

# Installation, Operation and Service Instructions

## INFRARED HEATER

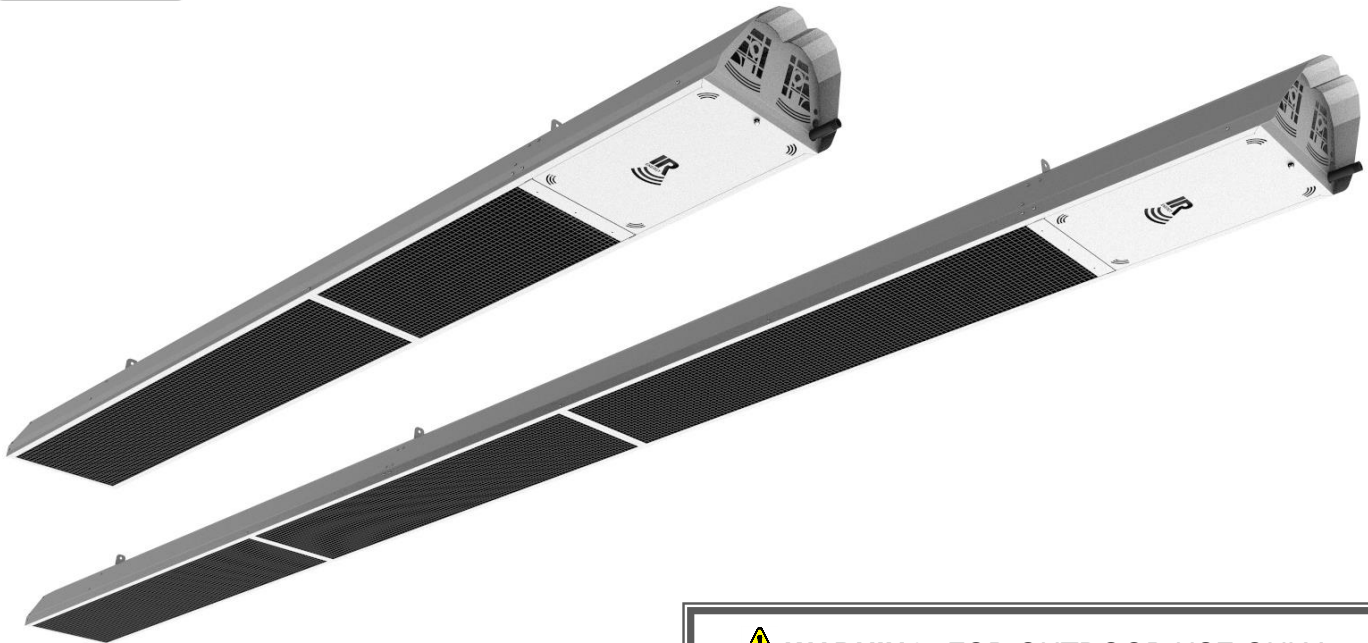


evenTUBE®

SERIES EvenTube®

Model ETS Infrared Patio Heater

Two-Stage



**⚠ WARNING: FOR OUTDOOR USE ONLY**

### 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.

### FOR YOUR SAFETY

Do not store or use gasoline or other 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

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.

### INSTALLER

Provide Manual to owner upon completion of installation!

Read and thoroughly understand these Instructions before attempting any installation.



**Canada:** 563 Barton Street, Stoney Creek, Ontario L8E 5S1  
**USA:** 980 Cobb Place Blvd, NW#100 Kennesaw, GA 30144

[www.irenergy.ca](http://www.irenergy.ca)

LT213

# Table of Contents

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## CAUTION AND GENERAL SAFETY

SAFETY REQUIREMENTS .....	4
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## GENERAL

INSTALLATION CODES .....	5
GENERAL INSTALLATION AND GAS CODES .....	5
GAS SUPPLY LINES .....	5
ELECTRICAL.....	5

## SPECIFICATIONS

HEATER COMPONENTS: ETS 50.....	6
HEATER COMPONENTS: ETS 60, 80, 100 .....	8
DIMENSIONAL DETAILS: ETS 50 .....	10
DIMENSIONAL DETAILS: ETS 60, 80, 100 .....	11

## INSTALLATION REQUIREMENTS

POWER & GAS SPECIFICATIONS .....	12
CLEARANCE TO COMBUSTIBLES.....	13
HEATER MOUNTING.....	14
VENTING.....	14
INSTALLATION / CODE REQUIREMENTS.....	15

## INSTALLATION INSTRUCTIONS

INSTALLATION – ETS 60, 80, 100 .....	16
INSTALLATION – ETS 50 .....	32

## WIRING DIAGRAMS

GENERAL REQUIREMENTS.....	34
EXTERNAL WIRING OPTIONS .....	35

## LIGHTING & SHUTDOWN INSTRUCTIONS

LIGHTING .....	36
SHUT DOWN.....	36

## MAINTENANCE & TROUBLE SHOOTING

MAINTENANCE.....	37
TROUBLE SHOOTING.....	37
TROUBLESHOOTING CHART.....	39

REPLACEMENT PARTS LIST .....	40
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WARRANTY .....	41
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### **DANGER - CARBON MONOXIDE HAZARD**

This appliance can produce carbon monoxide which has no odor.

Using it in an enclosed space can kill you.

Never use this appliance in an enclosed space such as a camper, tent, car or home.

### **WARNING - ELECTRICAL GROUNDING INSTRUCTIONS**

This heater is equipped with a three-prong (grounding) plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle. Do not cut or remove the grounding prong from this plug.

Keep any electrical supply cord away from any heated surfaces.

### **CAUTION - MAINTENANCE INSTRUCTION**

1. Keeping the appliance area clear and free from combustible materials, gasoline and other flammable vapors and liquids.
2. Not obstructing the flow of combustion and ventilation air.
3. Visually checking burner flames.
4. Cleaning the appliance, including special surfaces, with recommended cleaning agents, if necessary.

Check the maintenance section in this manual for additional instructions.

### **CAUTION - INSTALLATION**

This appliance shall be used only in a well-ventilated space and shall not be used in a building, garage or any other enclosed area.

The appliance may be installed with shelter no more inclusive than:

1. With walls on all sides, but with no overhead cover.
2. Within a partial enclosure which includes an overhead cover and no more than two side walls. These side walls may be parallel, as in a breezeway, or at right angles to each other.
3. Within a partial enclosure which includes an overhead cover and three side walls, as long as 30 percent or more of the horizontal periphery of the enclosure is permanently open.

## Caution and General Safety

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**CAUTION: FIRE OR BURN INJURY HAZARD**

- At all times maintain clearance to combustible materials as further specified in this manual. Failure to do so can result in serious fire hazard.
- Never operate heaters in atmosphere containing flammable vapours or combustible dusts.
- This heater is equipped with an electronic and automatic ignition device. Do not attempt to light the burner by hand. Failure to comply can result in a serious fire and personal injury hazard.
- Certain materials, when stored under this heater are subjected to radiant heat can soften, distort or otherwise be damaged, special care should be taken of plastic materials
- Appliance surfaces, other than the obvious flame and emitter surfaces, attain elevated temperatures during operation. Do not touch the heater head during operation. Everyone should be alerted to this hazard to avoid burning.
- Children should be strictly supervised when in the area of this heating appliance. Playing or running around the structure should be strictly forbidden.
- Clothing or other flammable materials should not be hung on or near this heater.
- Any guard or other protective device removed for servicing the heater must be replaced prior to operating the heater.
- 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.

### Safety Requirements

1. Never locate the heater directly below electrical lines, gas lines or sprinkler systems.
2. Do not locate heater too close to vinyl or plastic wall coverings. These materials may discolour or soften well before they reach combustible limits.
3. The heater requires a minimum clearance from combustible materials. See the Clearance to Combustible Materials section for specific requirements.
4. Always allow room for maintenance purposes.
5. The heater aspirates air for combustion. Do not locate heater where there are severe draft conditions or airflow restrictions to the burner.

## Installation Codes

Installations must comply with local building codes, or in their absence, the latest edition of the national regulations and procedures as listed below.

## General Installation and Gas Codes

Heaters must be installed only for use with the type of gas appearing on the rating plate, and the installation must conform to the National Fuel Gas Code, ANSI Z223.1/NFPA 54 in the US and CSA B149.1 *Natural Gas & Propane Installation Code* in Canada.

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

## Gas Supply Lines

Gas supply pipe sizing must be in accordance with the National Fuel Gas Code, ANSI Z223.1/NFPA 54 in the US and CSA B149.1 *Natural Gas & Propane Installation Code* in Canada.

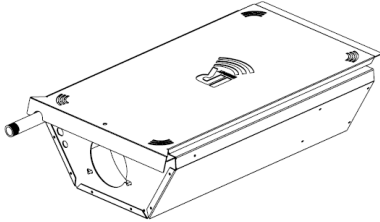
A 1/8" NPT plugged tap must be installed in the gas line connection immediately upstream of the burner farthest from the gas supply meter to allow checking of system gas pressure.

## Electrical



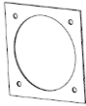
All heaters must be electrically grounded in accordance with the National Electric Code, ANSI/NFPA 70 in the US, and the Canadian Electric Code, CSA C22.1 in Canada, and must comply with all local requirements.


# Specifications

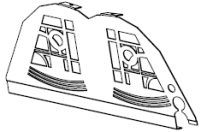
## Heater Components for ETS 50:

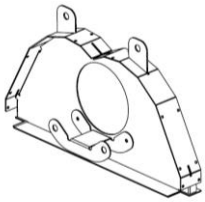


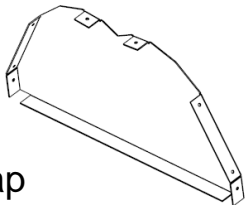
**Burner Head**  
(with Service Cover)

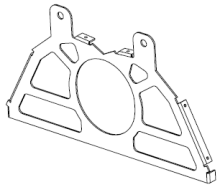
5/16 Nut QTY (4)  
  
 5/16 Lock Washer QTY (4)  
  
 Gasket QTY (1)  


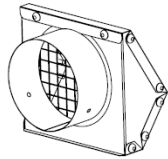
#8-32 x 3/8"  
Screws  
QTY (55)  



**Grill**  
QTY (1)  


**Burner Hanger**  
QTY (1)  


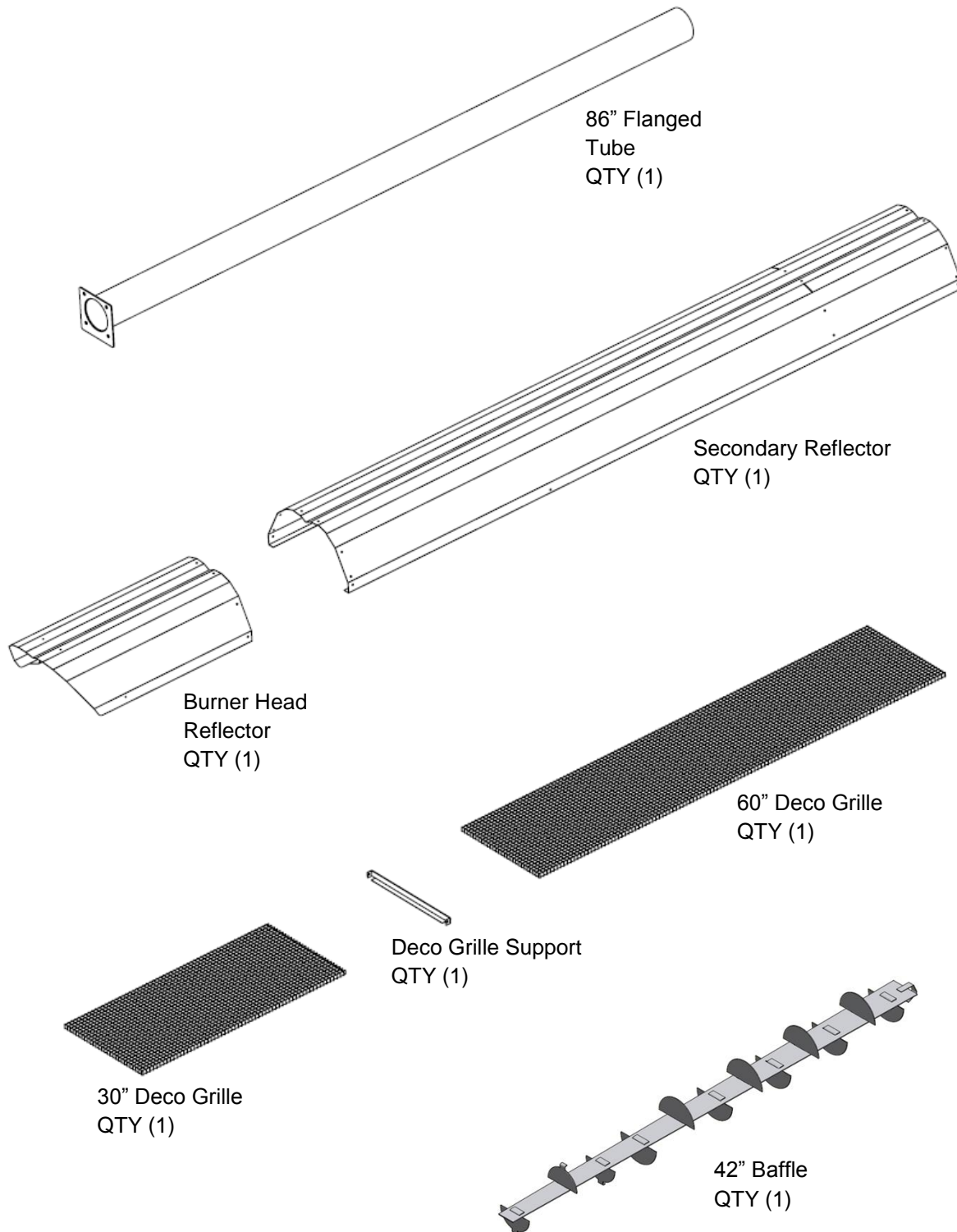
**End Cap**  
QTY (1)  


**Vent Hanger**  
QTY (1)  


**Vent Terminal**  
QTY (1)  


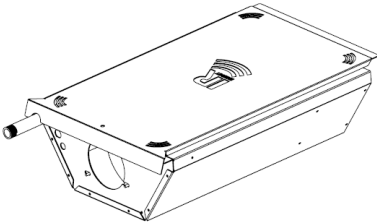
#8 x 1/2"  
Screws  
Self-drilling  
QTY (2)  


## Heater Components for ETS 50



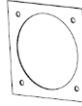



# Specifications

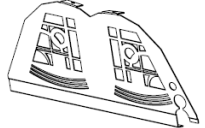
## Heater Components for ETS 60, 80, 100:

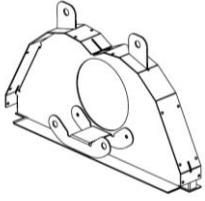


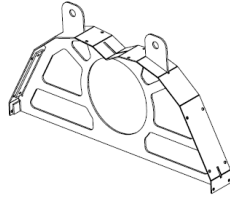
**Burner Head**  
(with Service Cover)

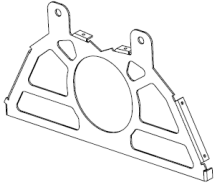
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 5/16 Lock Washer QTY (4)  
  
 Gasket QTY (1)  


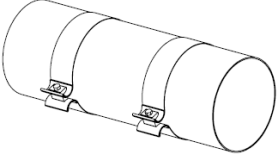
#8-32 x 3/8"  
Screws  
QTY (55)  


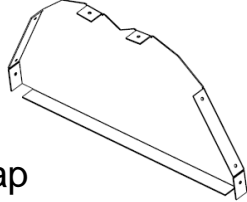
**Grill**  
QTY (1)  


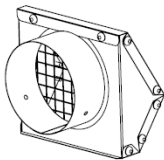
**Burner Hanger**  
QTY (1)  



**Middle Hanger**  
QTY (1)  


**Vent Hanger**  
QTY (1)  


**Coupling**  
QTY (1)  


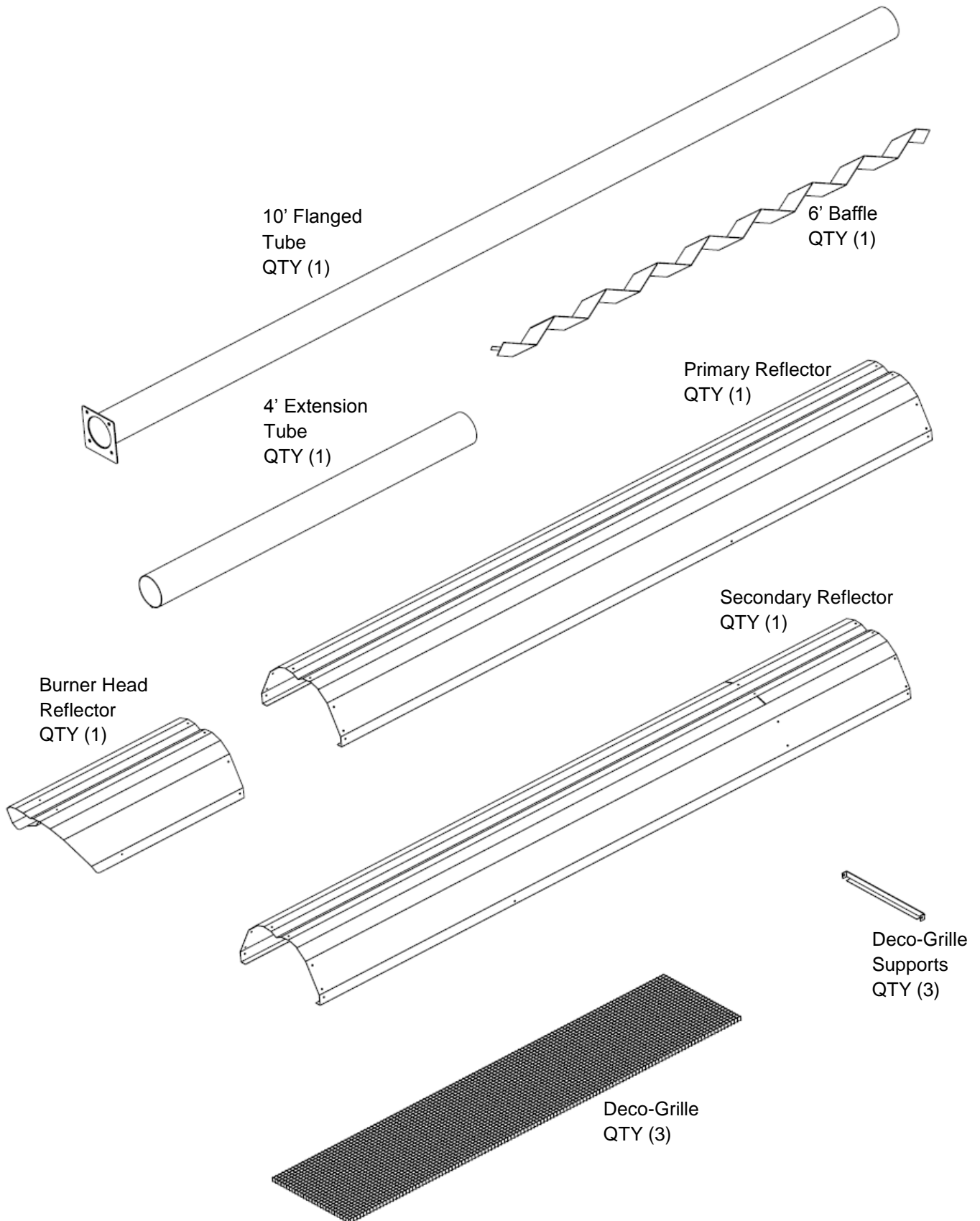
**End Cap**  
QTY (1)  


