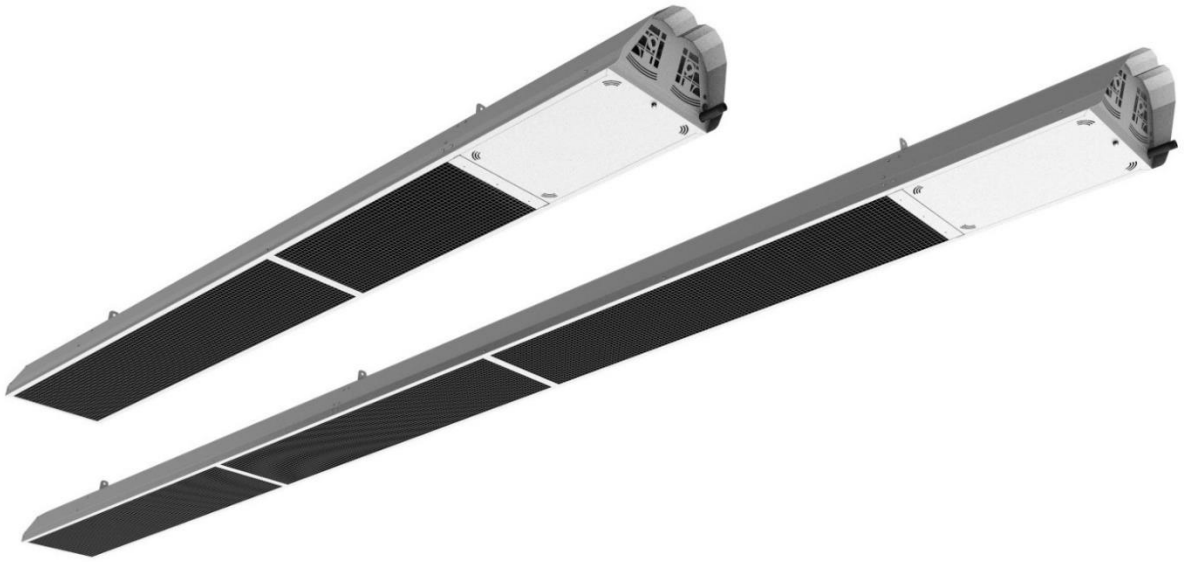
Installation, Operation and Service Instructions

RADIANT TUBE HEATERS

SUPERIOR RADIANT PRODUCTS

CE 0085 UKCA 0086

SERIES ETE
TWO STAGE



WARNING	FOR YOUR SAFETY
Improper installation, adjustment, alteration, service, or maintenance can cause property damage, injury or death. Read the installation, operation, and service instructions thoroughly before installing or servicing this equipment.	Do not store or use flammable vapors and liquids in the vicinity of this or any other appliance. If you smell gas: 1. Open windows 2. Don't touch electrical switches 3. Extinguish any open flame 4. Immediately call your gas supplier

OWNER	INSTALLER
Retain this Manual & ensure available for service. Improper installation, adjustment, alteration, service, or maintenance can cause injury, death or property damage. Read the installation, operation, and service instructions thoroughly before installing or servicing this equipment	Provide Manual to Owner upon completion of installation! Read and thoroughly understand these Instructions before attempting any installation

Superior Radiant Products Ltd.
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www.superiorradiant.com

CAUTION: FIRE OR EXPLOSION HAZARD

Maintain clearance to combustible materials as further specified in this manual. Failure to do so could result in a serious fire hazard. Heaters should not be located in hazardous atmospheres containing flammable vapors or combustible dusts. Signs should be provided in storage areas specifying maximum safe stacking height.

CAUTION: MECHANICAL HAZARD

This equipment expands and contracts with each operating cycle. The gas connection, suspension hardware, and the installation itself must safely allow this movement. Failure to do so could result in serious fire or explosion hazard.

CAUTION: FIRE OR EXPLOSIONS HAZARD

This heater is equipped with an automatic ignition device. Do not attempt to light the burner by hand. Failure to comply could result in a serious fire and personal injury hazard.

CAUTION: MECHANICAL HAZARD

Do not use high pressure (above 60 mbar) to test the gas supply system with the burners connected. Failure to do so could result in damage to the burner and its control components requiring replacement.

CAUTION: SERVICE LIFE RISK

Do not install equipment in atmosphere containing halogenated hydrocarbons or other corrosive chemicals. Failure to do so may lead to premature equipment failure and invalidation of the warranty. Additionally, it is recommended that the equipment be installed with a downward slope, away from the burner. The rate of declination should be 6mm (¼") in height per 3m (10') in length to allow the start-up condensation to drain.

CONTENTS

INTRODUCTION

Superior Radiant Products is a company in the infrared heating industry founded on the principles of product quality and customer commitment.

Quality commitments are evidenced by superior design, a regard for design detail and an upgrade of materials wherever justifiable.

Customer commitment is apparent through our ready responses to market demands and a never-ending training and service support program for and through our distributor network.

Superior Radiant offers more than 25 years of infrared expertise in a cost-effective unitary heater design as culmination of that commitment.

Series ETE model, is a low intensity infrared two stage tube heater with high radiant and thermal efficiency.

Important

The manufacturer's instructions, the layout drawing, national and local codes and ordinances, and all applicable standards which apply to gas piping and electrical wiring comprise the basic information needed to complete the installation. These criteria must be thoroughly understood before proceeding.

Only personnel who have been trained and understand all applicable codes should undertake the installation.

Codes and Regulations

Series ETE radiant tube heater is designed and manufactured according to:
- EN 416 "Single burner gas-fired overhead radiant tube heaters for non-domestic use".
- EN 14543 "Specification for dedicated liquefied petroleum gas appliances. Parasol patio heaters. Flueless radiant heaters for outdoor or amply ventilated area use".

Every heater is subjected to a function test prior to leaving the factory and is pre-set for the relevant type of gas. The following regulations and directives are to be considered for the installation and operation of radiant heating systems.

EN 60335-1, Household and similar electrical appliances - Safety - Part 1: General requirements

EN 60335-2-102: Household and similar electrical appliances - Safety - Part 2-102: Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections.

EN 12831, Heating systems in Buildings.

This heater is approved for outdoor installation only. Not for use in residential dwellings, refer to Rating plate.

GENERAL SPECIFICATIONS

Gas Supply

Supply Pressure

	Minimum	Nominal	Maximum
Natural Gas:	17.5 mbar	20 mbar	25 mbar
Propane:	28 mbar	37 mbar	50 mbar

Manifold Pressure

	Nominal Heat Input	Partial Heat Input
Natural Gas:	12.5 mbar	8 mbar
Propane:	25 mbar	15.5 mbar

Inlet Connection

1/2” male BSPP

Electric Supply

Alternating current: Voltage 230 V, 50 Hz with L, N and PE

Power consumption: 45 W, 0.3A

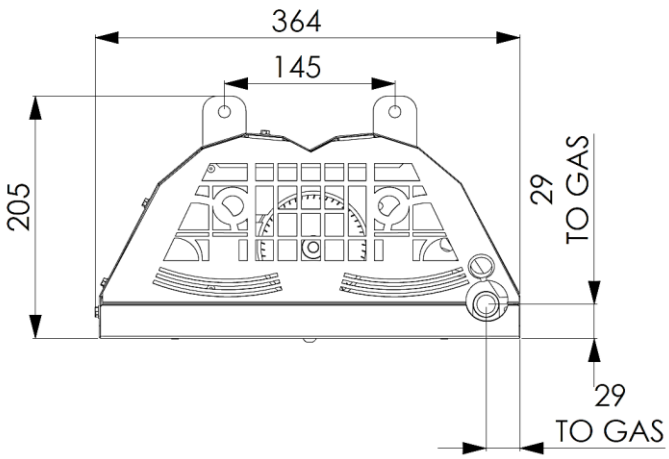
CONFIGURATIONS

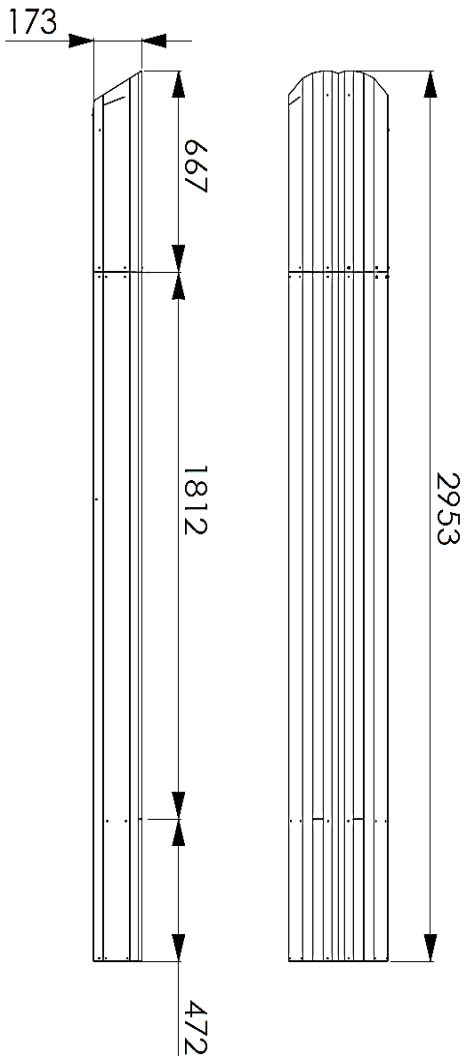
		Model ETE	
Natural gas		**15**	**30**
Heat Input	kW gross	14.5	27.5
Partial Heat Input	kW gross	10.5	21.5
Propane		**15**	**30**
Heat Input	kW gross	14.5	27.5
Partial Heat Input	kW gross	10.5	21.5

DIMENSIONAL CHART

ETE 15

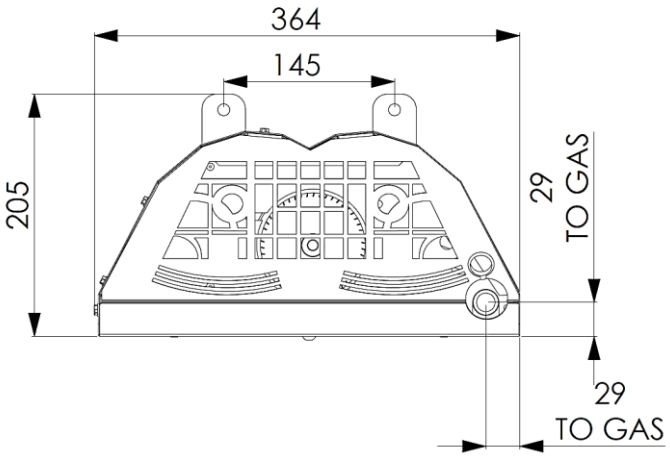
Note: All dimensions are in millimeters.

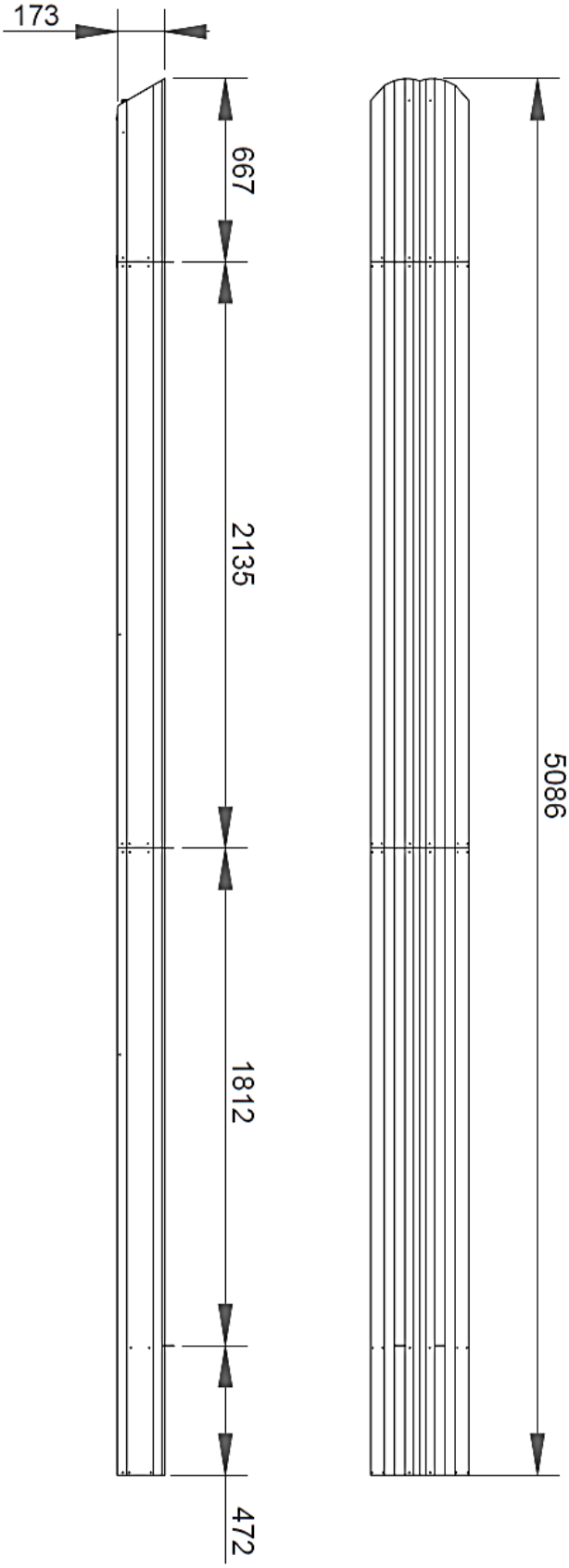




ETE 30

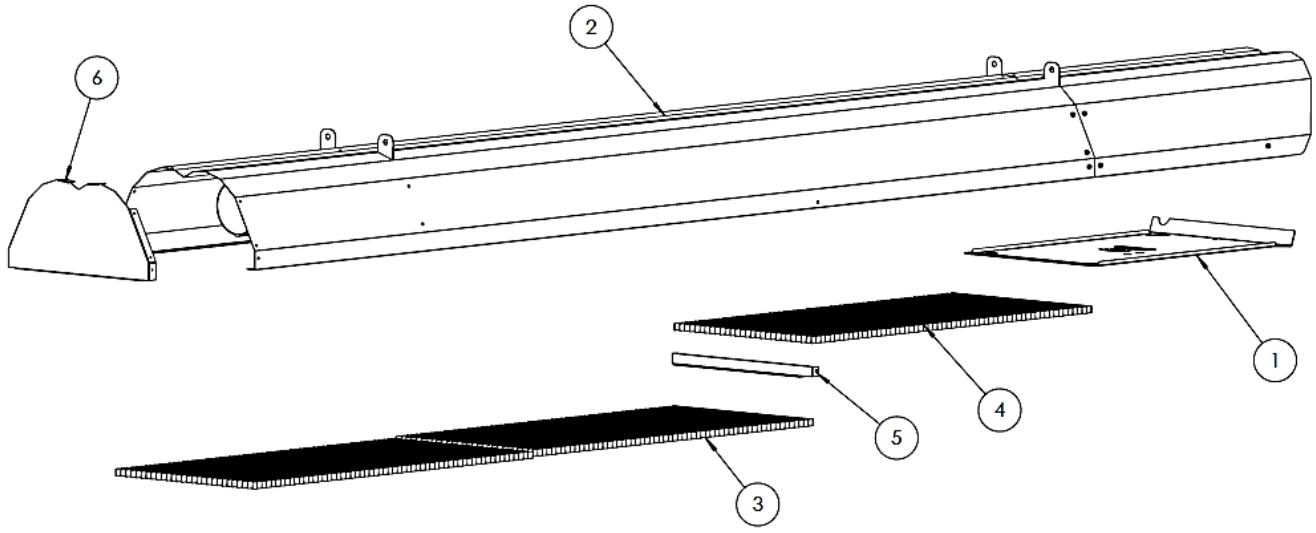
Note: All dimensions are in millimeters.





Components

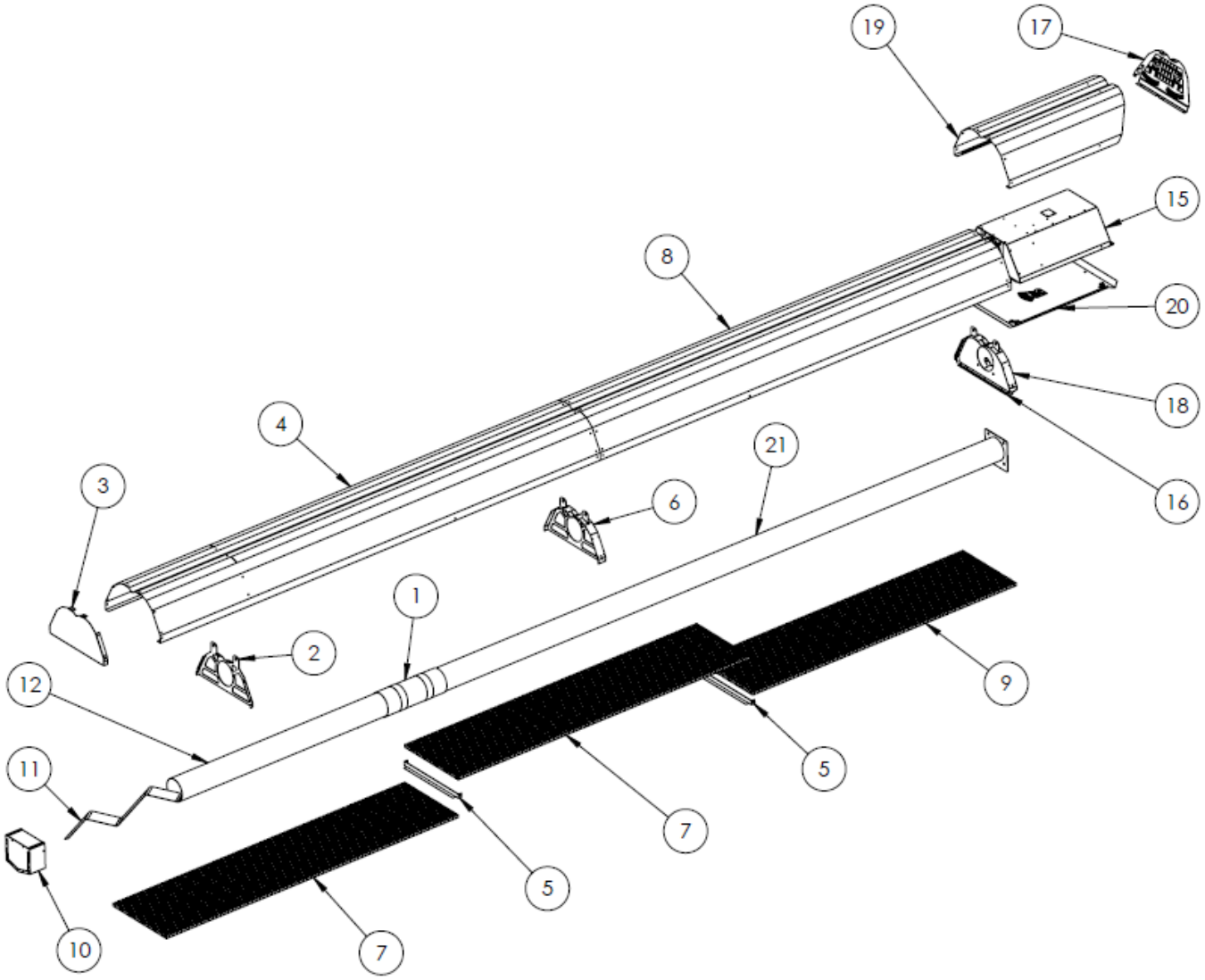
ETE15



No.	QTY	PN	Description
1	1	US340	Service Cover
2	1	n/a	Heater Assembly
3	1	CR094	Deco Gril 14x60
4	1	CR113	Deco Gril 14x30

No.	QTY	PN	Description
5	1	CR091	Deco Grille Support
6	1	CR088	End cap
7	10	EH013	Screw S/S #8 X1/2" (Not Shown)
8	8	EH113	Screw S/S #8-32 X 3/8" (Not Shown)

ETE30



No.	QTY	PN	Description
1	1	CR010	Coupling Assembly 4"
2	1	CR086MS	ETS Vent Hanger
3	1	CR088AL	End Cap
4	1	CR090AL	Reflector, 90" Secondary
5	2	CR091	Deco Grille Support
6	1	CR093S	Hanger Assembly, Middle
7	2	CR094	Deco Grille ETS Heater 14" X 60"
8	1	CR164AL	Reflector, 84" Primary,
9	1	CR165	Deco Grille 14" X 54"
10	1	CS152	ETS Vent Terminal Assembly
11	1	CT016	Baffle, 6' S/S W/Tab

No.	QTY	PN	Description
12	1	CT144	Tube 4" OD Alum. HT X 48" Long
13	60	EH013	Screw S/S #8 X1/2" (Not Shown)
14	15	EH113	Screw S/S #8-32 X 3/8" (Not Shown)
15	1	ETE30	ETE Burner
16	1	US213-S	Support Plate, Service Cover
17	1	US356AL	Grille Assembly
18	1	US230-S	Burner Head Hanger
19	1	US234	Cowling
20	1	US340	Service Cover, ETE
21	1	UT021	HT Flanged Tube ETE 10’

Installation Requirements

Clearance to Combustibles

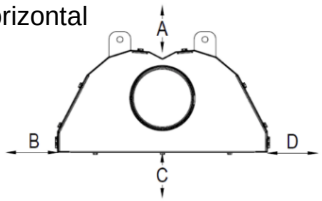
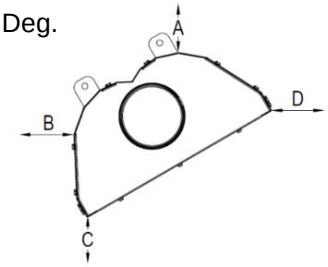
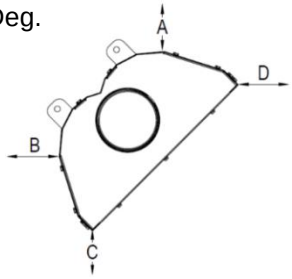
A general clearance of 500 mm (18”) in every direction is recommended for servicing around each Burner. This ensures adequate air flow in and around the Heating System.

