustion blower output (L1 & IND) is energized, an airflow fault will be declared and the control will stay in this mode with the combustion blower off.
- If the airflow signal is lost while the burner is firing, the control will immediately de-energize the gas valve and the combustion blower will remain on. If the call for heat remains, the control will wait for proper airflow to return. If proper airflow air is not detected after 30-seconds an airflow fault signal will be declared.

Proceed as follows to verify reason for airflow lockout:

1. Check air intake and exhaust for blockage. Remove any blockage.
2. Check combustion air blower for dirt. Clean and/or replace as necessary.
3. If there is no blockage, disconnect fresh air intake at burner head (if equipped). Retry for ignition. If unit does ignite, check to verify that duct size to unit is of proper size and length and that there is no blockage. Replace ducting as necessary to reduce amount of air restriction to unit.
4. If unit still does not ignite, disconnect exhaust vent at heater and retry for ignition. If unit does ignite, check to verify that vent size to unit is of proper size and length and that there is no blockage. (Refer to "VENTING" on pages 55 to **Error! Bookmark not defined.**). Replace venting as necessary to reduce amount of restriction.
5. If after 2, 3 and 4 are performed and unit still does not operate, replace air switch.
6. Reconnect venting and ducting, verify operation of unit.

## SR-SERIES

### I. FLAME WITH NO CALL FOR HEAT (FLAME FAULT)

- If at any time the main valve fails to close completely and maintains a flame, the full time flame sense circuit will detect it and energize the combustion blower. Should the main valve later close off completely removing the flame signal, the combustion blower will power off.

### J. IGNITION LOCK OUT (FAILURE TO LIGHT)

- FENWAL DSI Module will attempt three ignition trials before going into lockout. The valve relay will be de-energized immediately, and the combustion blower will be turned off.
- Recovery from lockout requires a manual reset by either resetting the thermostat or removing 24 volts, or removing the electrical power supply for a period of 5-seconds.
- If the thermostat is still calling for heat after one hour, the control will automatically reset and attempt to ignite the burner again.

If unit still does not operate, proceed as follows:

- Check flame sensor current. (see below)
- Check electrode for cracks and proper location, (see page 80)

### K. FLAME SENSOR CURRENT CHECK

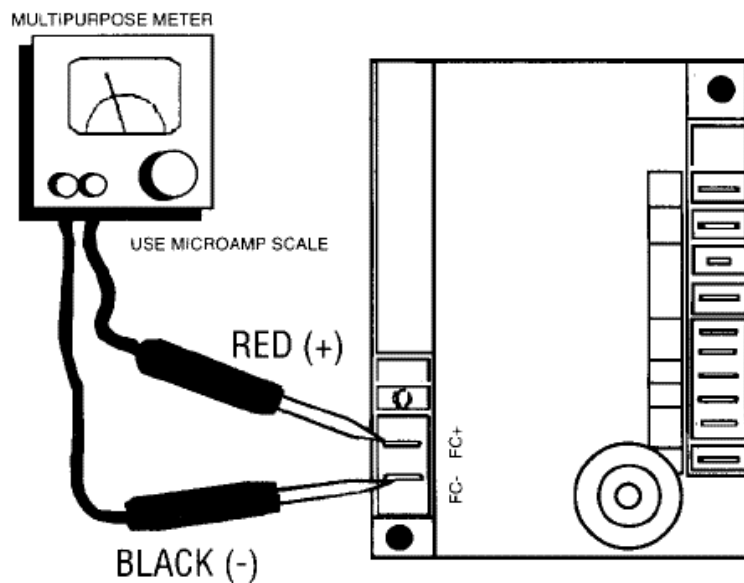


Figure 64. FLAME SENSOR CURRENT CHECK

### SERVICE CHECKS

Flame current is the current which passes through the flame from the sensor to the ground. The minimum flame current necessary to keep the system from lockout is .7 micro amps. To measure flame current, connect an analog DC micro ammeter to the FC- FC terminals per figure. Meter should read .7 uA or higher. If meter reads below "0" on scale, meter leads are reversed. Disconnect power and reconnect meter leads for proper polarity.

## SR-SERIES

### L. PROPER ELECTRODE LOCATION

Proper location of the electrode assembly is important for optimum system performance. The electrode assembly should be located so that the tips are inside the flame envelope about  $\frac{3}{4}$ " (1.9 cm) to 1" (2.54 cm).

#### CAUTIONS:

- 1) Ceramic insulators should not be in or close to the flame
- 2) Electrode assemblies should not be adjusted or disassembled, Electrodes should have a gap spacing of .125" (3.175 mm). If this spacing is not correct, the assembly must be replaced. Electrodes are NOT field adjustable.
- 3) Exceeding the temperature limits can cause nuisance lockouts and premature electrode failure.