**Vent Terminal**  
QTY (1)  


#8 x 1/2"  
Screws  
Self-drilling  
QTY (2)  




## Heater Components ETS 60, 80, 100 continued:

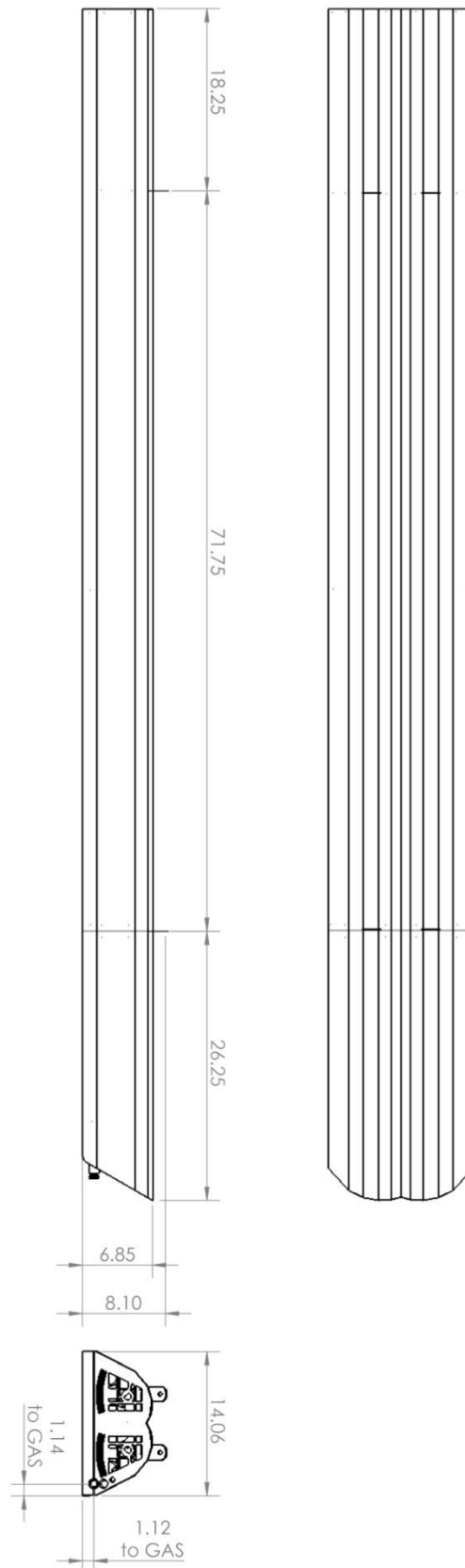


# Specifications

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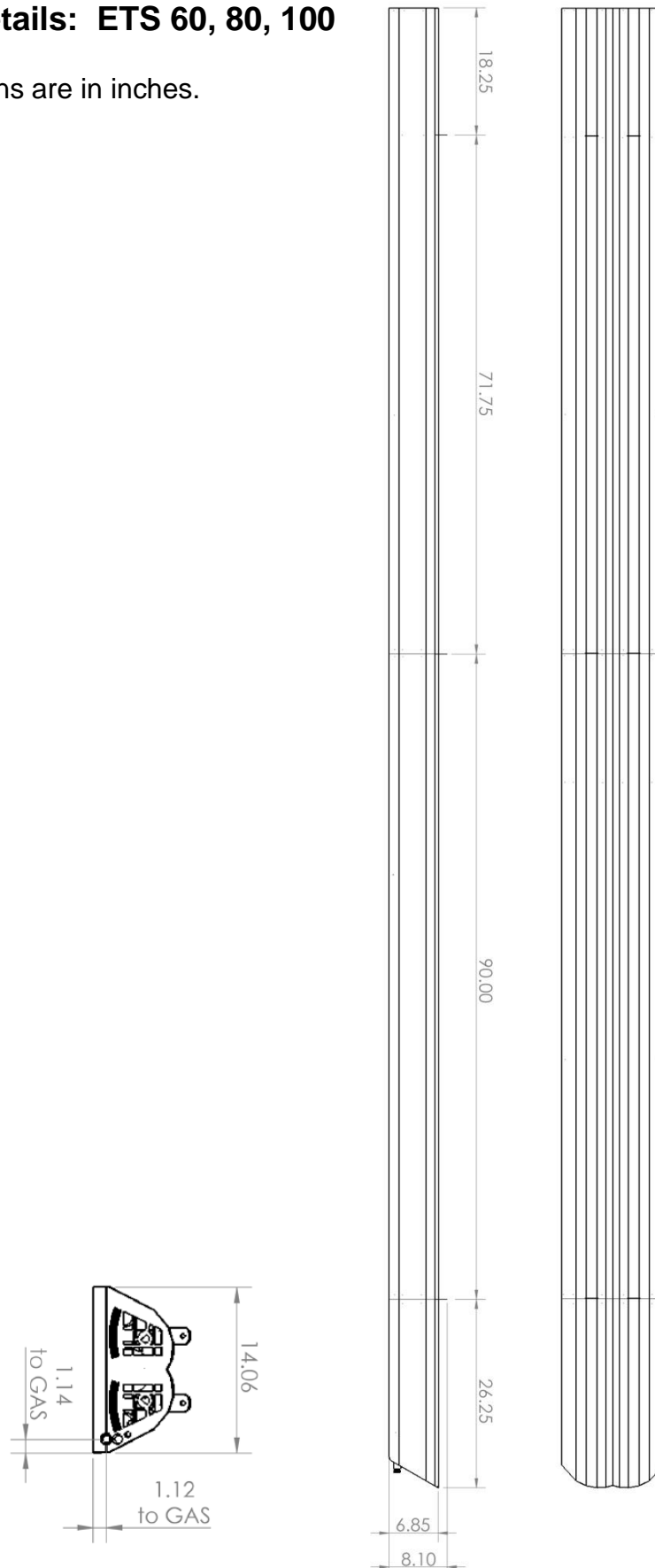
## Dimensional Details: ETS 50

**Note:** All dimensions are in inches.



## Dimensional Details: ETS 60, 80, 100

**Note:** All dimensions are in inches.



# Installation Requirements

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## Power & Gas Specifications

### Gas Supply:

<u>Rated Input</u>	<b>Hi Fire:</b>	<b>Low Fire:</b>
ETS – 100 NG	100,000 BTU	75,000 BTU
ETS – 80 NG	80,000 BTU	60,000 BTU
ETS – 60 NG, LP	60,000 BTU	45,000 BTU
ETS – 50 NG	50,000 BTU	35,000 BTU

<u>Inlet Pressure</u>	<b>Natural Gas:</b>	<b>Propane Gas:</b>
	Minimum: 5.0" W.C.	11.5" W.C.
	Maximum: 14.0" W.C.	14.0" W.C.

<u>Manifold Pressure</u>	<b>Natural Gas:</b>	<b>Propane Gas:</b>
	High Rate: 3.3" W.C.	10.2" W.C.
	Low Rate: 2.0" W.C.	6.4" W.C.

<u>Inlet Connection</u>	<b>Natural Gas:</b>	<b>Propane Gas:</b>
	½" Female NPT	½" Female NPT

### Electrical Supply:

120 VAC 60Hz. 1Amp: 36" Cord with grounded 3 prong plug.

### Important

Installation or repair should only be done by a qualified service person. The heater should be inspected before use and at least annually by a qualified service person.

The appliance and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of ½ psig (3.5 kPa)

The appliance 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 (3.5 kPa).

# Installation Requirements

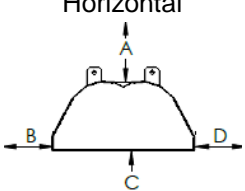
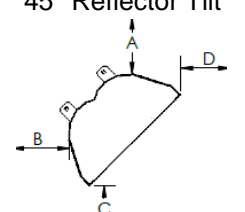
## Clearance to Combustibles

A general clearance of 18" (0.5 m) 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.

		Model No.:	
Reflector Configurations	Dim	ETS - 50	ETS – 60, 80, and 100
Horizontal 	A	5.5"	4"
	B	25"	29"
	C	66"	73.5"
	D	25"	29"
45° Reflector Tilt 	A	8"	8"
	B	3"	2.5"
	C	50"	55.5"
	D	40"	43"
Burner End		4"	4"
Exhaust End		6"	

Adequate clearance to sprinkler heads must be maintained.

**NOTE:** Sprinkler head heat fuse link performance may alter with age.

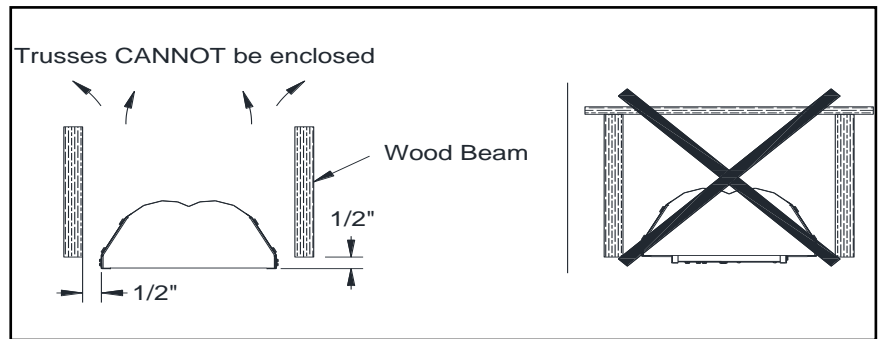
The stated clearance to combustibles represents a surface temperature of 47°C (117°F) **above** room temperature. Building materials with low heat tolerance (**such as plastics, vinyl siding, canvas, tri-ply, etc.**) may become subject to degradation at lower temperatures. **It is the installer's responsibility to ensure that adjacent materials are protected from degradation.**

**NOTE:** With an ambient temperature of 21°C (70°F), the surface temperatures at the clearance distances listed above could reach 86°C (187°F). **Care should be taken with placement of plastic or vinyl in the proximity of the heater** as they tend to distort and soften at these temperatures.

## Installation Requirements

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.



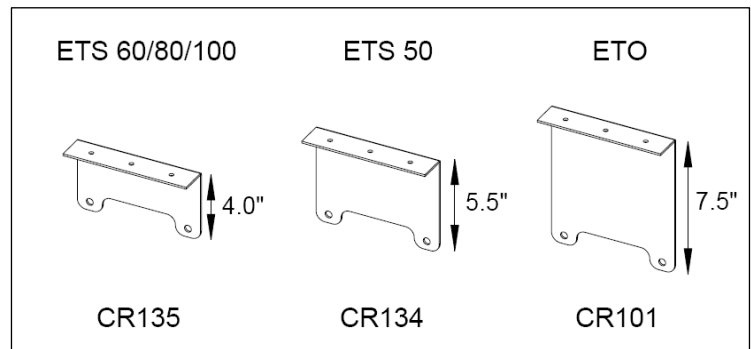
**NOTE:** Surfaces between joists or flush with the heater must not exceed 32°C (90°F) above ambient temperature.

## Heater Mounting

The heater can be mounted in a variety of ways, using a combination of chain, IR 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.

**Note: Minimum mounting height is 7' in Canada and 8' in the US.**



## 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.**

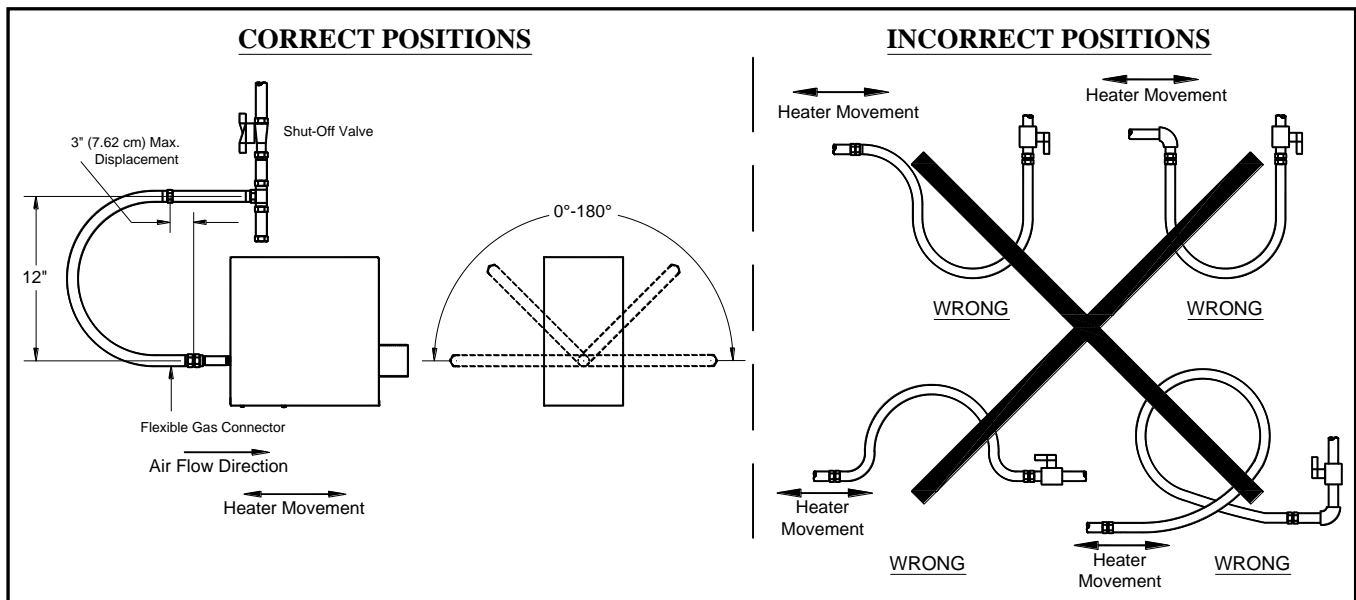
**If in doubt of your application, consult with your local fire marshal or gas authority having jurisdiction.**

**Indoor spaces include but are not limited to: attached garages, solariums, living quarters etc.**

## Installation / Code Requirements

Installation must comply with local building codes and/or, for the USA/National Fuel Gas Code, ANZI Z 223.1 (NFPA 54) and for Canada, CSA B149.1 National Gas and Propane Installation Code (latest editions).

Appliance must be electrically grounded in accordance with local codes or, in their absence; the National Electrical Code, ANSI/NFPA 70 in the USA, CSA C22.1 Canadian Electrical Code in Canada.



Check for gas leaks at all connections with appropriate soap solution.

Never connect an unregulated gas supply to the heater.

Do not use high pressure (above ½ psig) to test the gas supply system with the appliance connected. Failure to comply can result in damage to the appliance.

# Installation Instructions

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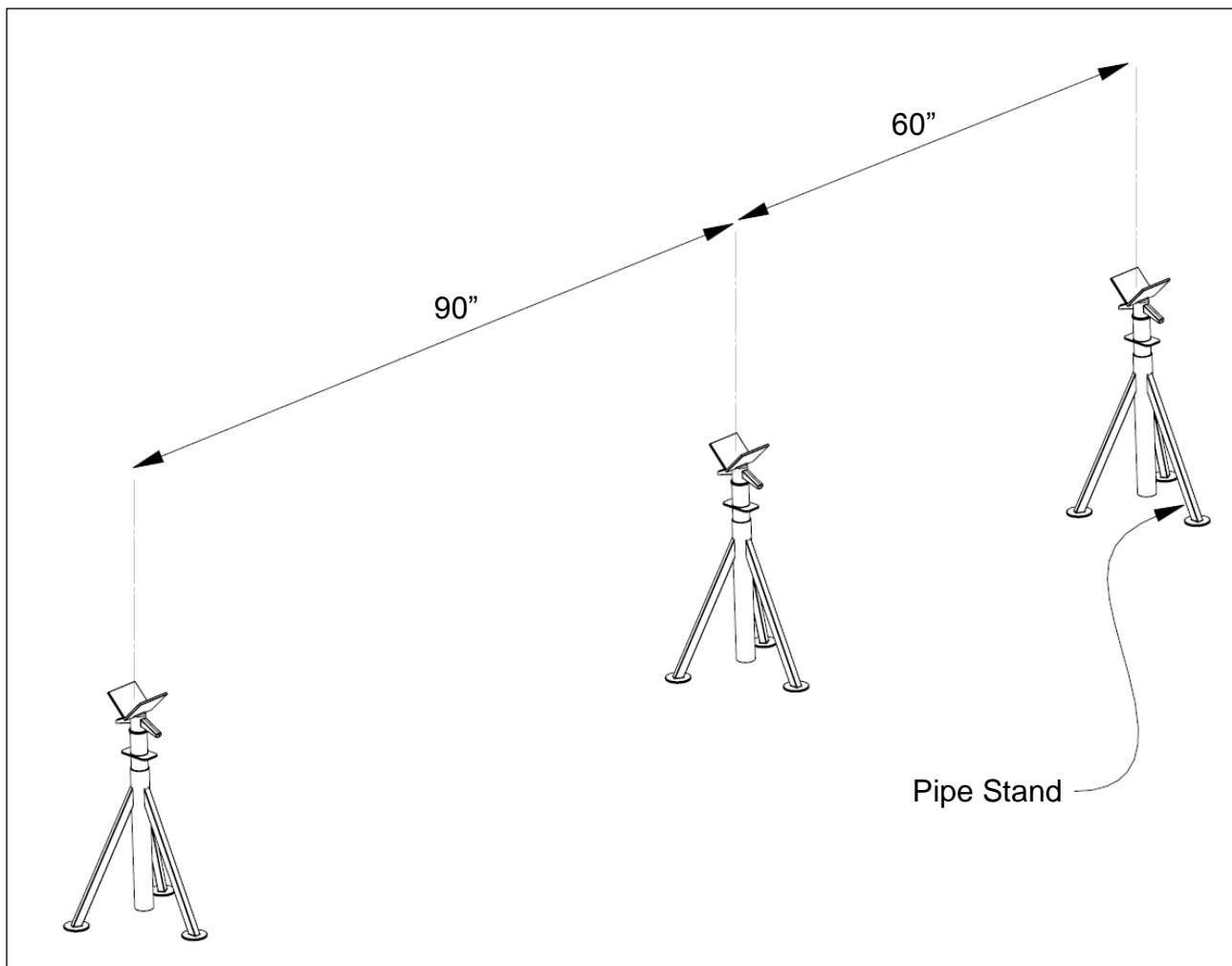
## Installation Sequence:

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.