In addition to this, it is very important to observe the minimum clearance to combustibles at all times to avoid any possibility of property damage or personal injury.

Table below lists the minimum clearance to combustible materials for various installation configurations. Additional clearance may be required for glass, painted surfaces and other materials which may be damaged by radiant or convective heat.

Combustible materials are considered to be wood, compressed paper, plant fibres, plastics, Plexiglas or other materials capable of being ignited and burned. Such materials shall be considered combustible even though flame-proofed, fire-retardant treated or plastered.
Adequate clearance to sprinkler heads must be maintained. **NOTE**: Sprinkler head heat fuse link performance may alter with age.

The stated clearance to combustibles represents a surface temperature of 65°C (117°F) ***above*** room temperature. Building materials with low heat tolerance **(such as plastics, vinyl siding, canvas, tri-ply, etc.)** may become subject to degradation at lower temperatures. **It is the installer’s responsibility to ensure that adjacent materials are protected from degradation.**

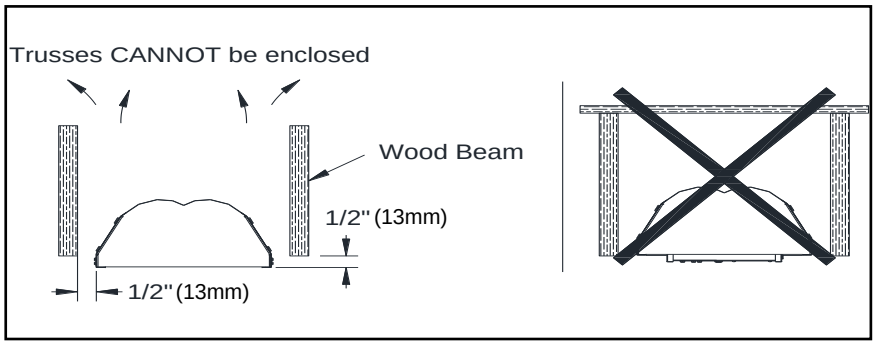
Reflector Configurations	Dim	ETE 15	ETE 30
Horizontal 	A B C D	140 mm (5.5") 635 mm (25") 1675 mm (66") 635 mm (25")	100 mm (4") 740 mm (29") 1870 mm (73.5") 740 mm (29")
30 Deg. 	A B C D	160 mm (6") 160 mm (6") 1370 mm (54") 865 mm (34")	160 mm (6") 160 mm (6") 1480 mm (58") 1050 mm (41")
45 Deg. 	A B C D	210 mm (8”) 75 mm (3”) 1270 mm (50”) 1020 mm (40”)	210 mm (8”) 70 mm (2.5”) 1410 mm (55.5”) 1100 mm (43”)
Burner End		100 mm (4”)	100 mm (4”)
Exhaust End		160 mm (6”)	100 mm (4”)

Heater Mounting

This heater can be installed between wood beams with minimum distances as shown.

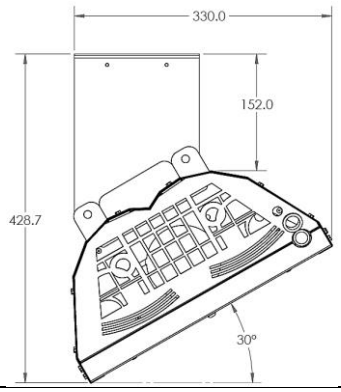
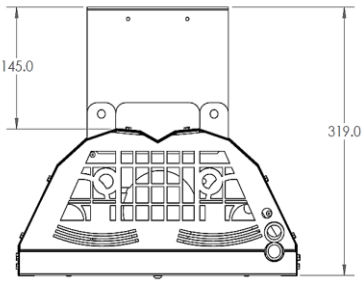
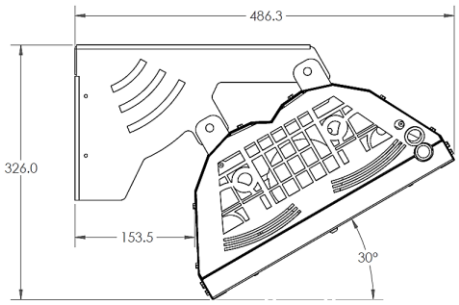
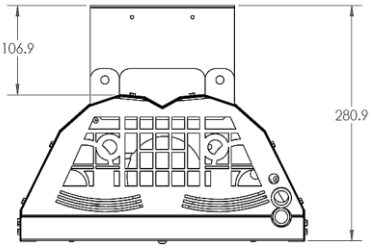
Air flow **MUST NOT** be restricted. The space above the heater must not be enclosed in order to allow air for ventilation.

Note: **Surfaces between joists or flush with the heater must not exceed 50°C (90°F) above ambient temperature.**



Optional Hangers

The heater can be mounted in a variety of ways, using a combination of chains and mounting bracket. It is critical that the heater is prevented from swaying and putting stress on the gas connection. Also, be sure to check local codes for seismic bracing requirements for outdoor heating equipment.

ETSCAB9S **ETSCAB17S** Angle Ceiling Bracket Kit, 304 S/S, 30° Angle		**ETSCB9S** Horizontal Ceiling Mount Bracket Kit, 304 S/S	
ETSWB9S **ETSWB17S** Wall Mount Bracket Kit, 304 S/S, 30° Angle		**ETSCB17S** Horizontal Ceiling Mount Bracket Kit, 304 S/S	

Venting

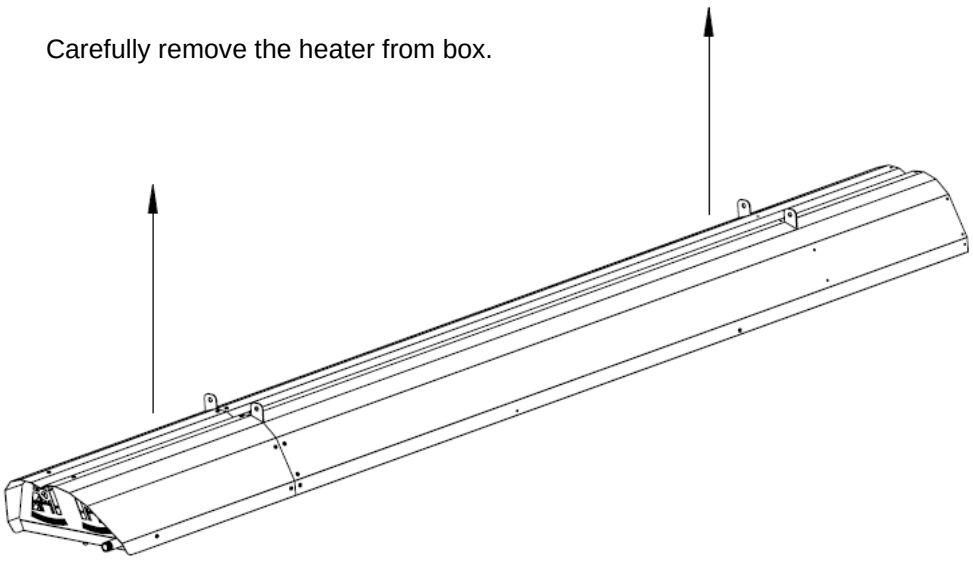
This heater does not require venting as it is approved for **OUTDOOR INSTALLATION ONLY**.

WARNING
• This heater is NOT approved for any indoor Residential application. • If in doubt of your application, consult with your local fire marshal or gas authority having jurisdiction. • Indoor spaces include but are not limited to: attached garages, solariums, living quarters etc.

Installation – ETE 15

Step 1:

Carefully remove the heater from box.



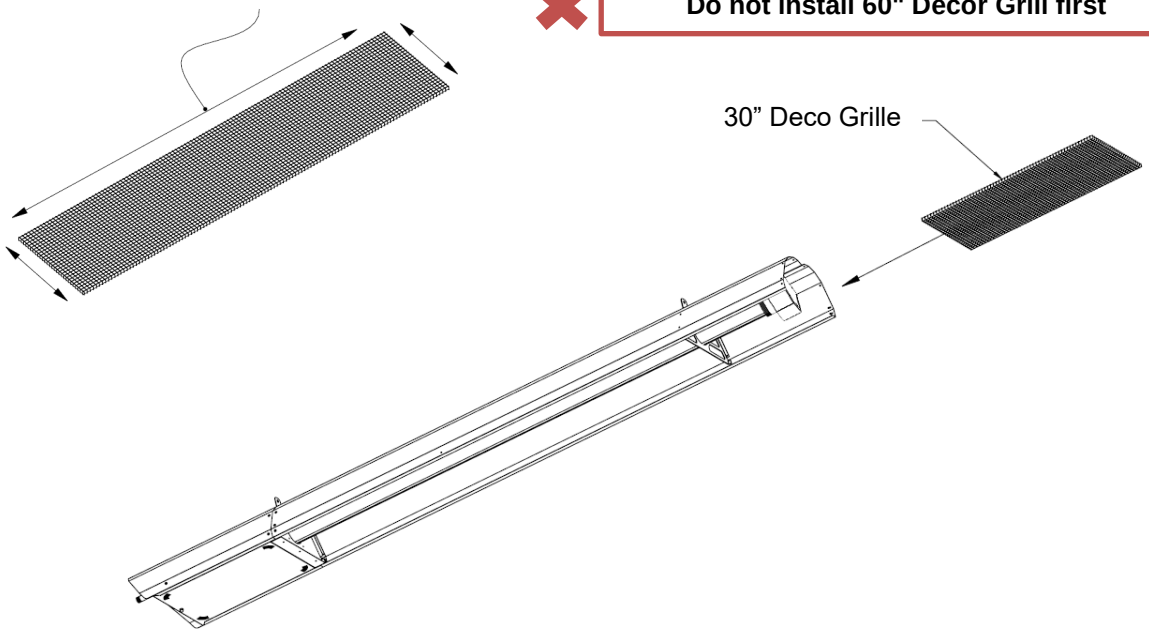
Step 2:

Before installing the Deco Grilles, **bend all the tabs** along one *long* side and both *short* sides of the Grille for easier fitment.

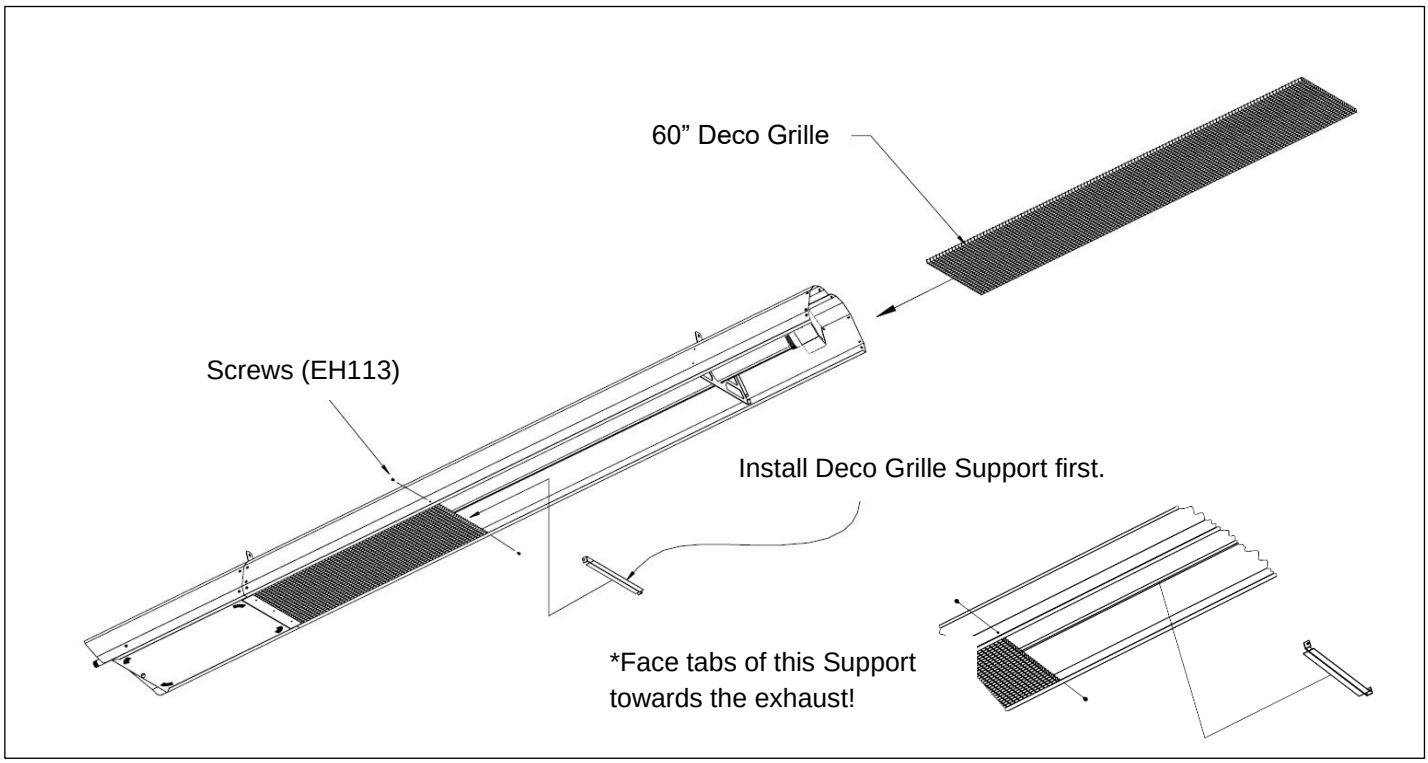
*Gloves recommended!

✓ **Use the 30" Deco Grill (Shorter one) first**

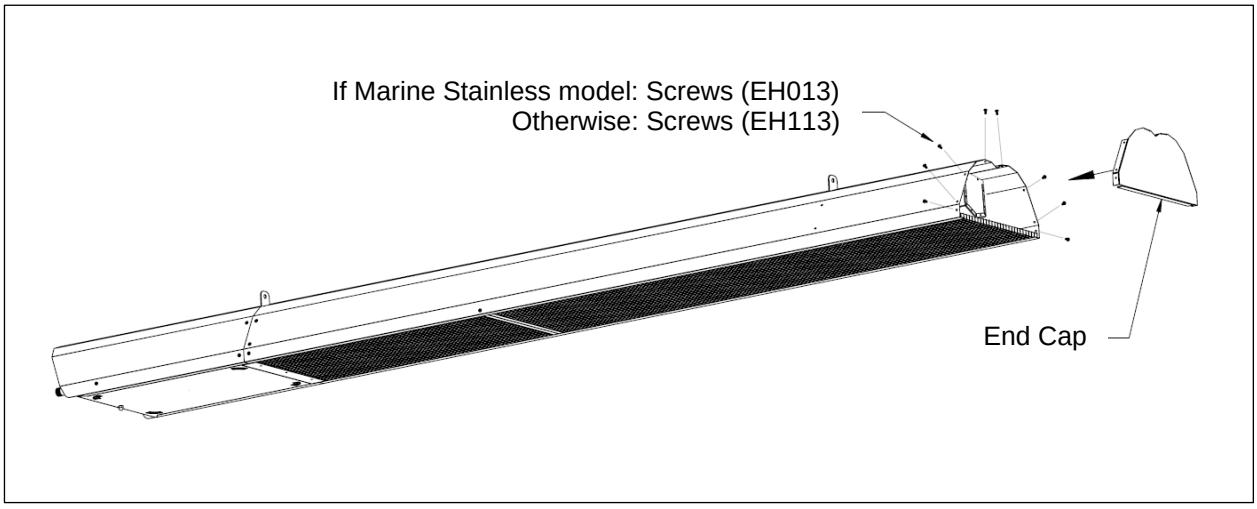
✗ **Do not install 60" Decor Grill first**



Step 3:



Step 4:



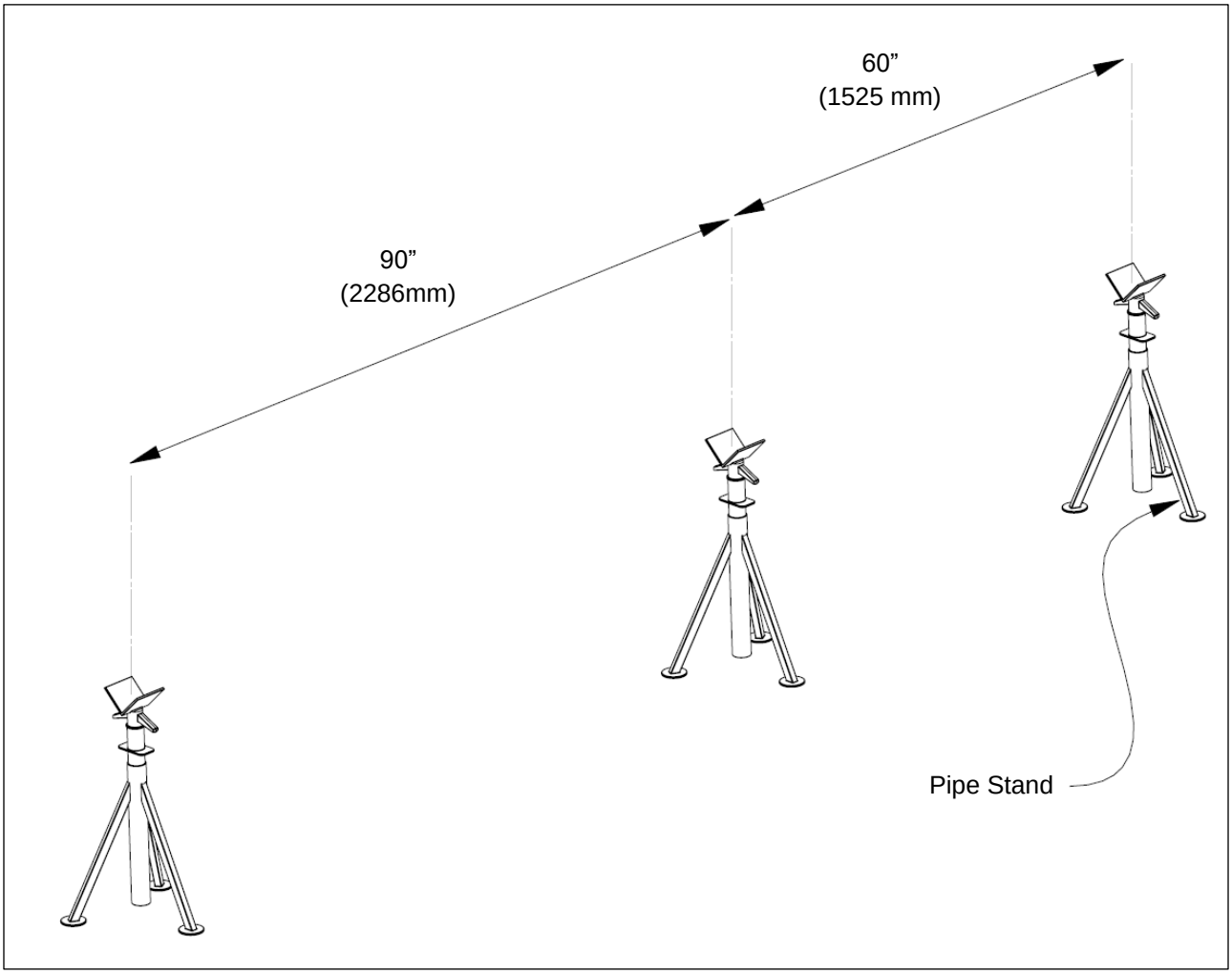
You should now have a fully assembled ETE15.