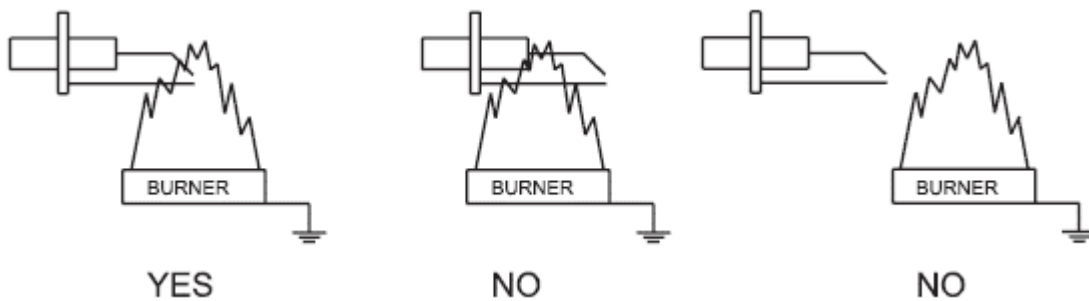


Figure 65. PROPER ELECTRODE LOCATION

**27.0 MAINTENANCE**

Maintenance is required once a year. Annually inspect your heater, before the heating season starts. If unit is in a dusty environment, maintenance will be required more often. If dust conditions are extreme, monthly or weekly maintenance may be required.

** WARNING:**

Disconnect electrical supply to heater and shutoff gas prior to inspection.

- A. Check combustion air intake for blockage.
- B. Check vent terminal and/or roof terminal for blockage. Remove as necessary for cleanliness and reinstall. Check for cracks or holes. Replace as necessary.
- C. Open service door.
- D. Check blower motor and scroll for dirt and/or locked rotor. Remove dirt with compressed air or vacuum cleaner. If rotor is locked, replace assembly.
- E. If burner needs cleaning, remove burner head from tube and use a combination of compressed air and/or a wire brush to remove any deposits or debris that may be on the actual burner.
- F. Make sure all wiring is intact and in good condition.
- G. Check electrode for proper gap and cleanliness. Clean or replace as necessary.
- H. Check ignition system for spark. Replace as necessary.
- I. Check exchanger tube for holes and/or cracks, dirt and/or deposits. Clean and/or replace as necessary.
- J. Wash any dirt or just off of the unit with a soap and water solution.
- K. Check any gas connections that were disconnected during maintenance for leaks. Use soap and water solution. Do not use flame.
- L. Test fire unit by setting thermostat above room temperature. Make sure unit is operating quietly and efficiently.
- M. Periodically visually check burner through view port to confirm proper operation.
- N. Check all couplers for tightness and/or leakage.

** WARNING:**

Only allow qualified/licensed service people, trained to service gas fired heating equipment, to perform any repairs on this unit. All replacement parts MUST originate from the manufacturer of this heater in order not to void CGA/AGA certification. Safety devices are not allowed to be rendered inoperative.

** 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.

The heater area must be kept clear and free from combustible materials, gasoline and other flammable vapors and liquids. The flow of combustion and ventilation air to heater must not be obstructed.

**SR-SERIES**

**28.0 PARTS:**

**28.1 BURNER HEAD AND RELATED PARTS**

(Refer to pages 84 & 84 for part number & description)