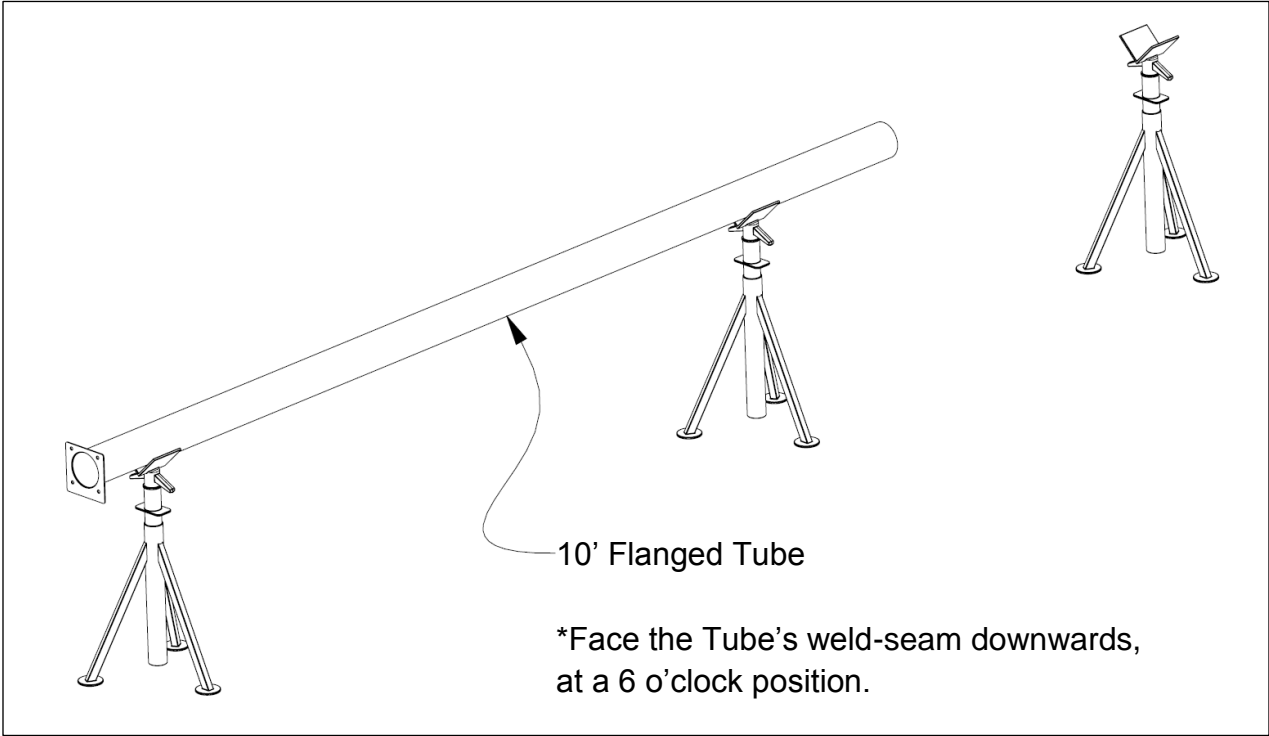
## Installation – ETS 60, 80, and 100

### Step 1:

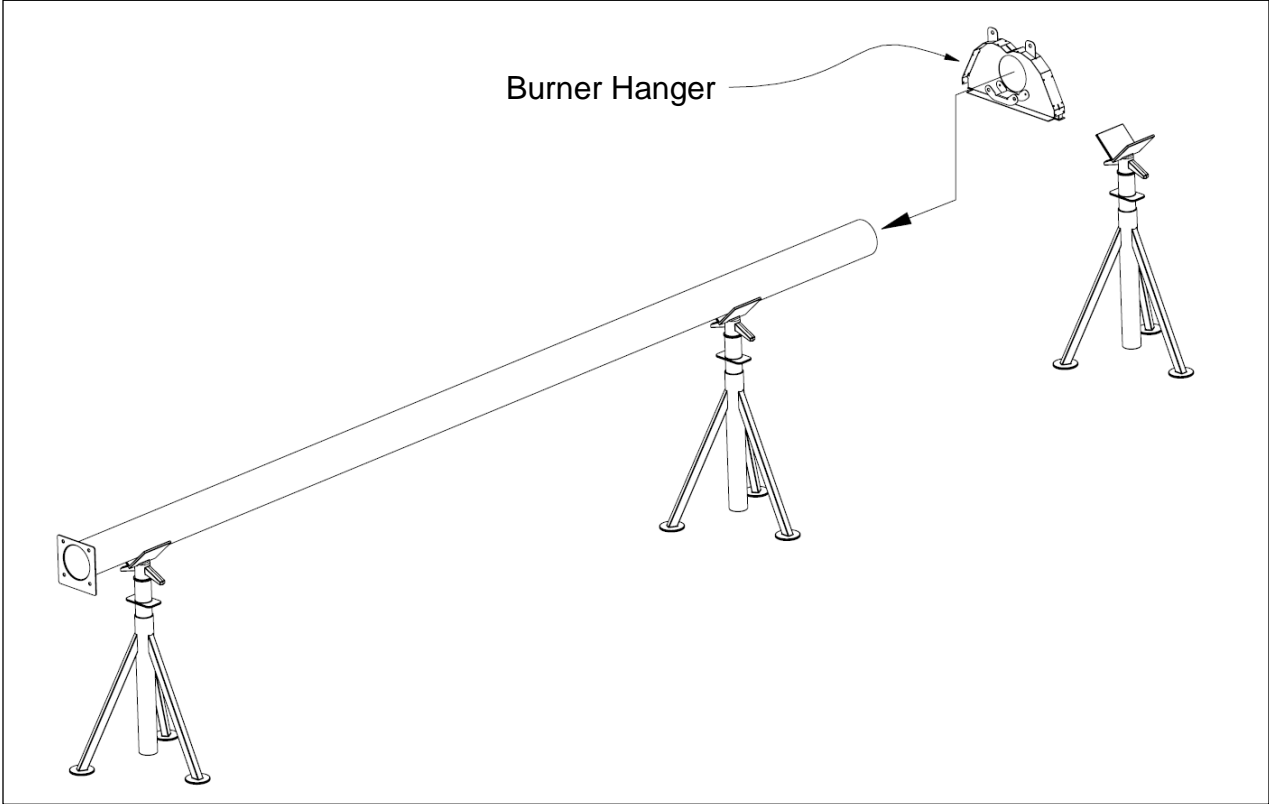




Step 2:



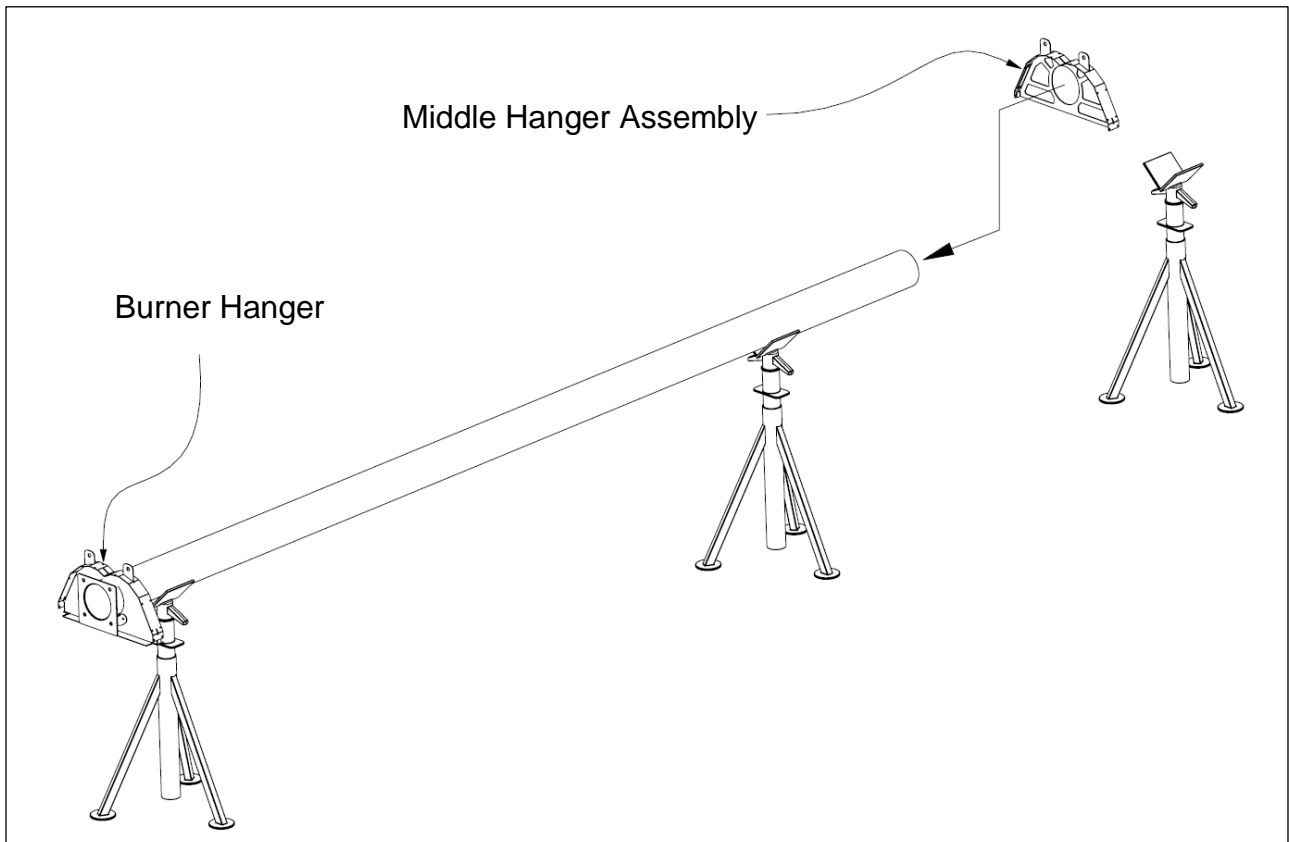
Step 3:



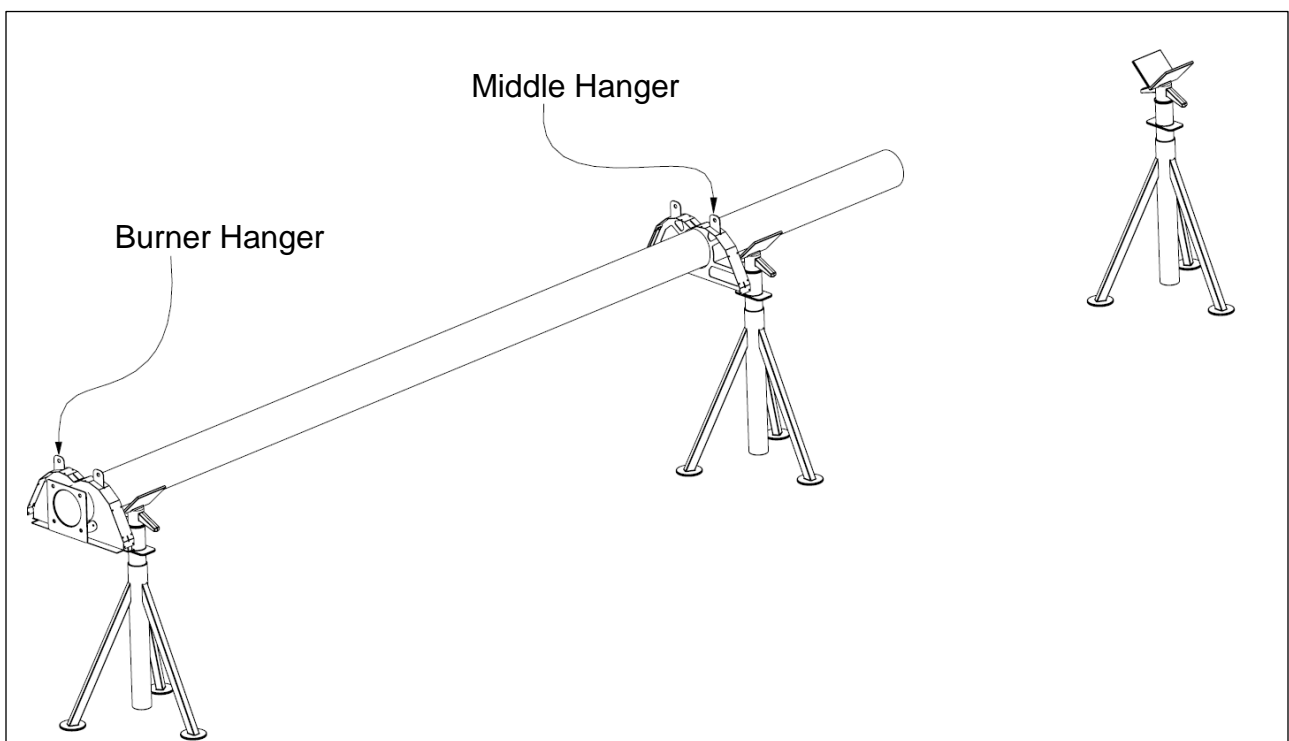
# Installation Instructions

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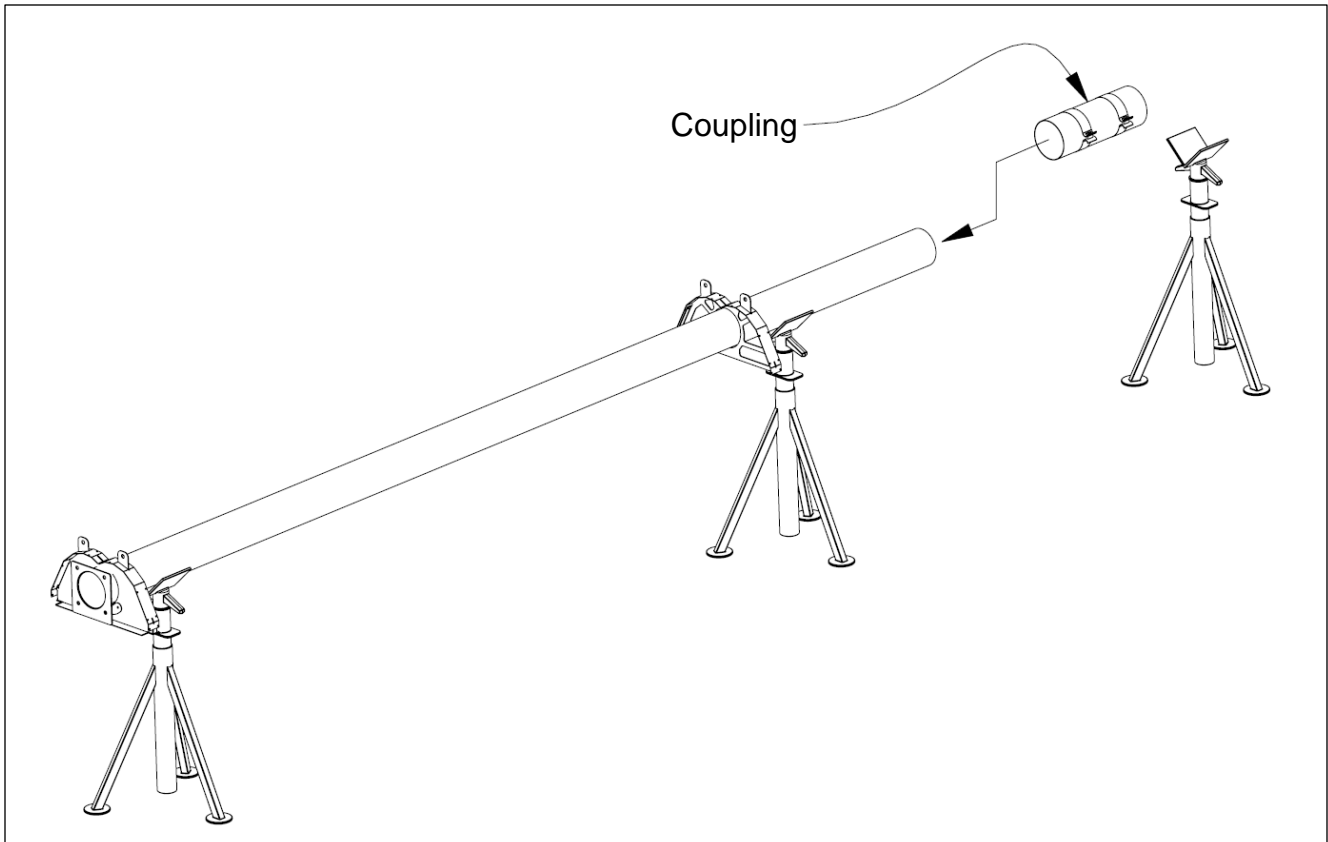
## Step 4:



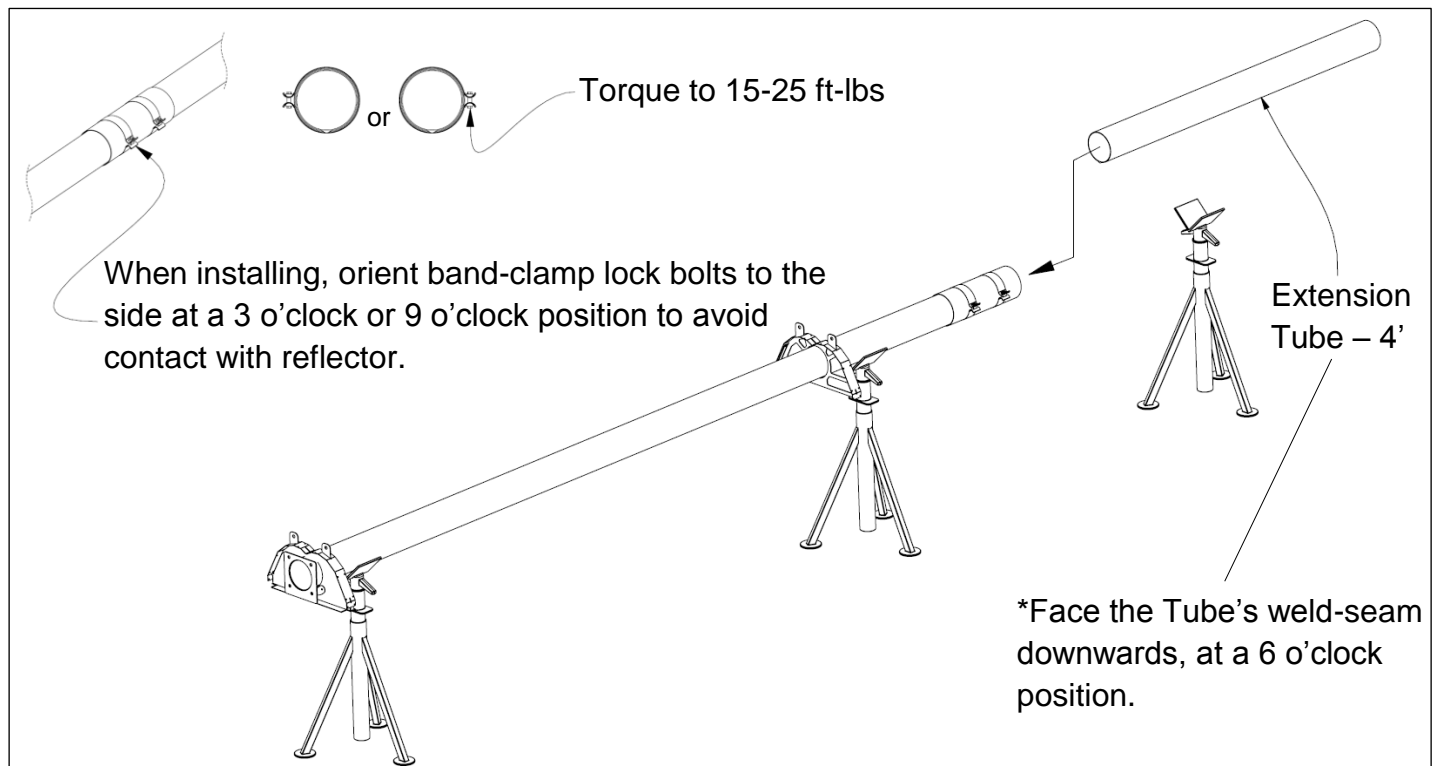
## Step 5:



## Step 6:

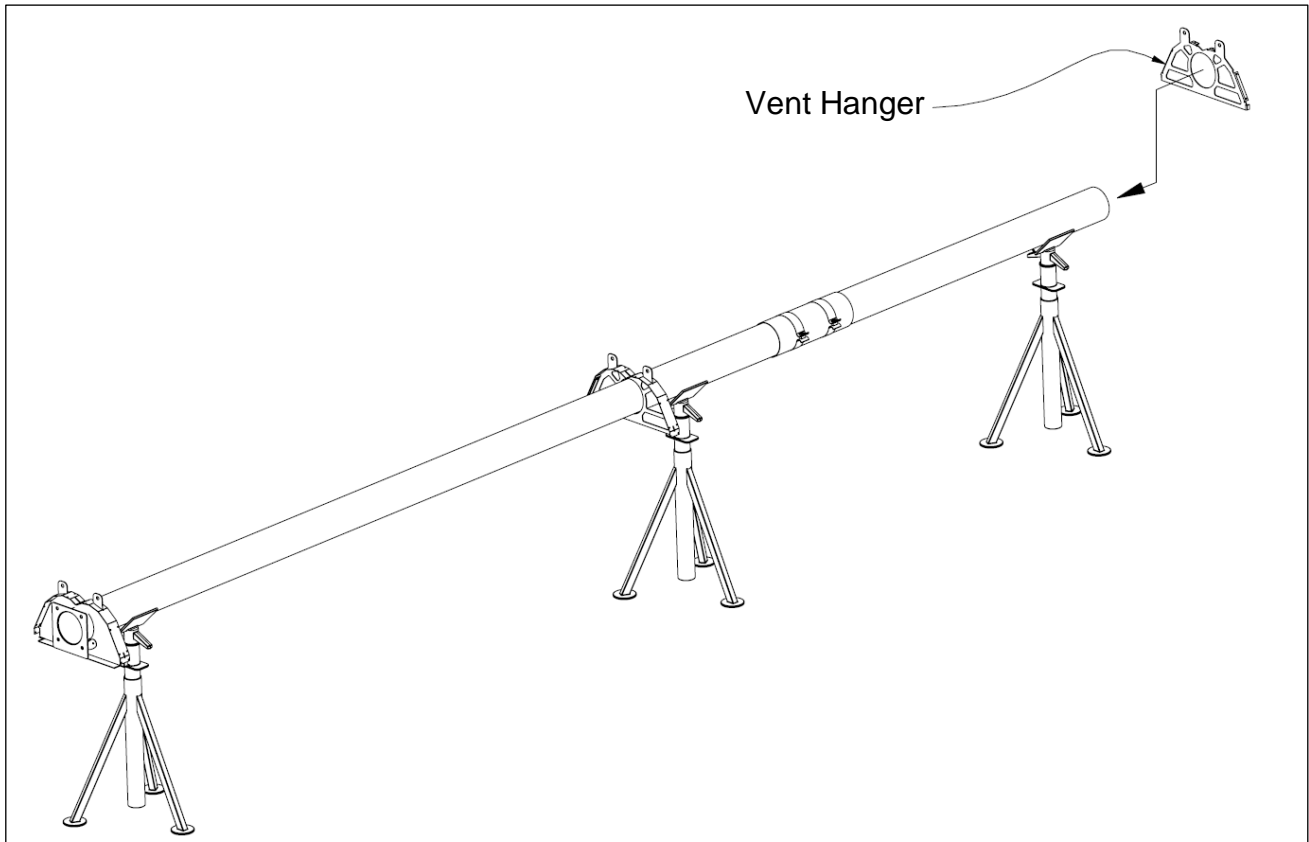


## Step 7:

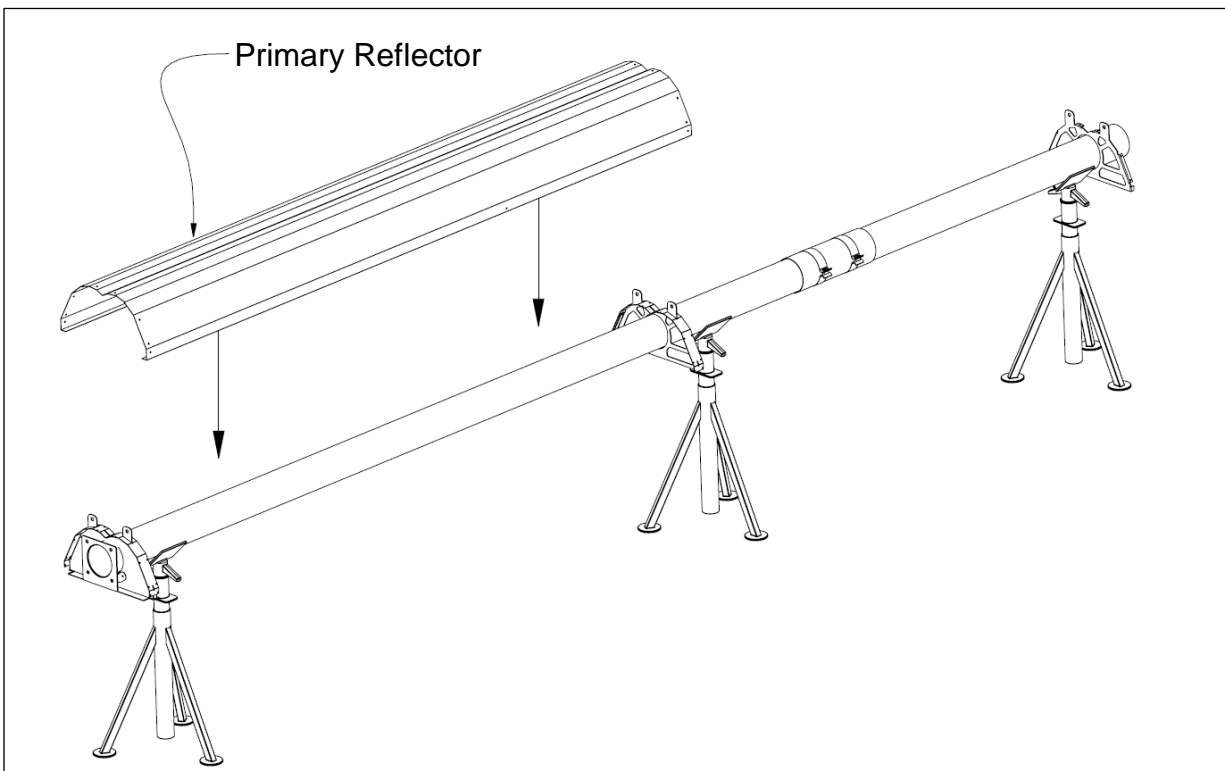


# Installation Instructions

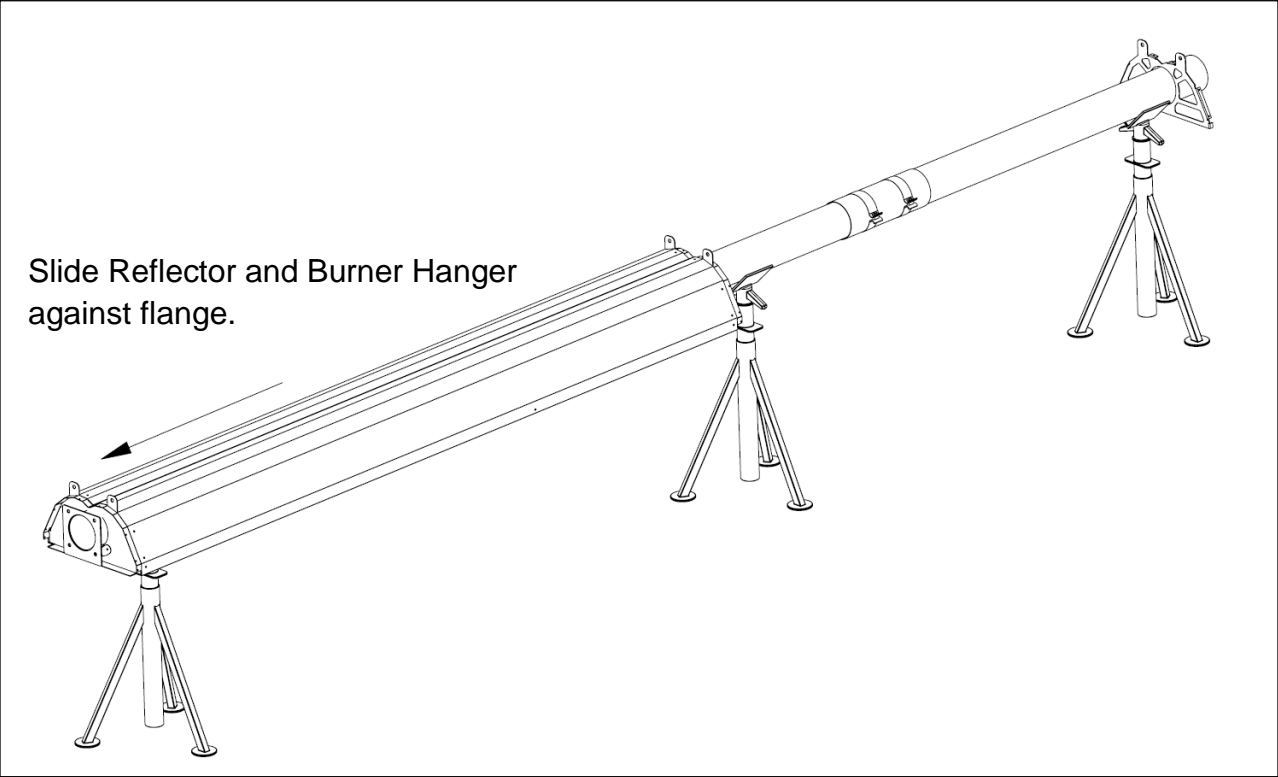
## Step 8:



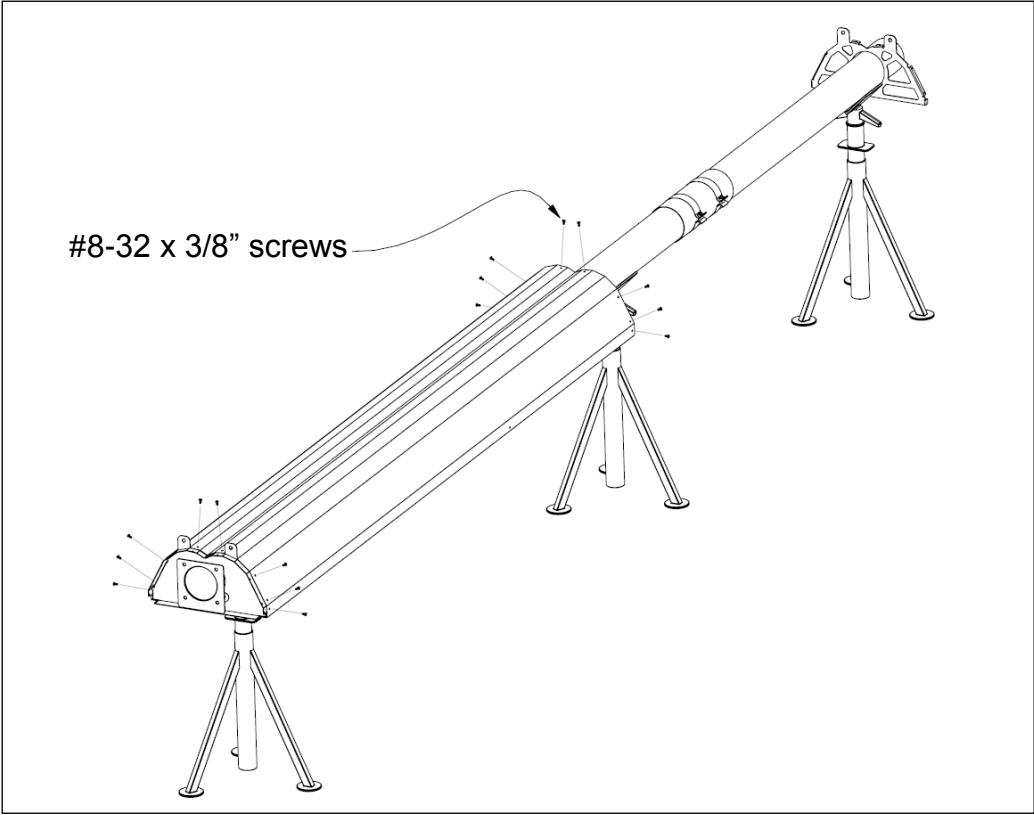
## Step 9:



Step 10:

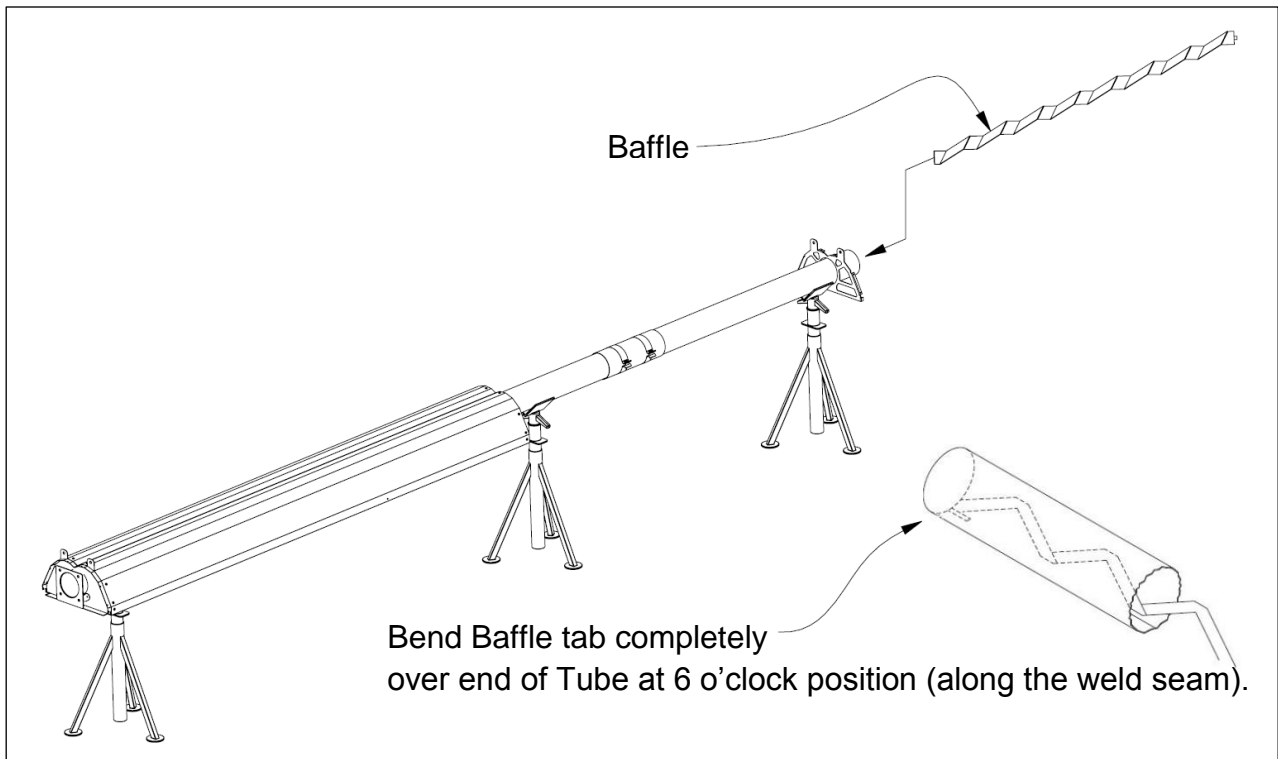


Step 11:

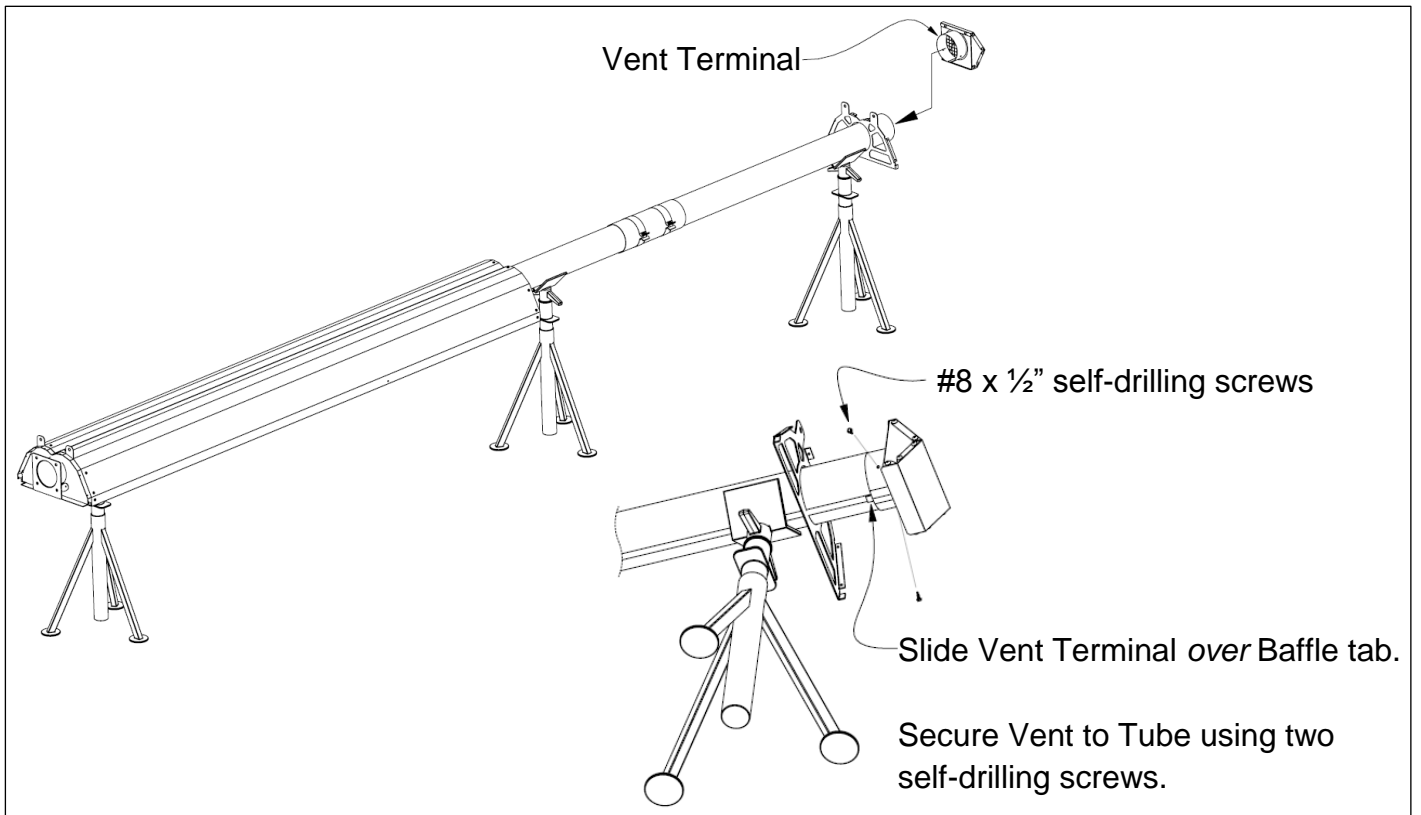


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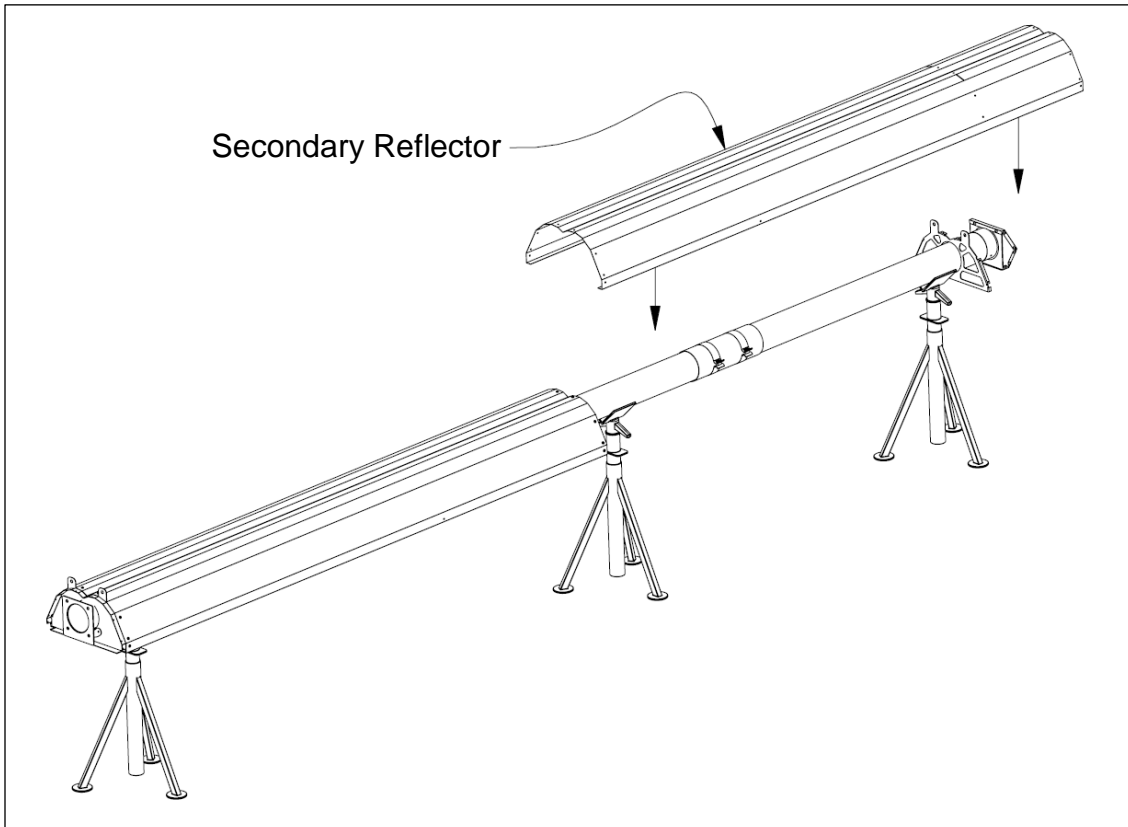
## Step 12:



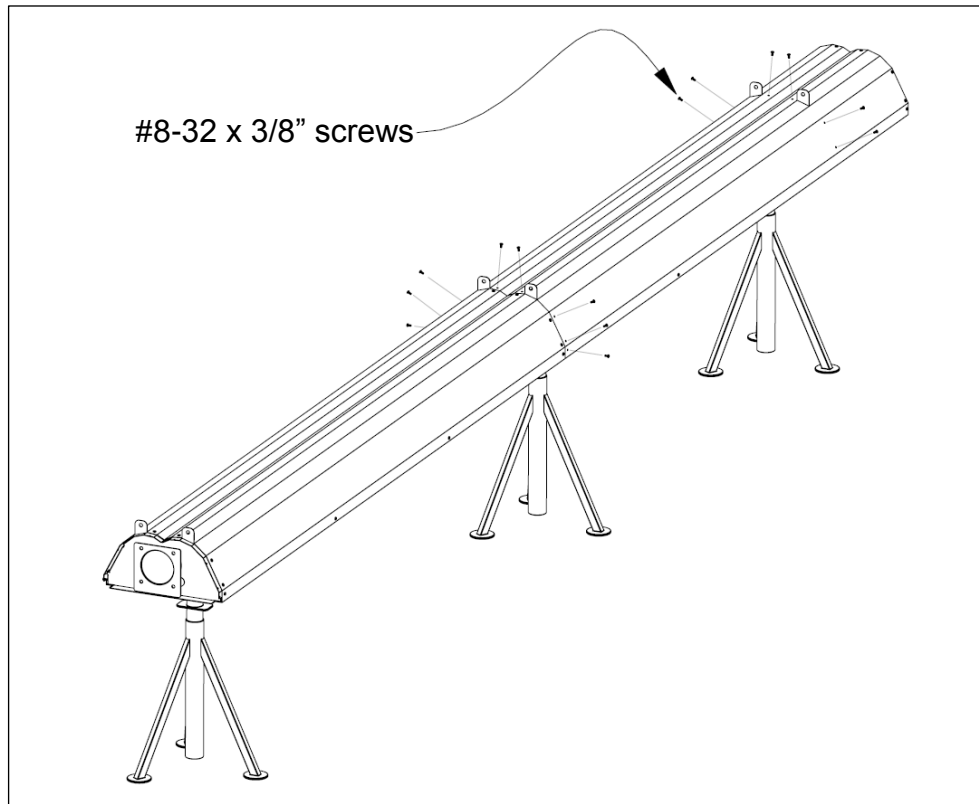
## Step 13:



## Step 14:



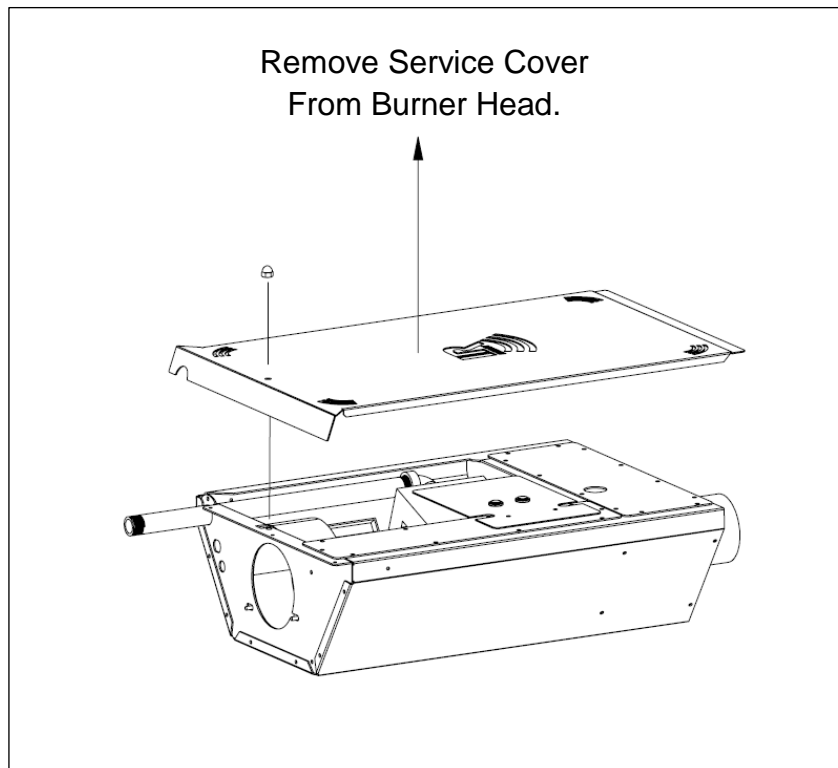
## Step 15:



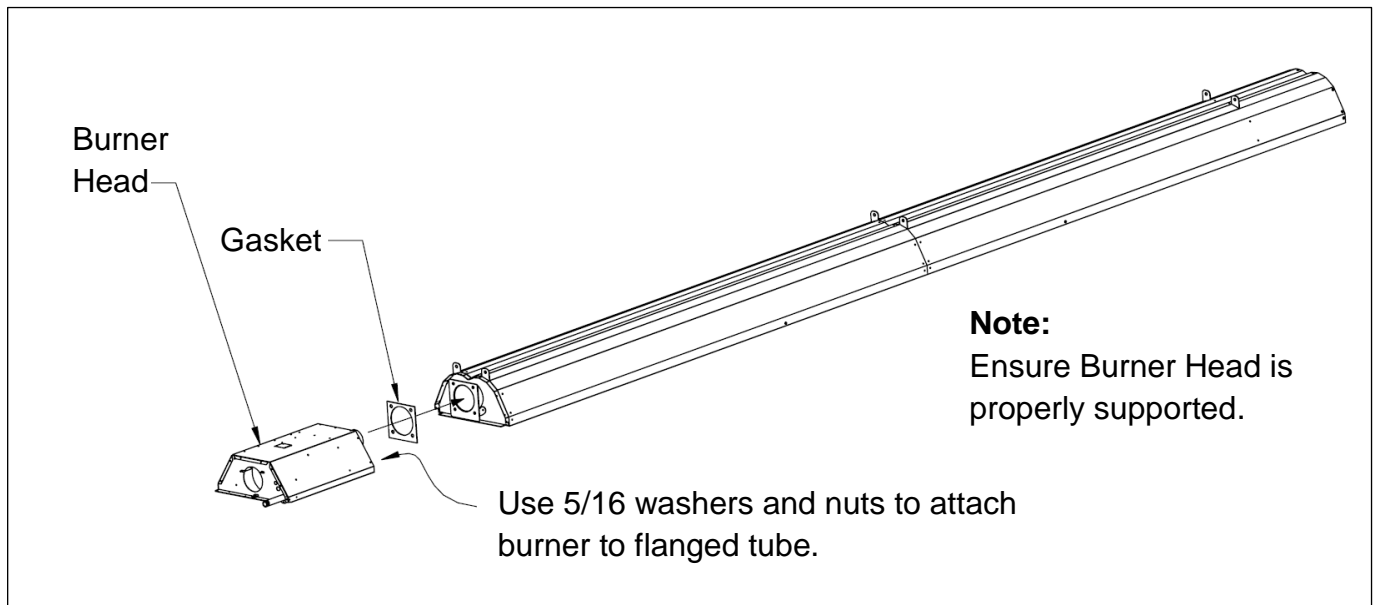
# Installation Instructions

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## Step 16:

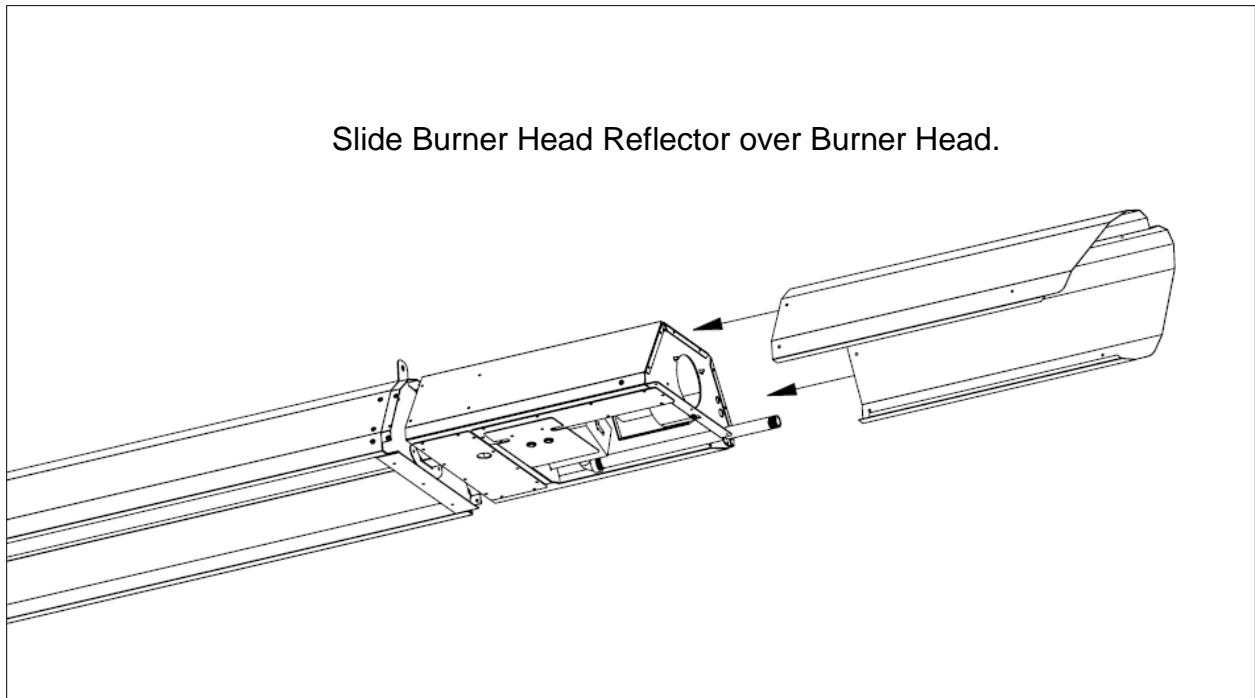


## Step 17:

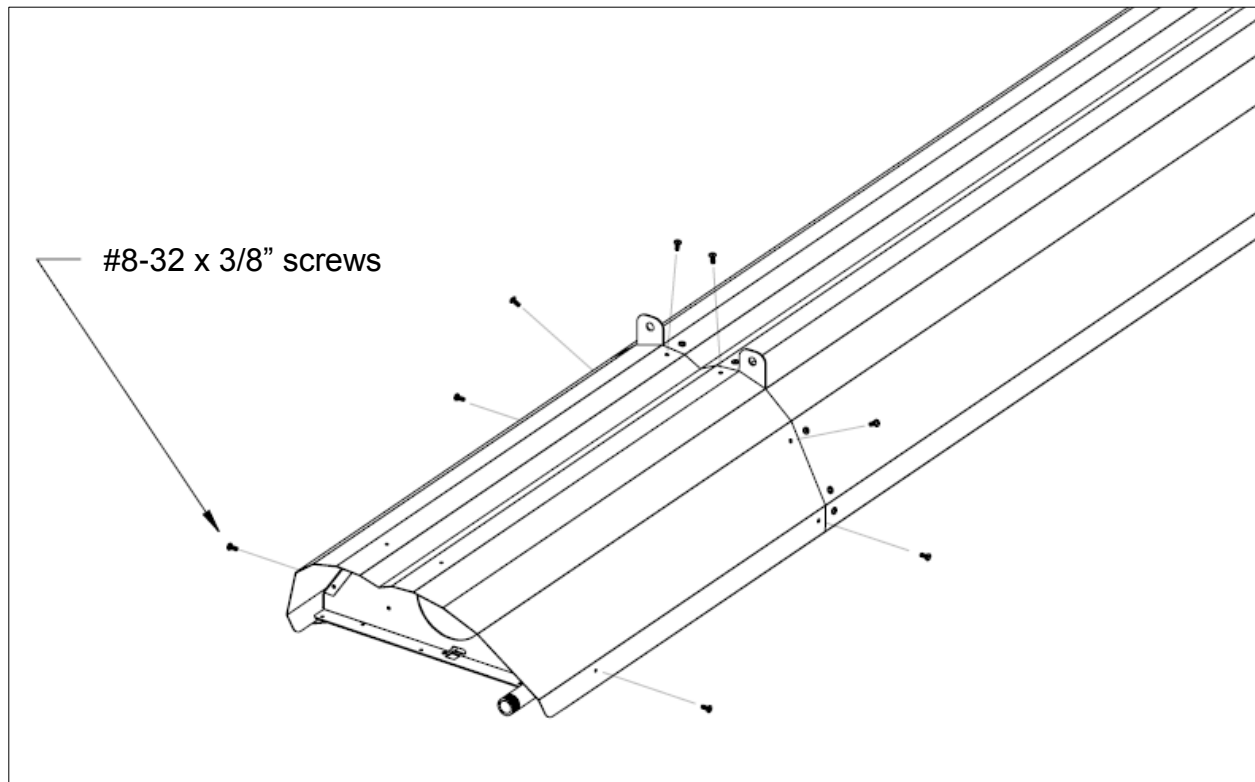




## Step 18:



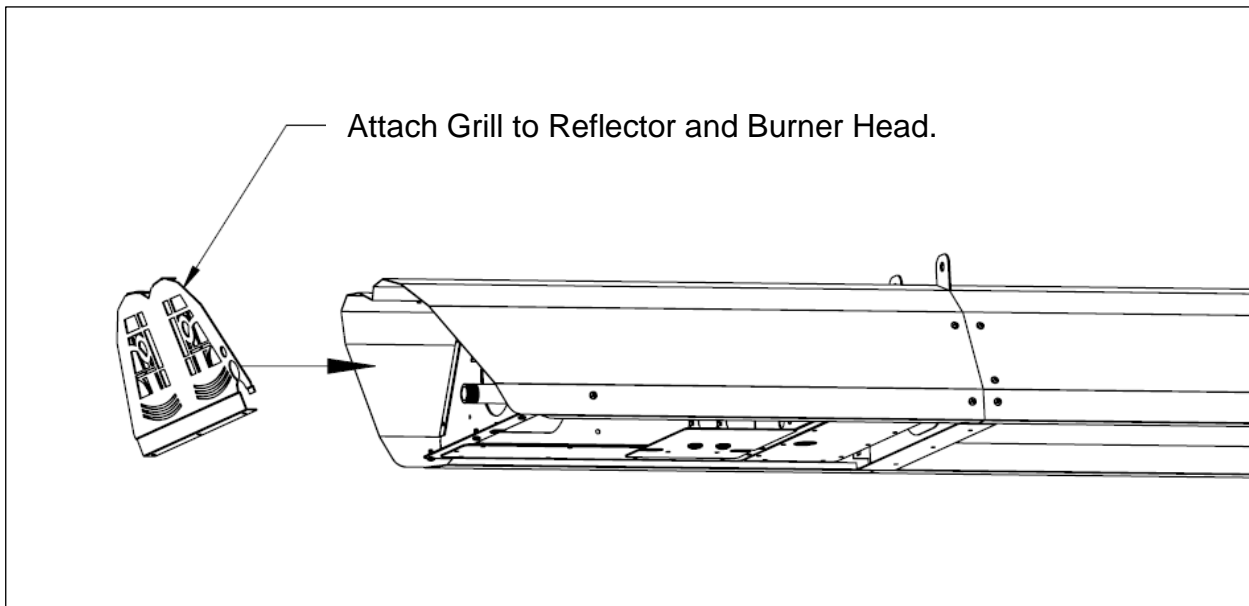
## Step 19:



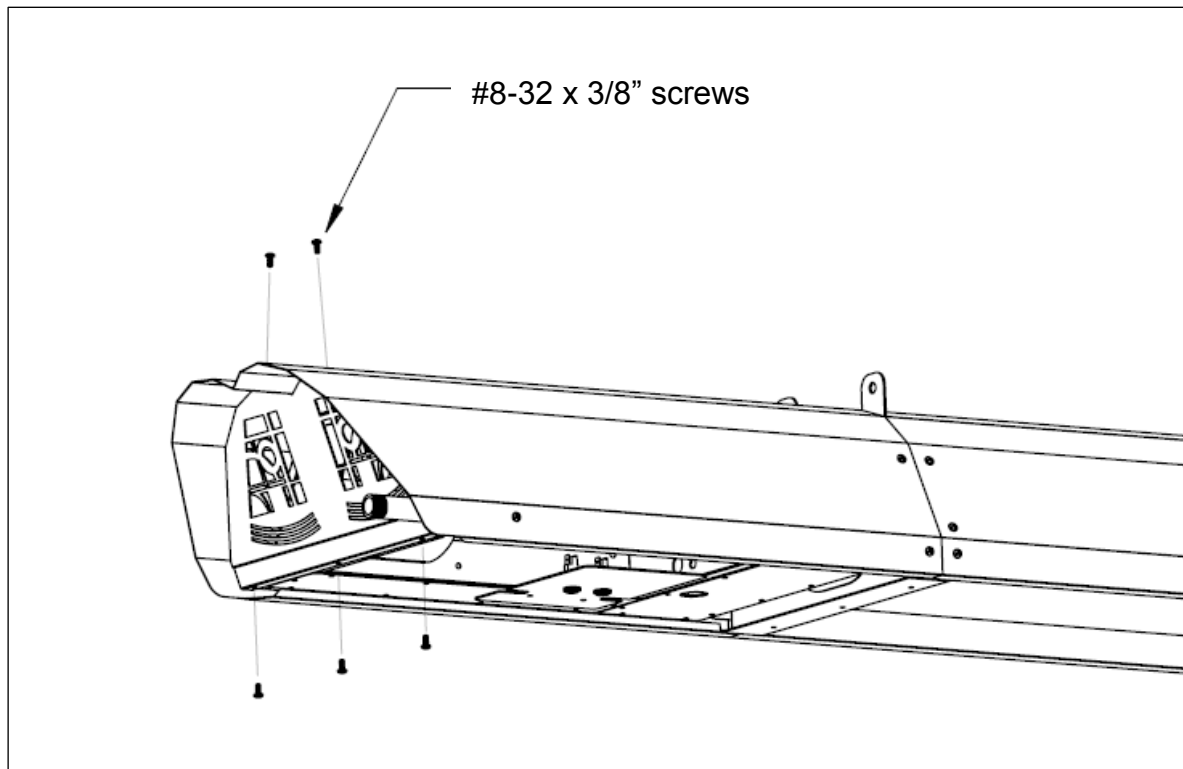
# Installation Instructions

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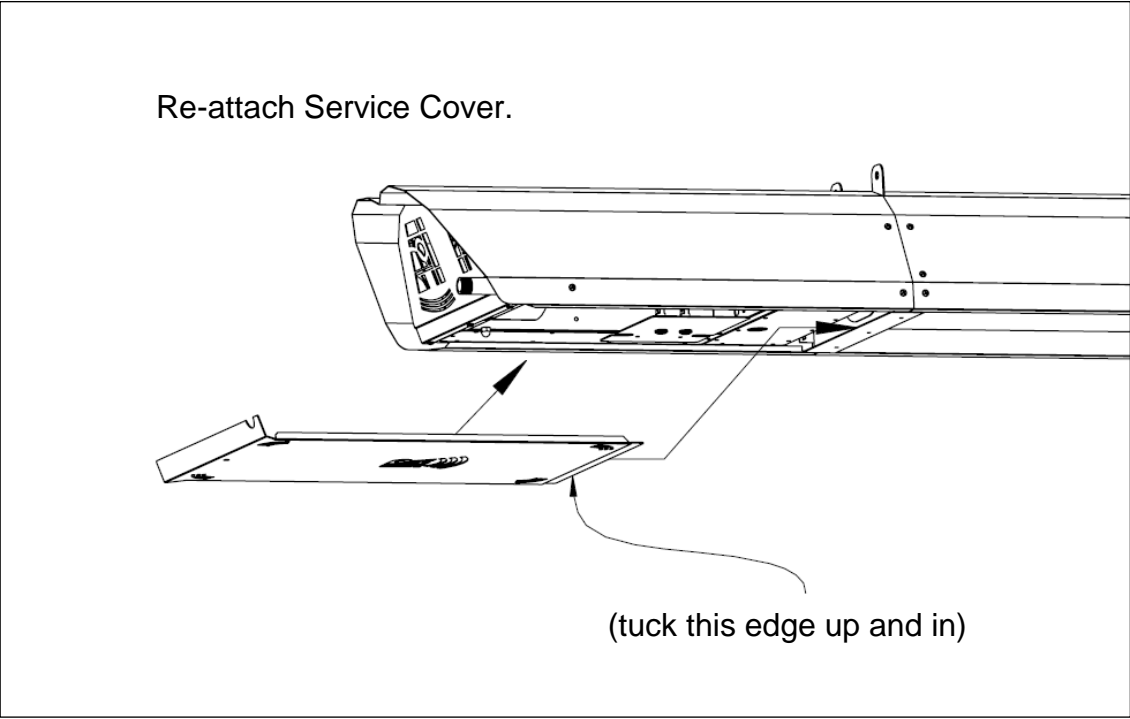
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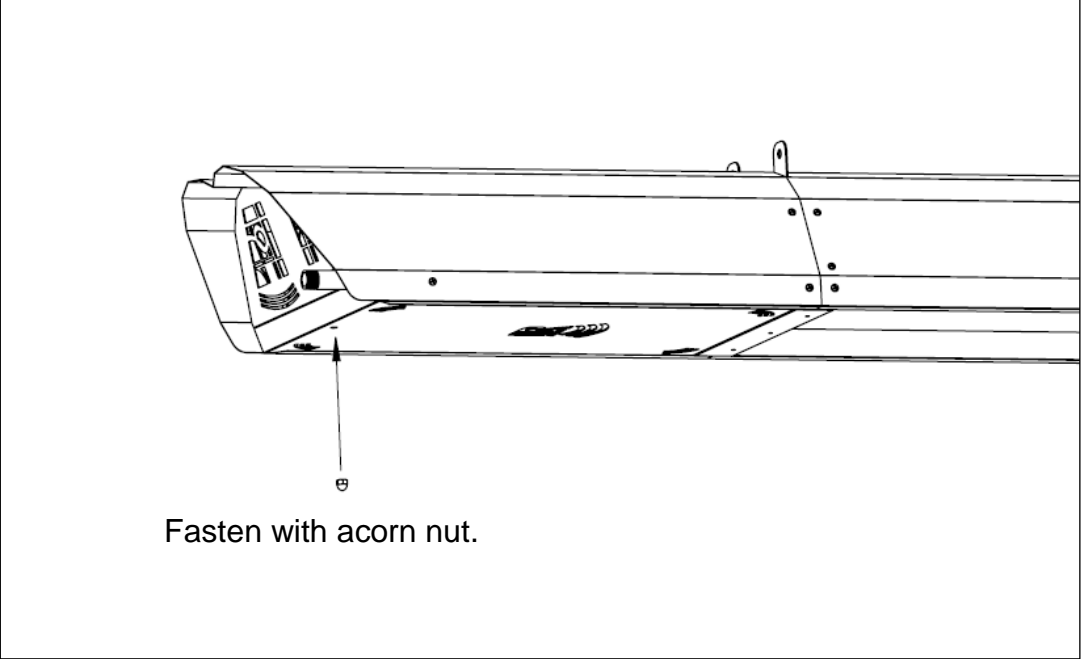
Step 21:



Step 22:



Step 23:

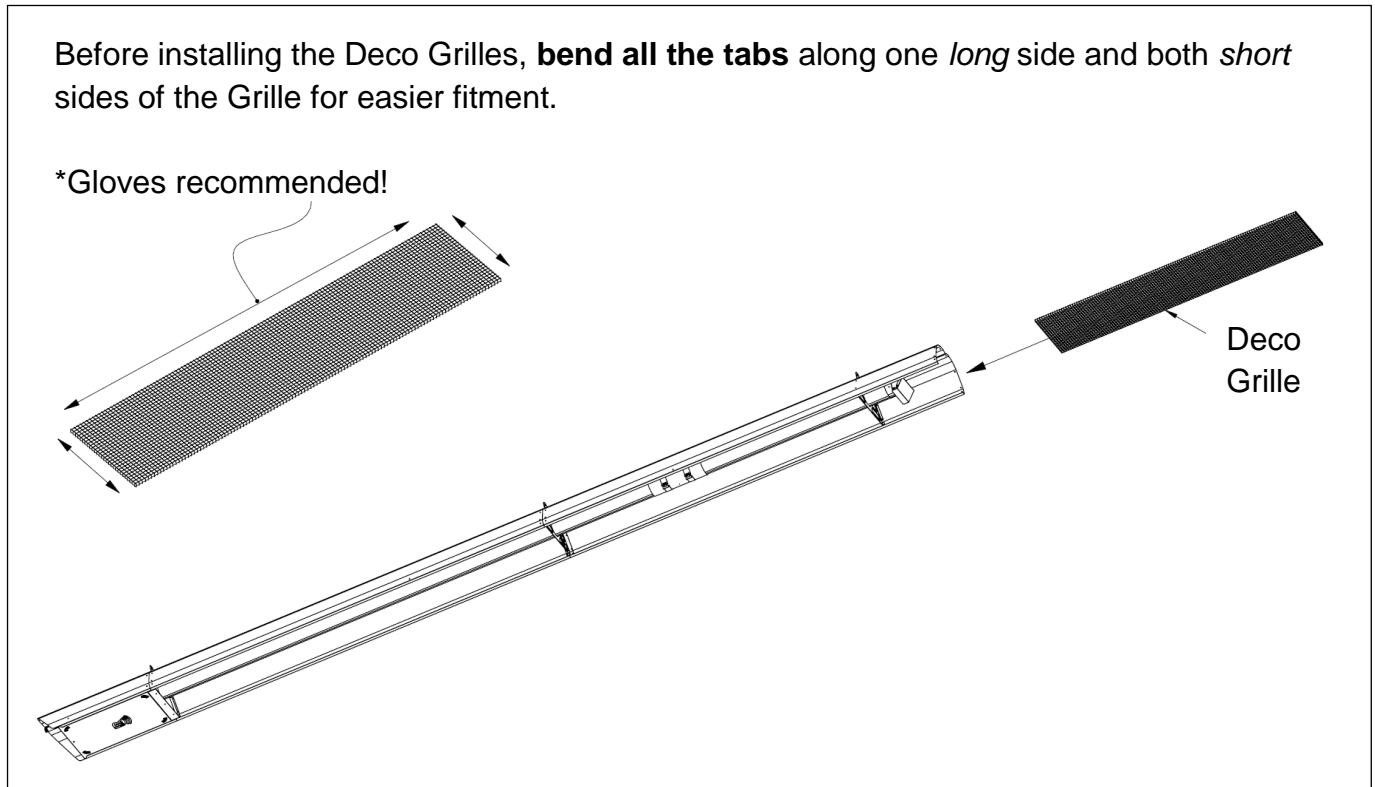


# Installation Instructions

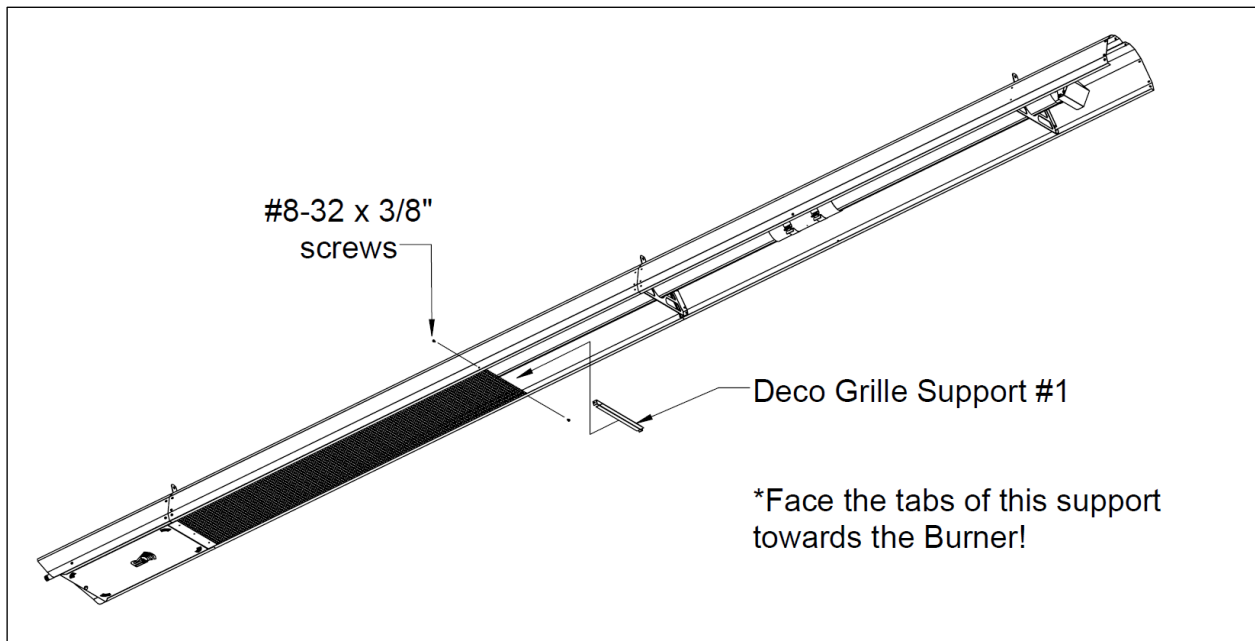
## Step 24:

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!