Installation – ETE 30

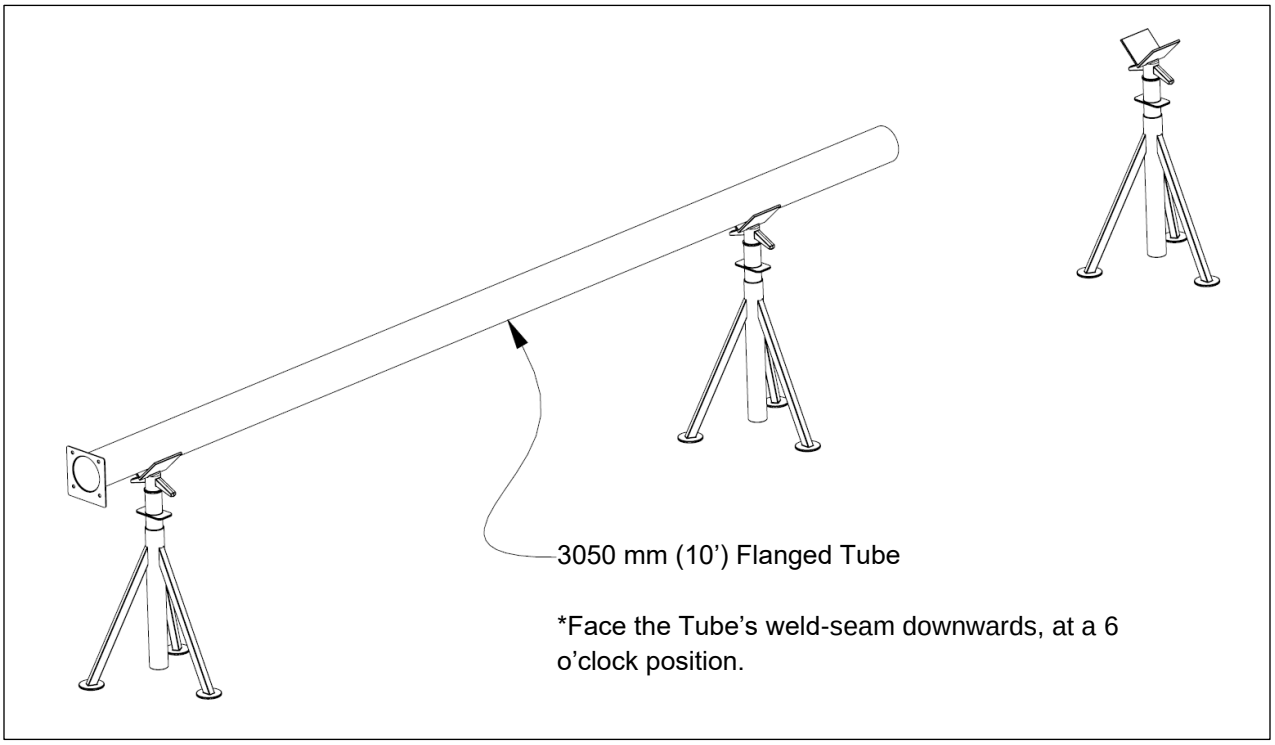
Generally, there is no unique sequence for installation of the burner or heat exchanger. A review of the job site will usually indicate a logical installation order. However, time and expense can be saved if installation is begun at the most critical dimension, watching for interference from overhead beams etc.

It is **RECOMMENDED** to follow the assembly sequence shown in the following pages for free hanging installation.

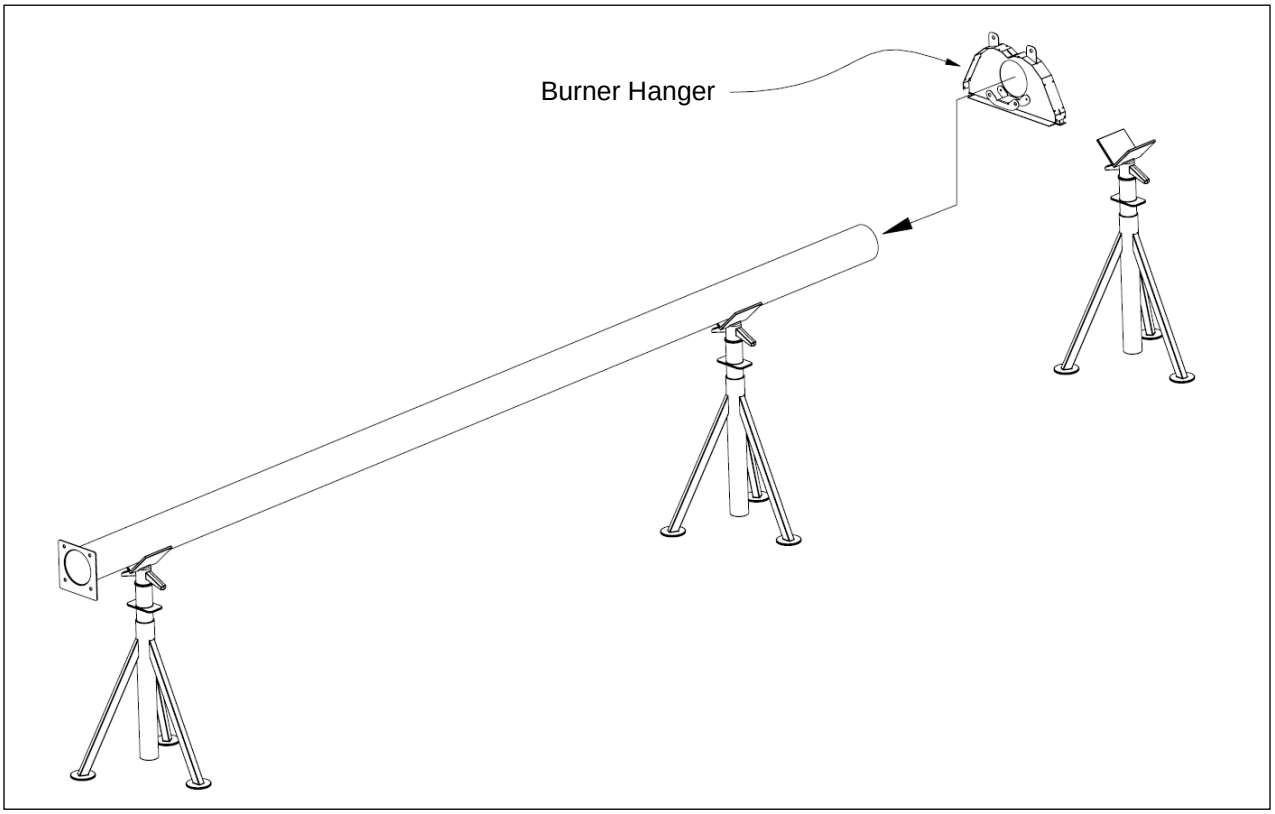
Step 1:



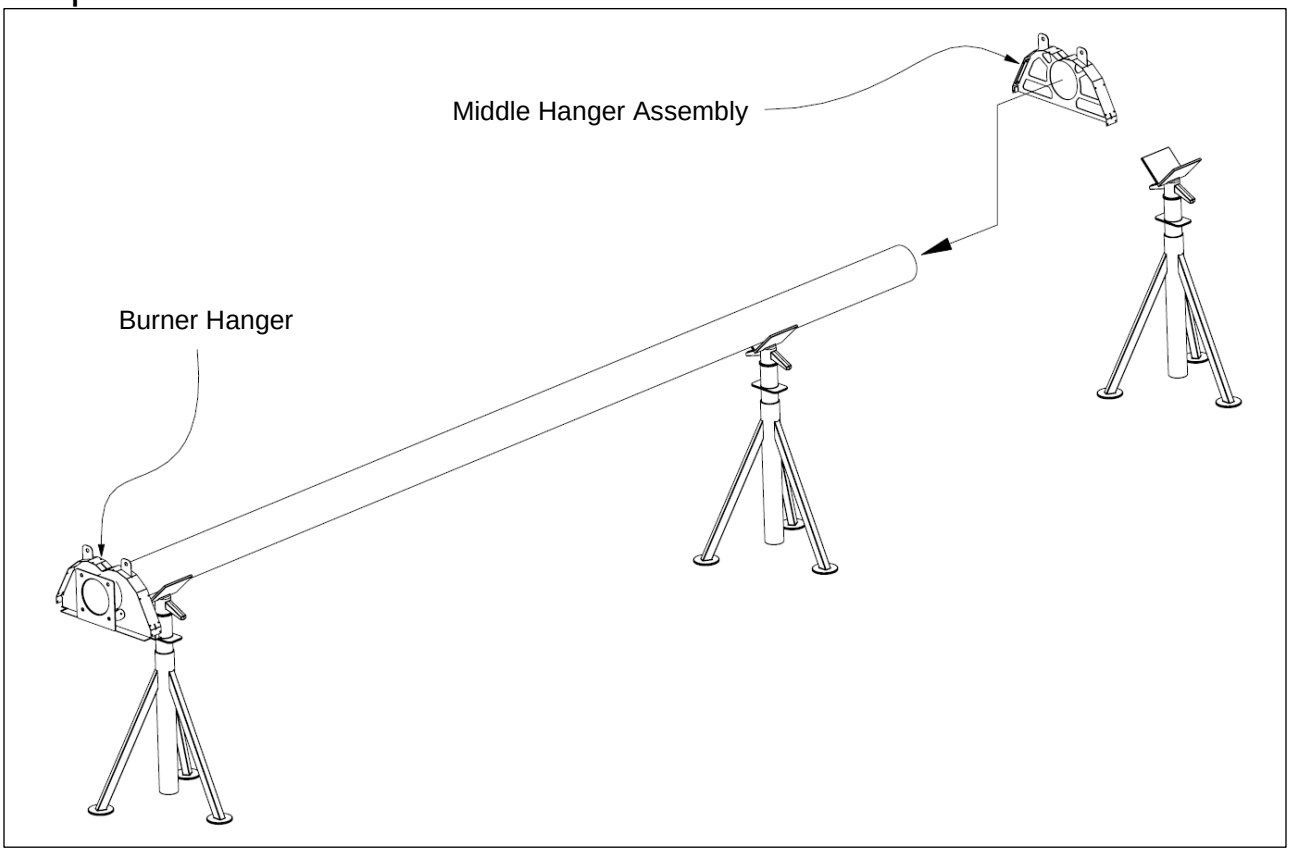
Step 2:


3050 mm (10') Flanged Tube
*Face the Tube's weld-seam downwards, at a 6 o'clock position.

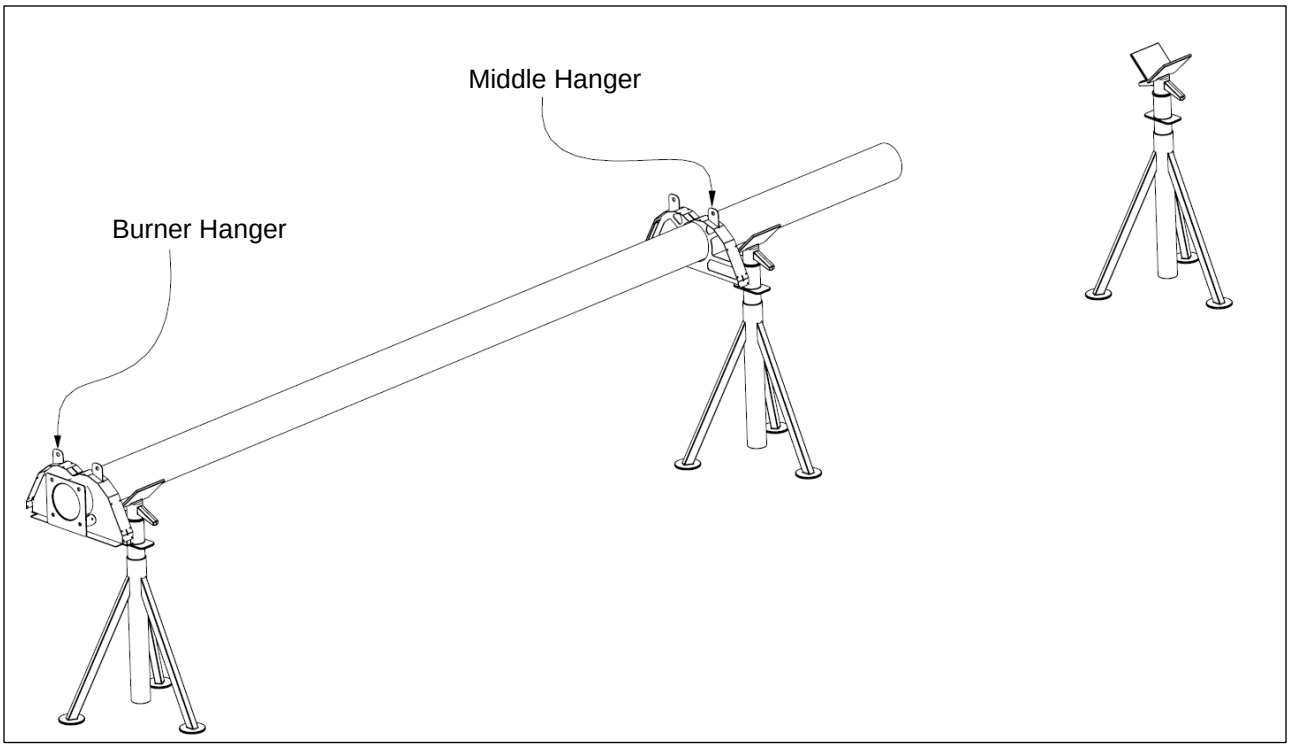
Step 3:


Burner Hanger

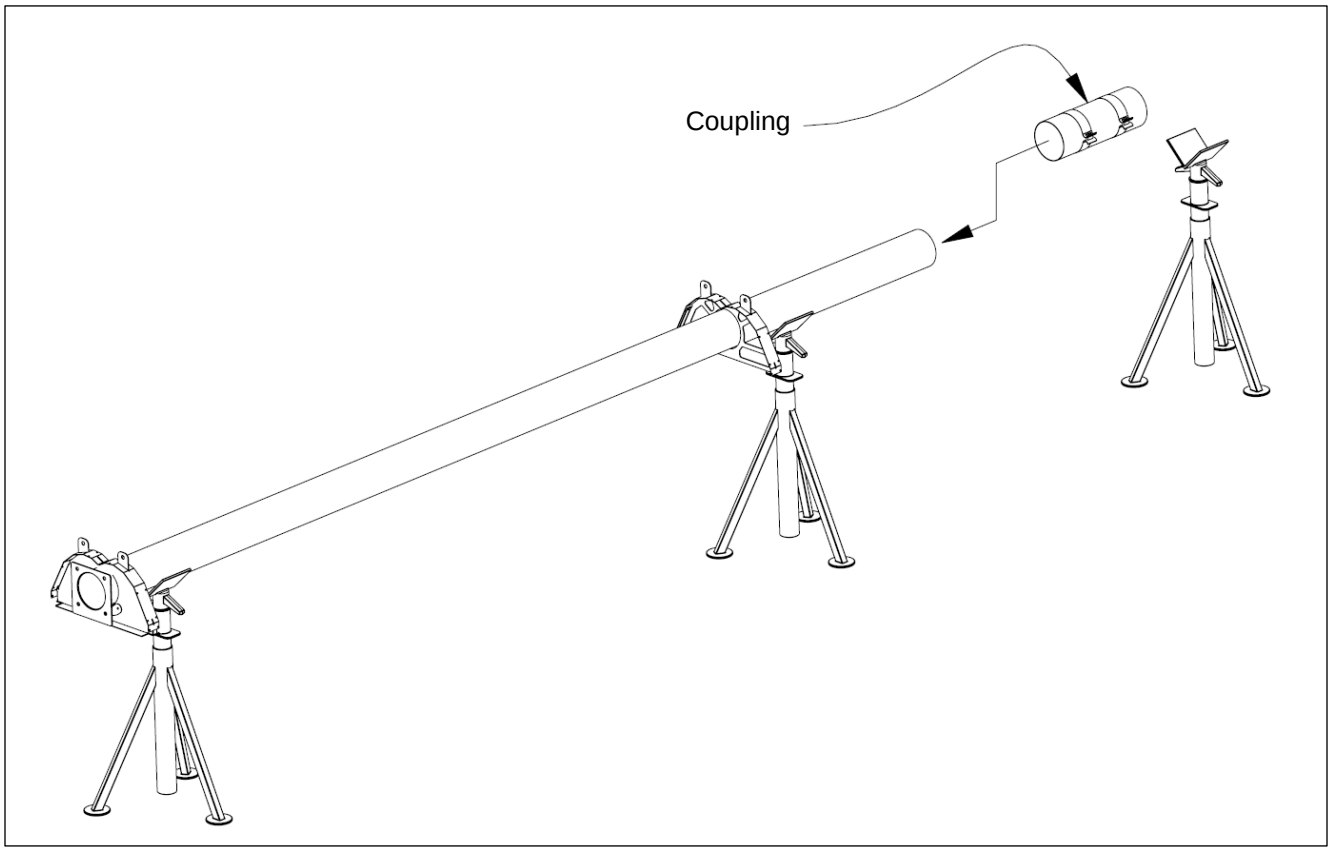
Step 4:


Middle Hanger Assembly
Burner Hanger

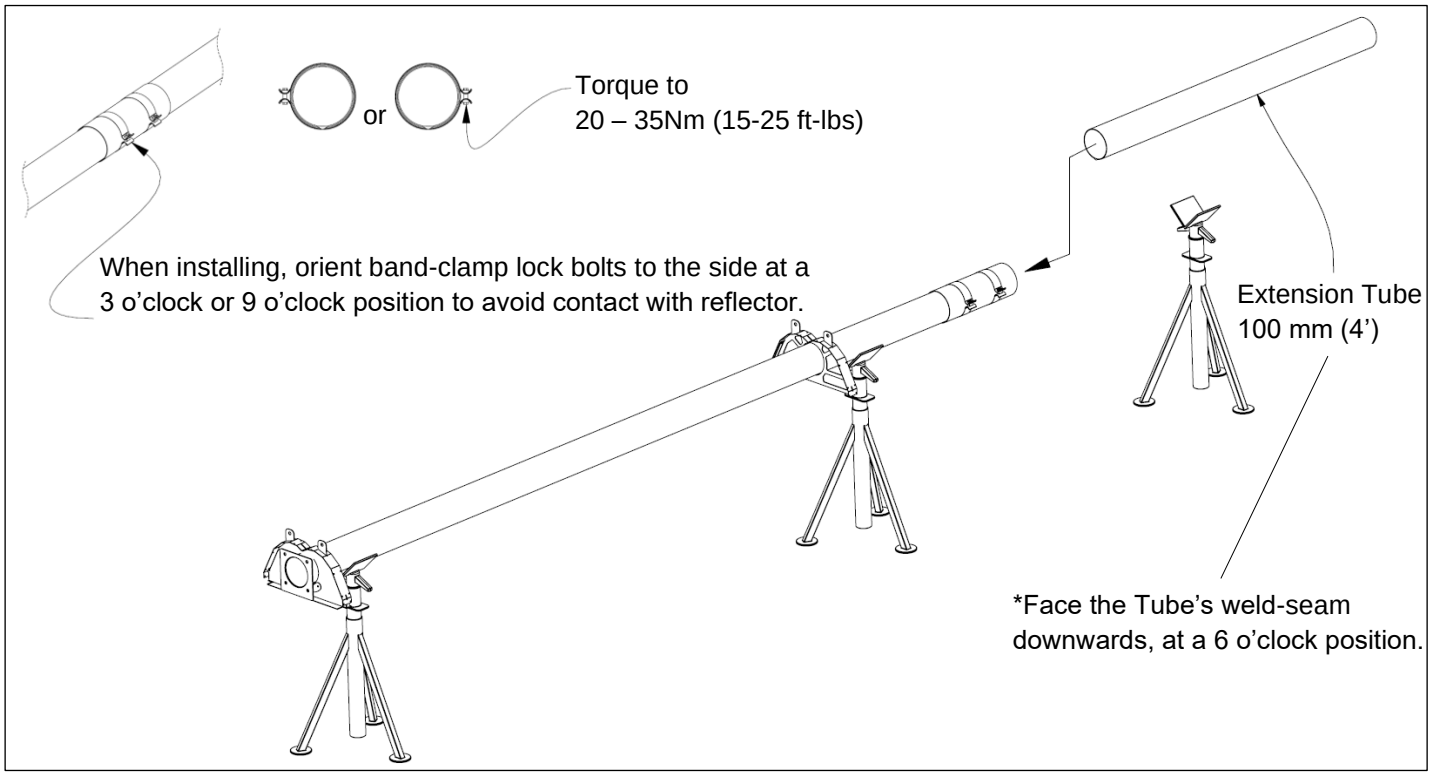
Step 5:


Middle Hanger
Burner Hanger

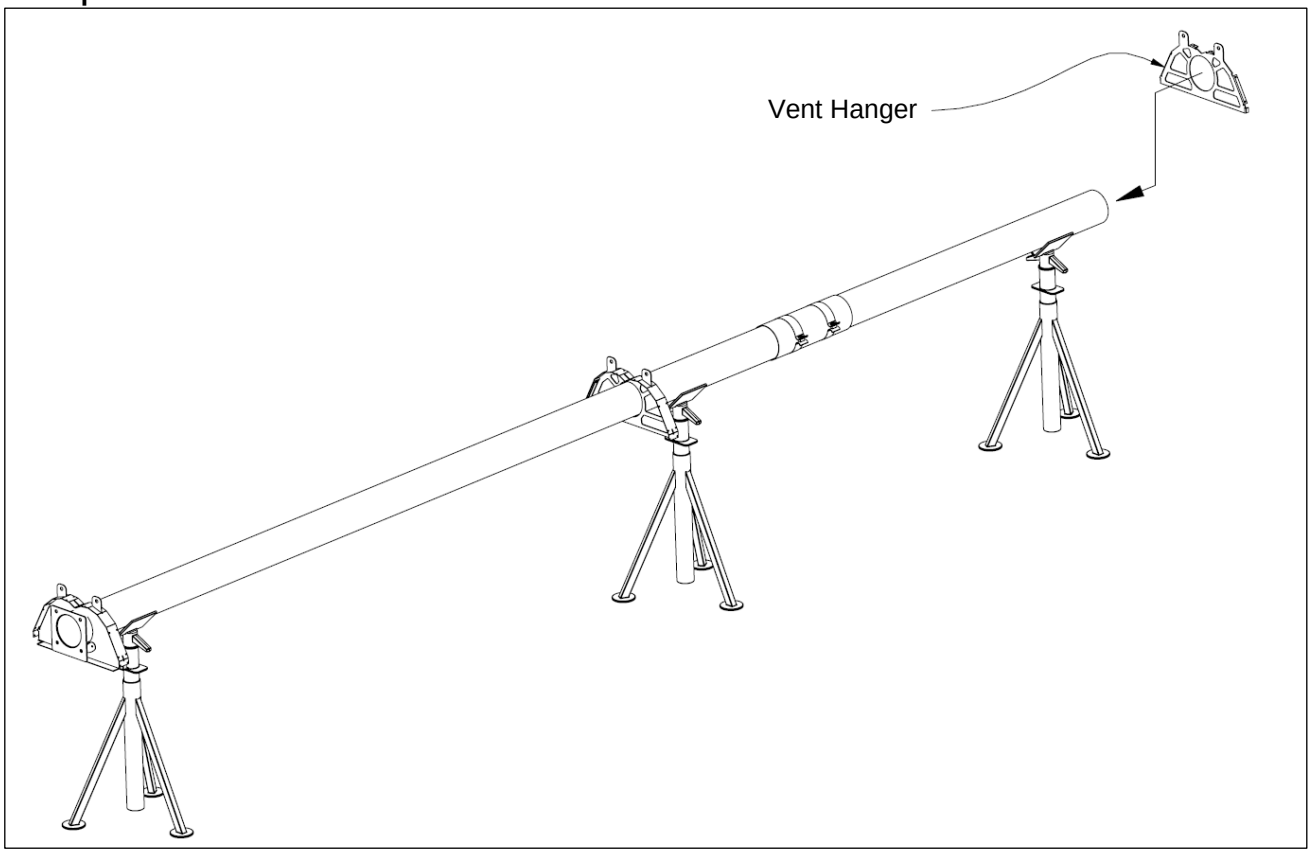
Step 6:


Coupling

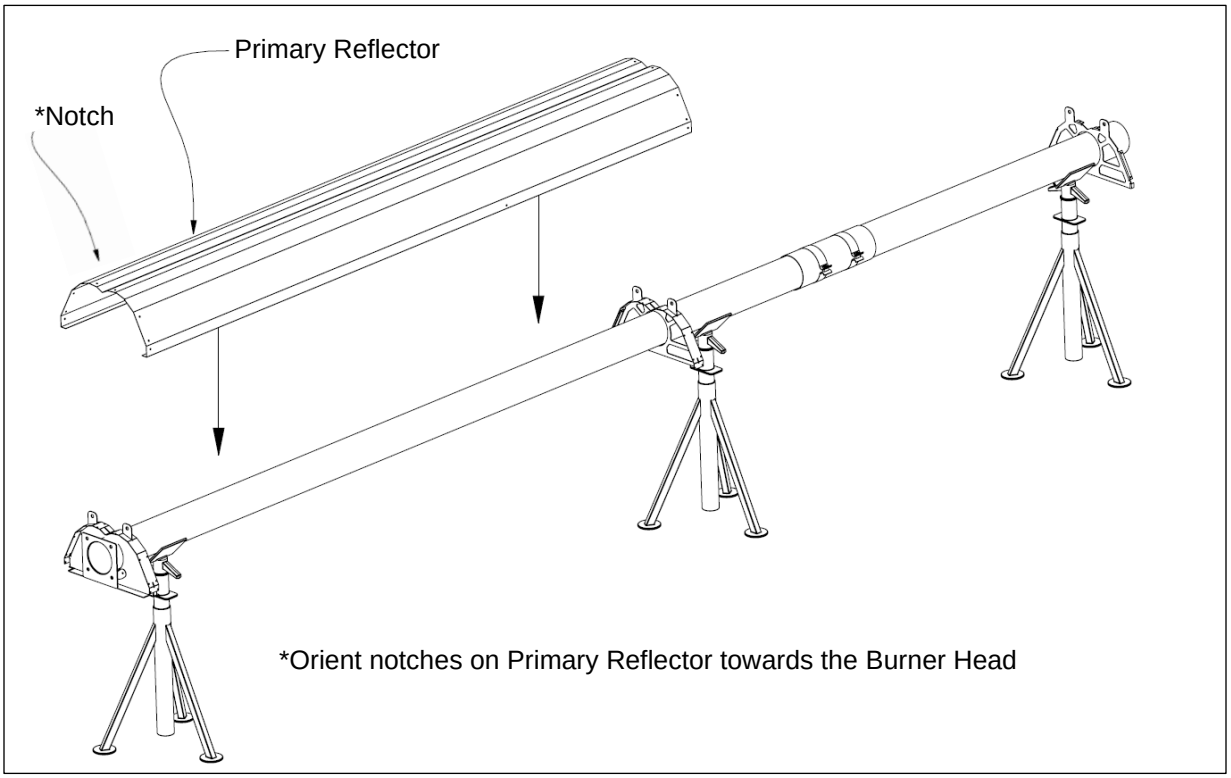
Step 7:


or
Torque to
20 – 35Nm (15-25 ft-lbs)
When installing, orient band-clamp lock bolts to the side at a
3 o'clock or 9 o'clock position to avoid contact with reflector.
Extension Tube
100 mm (4')
*Face the Tube's weld-seam
downwards, at a 6 o'clock position.

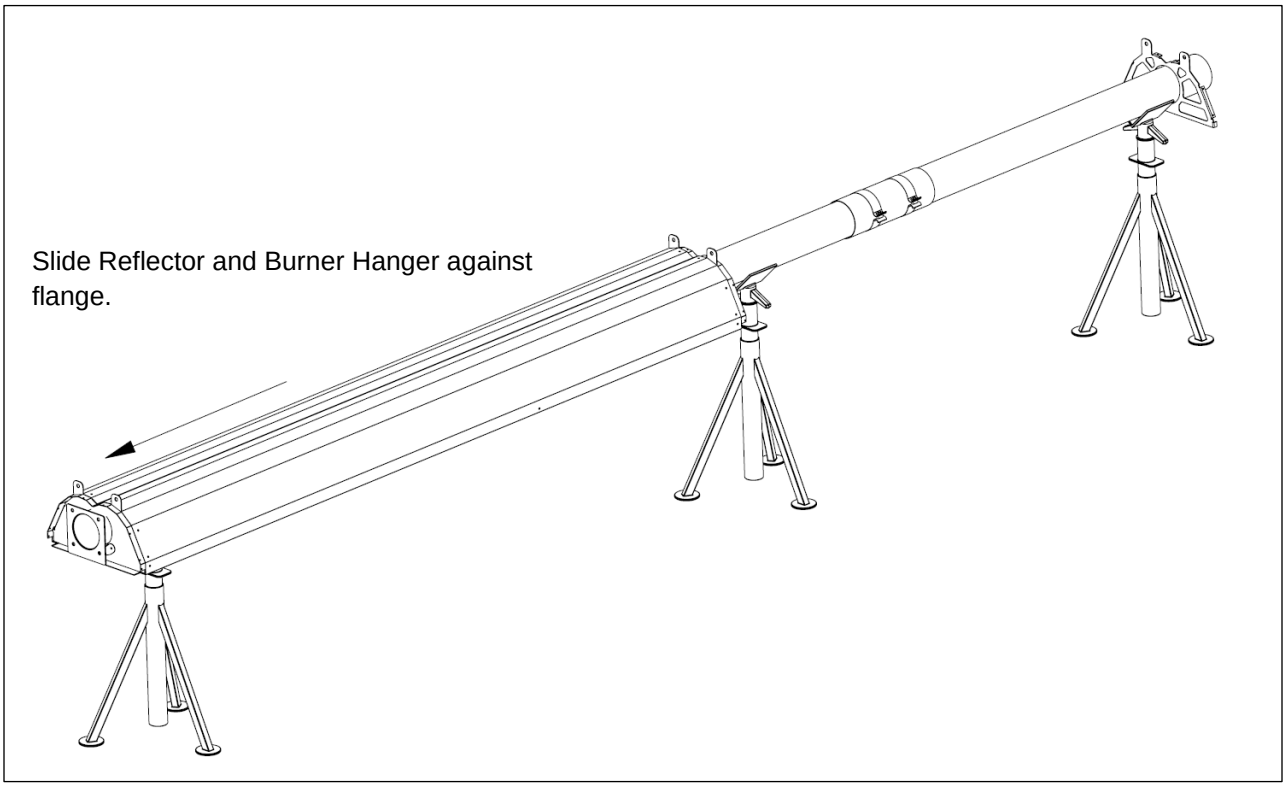
Step 8:


Vent Hanger

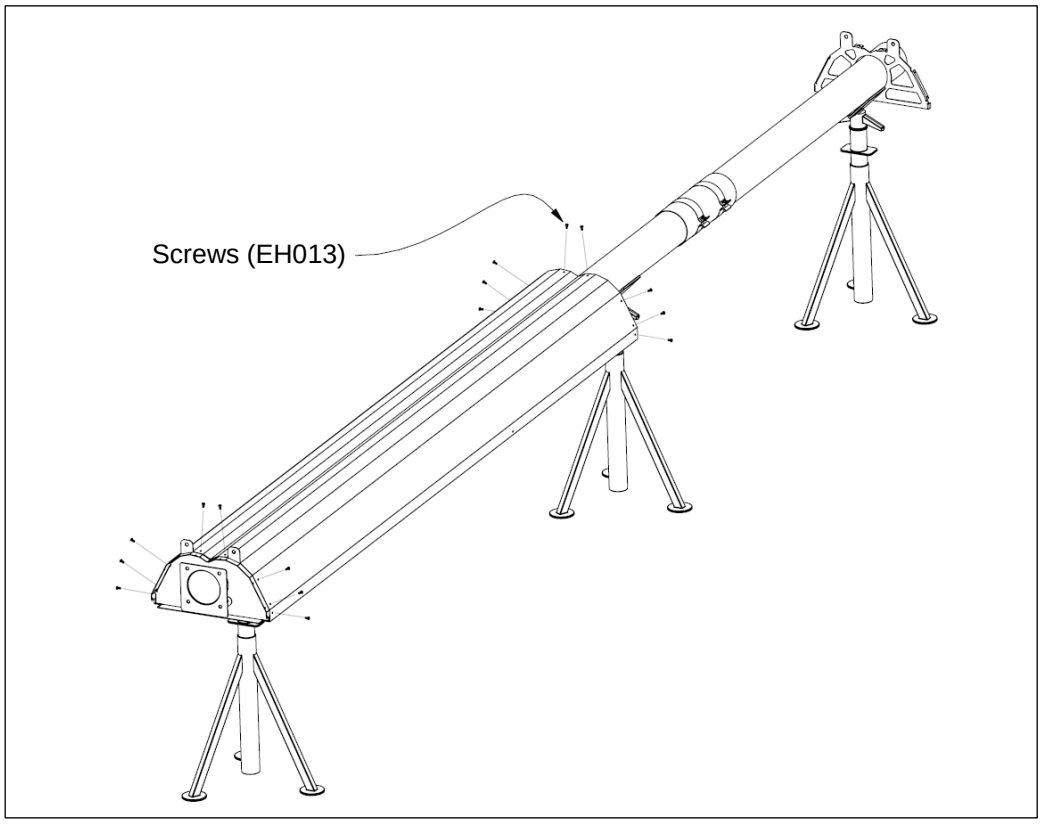
Step 9:


Primary Reflector
*Notch
*Orient notches on Primary Reflector towards the Burner Head

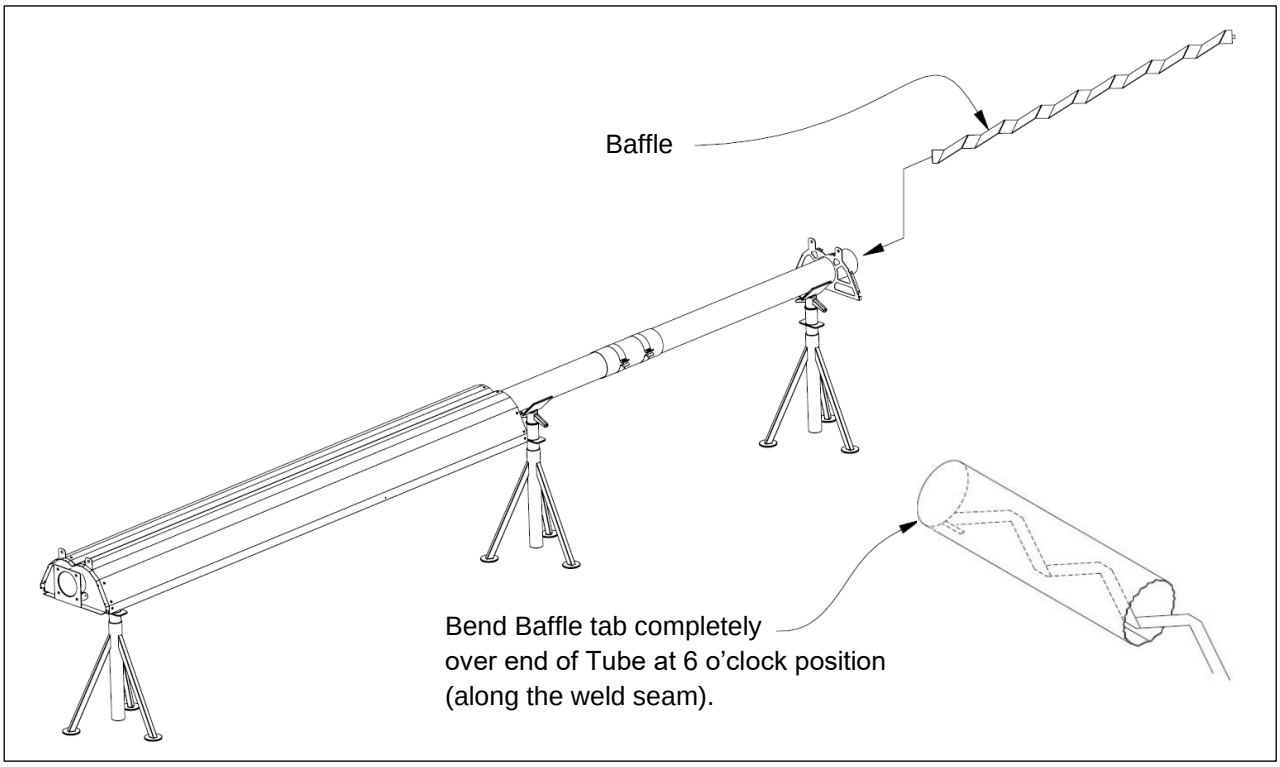
Step 10:



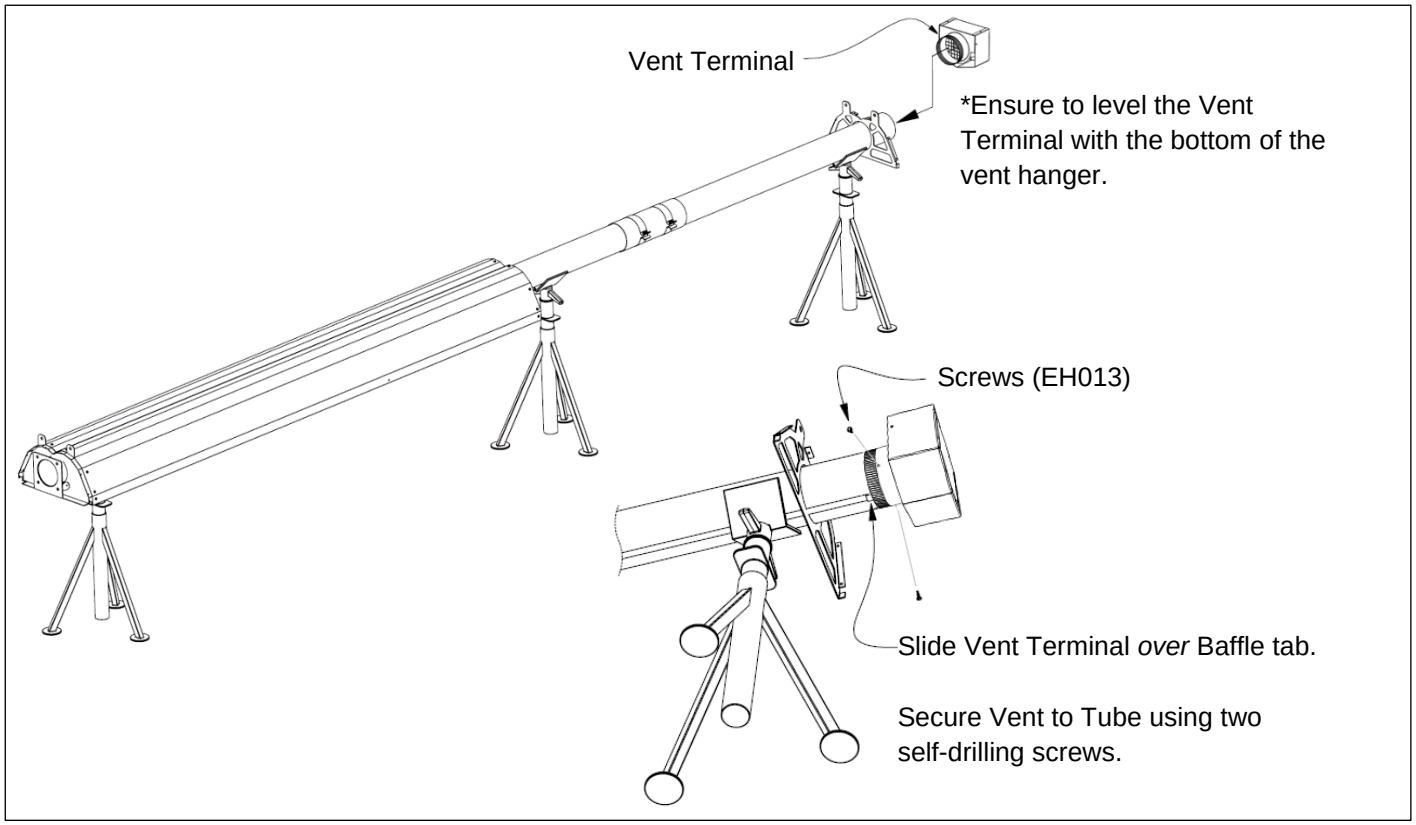
Step 11:



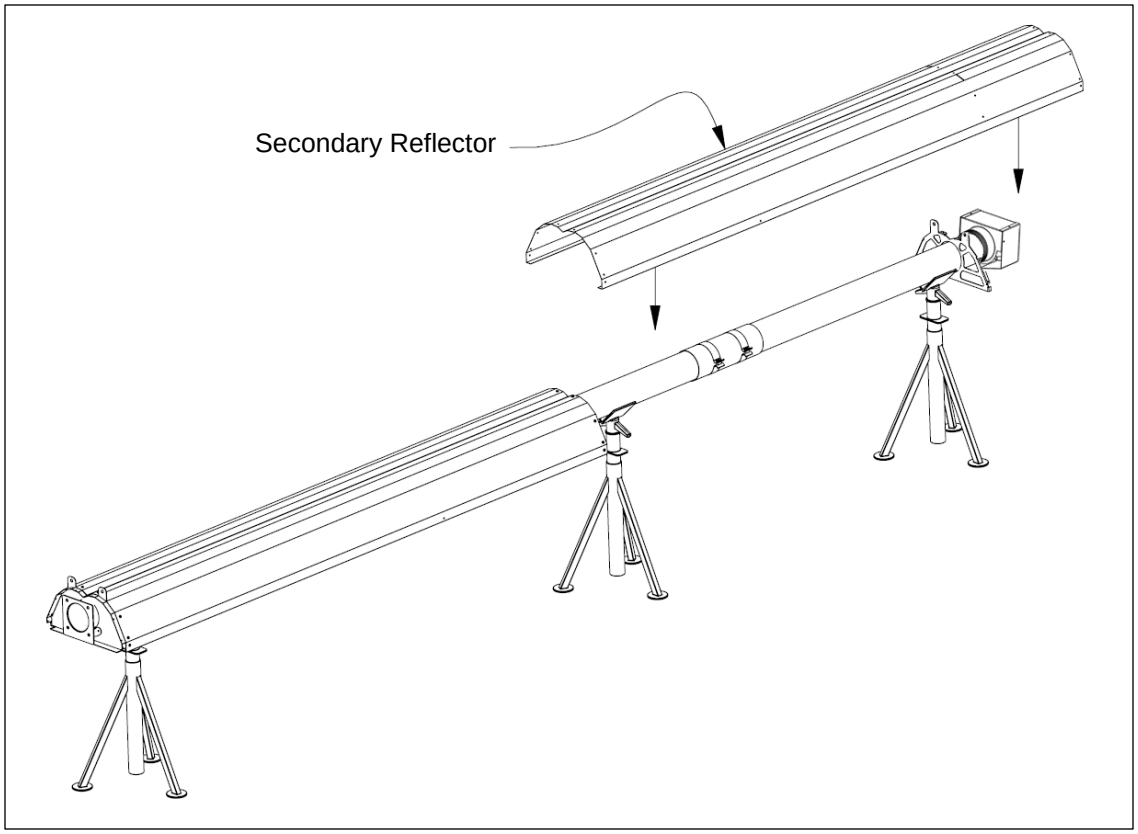
Step 12:



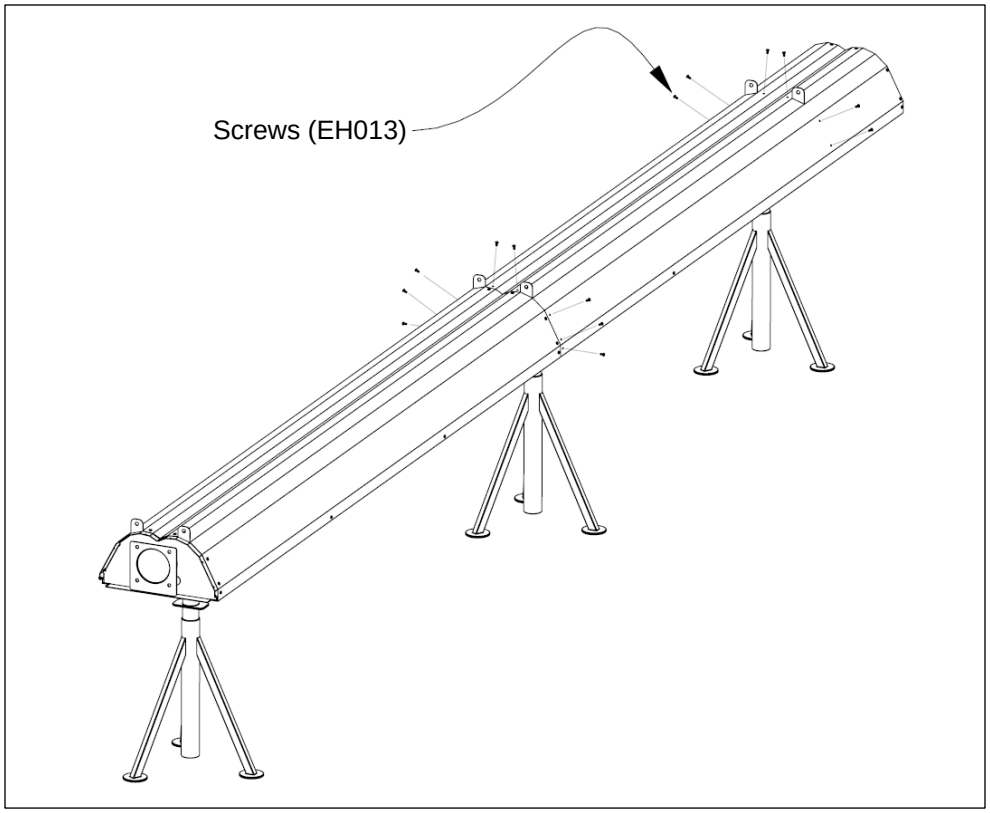
Step 13:



Step 14:

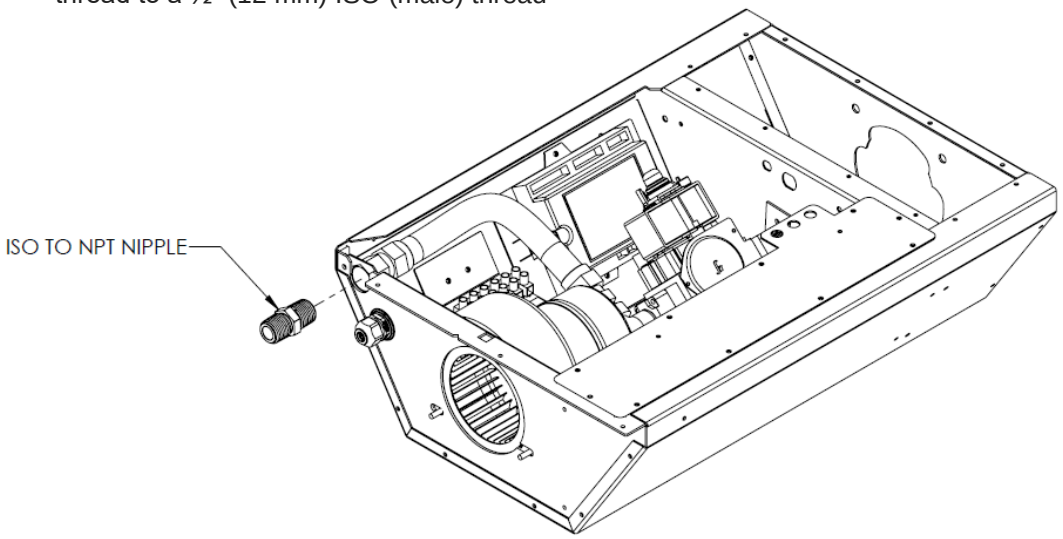


Step 15:

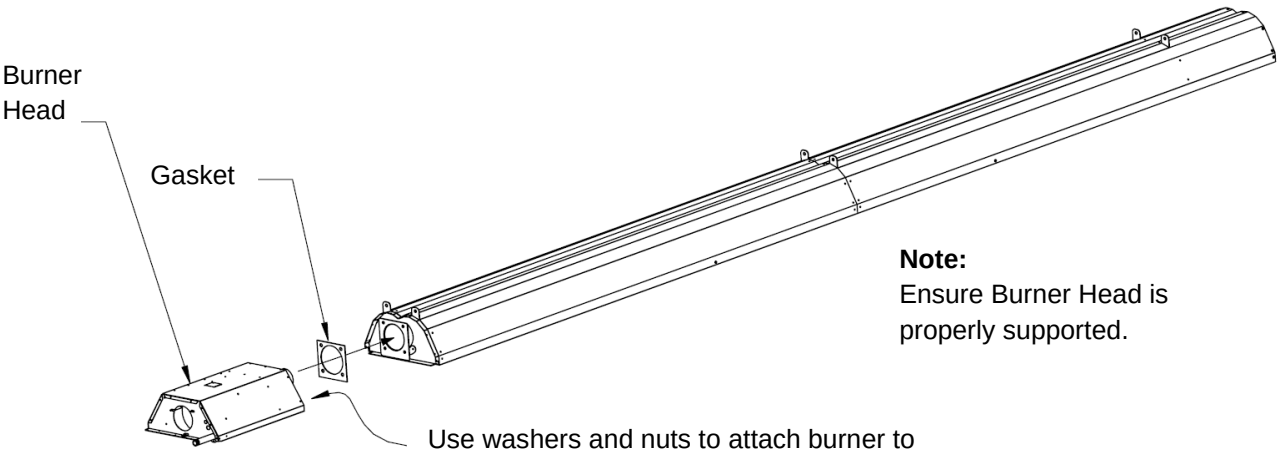


Step 16:

Install nipple to convert from a ½” (12 mm) NPT thread to a ½” (12 mm) ISO (male) thread

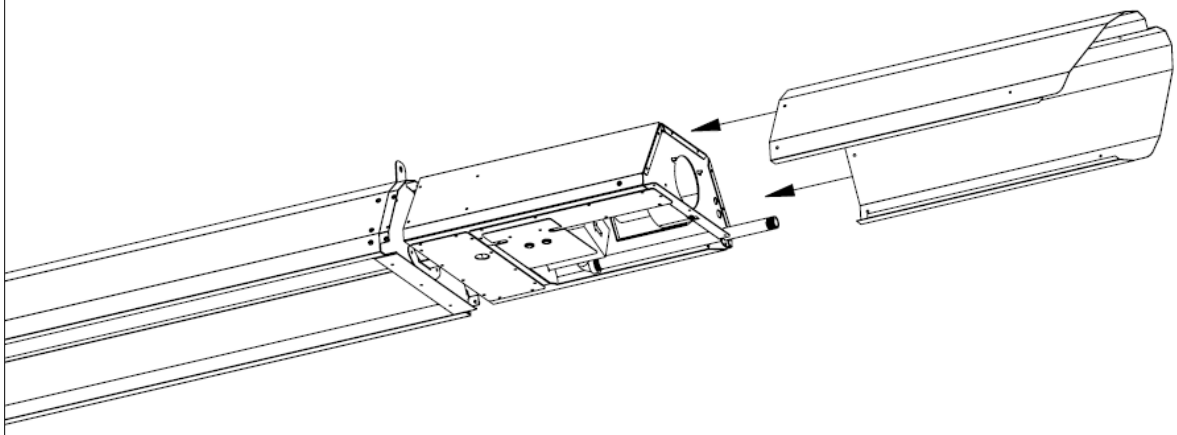


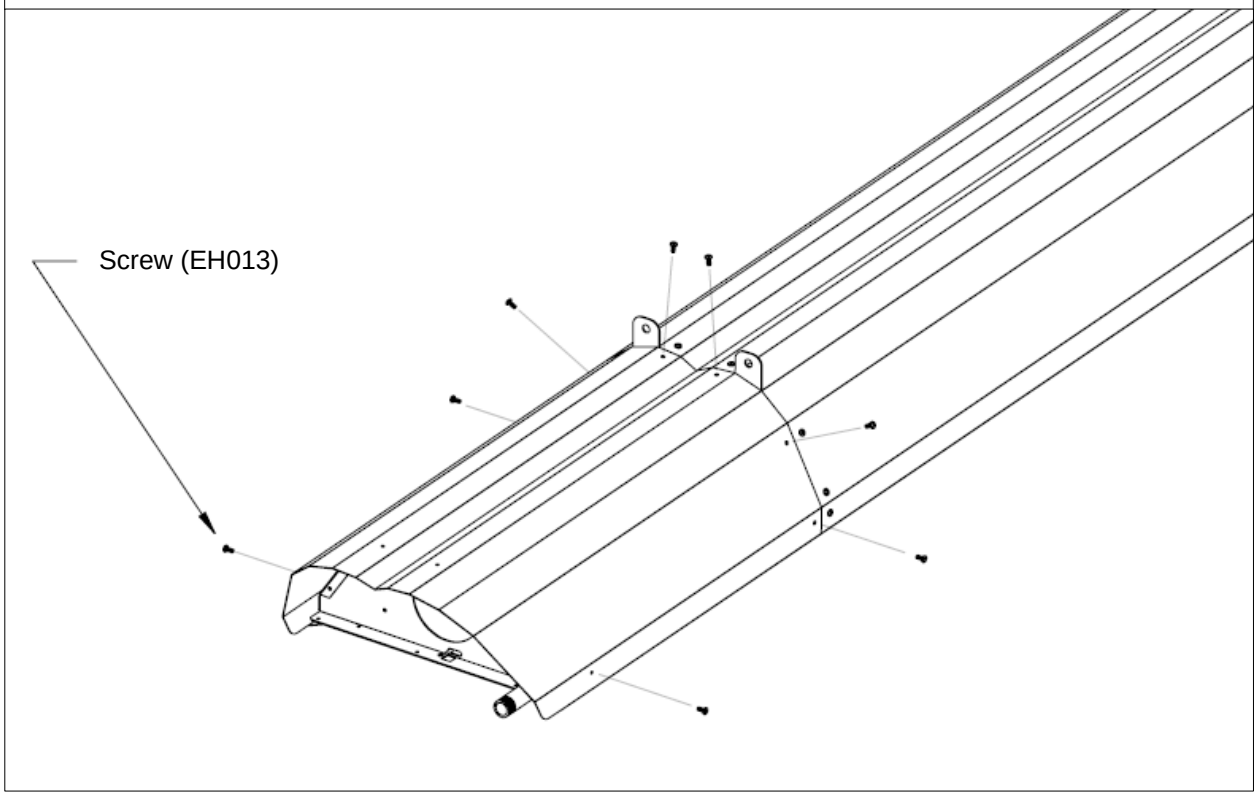
Step 17:



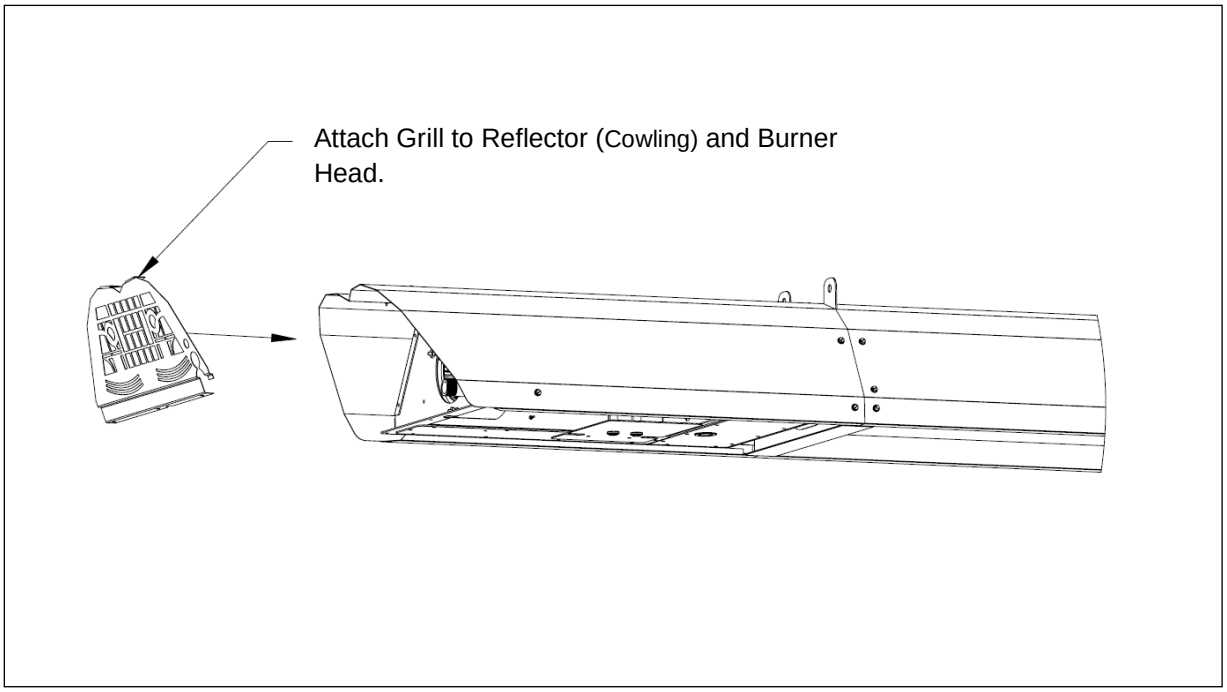
Step 18:

Slide Burner Head Reflector (Cowling) over Burner Head.

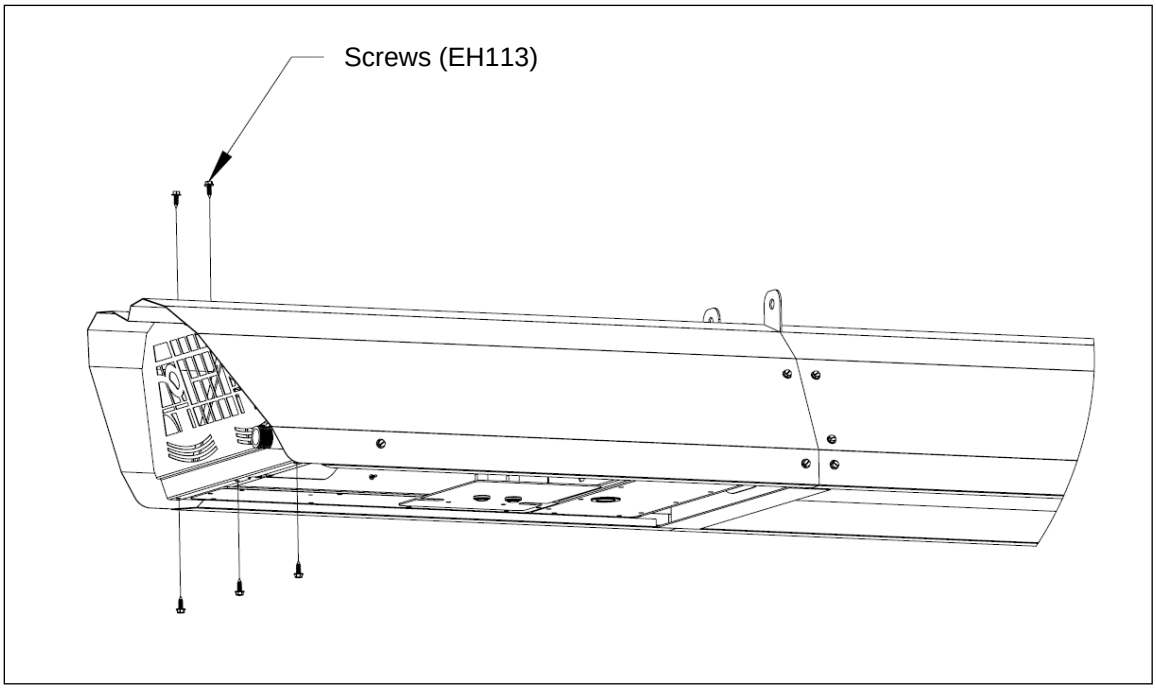




Step 20:

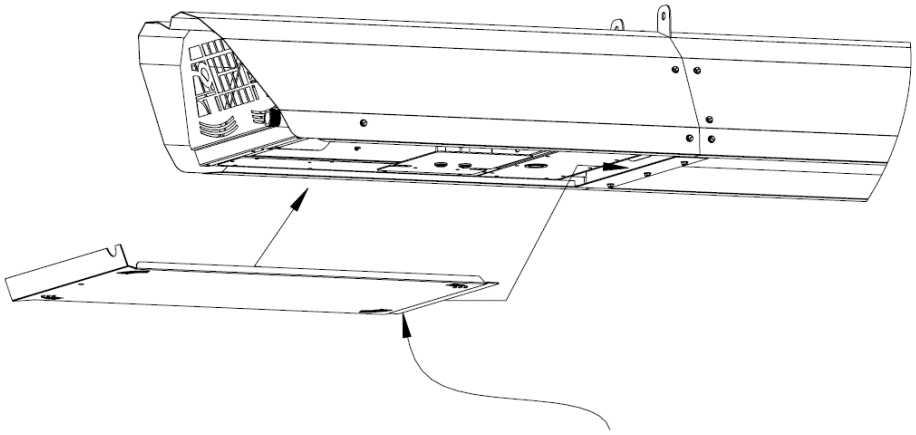


Step 21:



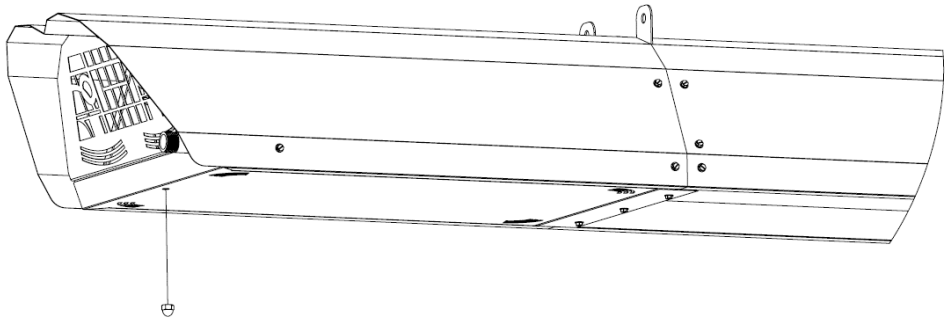
Step 22:

Re-attach Service Cover.



(tuck this edge up and in)

Step 23:

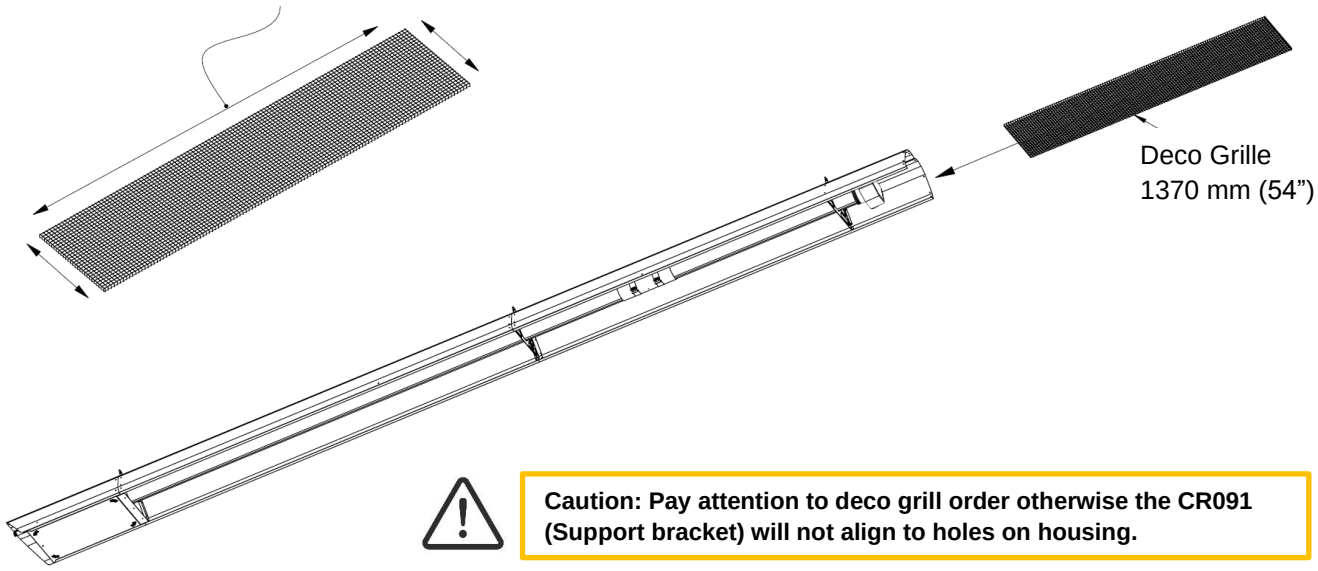


Fasten with screw.

Step 24:

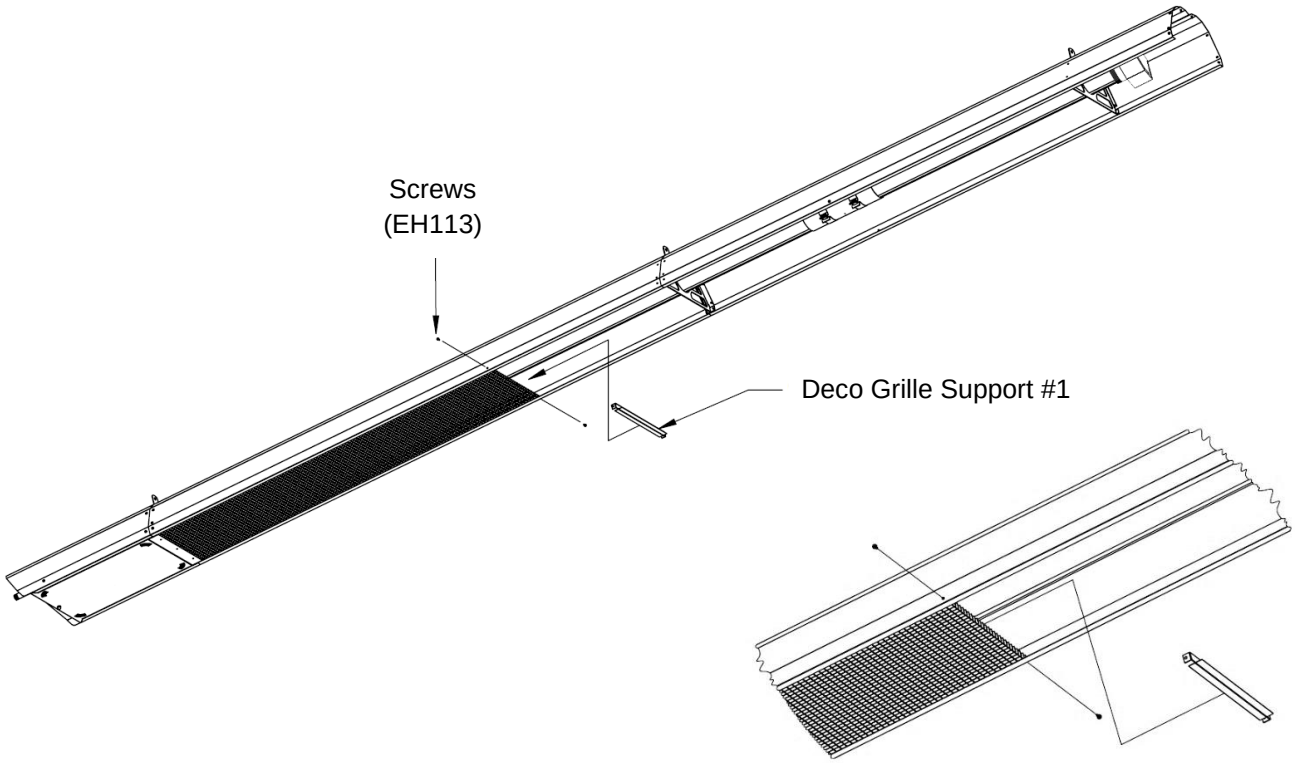
Before installing the Deco Grilles, **bend all the tabs** along one *long* side and both *short* sides of the Grille for easier fitment.

*Gloves recommended!



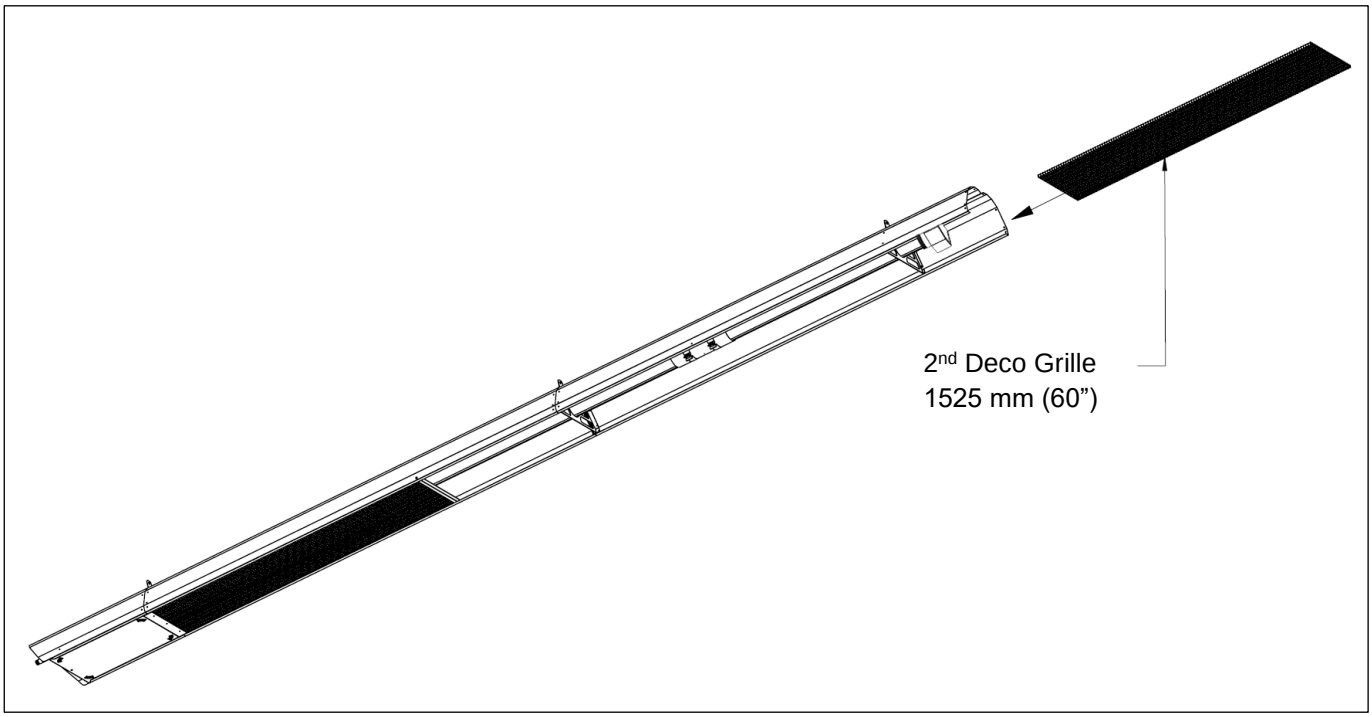
Caution: Pay attention to deco grill order otherwise the CR091 (Support bracket) will not align to holes on housing.

Step 25:

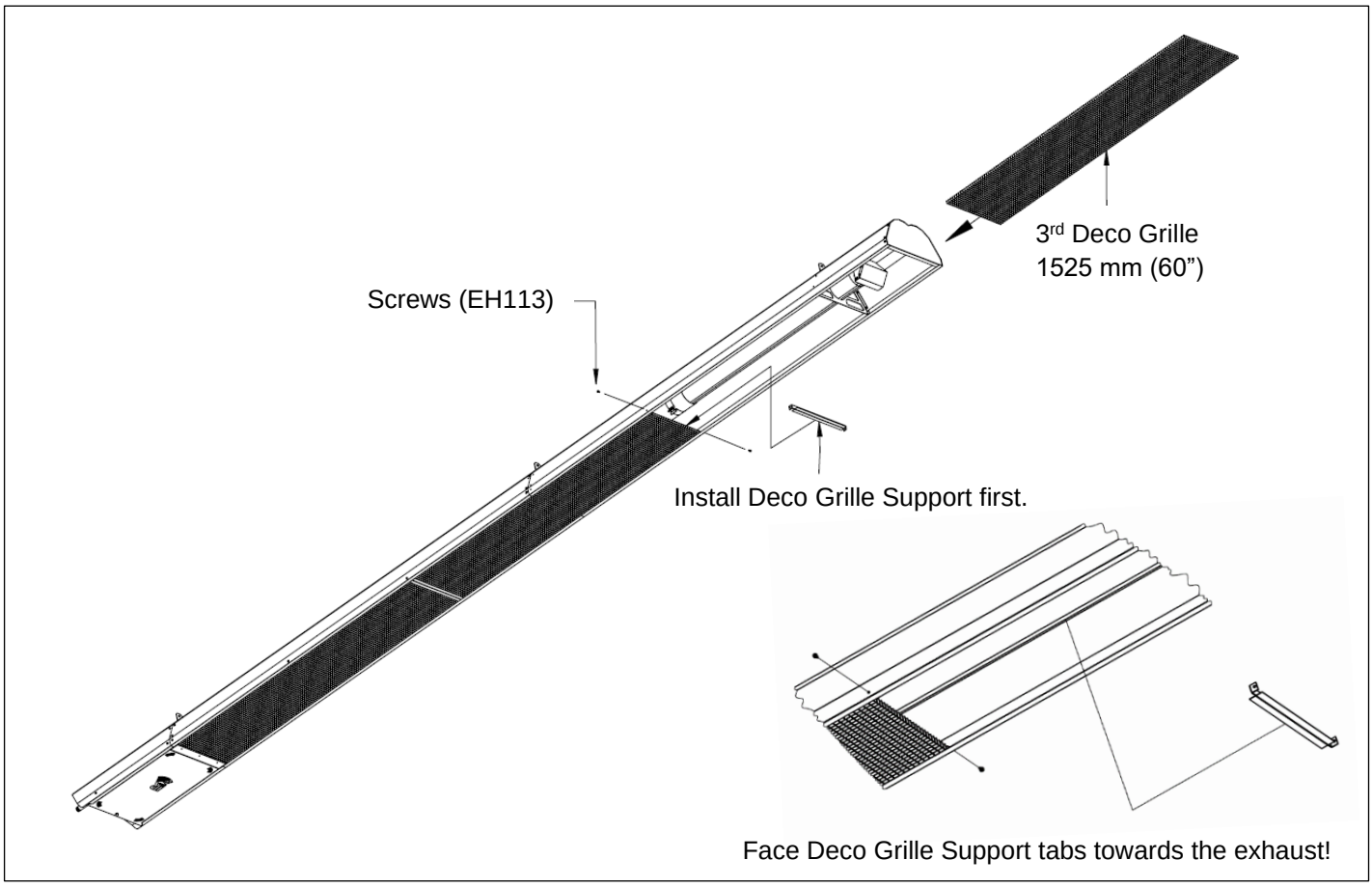


Face Deco Grille Support tabs towards burner!

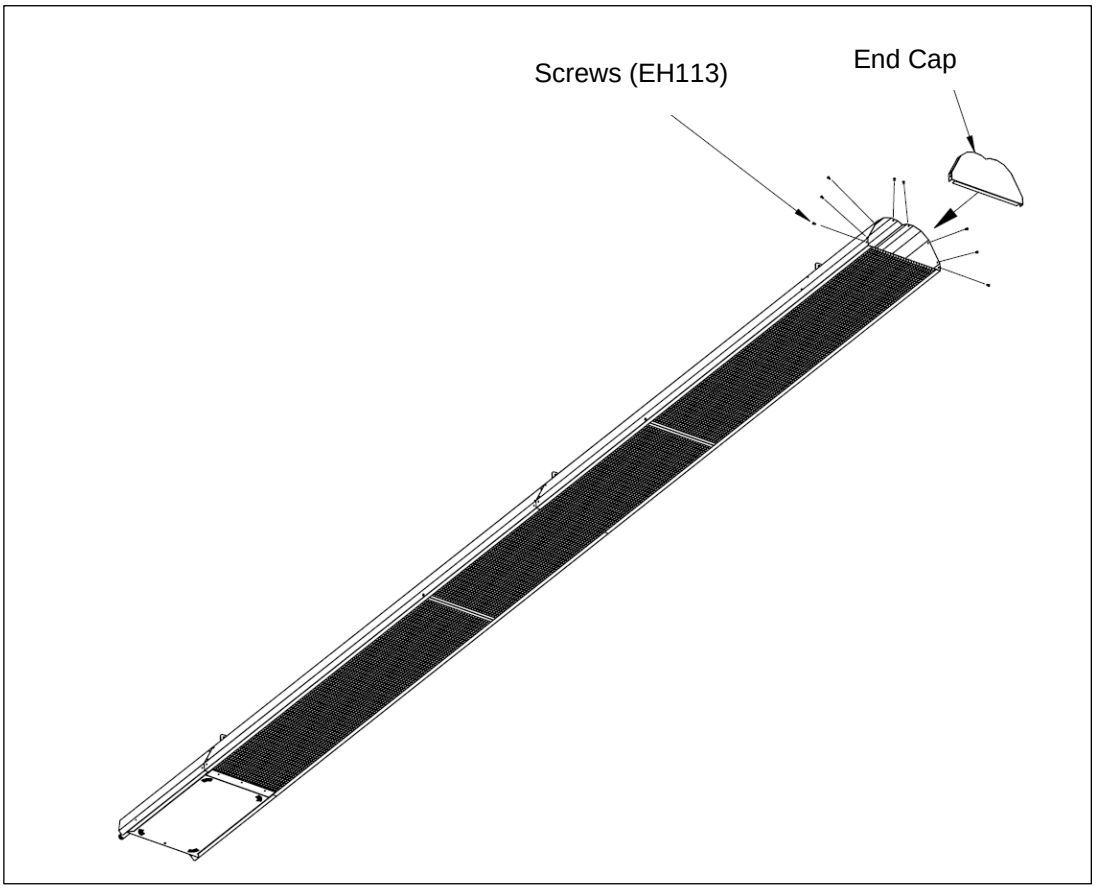
Step 26:

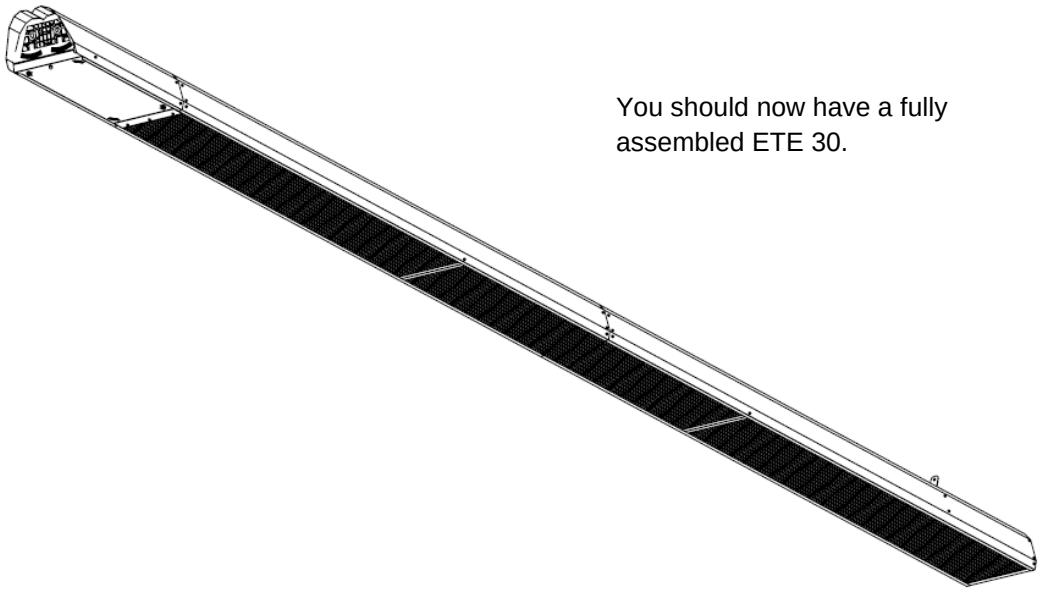


Step 27:



Step 28:

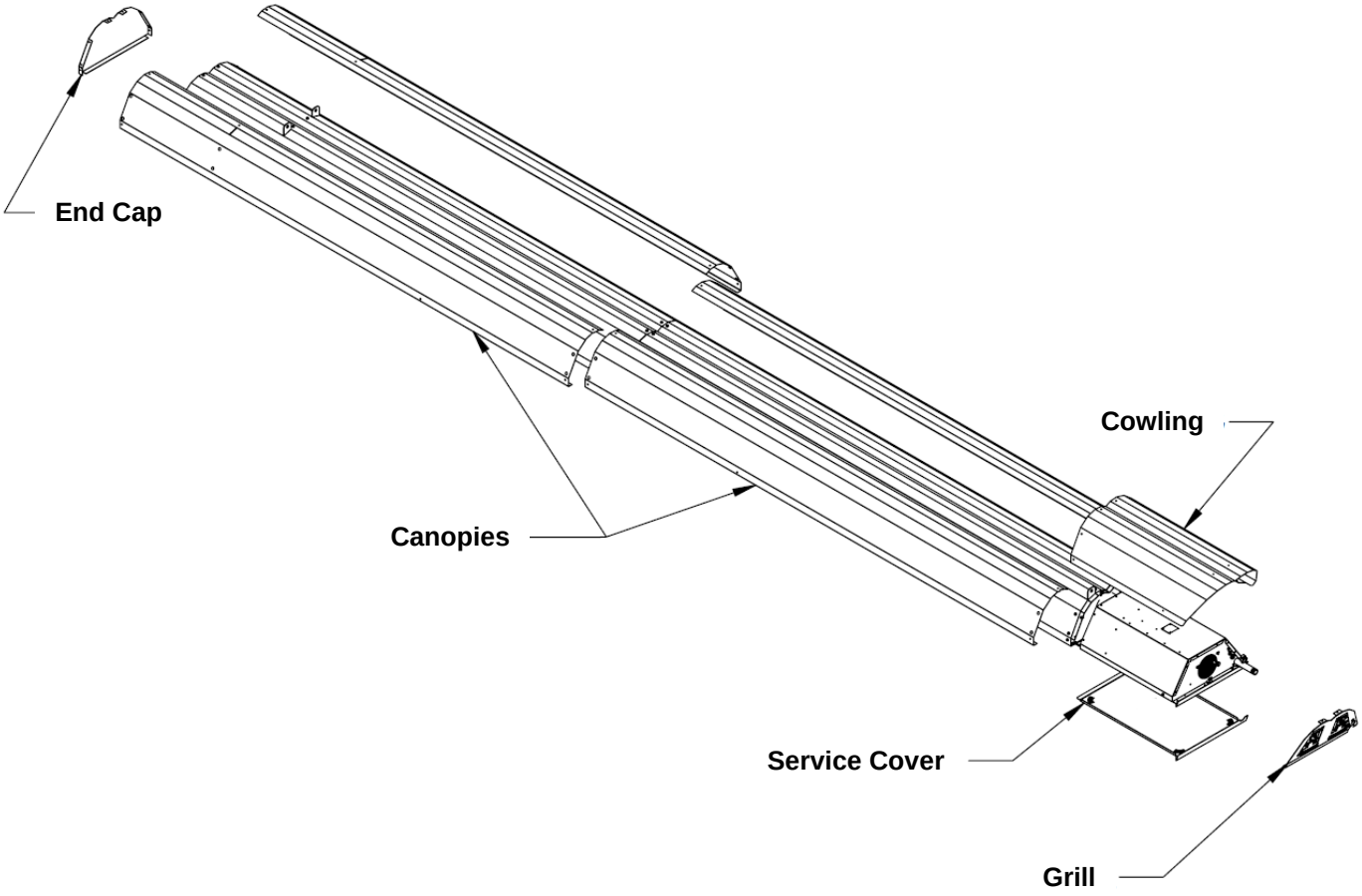




You should now have a fully assembled ETE 30.

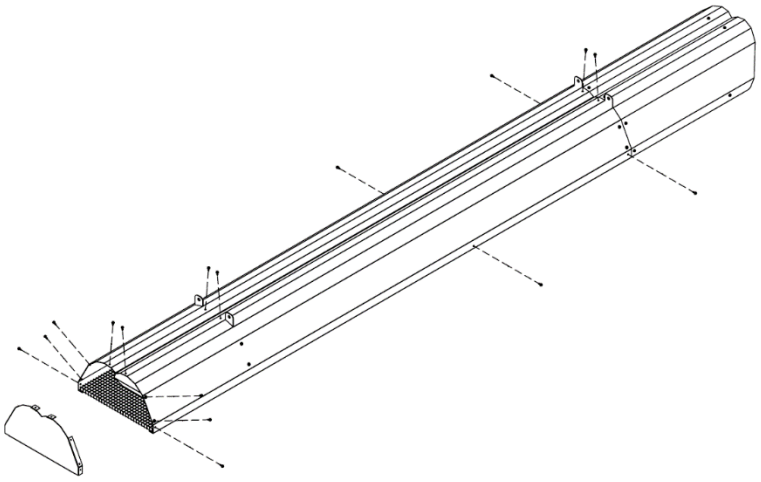
Canopy Installation Instructions (Optional)

The following instructions demonstrate how to assemble the painted canopies of your heater. Contact manufacturer for more details regarding painted canopies.



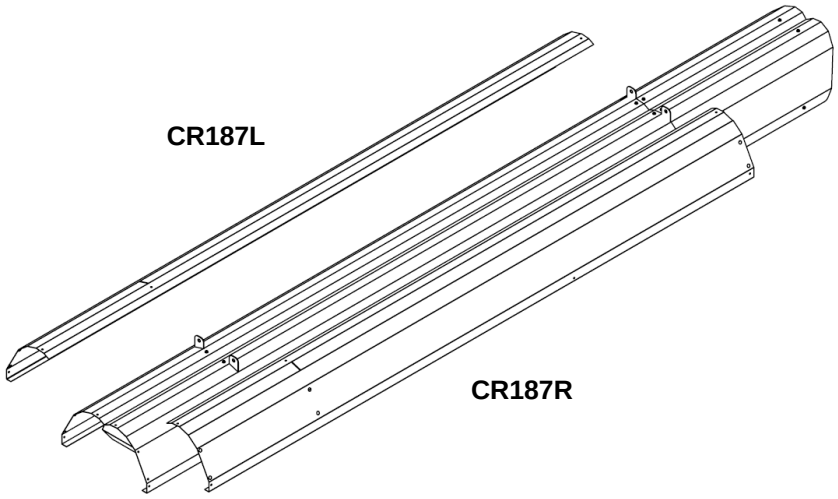
ETE 15

STEP 1
The screws shown on the right are used to secure the canopy.



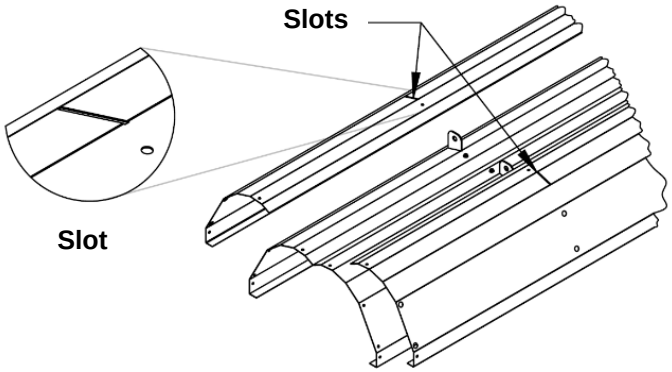
STEP 2

Install canopies (note part numbers) as shown to the right. After placing canopies on reflectors, fasten reflectors and canopies **together**.



STEP 2A

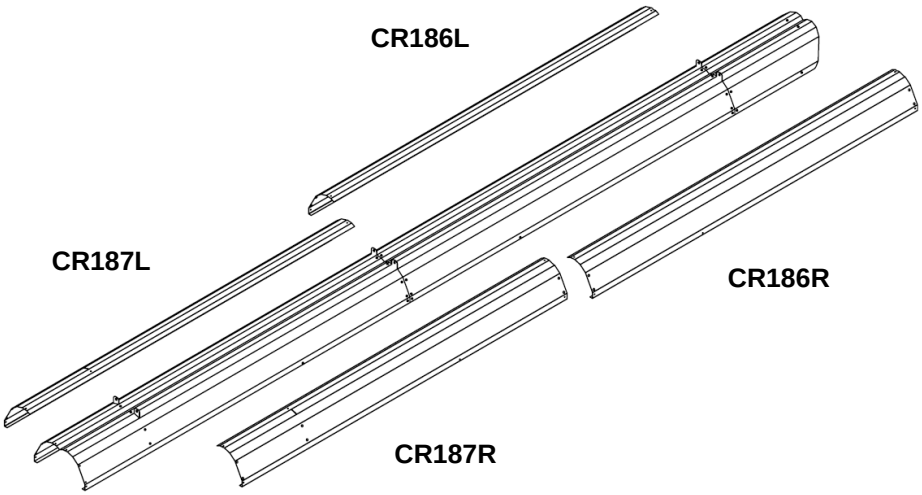
Note the slots in the canopies which allow the hanger to protrude.



ETE 30

STEP 1

Peel plastic off all parts (if applied).

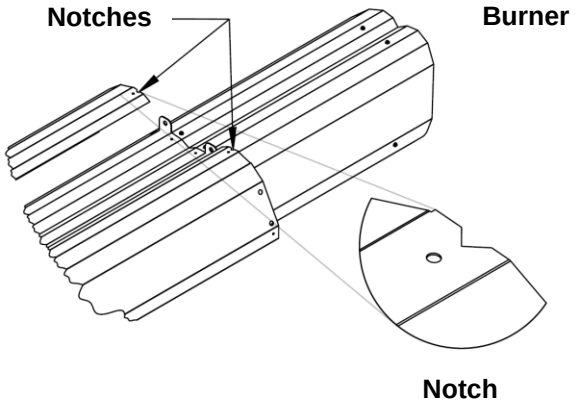


STEP 2

Install canopies (note part numbers) as shown to the right. After placing canopies on reflectors, fasten reflectors and canopies **together**.

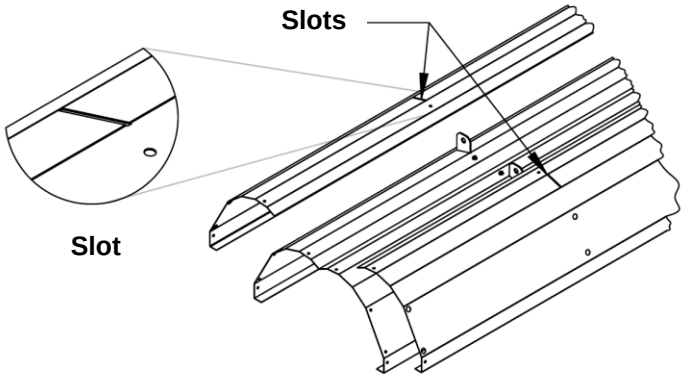
STEP 2A

Install primary canopies (CR186L & R) as shown. Note orientation of **notches** relative to the burner.



STEP 2B

Install secondary canopies (CR187L & R) as shown. Note the **slots** in the canopies which allow the hanger to protrude.

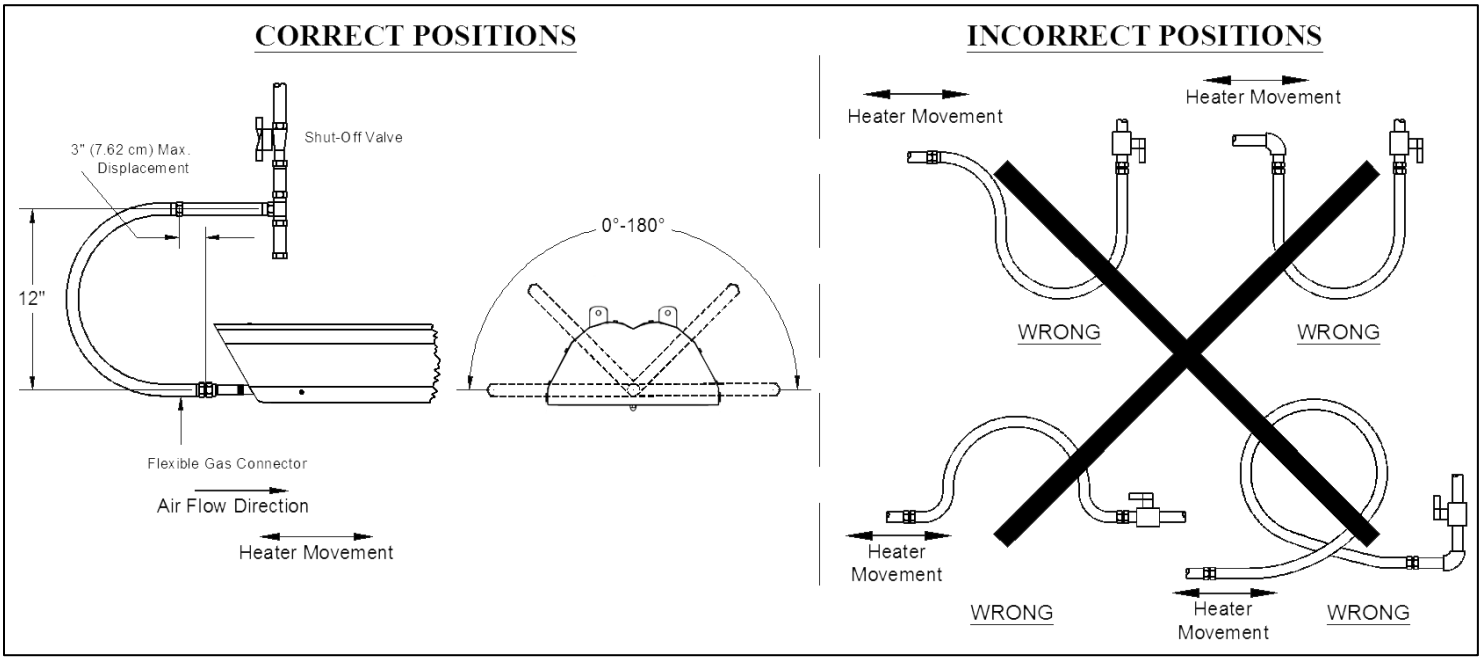


Gas Piping

General Requirements

- Before connecting gas to the heater, check the supply gas and supply pressure: match the information on the rating plate of the heater.
- The gas meter and service must be sufficiently large to supply gas to the connected building gas load including the heating equipment and any other gas fired equipment. Additionally, the gas distribution piping must be designed according to National standards and Codes of Practice in the destination country. Generally, (low pressure) systems designed with a maximum 1.25 mbar (½" W.C.) total pressure drop meet this requirement.
- Gas supply pipe sizing must be in accordance with the National standards and Codes of Practice in the destination country. Minimum size to be 12.7 mm (½") bore.
- To accommodate the dynamic thermal expansion of radiant tube heaters, a flexible gas connection has to be realized. The flexible connection is achieved by the use of flexible gas hoses.
- Flexible gas hoses used for the installation of radiant tube heaters shall be of stainless steel construction. The minimum diameter of the hose shall not be less than the diameter of the inlet connection. The minimum length of the flexible hose shall not be less than 0.5 metres. The maximum length of the flexible hose including the fittings shall not be greater than 2 metres.
- Flexible gas hoses shall meet the requirements of EN 14800:2007. National standards and Codes of Practice in the destination country must be adhered to.