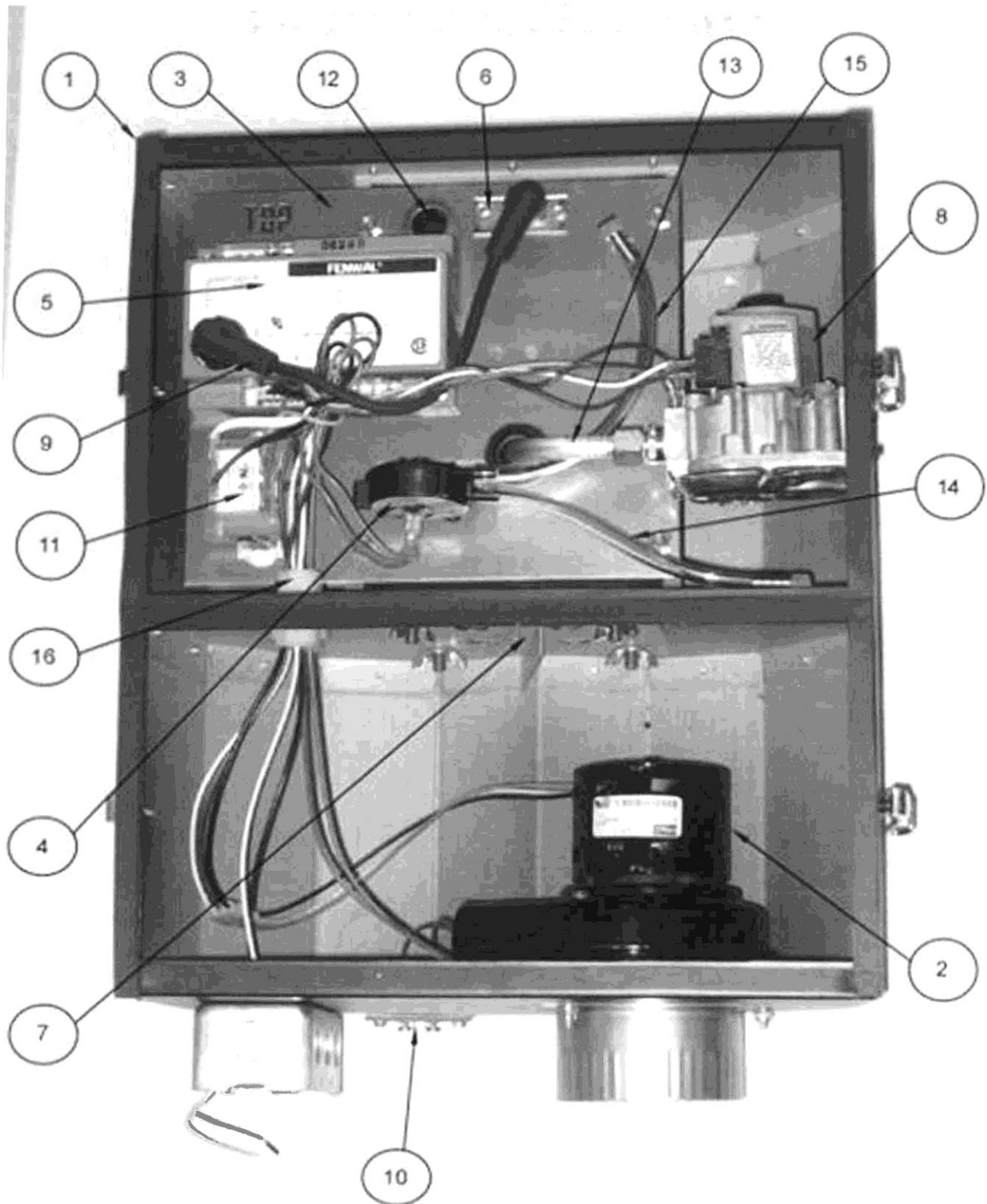
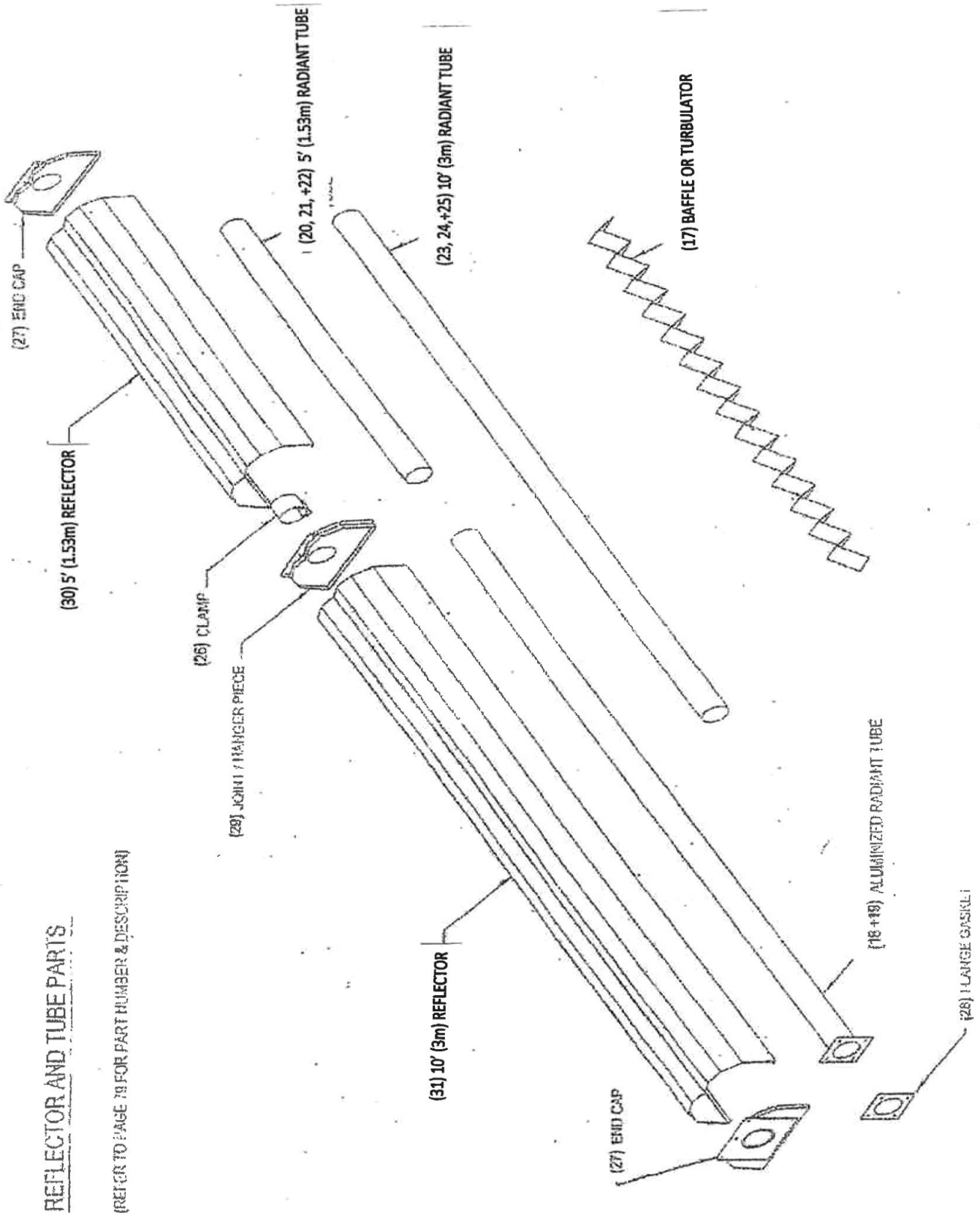