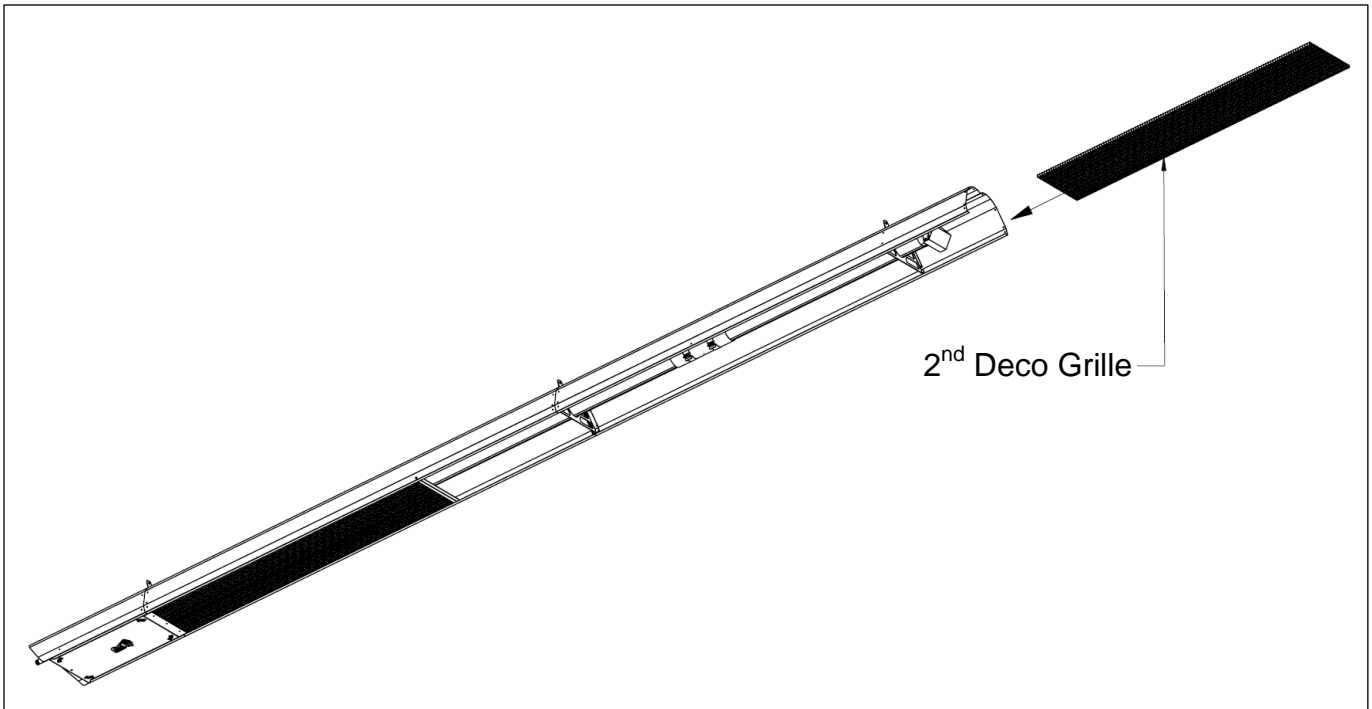


## Step 25:

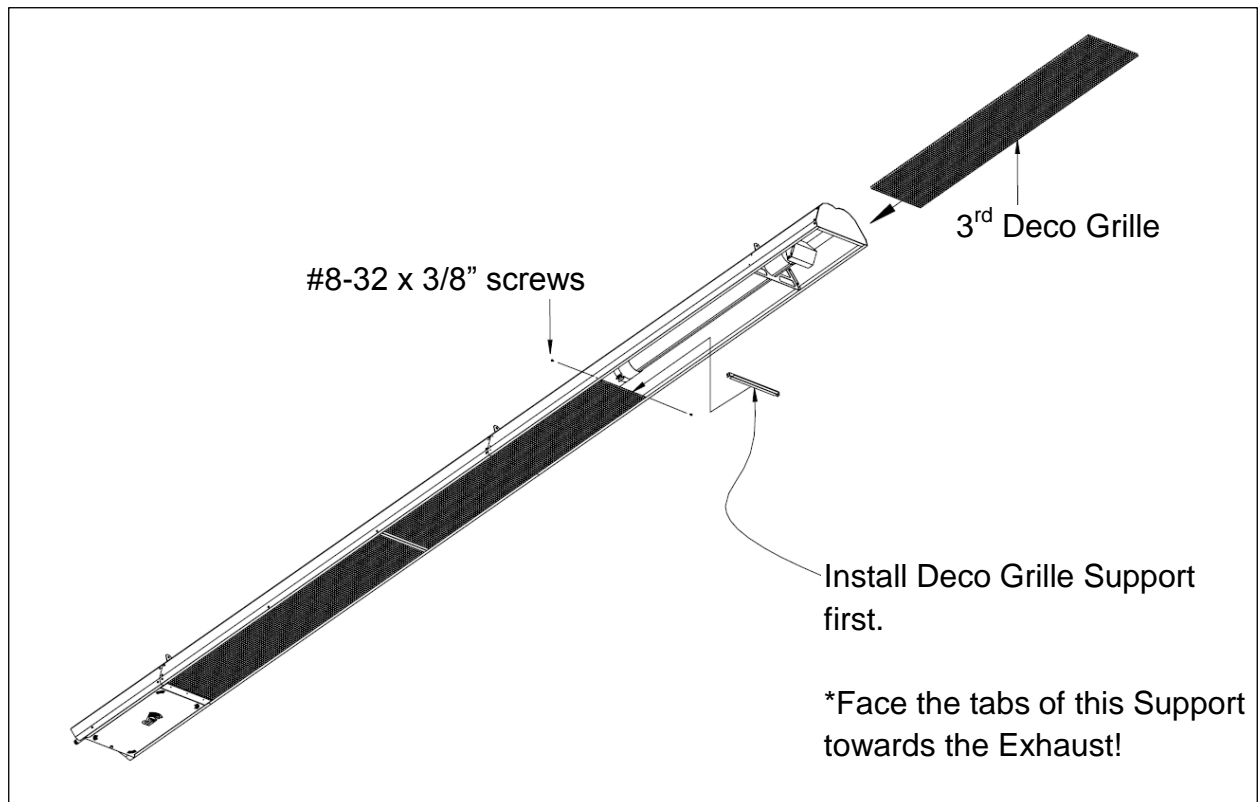


# Installation Instructions

## Step 26:



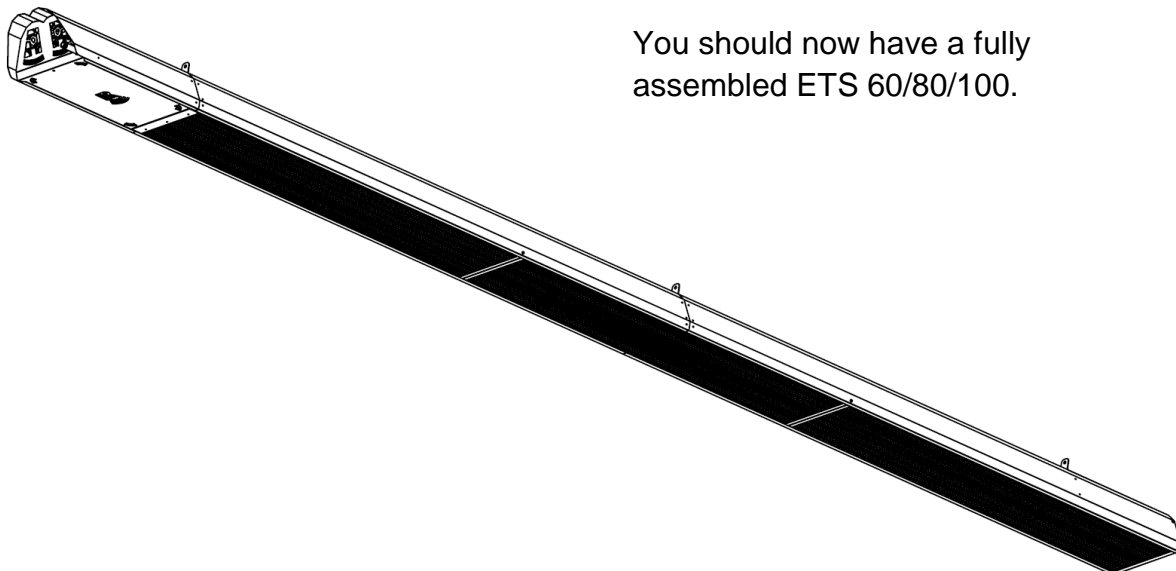
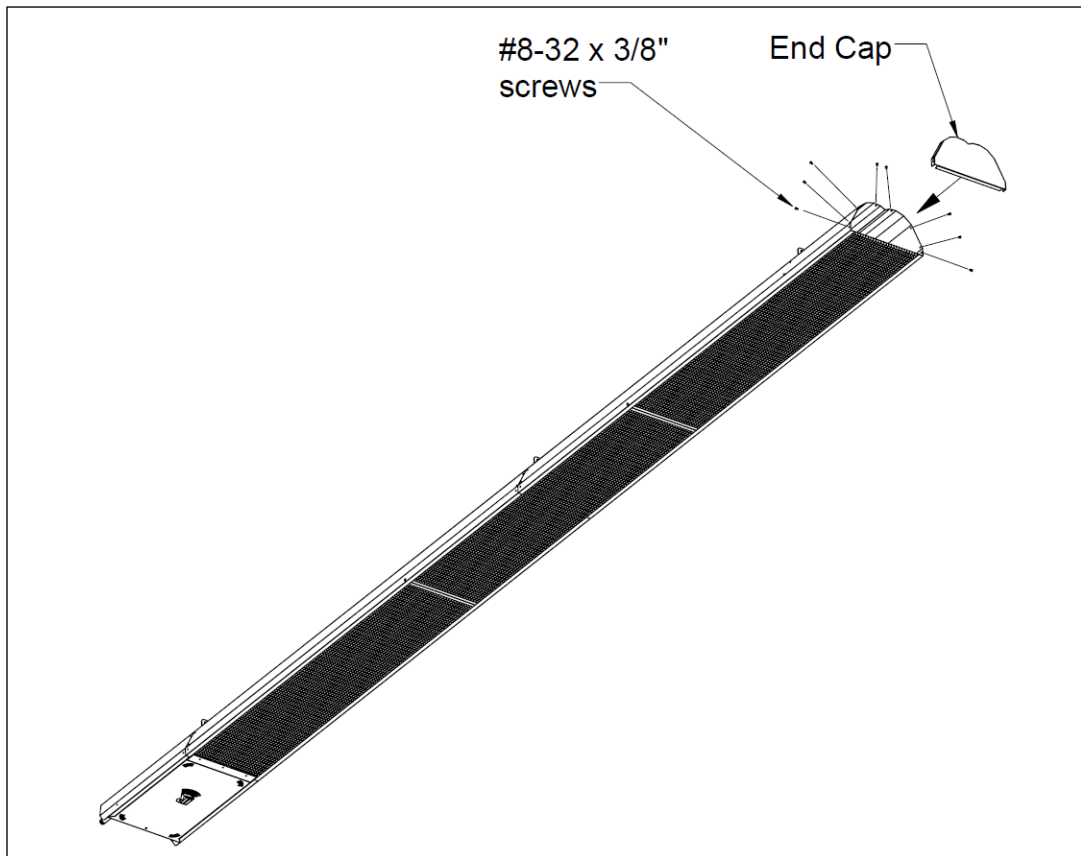
## Step 27:



# Installation Instructions

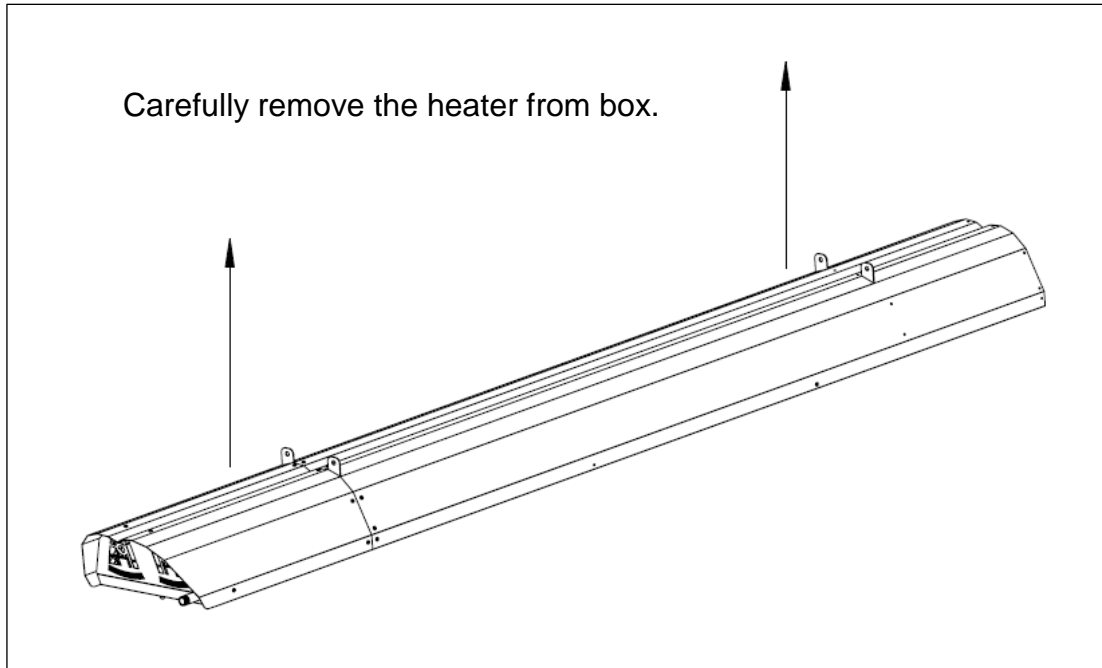
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Step 28:



## Installation Sequence ETS 50:

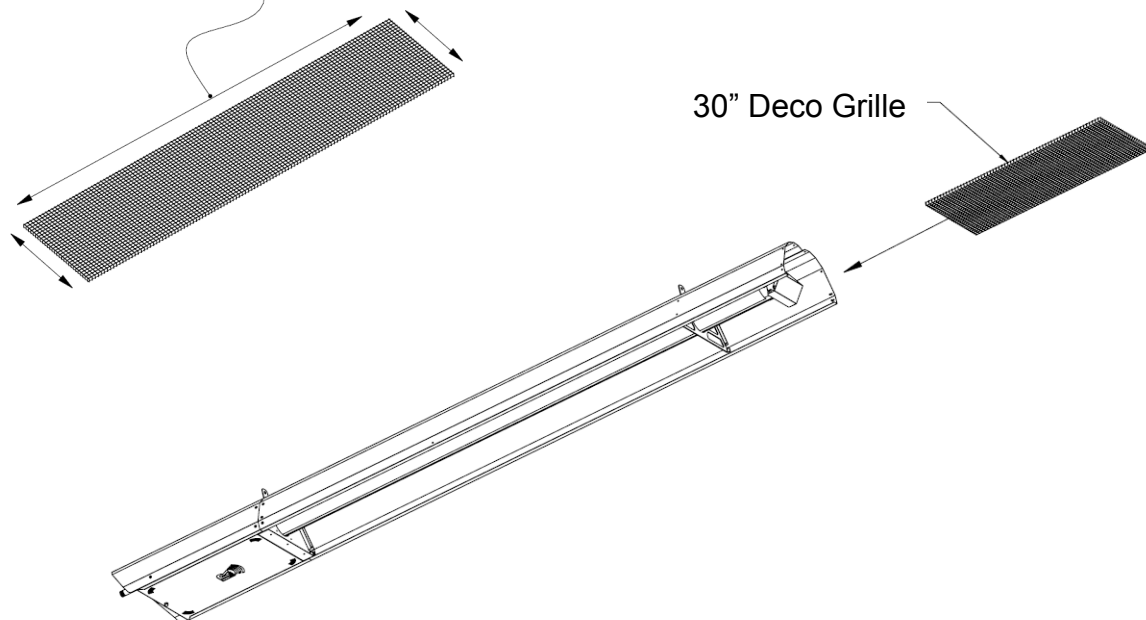
### Step 1: (ETS 50)



### Step 2: (ETS 50)

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

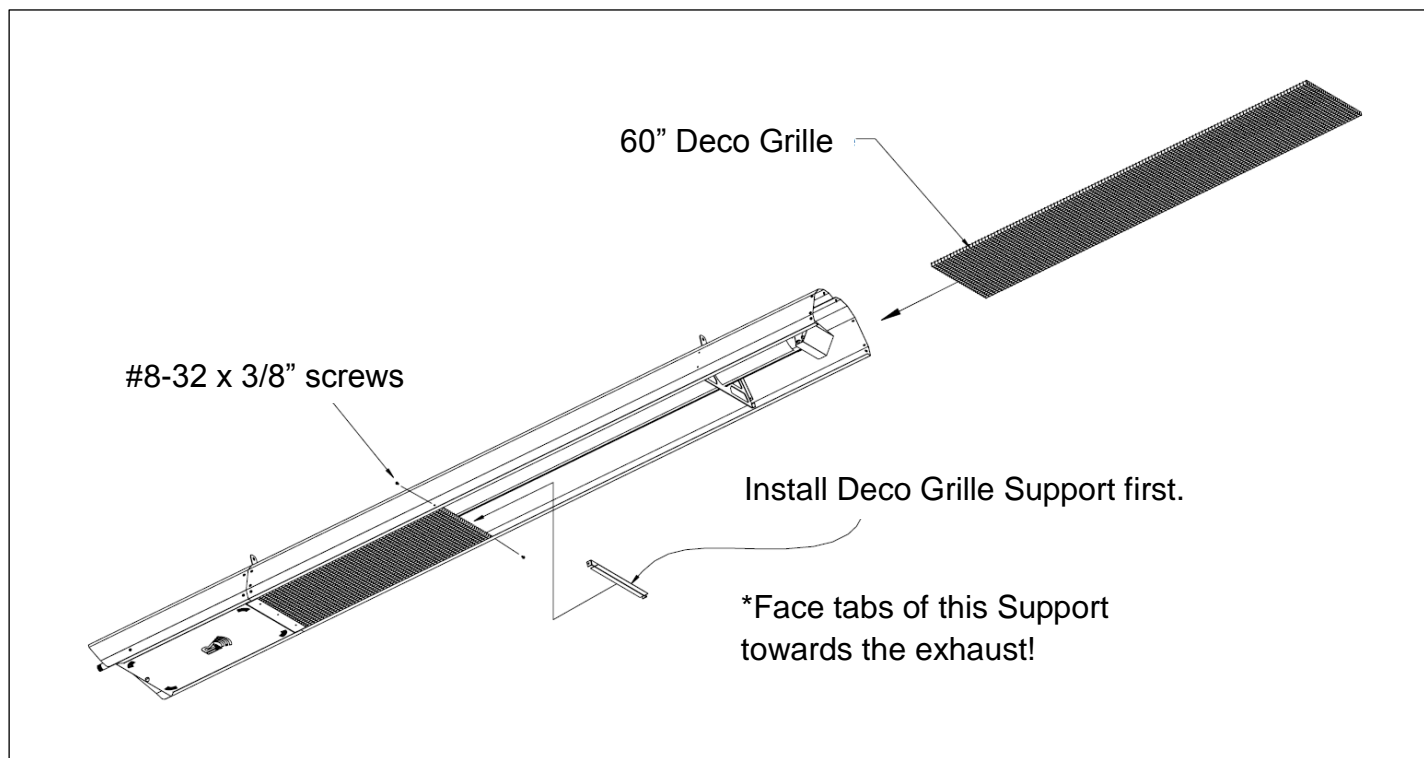
\*Gloves recommended!



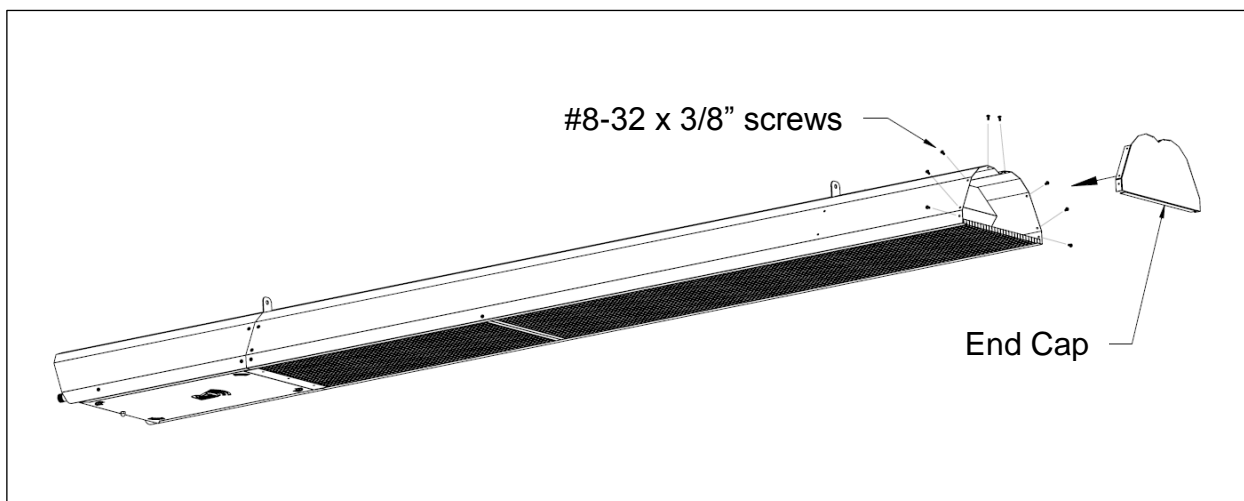
# Installation Instructions

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## Step 3: (ETS 50)

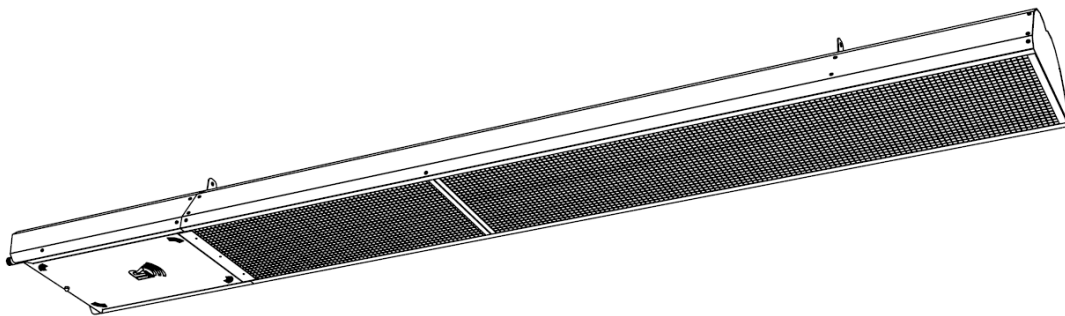
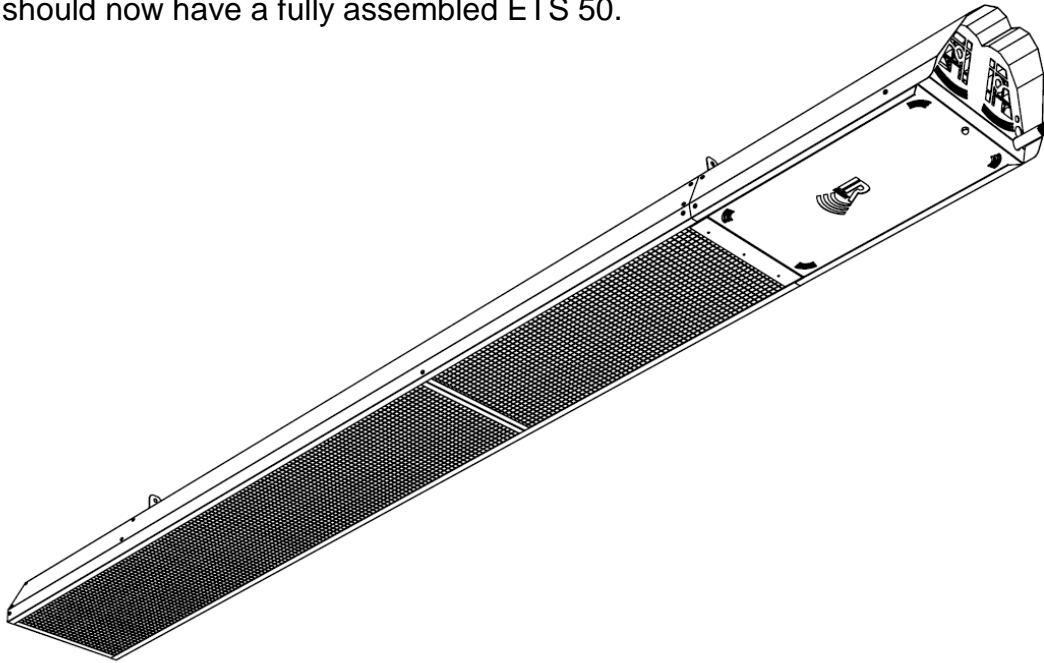


## Step 4: (ETS 50)





You should now have a fully assembled ETS 50.