Flexible gas connectors of approved type must be installed as shown in Figure, in one plane, and without sharp bends, kinks or twists. A smooth loop of approximately 300 mm (12”) in diameter is best. Failure to install the gas connection in the approved manner will result in a hazardous and potentially deadly situation due to the movement of the heat exchanger and burner in the normal course of operation.



ELECTRICAL WIRING

General Requirements

The electrical wiring to this heater must be installed in accordance with National standards and Codes of Practice in the destination country.

Electrical supply 230V, 50Hz
Power consumption 70W
Current rating 0.3 A

Internal Wiring Diagram

This is a two-stage heater.

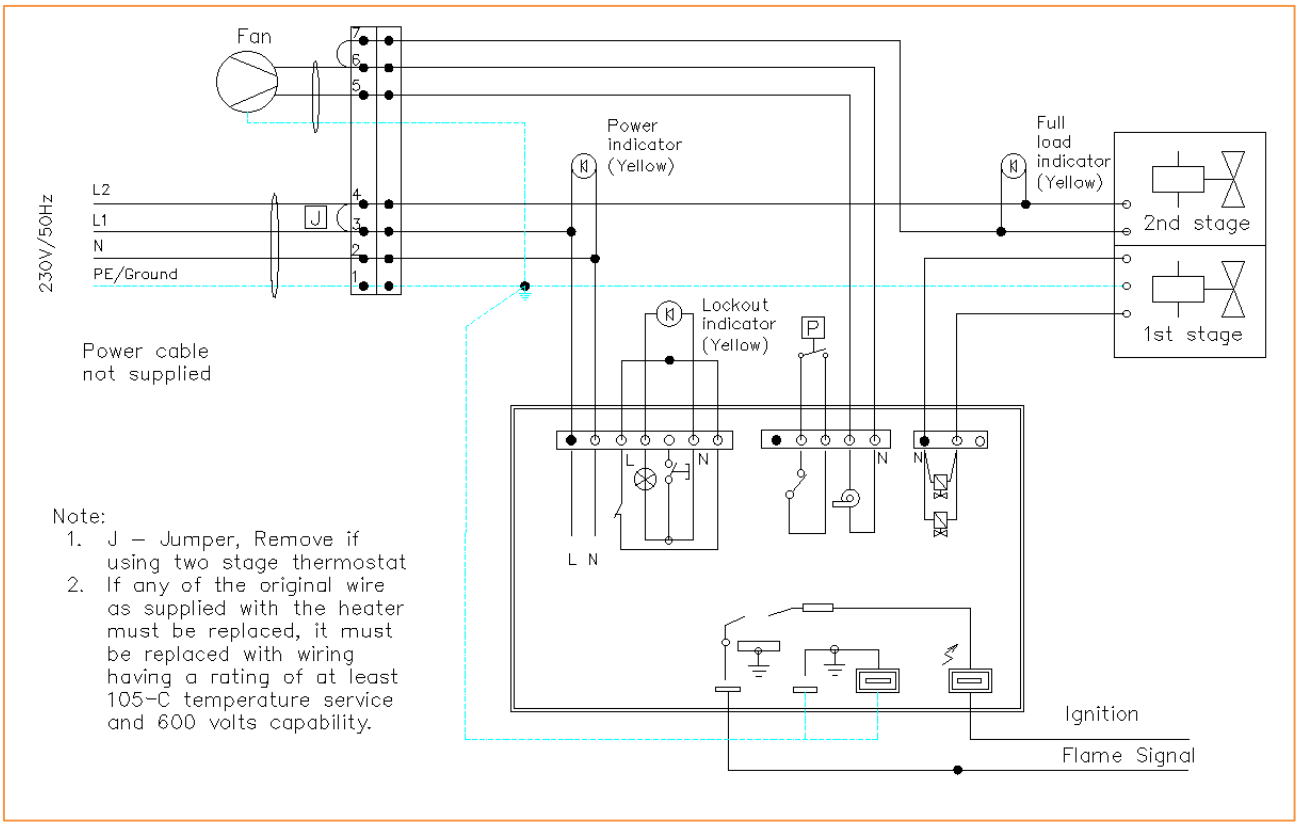


Figure 9: Wiring Diagram

Air Pressure Switch

The heater is equipped with an air pressure switch located in the burner box. This device monitors the air pressure produced by the fan. In the event that the exhaust venting or the intake pipe becomes blocked or sufficiently restricted, the air pressure switch (normally open) will shut down the heater.

BURNER OPERATION

Starting sequence of operation

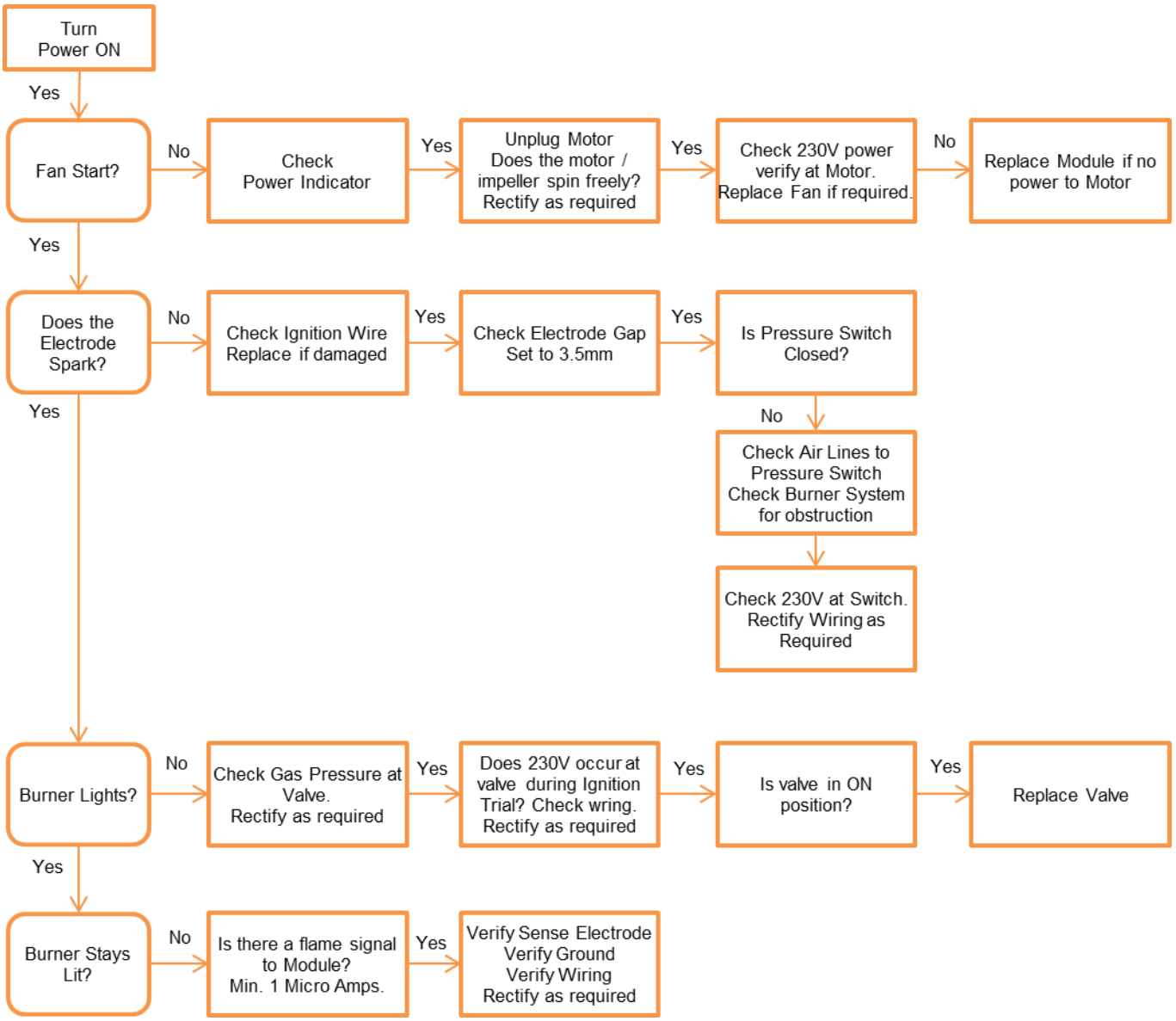
- Turn the power on. When the controller calls for heat, the fan motor will energize.
- After fan establishes the flow, the air-proving switch closes and activates the ignition sequence.
- The ignition module energizes the igniter after a pre-purge period of approximately 30 seconds,.
- The gas valve opens after sparking starts.
    - If a flame is detected, the ignition sensing rod "reads" a rectification signal and the gas valve remains open. The sparking stops when the flame signal is established.
    - If no flame is detected, the gas valve closes and a 30 seconds inter-purge period begins.
    - After the inter-purge, the module repeats the trial for ignition period.
    - If no flame is detected after three trials, the module will lockout. “Lockout” Indicator is ON.
    - Reset is accomplished by removing power from the module for at least 5 seconds.
- During normal operation, the “Power” indicator is ON.
- The “Full load” lamp indicates that the heater is running at full load. At a partial load, the “Full load” indicator stays OFF.
- Switch off the electricity supply to the appliance to shut down the heater. To shut down the heater for long periods of time, switch off the electricity supply and close the gas valve.

MAINTENANCE

For best performance, the certain minimal maintenance procedures should be performed before each heating season:

- Before performing any services or maintenance, shut off gas and electrical supply to heater.
- Check condition of forced air blower scroll and motor. Dirt and dust may be blown or vacuumed from the blower.
- Check condition of burner. Remove any foreign objects or debris from inside the burner box or burner cup.
- Inspect the igniter. Replace igniter if there is excessive wear or erosion, breakage or other defects.
- Be sure the burner observation window is clean and free of cracks or holes. Clean or replace as necessary.
- The reflector sections may be cleaned by wiping with a damp cloth.
- A service agency qualified to adjust and repair infrared heaters should be engaged for service other than routine maintenance.
- Be sure exhaust vent terminal and fresh air inlet grill are free from obstructions. If either is restricted, the safety air switch will not operate properly and the heater could fail to operate.
- Check the inside of the heat exchanger tube visually with a flashlight. If carbon or scale are present, scrape or otherwise remove deposits (a wire brush works well)

Troubleshooting Chart



CONVERSION INSTRUCTIONS

Adjusting the manifold pressure

Check inlet and outlet pressure using the pressure test points provided. After testing, carefully seal test points with the provided screw.

- Remove the modulator plastic cap E
- Full load pressure: energize the modulator. Screw the nut C clockwise to increase the manifold pressure and screw it counter clockwise to decrease manifold pressure.
- Partial load pressure: cut-off the power supply to the modulator and, keeping the nut C blocked, screw in the screw D to increase the pressure and screw it out to decrease it. Use screwdriver 6x1 blade.
- Put back the modulator plastic cap.

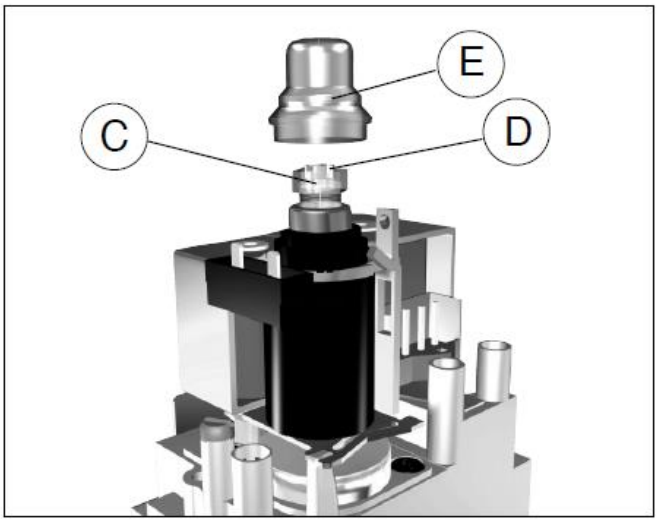


Figure 10: Modulator

- Ensure that the flame does not go out and light back does not occur at the full and partial load gas manifold pressure.

Conversion from Natural Gas to Propane

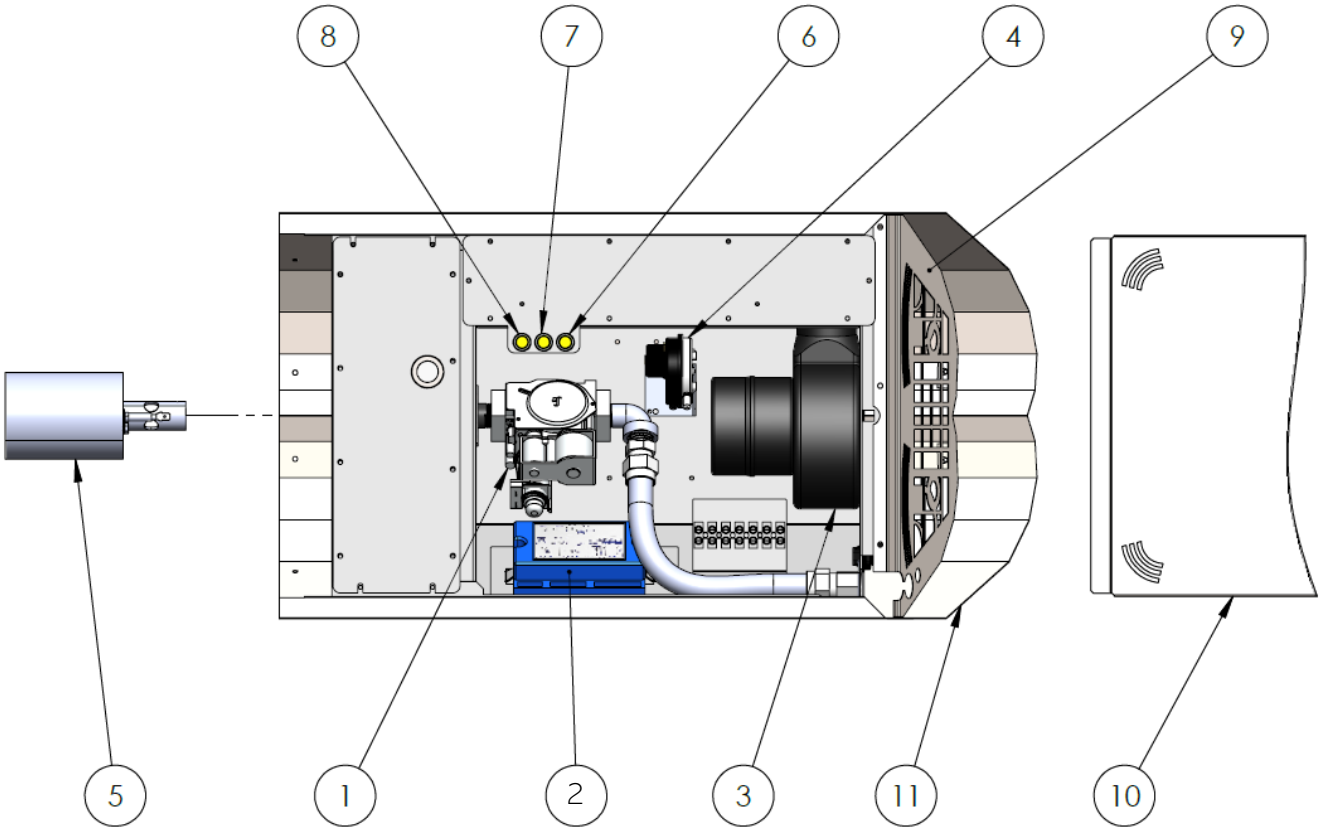
- Remove the injector and replace it with the alternative injector supplied with conversion kit. Check that the size reference marked on the injector agrees with that listed in the Specifications table for the heater model.
- Adjust the manifold pressure, check supply and manifold pressure in accordance with specs.
- Affix the gas adjustment label (Propane 37mbar) supplied with conversion kit onto the rating Plate, adjacent to the headings "Adjusted For" and "Setting Pressure", to cover the original gas adjustment label (Natural Gas, 20mbar).

Conversion from Propane to Natural Gas

- Remove the injector and replace it with the alternative injector supplied with conversion kit. Check that the size reference marked on the injector agrees with that listed in the Specifications table for the heater model.
- Adjust the manifold pressure, check supply and manifold pressure in accordance with specs.
- Affix the gas adjustment label (Natural Gas, 20mbar) supplied with conversion kit onto the Data Label adjacent to the headings, "Adjusted For" and "Setting Pressure" to cover the original gas adjustment label (Propane, 37mbar).

Replacement Parts List

Item	Part No.	Description
1	RP-UG111	Gas Train Assembly
2	RP-CE432	Ignition Module
3	RP-CE446	Blower Motor Assembly
4	RP-CE450 RP-CE464	Air Switch w/ Bracket, 75 Pa, ETE30 Air Switch w/ Bracket, 47 Pa, ETE15
5	RP-UG001 RP-CE002 RP-CE003 RP-CE439 RP-CE451	Burner Cup Electrode for Sparking Electrode for Flame Sense Wire, Ignition 12” Wire, Flame Sense 10”
6	RP-UE015	Full Load Indicator Light, Amber, 230 VAC
7	RP-UE015	Power Indicator Light, Amber, 230 VAC
8	RP-UE015	Lockout Indicator Light, Amber, 230 VAC
9	US225AL	Grill
10	EESCPSRP	Service Door
11	US234AL	Cowling



TECHNICAL DETAILS

	Heat Input (kW)		Partial Heat Input (kW)		Injector	Weight	Dimensions (mm)		
Model	Gross	Net	Gross	Net	mm (#)	kg	L	W	H
Natural Gas									
ETE 15	14.5	13.0	10.5	9.5	3.05 (#31)	37	2953	364	205
ETE 30	27.5	25.0	21.5	19.6	4.22 (#19)	57	5086	364	205
Propane									
ETE 15	14.5	13.5	10.5	9.6	2.06 (#46)	37	2953	364	205
ETE 30	27.5	25.0	21.5	19.6	2.82 (#34)	57	5086	364	205