Figure 66. BURNER HEAD PARTS

28.2 REFLECTOR AND TUBE PARTS

(Refer to page 85 for part number & description)



REFLECTOR AND TUBE PARTS

(REFER TO PAGE 79 FOR PART NUMBER & DESCRIPTION)

Figure 67. REFLECTOR AND TUBE PARTS

## SR-SERIES

### 28.3 PARTS LIST:

#### A. REPLACEMENT BURNER HEADS

(See page 82 for visual details)

<b>STANDARD BURNER HEAD ONLY – NATURAL GAS</b>				
<b>ITEM</b>	<b>PIN</b>	<b>MODEL</b>	<b>FUEL</b>	<b>WEIGHT</b>
1	5120181	SR-40	NG	36 LBS (16.4 KG)
1	5120183	SR-50	NG	36 LBS (16.4 KG)
1	5120185	SR-60	NG	36 LBS (16.4 KG)
1	5120187	SR-75	NG	36 LBS (16.4 KG)
1	5120189	SR-80	NG	36 LBS (16.4 KG)
1	5120191	SR-100	NG	36 LBS (16.4 KG)
1	5120193	SR-125	NG	36 LBS (16.4 KG)
1	5120195	SR-150	NG	36 LBS (16.4 KG)
1	5120197	SR-175	NG	36 LBS (16.4 KG)
1	5120199	SR-200	NG	36 LBS (16.4 KG)

<b>STANDARD BURNER HEAD ONLY – L.P.G (Propane)</b>				
<b>ITEM</b>	<b>PIN</b>	<b>MODEL</b>	<b>FUEL</b>	<b>WEIGHT</b>
1	5120182	SR-40	LPG	36 LBS (16.4 KG)
1	5120184	SR-50	LPG	36 LBS (16.4 KG)
1	5120186	SR-60	LPG	36 LBS (16.4 KG)
1	5120188	SR-75	LPG	36 LBS (16.4 KG)
1	5120190	SR-80	LPG	36 LBS (16.4 KG)
1	5120192	SR-100	LPG	36 LBS (16.4 KG)
1	5120194	SR-125	LPG	36 LBS (16.4 KG)
1	5120196	SR-150	LPG	36 LBS (16.4 KG)
1	5120198	SR-175	LPG	36 LBS (16.4 KG)
1	5120200	SR-200	LPG	36 LBS (16.4 KG)



## SR-SERIES

### B. BURNER HEAD COMPONENTS

(See page 82 for visual details)

<b>BURNER HEAD COMPONENTS:</b>			
<b>ITEM</b>	<b>PIN</b>	<b>DESCRIPTION</b>	<b>WEIGHT</b>
2	5010436	Blower Motor Assembly (SR-40 to SR-100 Series)	**
2	3010002	Blower Motor Assembly (SR-125 to SR-200 Series)	**
4	3070420	Air Switch (SR-40 Series)	**
4	3070423	Air Switch (SR-50, 60, 75 & 80 Series)	**
4	3070424	Air Switch (SR-100 Series)	**
4	3070425	Air Switch (SR-125 Series)	**
4	3070426	Air Switch (3R-150 Series)	**
4	3070428	Air Switch (SR-175 & 200 Series)	**
6	3030613	Direct Spark Ignition Module (Fenwal)	**
6	3030376	Electrode Assembly (SR-40 to SR-100 Series)	**
6	3030377	Electrode Assembly (SR-125 to SR-200 Series)	**
7	5010379	Air Shutter with dam SR 40 NG #6	**
7	3010090	Air Shutter with dam SR 40 LPG	**
7	5010381	Air Shutter with dam SR 50, 60 & 100 #78	**
7	5010382	Air Shutter with dam SR 75,80 & 150 #10	**
7	5010383	Air Shutter with dam SR 125 #12	**
8	3020005	Gas Valve LP (SR-40 to SR-200 Series)	**
8	3020003	Gas Valve NG (SR-40 to SR-200 Series)	**
9	3030026	High Voltage Ignition Wire	**
10	3070025	Thermostat Connector	**
11	3070016	Transformer	**
12	3110022	View Port - Mica Window assembly	**
13	3020740	Fuel Line SR 40-150	**
13	3020743	Fuel Line SR 175-200	**
15	5040371	Vinyl Hose for Differential Air Proving Switch	**
16	3070307	SR Wire Harness	**
	5110624	Lid Small	**
	5110625	Lid Large	**
	5110627	Rating Plate	**

## SR-SERIES

### C. TUBE COMPONENTS

(See page 82 for visual details)

<b>TUBE COMPONENTS:</b>			
<b>ITEM</b>	<b>PIN</b>	<b>DESCRIPTION</b>	<b>WEIGHT</b>
<b>17</b>	5170743	Baffle/Turbulator	5 lbs (2.3 kg)
<b>18</b>	5170163	Flanged Tube 4" (10.2 cm) x 124" (315 cm)	30 lbs (13.7 kg)
<b>20</b>	5170171	Standard Tube 4" (10.2cm) x 5' (1.53m)	15 lbs (6.8 kg)
<b>21</b>	5170255	Aluminized Tube 4" (10.2cm) x 5' (1.53m)	15 lbs (6.8 kg)
<b>23</b>	3170169	Standard Tube 4" (10.2cm) x 10' (3m)	30 lbs (13.7 kg)
<b>24</b>	3180245	Aluminized Tube 4" (10.2cm) x 10' (3m)	30 lbs (13.7 kg)
<b>26</b>	3170201	Tube Clamp	**

### D. REFLECTOR COMPONENTS

(See page 82 for visual details)

<b>REFLECTOR COMPONENTS:</b>			
<b>ITEM</b>	<b>PIN</b>	<b>DESCRIPTION</b>	<b>WEIGHT</b>
<b>27</b>	5190139	End Cap	**
<b>28</b>	5080319	Flange Gasket	**
<b>29</b>	5190137	Hanger/Joint Piece	**
<b>30</b>	5180163	Reflector 5' (1.52m)	5 lbs (2.3 kg)
<b>31</b>	5180164	Reflector 10' (3m)	10 lbs (4.6 kg)
<b>n/a</b>	5180240	Side Reflector 10' (3m)	8 lbs (3.7 kg)

\*\* UNDER 3 lbs (1.4 kg)

**29.0 WARRANTY**

**Non-Transferable / Limited Warranty - Calcana Heaters**

Calcana Industries Ltd. ("the Manufacturer") warrants to the original owner at the original installation site that the heater manufactured by the manufacturer ("the Product") will be free from defects in material and workmanship for one (1) year from date of shipment from the factory. Calcana further warrants that the heat exchanger, reflectors, brackets, burner and burner box will be free from defects in material and workmanship for three (3) years from the date of shipment from the factory. If upon examination by the Manufacturer the Product is shown to have a defect in the 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. In no event shall the customer be entitled to consequential, indirect or special damages of any nature for defective merchandise, and in no instance may damages include loss of profit. Calcana reserves the right to inspect the system involved in any claim against the warranty. The warranty is null and void if any of the components installed are not original Calcana parts or the installation does not conform to the supplied installation manual.

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 reinstallations 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
- e) If Product is not paid for in a timely manner and in accordance with payment terms
- f) If Product or any part of it is damaged by any act of nature including, but not limited to; hurricanes, gales, tornadoes, wind snow, sleet, hail, rain, flood, fire or any other similar or dissimilar condition, or by normal wear and tear, which included marks and/or dents to the reflector caused by improper transportation or installation.
- g) If Product or any part of it is damaged by vandalism, improper use, accumulation of weight or heavy loads on the heater.
- h) If Product is damaged due to lack of cleaning or maintenance, whether routine or otherwise.

The 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 the Limited Warranty shall not extend the duration of the warranty with respect to such repaired or replaced part beyond the stated warranty period.

All labor during the warranty period is the responsibility of the installing person or contractor.

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 and fitness for a particular purpose, are hereby disclaimed and excluded from this limited warranty. The warranty cannot be transferred or assigned by the Customer. All disputes arising from this warranty are to be governed by the laws of the Province of Alberta and any action to enforce this warranty must be initiated in the Province of Alberta. 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.

USA  
**Calcana USA Ltd.**  
30201 Country Road 49  
Loxley, AL. 36551  
Tel: 251-964-4400  
Fax: 251-964-4404

**30.0 FUEL CONVERSION**

**30.1 CONVERSION KIT FOR HONEYWELL SINGLE INPUT GAS VALVE**

**USE WITH HONEY WELL PART #393691 LP Gas AND #394588 Natural Gas - Conversion Kits used in:**

**Models SR, SLR and CAL Series Heaters.**

The conversion shall be carried out in accordance with the requirements of the provincial/state authorities having jurisdiction and in accordance with the requirements as follows:

CANADA: *Natural Gas and Propane Installation Code, CSA B149.1* or latest edition.

USA: *National Fuel Gas Code, ANSI Z223.1/NFPA 54*, or latest edition.

**⚠ WARNING:** This conversion kit shall be installed by a qualified service agency in accordance with the manufacturer's instructions and all applicable codes and requirements of the authority having jurisdiction. If the information in these instructions is not followed exactly, a fire, explosion or production of carbon monoxide may result causing property damage, personal injury or loss of life. The qualified service agency is responsible for the proper installation of this kit. The installation is not proper and complete until the operation of the converted appliance is checked as specified in the manufacturer's instructions supplied with the kit. The installer of this conversion kit assumes full responsibility and liability for the installation of this conversion kit. If you do not understand these instructions or the information contained in the installation manual, **DO NOT INSTALL THIS CONVERSION KIT OR OPERATE THE UNIT ASSOCIATED WITH THIS GAS CONVERSION.**

**DIRECTIONS:**

- 1) Caution the gas supply shall be shut off prior to disconnecting the electrical power, before proceeding with the conversion.
- 2) Turn off electrical supply to heater
- 3) Disconnect gas supply line to heater
- 4) Disconnect electrical supply to heater
- 5) Disconnect thermostat control wire from heater
- 6) Remove burner head from reflector assembly being careful to support burner head in such a fashion that it will not fall from the location overhead where it was installed. Use two people if necessary.
- 7) Remove service door that provides access to gas valve location
- 8) Remove igniter assembly
- 9) Use deep wall socket to remove orifice spud.
- 10) Install correct orifice for the fuel that you are converting to. **CHECK TWICE TO MAKE SURE.** Reference chart below:
- 11) Locate gas valve. Identify manufacturer of gas valve. Make sure you are using the correct kit as manufactured for the gas valve that is installed in heater and following instructions as detailed on the enclosed White Rodgers or Honey Well instruction sheets for the associated Gas Conversion Kits. Make sure you have the correct conversion spring for the fuel type you are converting to.
- 12) Verify Manifold pressure using a manometer. Adjust pressure if necessary. (see valve instructions for details)  
Manifold Pressure is: NG: 3.5" w.c. for LPG: 10.5" w.c. Leak Test all Fittings Prior to Operation
- 13) When the conversion is complete, fill out the information as required on the enclosed conversion label.
- 14) Attach completed label on or near the rating plate

# SR-SERIES

## Conversion Chart With Part Numbers and Corresponding Orifice Sizes

MODEL	PIN	FROM	TO	ORIFICE
SR/SLR40	3025000	NG	LPG	#51
SR/SLR 50	3025003	NG	LPG	1.95mm
SR/SLR 60	3025004	NG	LPG	#45
SR/SLR 75	3025002	NG	LPG	#42
SR/SLR 50	3025005	NG	LPG	2.4mm
SR/SLR 100	3025006	NG	LPG	#36
SR/SLR 125	3025007	NG	LPG	#31
SR/SLR 150	3025008	NG	LPG	#3.4mm
SR/SLR 175	3025009	NG	LPG	#25
SR/SLR 200	3025010	NG	LPG	#20
CAL-40	3025000	NG	LPG	#51
CAL-50	3025001	NG	LPG	#48
CAL-75	3025002	NG	LPG	#42

MODEL	PIN	FROM	TO	ORIFICE
SR/SLR 40	3025014	LP	NG	#31
SR/SLR 50	3025012	LP	NG	3.3mm
SR/SLR 60	3025015	LP	NG	#28
SR/SLR 75	3025013	LP	NG	#21
SR/SLR 80	3025016	LP	NG	#19
SR/SLR 100	3025017	LP	NG	#13
SR/SLR 125	3025018	LP	NG	5.3 mm
SR/SLR 150	3025019	LP	NG	6.1mm
SR/SLR 175	3025020	LP	NG	#H
SR/SLR 200	3025021	LP	NG	7.3 mm
CAL-40	3025011	LP	NG	#32
CAL-50	3025012	LP	NG	3.3mm
CAL-75	3025013	LP	NG	#21



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 Loxley, AL. 36551  
 Tel: 251-964-4400  
 Fax: 251-964-4404

**NOTE:** CONVERSION KITS COME WITH GAS VALVE CONVERSION SPRING, PREDRILLED ORIFICE AND CONVERSION LABEL.  
 CONVERSION KITS ARE FOR UNITS RATED FOR THE FOLLOWING LOCATIONS AND ELEVATIONS: CANADA: 0 – 4500 FT (1372 m)  
 FOR INSTALLATIONS ABOVE THE DESIGNATED ELEVATIONS, CONTACT FACTORY. USA: 0 – 2000 FT (610 m)

393691 LP GAS AND 394588 NATURAL GAS CONVERSION KITS

- a. For one  $\text{m}^3$  per revolution gas meter dial, use Table 1 directly.
- b. For  $1/2 \text{ m}^3$  per revolution gas meter dial:
  - (1) Determine time for two dial revolutions
  - (2) Use Table 1 directly.
- c. For two  $\text{m}^3$  per revolution gas meter dial:
  - (1) Determine time for one complete dial revolution.
  - (2) Divide time by two.
  - (3) Use Table 1 directly.

Table 1. Converting Gas Flow Rate.

Time (sec)	Flow (cfh)	Flow ( $\text{m}^3/\text{hr}$ )
40	80	2.55
41	86	2.50
42	96	2.44
43	94	2.36
44	92	2.32
45	80	2.27
46	78	2.21
47	77	2.16
48	75	2.12
49	73	2.07
50	72	2.04
51	71	2.01
52	69	1.95
53	68	1.93
54	67	1.90
55	65	1.84
56	64	1.81
57	63	1.78
58	62	1.76
59	61	1.73
60	60	1.70
62	58	1.64
64	56	1.58
66	54	1.53
68	53	1.50

CHECKOUT

- Make certain the primary air supply to the main burner is properly adjusted for complete combustion at final pressure regulator setting. Main burner must light reliably under all conditions.
- Piece system in operation and observe through at least one complete cycle to assure all controls are operating properly.
- If manometer (pressure gauge) method is used, perform Gas Leak Test at outlet pressure tap plug.
- Apply the conversion label in the conversion kit to the gas control, heating appliance, and any other controls to allow conversion to a new type of gas.

# Honeywell

## 393691 LP Gas and 394588 Natural Gas Conversion Kits

### FOR VR8200/VR8300/SV9500/SV9600 FAMILY OF COMBINATION GAS CONTROLS

INSTALLATION INSTRUCTIONS

APPLICATION

The 393691 LP Conversion Kit changes VR8200/VR8300/SV9500/SV9600 family combination gas controls from regulated natural gas to regulated LP gas. The 394588 Natural Gas Conversion Kit changes VR8200/VR8300/SV9500/SV9600 family combination gas controls from regulated LP gas to regulated natural gas. Kits include a new cap screw, pressure regulator adjustment screw, spring and conversion label.

To use this kit, assure gas control is equipped with a standard or slow opening pressure regulator.

NOTE: Slow regulator valves cannot be converted.

INSTALLATION

When Installing this Product...

- Read these instructions carefully. Failure to follow instructions can damage product or cause a hazardous condition.
- Check ratings given in instructions and on product to make sure product is suitable for your application.
- The installer must be a trained, experienced service technician.
- After installation is complete, use these instructions to check out product operation.

WARNING

Fire or Explosion Hazard.  
Can cause severe injury, death or property damage.  
Follow these warnings exactly:

- Disconnect power supply before wiring to prevent electrical shock or equipment damage.
- To avoid dangerous accumulation of fuel gas, turn off gas supply at appliance service valve before starting installation and perform Gas Leak Test after completion of installation.
- Use only your hand to turn gas control knob. Never use any tools. If gas control knob will not operate by hand, then a qualified technician should replace the gas control. Force or attempted repair may result in fire or explosion.
- Change main and pilot burner orifices to meet appliance manufacturer specifications.

To convert from one gas to another:

- Turn off gas supply at the appliance service valve.
- Remove regulator cap screw and pressure regulator adjusting screw. Refer to Fig. 1.
- Remove the existing spring.
- Insert the replacement spring. Refer to Fig. 2.

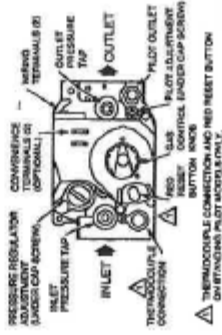


Fig. 1. Top view of VR8200 combination gas control.



Honeywell

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**Perform Gas Leak Test**

**WARNING**

Fire or Explosion Hazard.  
Can cause severe injury, death or property damage.  
Check for gas leaks with soap and water solution any time work is done on a gas system.

LEAK DETECTOR	LP	NATURAL GAS
LEAK DETECTOR	BLACK	BLACK
CAP SCREW	BLACK	BLACK
O-RING	BLACK	BLACK
REGULATOR HOUSING	BLACK	BLACK
SPRING	RED	STAINLESS STEEL



Fig. 2. Conversion kit installation in regulator.

- Install the new plastic pressure regulator adjustment screw. Ensure that the screw top is flush with the regulator top.
- Turn pressure regulator adjustment screw clockwise  $\curvearrowright$  eleven complete turns. The preliminary pressure setting is approximately 10.0 psi (2.9 kPa) for LP gas regulator (393991) and 3.5 psi (0.9 kPa) for natural gas regulator (394588).
- Check the regulator setting using a manometer or by setting the gas meter. See Check and Adjust Gas Input and Burner Ignition section.
- Install the new cap screw and O-ring.
- Mount conversion label on the gas control.
- Install the gas control and appliance according to appliance manufacturer instructions.

**START-UP**

**Gas Control Knob Settings**

**OFF:** Prevents pilot and main burner gas flow.

**PILOT:** (On standing pilot control only): Permits pilot burner gas flow when red knob is held down or thermocouple current is above power unit dropout level.

**ON:** Permits gas flow into gas control. Pilot burner gas is controlled in the PILOT position for standing pilot and intermittent pilot systems. Main burner gas flow is controlled by thermostat and automatic valve operators.

**Check and Adjust Gas Input and Burner Ignition**

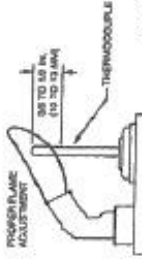


Fig. 3. Proper flame adjustment.

**Check and Adjust Gas Input and Burner Ignition**

**CAUTION**

Equipment Damage Hazard.  
Exceeding input ratings can damage the equipment.

- Do not exceed input rating stamped on appliance nameplate, or manufacturer recommended burner orifice pressure for size orifice(s) used. Make certain primary air supply to main burner is properly adjusted for complete combustion. Follow appliance manufacturer instructions.

**IF CHECKING GAS INPUT BY-CLOCKING GAS METER:**

- Make sure that the only gas flowing through the meter is for the appliance being checked.
- Make certain that other appliances are turned off with their pilot flames extinguished for deduct their gas consumption from the meter reading.
- Convert flow rate to Bluh as described in form 70-2802, Gas Controls Handbook, and compare to Bluh input rating on appliance nameplate.

**IF CHECKING GAS INPUT WITH MANOMETER:**

- Be sure the gas control knob is in the PILOT position before removing outlet pressure tap plug to connect manometer (pressure gauge).
- Turn the gas control knob back to PILOT when removing gauge and replacing plug.
- Shut off gas supply at the appliance-service valve, or for LP gas, at the gas tank, before removing the outlet pressure tap plug and before disconnecting manometer and replacing outlet pressure tap plug.
- Perform Gas Leak Test at outlet pressure tap plug.

**Checking Gas Pressure Using Meter Clocking Method**

**NOTE:** Use this method when manometer is not available or when manifold pressure is not specified in in. wc (kPa) by the burner manufacturer.

**393991 LP GAS AND 394588 NATURAL GAS CONVERSION KITS**

- Make sure that the only gas flowing through the meter is for the appliance being checked.
- Make certain that other appliances are turned off with their pilot flames extinguished for deduct their gas consumption from the meter reading.
- Turn gas control knob to ON position.
- To obtain an accurate gas pressure reading, cycle main burner on and off several times to stabilize the pressure regulator diaphragm. Use a watch with a second hand, carefully check the gas meter to determine the time per revolution. Use Table 1 to determine the exact main burner gas flow rate in cubic feet per hour (cfh).
- Compare actual input with burner manufacturer recommended input (stamped on burner nameplate). To convert Bluh rating to cfh ( $m^3/hr$ ) use the following formula:  
$$\text{Bluh Rating} \times 1.345 \times 10^{-3} = \text{cfh} \quad (m^3/hr) \text{ or gas flow rate in cubic feet per hour (cfh)}$$
  
(Bluh Content of Gas per ft<sup>3</sup>)
- If necessary, adjust pressure regulator to match appliance rating. (On step-opening regulators, match the full rate outlet pressure.)
  - Remove pressure regulator adjustment cap screw.
  - Using a screwdriver, turn inner adjustment screw clockwise  $\curvearrowright$  to increase or counterclockwise  $\curvearrowleft$  to decrease gas pressure to main burner.
  - Always replace cap screw and tighten firmly to prevent gas leakage.
- Turn gas supply back on to other appliances and recheck all pilot flames according to appliance manufacturer instructions.
- Proceed to Checkout section.

**Checking Gas Pressure Using a Manometer (Pressure Gauge)**

- Turn gas control knob to PILOT (standing pilot systems) or OFF (intermittent and direct ignition systems).
- Remove outlet pressure tap plug from gas control and connect pressure gauge. Refer to Fig. 1.
- Turn gas control knob to ON position.
- To obtain an accurate outlet pressure reading, main burner must be cycled on and off several times to stabilize the pressure regulator diaphragm.
- Light main burner and read pressure gauge. If necessary, adjust pressure regulator to match appliance rating. (On step-opening regulators, match the full rate outlet pressure.)
  - Remove pressure regulator adjustment cap screw.
  - Using a screwdriver, turn inner adjustment screw clockwise  $\curvearrowright$  to increase or counterclockwise  $\curvearrowleft$  to decrease gas pressure to main burner.
  - Always replace cap screw and tighten firmly to prevent gas leakage.
- Turn gas control knob to PILOT (standing pilot system) or OFF (intermittent and direct ignition systems).
- Remove pressure gauge and replace outlet pressure tap plug and pressure regulator cap screw.
- Proceed to Checkout section.

**31.0 EXAMPLE OF CONVERSION KIT LABEL**  
**TO BE COMPLETED AS PER INSTRUCTIONS IN KIT**

<p>This appliance was converted on DAY: _____ MONTH: _____ YEAR: _____ to NG: _____ LP. _____ gas with Kit # _____ by: NAME: _____ COMPANY: _____ ADDRESS: _____ CITY/TOWN: _____ STATE/PRO: _____ TELEPHONE: _____ Orifice Size: _____ leak Test Performed: Yes: _____ Manifold Pressure: Min _____ Max _____ Input: _____ Altitude: _____</p> <p>(The name of the individual and organization making this conversion accepts the responsibility that this conversion has been properly made and has performed a leak test on the appliance prior to placing into service.) Locate label in a conspicuous location on the appliance near rating plate.</p> <p>=====</p> <p>Cet appareil a ete converti au: _____ Injecteur: _____ Date: _____ Pression a la tubulure d'alimentation: _____ Debit calorifique: _____</p>
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