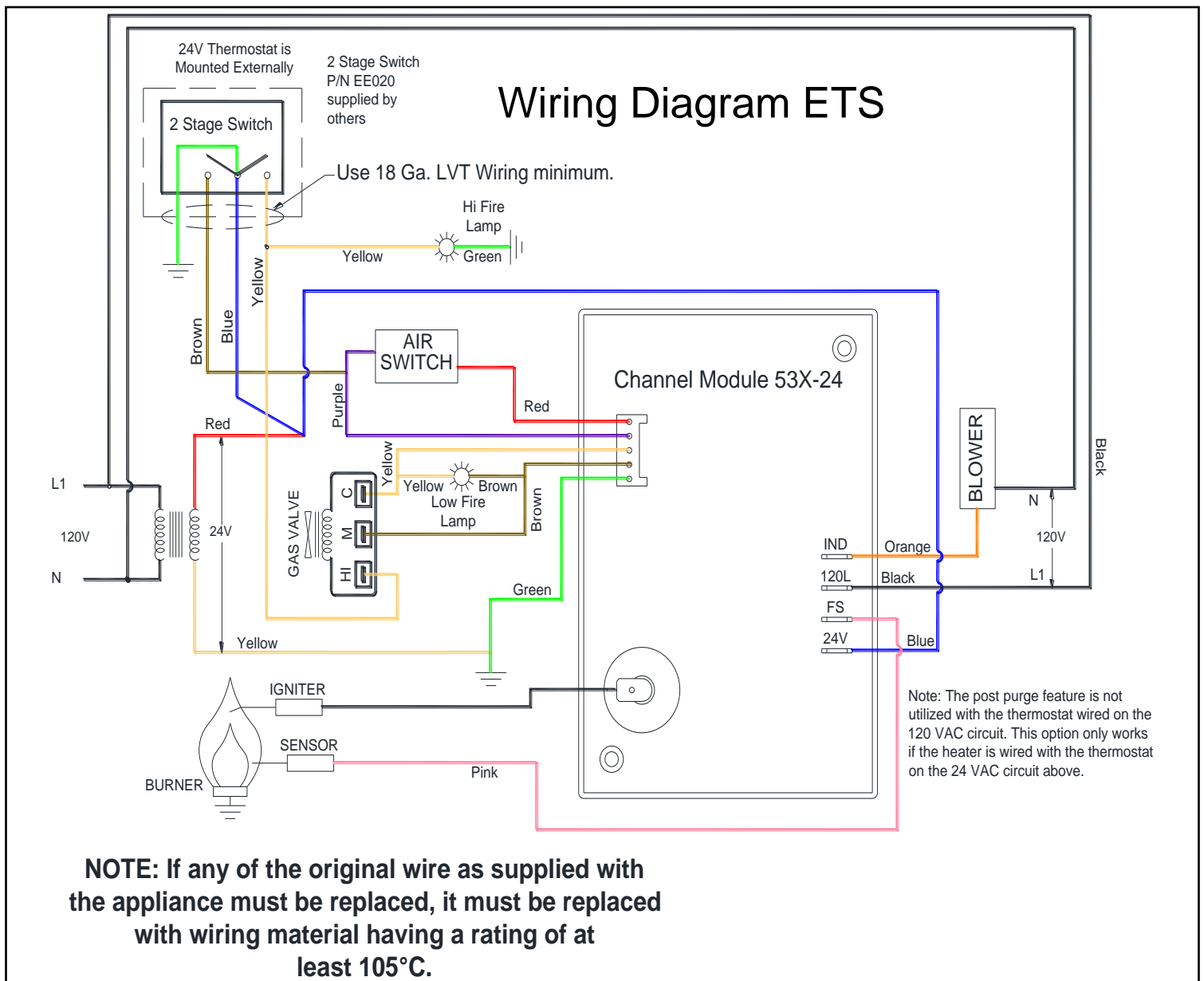


# Wiring Diagrams

## General Requirements

Heaters are normally controlled by line voltage (120V) or low voltage (24V) thermostats. Line voltage thermostats are wired directly while low voltage thermostats use a relay. In all cases, heaters must be grounded in accordance with the *National Electric Code*, ANSI/NFPA 70 in the US, and the *Canadian Electric Code*, CSA C22.1 in Canada, and must comply with all local requirements. Heaters may also be controlled with a manual line switch or timer switch in place of the thermostat. Refer to wiring diagrams below for guidance on electrical wiring of heaters.

If any of the original wire as supplied with the heater must be replaced, it must be replaced with wiring having a rating of at least 105°C temperature service and 600 volts capability.

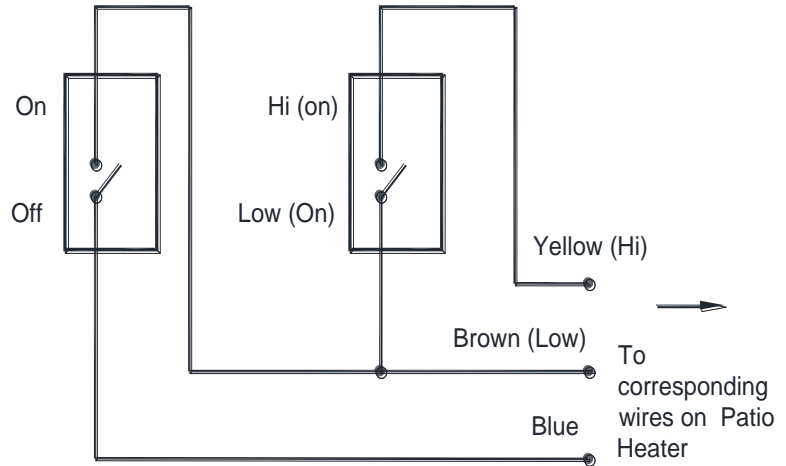


# External Wiring Options

## Manual Line Switch with Hi-LO wiring diagram

**Notes:**

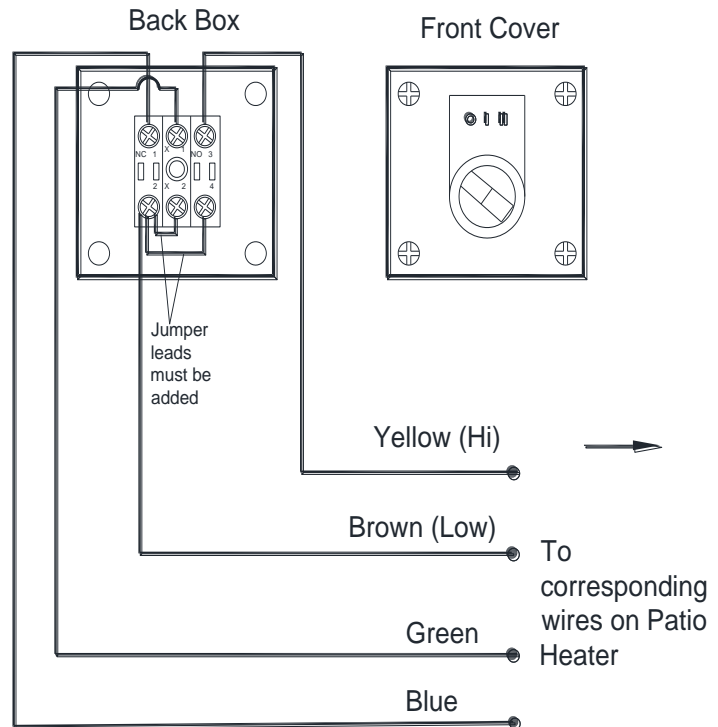
- Using 2 Toggle switches
- Allow Min. contact rating of 1AMP per heater inductive.
- Allow 20VA / 24V. transformer per heater.



## Two Stage Switch wiring diagram

**Notes:**

- Using 2-Stage witch (P/N EE020)
- Max. 5 heaters per 1 switch
- Allow 20VA / 24 V. transformer per heater.



# Lighting & Shutdown Instructions

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## Lighting

1. Open manual gas supply valve (ensure gas supply lines have been purged).
2. Turn on switch to energize electric supply.
3. The blower motor will energize.
4. When the motor approaches nominal running RPM, the air-proving switch closes and activates the ignition module.
5. The ignition module, after a pre-purge period of approximately 30 seconds, energizes the igniter. Additionally, the gas valve is energized for this ignition trial period of 15 seconds.
6. 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.
7. If no flame is detected, the gas valve closes and a 30 sec inter-purge period begins. After the inter-purge, the module repeats the trial for ignition period. If flame is still not established, a third and final inter-purge followed by a final ignition trial cycle begins. After three trials, the module will lockout for a period of approximately 1 hour or until reset. *(Reset is accomplished by removing power from the module for at least 5 seconds.)* After this 1-hour period, the module re-attempts the full ignition sequence.

## Shut Down

1. Turn off power to electronic control.
2. For longer periods of shut down, also close manual gas supply valve.

**NOTE:** It is ideal to use a factory recommended "Hi-Lo switch" with this heater.

## 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)

## Trouble Shooting

### Blower Motor Fails to Run

- Is the heater plugged in? Is there 115V at the burner receptacle?
- Check blower for obstructions. Replace blower if necessary.

### No Gas Supply

- Check to see if manual supply valve to heater is ON.
- Check to see if gas valve knob on heater gas control is ON.
- Supply gas pressure can be checked at 1/8" NPT pressure tap in gas supply system.
- Is combination gas control opening? No manifold pressure indicates valve is closed. Gas pressure downstream of gas control can be measured by connecting a manometer to pressure tap on control. If the valve is closed, either the gas valve or the ignition module is faulty.

# Maintenance & Trouble Shooting

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Trouble shooting continued...

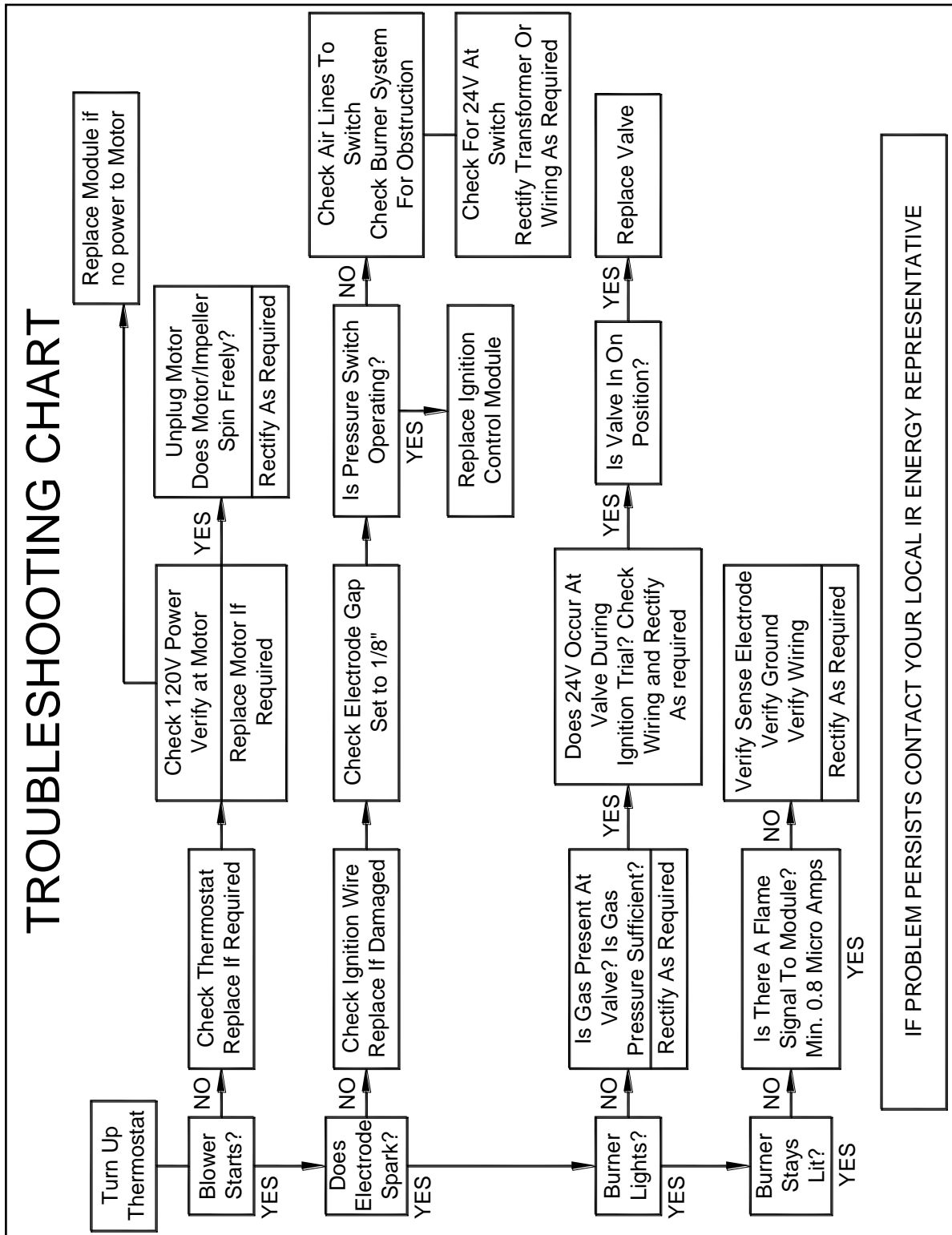
## **Burner Does Not Light**

- Is spark visible through site glass during ignition trial? If no, further electrical checks by a qualified service person are required.
- Check to see if gas lines were properly purged of air.
- Check inlet and outlet gas pressure during ignition period.
- Check for proper orifice and air plate.

## **Burner Does Not Stay Lit**

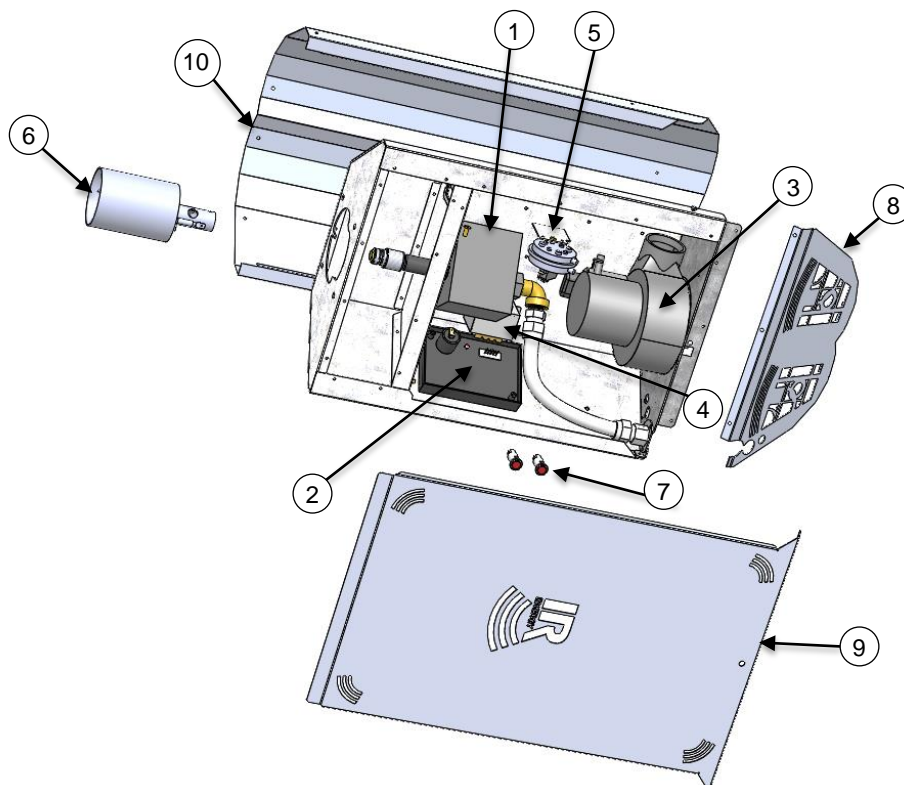
- Check ground wire continuity.
- Check insulation on the igniter leads.
- Measure flame signal current; it should be between 2 to 6 micro amps dc. Minimum 0.8 micro amps.
- Clean flame rod if necessary.
- Replace module if necessary.

Troubleshooting Chart



# Replacement Parts List

Item	Part No.	Description
1	UG105	Gas Train Assembly <b>for Natural Gas</b>
	UG106	Gas Train Assembly <b>for Propane</b>
2	CE201	Ignition Module
	CE202	Wire Harness w/5 pin PLUG to Ignition Module
3	CE011	Blower Motor Assembly w/ 0.26A PSC Motor
4	CE058	Transformer, 115V to 24VAC, 40VA
5	CE291	<b>For ETS 50:</b> Air Switch w/ Bracket, 0.50" w.c.
	CE028	<b>For ETS 60:</b> Air Switch w/ Bracket, 0.78" w.c.
	CE028	<b>For ETS 80:</b> Air Switch w/ Bracket, 0.78" w.c.
	CE021	<b>For ETS 100:</b> Air Switch w/ Bracket, 0.55" w.c.
6	UG001	Burner Cup
	CE002	Electrode for Sparking
	CE003	Electrode for Flame Sense
	CE006	Wire, Ignition
	CE036	Wire, Flame Sense
7	CE057	Operation Light, Amber, 28VAC
8	US225	Grill
9	US215	Service Door
10	US224	Cowling
-	CE010	Power Cord <i>(Not Shown)</i>







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# SERIES ETS INFRARED HEATERS WARRANTY

The manufacturer warrants to the original owner that the product will be free of defects in material and workmanship as described below.

Series	Component	Warranty Period			
		1 Year	5 Years	7 Years	10 Years
ETS	Burner & Controls	*			
	Aluminized Heat Exchanger (Tube)				*

The Manufacturer’s obligation under this warranty is limited to repair or replacement, F.O.B. its facility, of the defective part. In the case of replacement parts, the warranty period shall be the longer of the original warranty or a period of 12 months from the date of purchase. In no event shall the Manufacturer be liable for incidental expense or consequential damages of any kind.

This warranty does not cover any shipping, installation or other costs incurred in the repair or replacement of the product. No materials will be accepted for return without authorization.

This warranty will not apply if in the judgment of the Manufacturer, the equipment has been improperly installed, unreasonably used, damaged or modified.

This warranty will not apply to damage to the product when used in corrosive atmospheres and in particular atmospheres containing halogenated hydrocarbons. No person is authorized to assume for the Manufacturer any other warranty, obligation or liability.

THE REMEDIES PROVIDED FOR IN THE ABOVE EXPRESS WARRANTIES ARE THE SOLE AND EXCLUSIVE REMEDIES. NO OTHER EXPRESS OR IMPLIED WARRANTIES ARE MADE INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE.