

EHL/EDX Series

AU Installation, Operation, Maintenance and Parts Manual

AGA XXXXG Certified 240V-50Hz. Overhead Radiant Gas Fired Infrared Tube Heater.

RE-VERBER-RAY

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

⚠ WARNING



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

This heater must be installed and serviced by authorized gas installation and service personnel only. Failure to comply could result in personal injury, asphyxiation, death, fire or property damage.



In locations used for the storage of combustible materials, signs must be posted to specify the maximum permissible stacking height to maintain the required clearances from the heater to the combustibles. Signs must either be posted adjacent to the heater thermostats or in the absence of such thermostats, in a conspicuous location.

Do not place articles on or against this appliance.

Do not use or store flammable materials near this appliance.

Do not spray aerosol in the vicinity of this appliance while in operation.



Not for residential use! Do not use this heater in the home, sleeping quarters, attached garages, etc. Installation of a commercial tube heater system in residential indoor spaces may result in property damage, serious injury, asphyxiation or death.

For Your Safety

If you smell gas:

- Do not try to light any appliance.
- Do not touch any electrical switch.
- Do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone.
- Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

Contents

1.0	INTRODUCTION	4
1.1	Overview	4
1.2	Kit Contents	4
2.0	SAFETY	5
2.1	Warning Symbols	5
2.2	Applications	5
2.3	Codes and Regulations	6
2.4	Clearance to Combustibles	7
3.0	INSTALLATION	9
3.1	Design Considerations and Prechecks	9
3.2	Recommended Mounting Heights	12
3.3	Hanger Placement and Suspension	13
3.4	Optional U-Bend or Elbow Accessory Configuration	16
3.5	Radiant Tube Assembly	17
3.6	Burner Control Box Suspension	20
3.7	Reflector Assembly	21
3.8	Baffle Assembly and Placement	23
3.9	Final Heater Assembly	24
3.10	Flueing	25
3.11	Combustion Air Requirements	30
3.12	Gas Supply	32
4.0	EDX SERIES SPECIFIC	35
4.1	Electrical Requirements	35
4.2	Operation	37
4.3	Troubleshooting	39
4.4	Replacement Parts List	40
4.5	Technical Specifications	42
5.0	EHL SERIES SPECIFIC	43
5.1	Electrical Requirements	43
5.2	Operation	45
5.3	Troubleshooting	47
5.4	Replacement Parts List	48
5.5	Technical Specifications	50
6.0	MAINTENANCE	51

Available Models

EDX Series Offering

Model Number	MJ/h		Length (mm)		Length (M)			Combustion Chamber	Radiant Tubes
	High	Low	Min.	Max.	Install Kit				
EDX-50	52,8	N/A	6.705	12.473	6M	9M	12M	Aluminized	Aluminized or Hot-Rolled Steel
					20 kit	30 kit	40 kit		
EDX-60	63,3	N/A	6.706	12.473	6M	9M	12M	Aluminized	Aluminized or Hot-Rolled Steel
					20 kit	30 kit	40 kit		
EDX-75	79,1	N/A	6.707	12.473	6M	9M	12M	Aluminized	Aluminized or Hot-Rolled Steel
					20 kit	30 kit	40 kit		
EDX-100	105,5	N/A	9.525	15.417	9M	12M	15M	Aluminized	Aluminized or Hot-Rolled Steel
					30 kit	40 kit	50 kit		
EDX-125	131,9	N/A	12.473	18.365	12M	15M	18M	Aluminized	Aluminized or Hot-Rolled Steel
					40 kit	50 kit	60 kit		
EDX-150	158,3	N/A	12.473	18.365	12M	15M	18M	Titan-Alum	Aluminized or Hot-Rolled Steel
					40 kit	50 kit	60 kit		

EHL Series Offering

Model Number	MJ/h		Length (mm)		Length (M)			Combustion Chamber	Radiant Tubes
	High	Low	Min.	Max.	Install Kit				
EHL-75	79,1	52,8	6.707	12.473	6M	9M	12M	Aluminized	Aluminized or Hot-Rolled Steel
					20 kit	30 kit	40 kit		
EHL-100	105,5	68,5	9.525	15.417	9M	12M	15M	Aluminized	Aluminized or Hot-Rolled Steel
					30 kit	40 kit	50 kit		
EHL-125	131,9	100,2	9.525	15.417	12M	15M	18M	Aluminized	Aluminized or Hot-Rolled Steel
					40 kit	50 kit	60 kit		
EHL-150	158,3	105,5	12.473	18.365	12M	15M	18M	Titan-Alum	Aluminized or Hot-Rolled Steel
					40 kit	50 kit	60 kit		

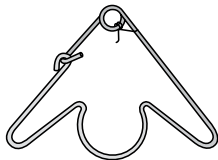
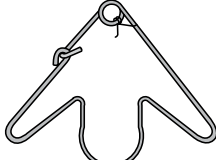

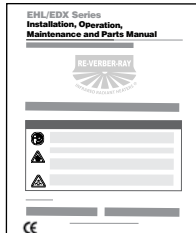
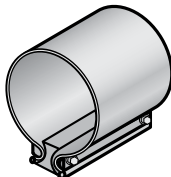

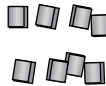
1.0 Introduction

1.1 Overview

The intent of this manual is to provide information regarding general safety, installation, operation and maintenance of this tube heater. You must read and understand all instructions and safety warnings before installing or servicing the tube heater.

1.2 Kit Contents

Prior to installation, verify that you have received all heater components included with your tube heater. Refer to the chart below for a list of the kit contents for your model heater. Materials not included in the kit (e.g. sheet metal screws, flue material, terminals, etc.) are the responsibility of the installer.

Kit Contents - Reference the column for your model length.							
TP-19B Hanger with Reflector Tension Spring		TP-19E* Hanger with Reflector Tension Spring		TP-82 Reflector Center Support (RCS)		Installation, Operation and Maintenance Manual F/N: LIOEAU	
							
TP-21B Tube Clamp		TP-105 Reflector End Cap		TP-106 Reflector End Caps Clips			
							
Part No.	Description	Unit Length Kit Size	6M 20	9M 30	12M 40	15M 50	18M 60
TP-19B	Hanger w/ Tension Spring		3	4	5	6	7
TP-19E*	Elongated Agricultural Hanger		—	—	—	—	—
TP-21B	Tube Clamp		2	3	4	5	6
TP-82	Reflector Center Support		2	3	4	5	6
TP-105	Reflector End Cap		2	2	2	2	2
TP-106	Reflector End Cap Clips		8	8	8	8	8
LIOEAU	EHL/EDX Series IOM		1	1	1	1	1
Filled By:							

*Optional

2.0 Safety

⚠ WARNING



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

2.1 Warning Symbols

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

⚠ WARNING

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

⚠ CAUTION

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

NOTICE

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

2.2 Applications

This is not an explosion-proof heater. Consult the local Fire Marshall, fire insurance carrier and other authorities for approval if the proposed installation is in question.

Commercial and Agricultural

This tube heater is designed and certified for use in industrial and commercial buildings such as, warehouses, manufacturing plants, aircraft hangars, vehicle maintenance shops and in agricultural applications (e.g. poultry houses).

⚠ WARNING



Not for residential use!
Do not use this heater in the home, sleeping quarters, attached garages, etc.

2.3 Codes and Regulations

The following must be reviewed before installing this heater:

Installation must be in accordance with these instructions, local gas fitting instructions, municipal building codes, electric wiring regulations, AS 5601, and any other relevant statutory regulations. The requirements of the local authority - gas, electricity, etc.

- Check the heater rating label on the heater to verify the proper gas to be used. Check other labels on the heater to verify proper mounting and clearance to combustibles.
- Signs must be posted in storage areas to specify maximum stacking heights allowed in order to maintain published clearances to combustibles.
- Notwithstanding their limited scope, this appliance must be installed in accordance with relevant provisions of the following regulations:

2.4 Clearance to Combustibles

⚠ WARNING



This is not an explosion-proof heater. Do not store or use flammable objects, liquids or vapor in the vicinity of the heater. Where there is the possibility of exposure to flammable vapors or highly combustible materials, consult the local fire marshal, fire insurance carrier and other authorities for approval of the proposed installation.

⚠ WARNING



This heater must be installed so that the minimum clearances to combustibles, as marked on the heater, will be maintained. If vehicle lifts are present, ensure that these clearances will be maintained from the highest raised vehicle.

⚠ WARNING



Fire Hazard. Always maintain published clearance to combustibles. Failure to comply with the stated clearances to combustibles could result in personal injury, death and/or property damage.

Hazards

For maximum safety, the building must be evaluated for hazards before installing this heating system. A critical safety factor before installation is the clearance to combustibles.

Clearances to combustibles is defined as the minimum distance that **must** be maintained between the tube surface or reflector and combustible materials. It also pertains to the distance that must be maintained from moving objects (e.g. overhead doors, cranes, vehicle lifts, etc.) around the tube heater.

The following is a partial list of items to maintain clearances from:

- Gas and electrical lines
- Combustible and explosive materials
- Chemical storage areas
- Areas of high chemical fume concentrations
- Vehicle parking areas
- Vehicle lifts
- Hoists or cranes
- Storage areas with stacked materials
- Lighting
- Sprinkler heads
- Overhead doors and tracks
- Dirty, contaminated areas

If you are unsure about the proposed installation, consult your local fire marshal, fire insurance carrier or other authorities for the approval of the proposed installation.

Safety Signs and Labels

It is important to provide warnings to alert individuals to potential hazards and safety actions. Local codes may require you to post a sign “specifying the maximum permissible stacking height to maintain the required published clearances from the heater to combustibles” near the heater’s thermostat or, in the absence of such thermostats, in a conspicuous location.

All safety labels must be maintained on this appliance. Contact your distributor if replacement labels are needed.

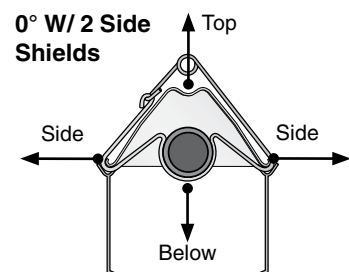
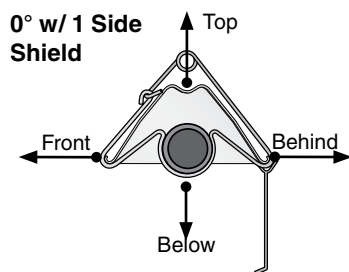
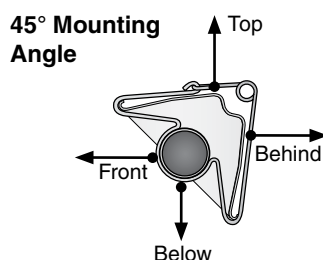
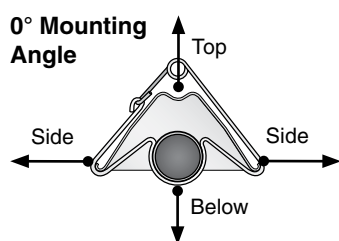
Clearance to Combustibles

IMPORTANT:

For the safe installation of this unit, the clearance to combustibles data below contains clearances that **must** be maintained.

Check the rating plate on the heater to verify the minimum clearance to combustibles and gas type for your model heater.

EHL/EDX Series Clearance to Combustibles Data (mm)



Heater Input (MJ/h)	Mounting Angle*	Side		Top	Below
		Front	Behind		
53-63 MJ/h	0°	229	229	152	1194
	45°	991	203	254	1194
	w/ 1 side shield	737	203	152	1194
	w/ 2 side shields	229	229	152	1194
	6.1m downstream of burner	178	178	152	762
79 MJ/h	0°	229	229	152	1524
	45°	991	203	254	1524
	w/ 1 side shield	737	203	152	1524
	w/ 2 side shields	229	229	152	1524
	6.1m downstream of burner	178	178	152	762
105-109 MJ/h	0°	356	356	152	1676
	45°	991	203	254	1676
	w/ 1 side shield	737	203	152	1676
	w/ 2 side shields	406	406	152	1676
	6.1m downstream of burner	178	178	152	762
132 MJ/h	0°	508	508	152	1930
	45°	1473	203	254	1930
	w/ 1 side shield	1067	203	152	1930
	w/ 2 side shields	508	508	152	1930
	6.1m downstream of burner	178	178	152	762
152-163 MJ/h	0°	610	610	152	2057
	45°	1473	203	254	2057
	w/ 1 side shield	1067	203	152	2057
	w/ 2 side shields	584	584	152	2057
	6.1m downstream of burner	279	279	152	1118

* Heaters mounted on an angle between 0° to 45° must maintain clearances posted for 0° or 45°; whichever is greater.



3.0 Installation

3.1 Design Considerations and Prechecks

Placement of infra-red tube heaters is influenced by many factors. Aside from safety factors, considerations such as the number of elbows that are allowed, maximum flue lengths and ducting of combustion air are a few examples. It is critical that all guidelines and instructions are followed.

To ensure a properly designed heating system, a heating layout should be developed for the correct placement of the burner control box, radiant tubing, flueing and combustion air intake ducts. Inspect and evaluate the mounting conditions, flue locations, gas supply and electrical wiring. Refer to the chart below for the recommended distances for the model being installed.

HEATER INSTALLATION CHART (mm)				
Input (MJ/h)	Recommended Mounting Heights	Distance Between Heaters	Distance Between Heater Rows	Maximum Distance Between Heater and Wall
53-63 MJ/h	3050 - 4880	3050 - 9140	3660 - 19810	5030
79 MJ/h	3660 - 5490	3660 - 10670	4570 - 21340	6100
105-109 MJ/h	3690 - 6100	3960 - 12190	4880 - 25910	6100
132 MJ/h	4570 - 7620	4270 - 13100	5180 - 27430	7620
152-163 MJ/h	4880 - 9140	4570 - 13720	5490 - 30480	7620

When designing an infra-red radiant heating system, consider the following:

- Has the building's heat loss been evaluated?
- Does the design meet the needs of the space?
- Have all clearance to combustible situations been observed?
- Have recommended mounting heights been observed?
- Is the supply (burner) end of the heater located where more heat is required?
- Is it best to offset the heaters and/or rotate the reflectors towards the heat zone?
- Are protective guards, side shields, 'U' or 'L' reflector covers needed?
- Does the heater require outside fresh air for combustion?
- Is the environment harsh or contaminated (requiring outside air for combustion)?
- Are chemicals or vapor a concern (requiring outside air for combustion)?

NOTE: The effective infra-red surface temperature of a person or object may be diminished with wind above 8 km/h. The use of adequate wind barrier(s) may be required.

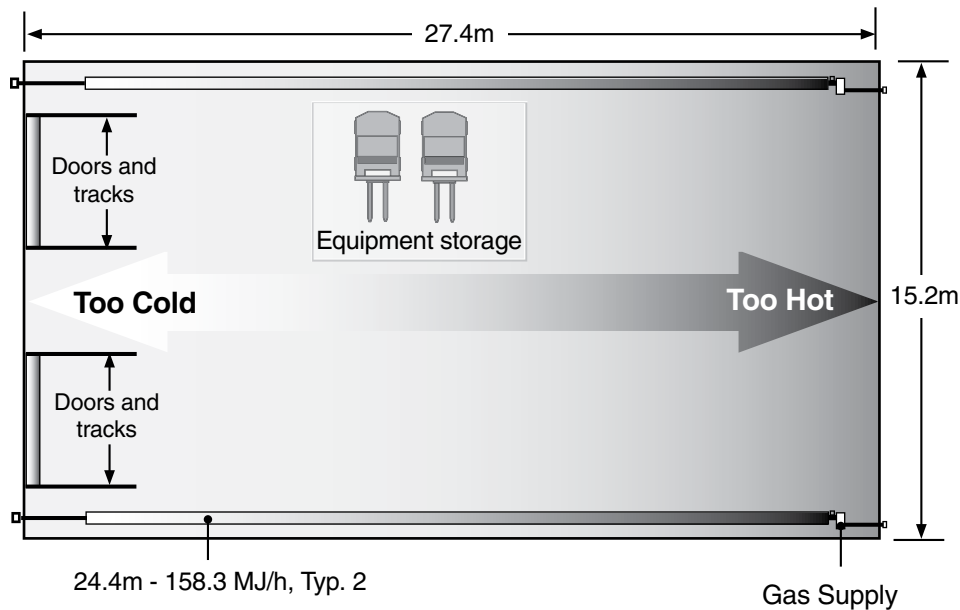
NOTE: When heated, materials high in hydrocarbons (solvents, paint thinner, mineral spirits, formaldehydes, etc.) can evaporate. This may result in odors or fumes being emitted into the environment. To correct this problem, clean the area and/or introduce additional ventilation.

Heaters installed and serviced in accordance with the installation manual do not emit odors into the environment. See notice on page 30 for additional information.

General Design Scenario

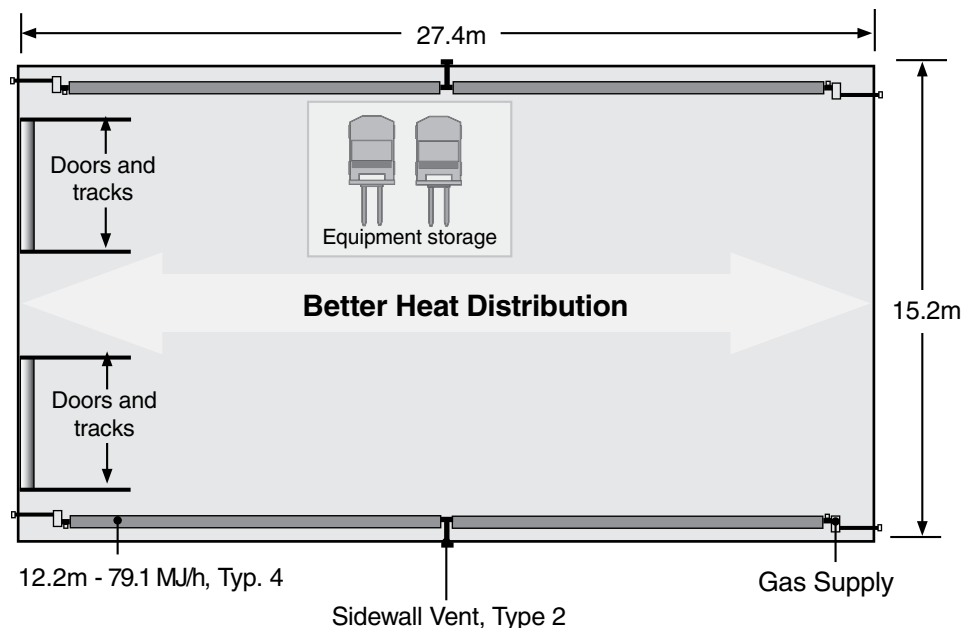
A tube heater system is being installed in a 27.4m (L) x 15.2m (W) space with 4.3m ceilings. Two overhead doors are located at one end and an equipment storage area exists on one side. The calculated heat load is 316.5 MJ/h.

Figure 3.1 - Poor Design



- Two burners (158.3 MJ/h each) are placed at one end, opposite the area of highest demand (overhead doors).
- Recommended mounting heights are not observed.
- Produces an uneven heat distribution.

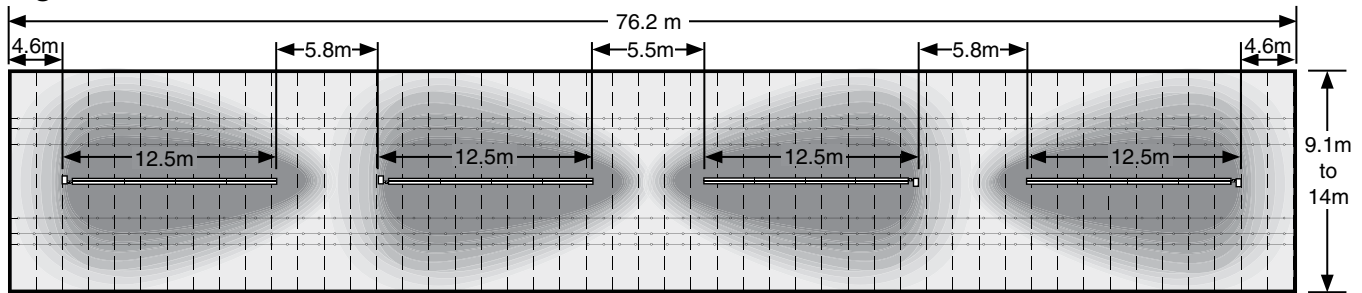
Figure 3.2 - Good Design



- Four burners (79.1 MJ/h each) are placed in each corner. Burner (hotter) ends direct heat to areas of highest heat demand.
- Recommended mounting heights observed.
- Distributes heat more evenly.

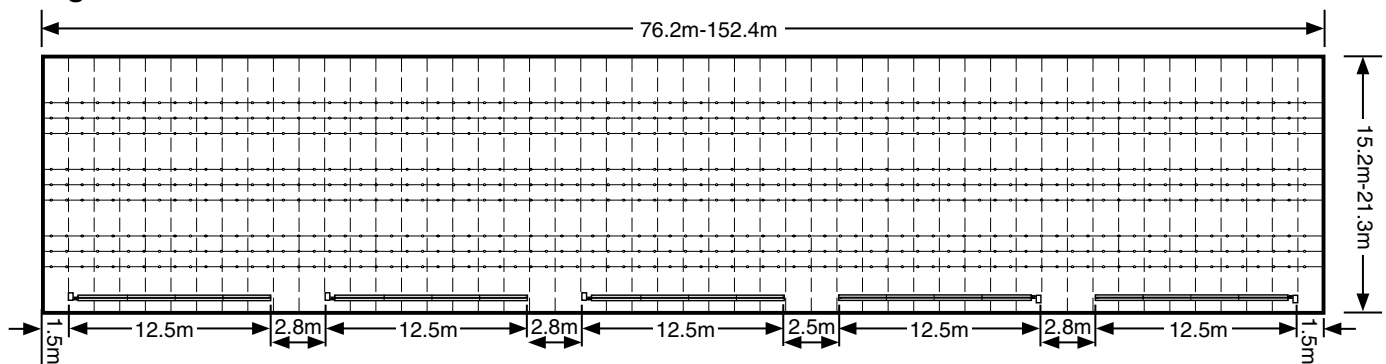
Agricultural (Brood) Design Scenario

Figure 3.3 - Center House Installation



NOTE: Utilize CH hangers on houses 18.3 meters or more with center house mounting.

Figure 3.4 - Side Wall Installation

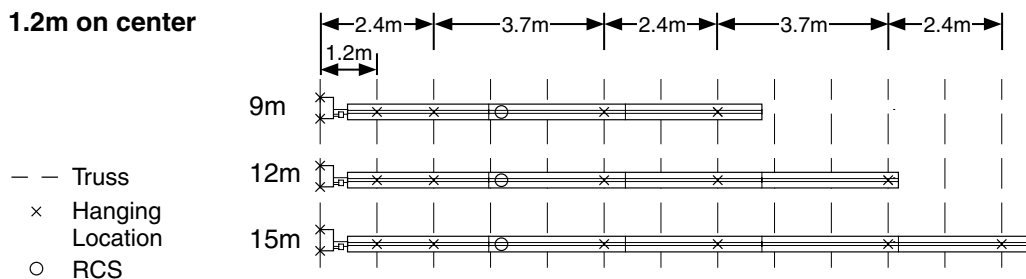


NOTE: Optional hangers (TP-19E) may be required for side wall installations.

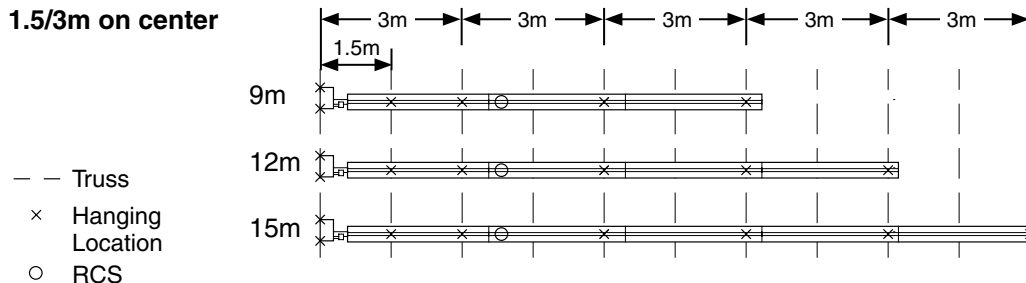
Figure 3.5 - Center House Installation

9m, 12m and 15m Truss Installation

1.2m on center



1.5/3m on center



NOTE: Mount Reflector at a 45° angle toward center.

Design Criteria

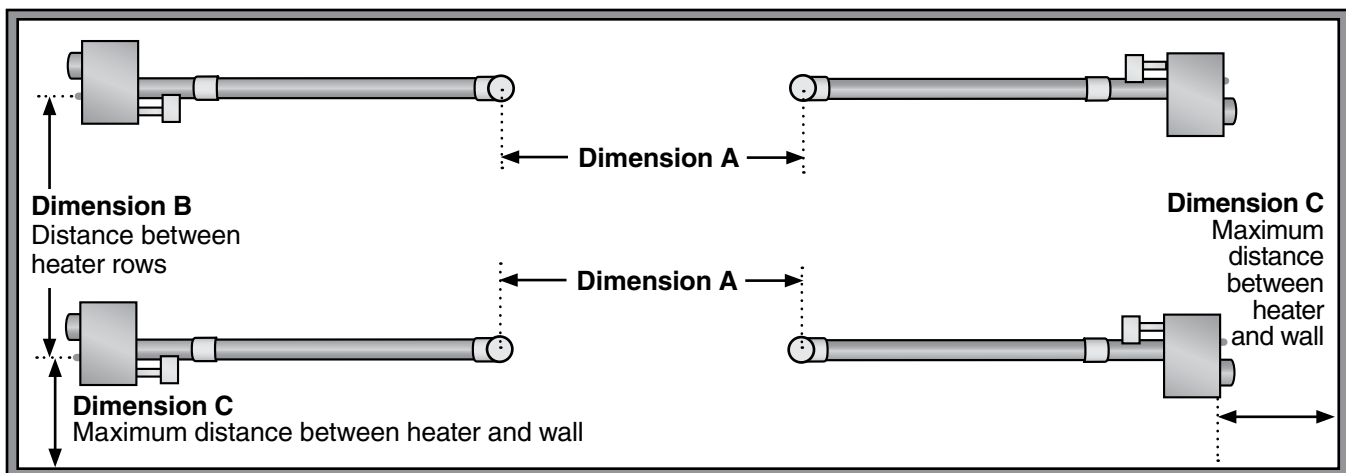
3.2 Recommended Mounting Heights (Industrial/Commerical Applications)

Model (M)	MJ/h Range	kW Range	Recommended Mounting Heights (M)	Coverage Straight Config. (LxW) (M)	Coverage U-Tube Config. (LxW)	Distance Between Heater Rows (M) Dim. A	Distance Between Heater Rows (M) Dim. B	Max. Distance Between Heaters and Wall (M) Dim. C
EDX/ EHL 6M	53-63	14.6 - 17.6	3.5 - 5.0	6.5 x 4.0	4.0 x 4.0	3.5 - 6.5	6.5 - 12.5	5.0
	79	22.0 - 29.3	4.0 - 6.5	7.0 x 4.5	4.0 x 4.5	6.5 - 9.5	9.5 - 15.5	5.5
EDX/ EHL 9M	53-63	14.6 - 17.6	3.5 - 5.0	9.5 x 4.5	5.5 x 4.0	3.5 - 6.5	6.5 - 12.5	5.5
	79-132	22.0 - 36.6	4.0 - 6.5	10.0 x 5.5	5.5 x 4.5	6.5 - 9.5	9.5 - 15.5	6.5
	105-109	29.3 - 36.6	3.5 - 6.5	10.0 x 5.5	5.5 x 4.5	6.5 - 9.5	9.5 - 15.5	6.5
EDX/ EHL 12M	79-132	22.0 - 36.6	4.0 - 7.0	13.5 x 6.5	7.0 x 5.5	6.5 - 9.5	9.5 - 15.5	6.5
	158.3	44.0	5.0 - 9.5	14.0 x 8.0	7.5 x 6.5	9.5 - 12.5	12.5 - 18.5	8.0
EDX/ EHL 15M	53-63	14.6 - 17.6	3.5 - 5.0	12.5 x 5.5	7.0 x 4.5	3.5 - 6.5	6.5 - 12.5	6.5
	79-132	22.0 - 36.6	4.0 - 6.5	13.5 x 6.5	7.0 x 5.5	6.5 - 9.5	9.5 - 15.5	6.5
	158	44.0	5.0 - 9.5	14.0 x 8.0	7.5 x 6.5	9.5 - 12.5	12.5 - 18.5	8.0
EDX/ EHL 18M	132	36.6	5.0 - 8.0	20.5 x 8.5	10.0 x 6.5	6.5 - 9.5	9.5 - 15.5	8.0
	158	44.0	5.5 - 12.5	20.5 x 10.5	10.5 x 8.0	9.5 - 12.5	12.5 - 18.5	8.0

NOTE:

Factory recommended mounting heights are listed as a guideline. If infra-red heaters are mounted too low or too high, they may result in heat discomfort or lack of heat. It is generally recommended to observe the recommended mounting heights to optimize comfort conditions. However, certain applications such as spot heating, freeze protection, outdoor patio heating or very high ceilings may result in the heaters being mounted outside of the factory recommended mounting heights. Clearances to combustibles **must** always be maintained.

Figure 3.6 • Recommended Mounting Heights and Distances - see chart above for dimensions.



3.3 Hanger Placement and Suspension

⚠ WARNING



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

⚠ WARNING



Failure to maintain the published clearance to combustibles may result in fire and/or explosion, property damage, serious injury or death. Always maintain clearances and post signs where needed.

Suspension of the heater must conform to applicable codes referenced in the Safety section and these instructions.

- ① Remove unit from packaging and discard all transit protection materials.

NOTE: All packaging material are external of the burner and tubular exchangers.

- ② Lay radiant tubing out in the following order. Position tubes in their approximate locations. Figure 3.7.

- Primary combustion chamber.
- Radiant emitter tubes.

IMPORTANT! 152-163 MJ/h models must use the titanium alloy treated combustion chamber as the first tube connected to the burner control box. The combustion chamber has an orange identification sticker located on the swaged end of the tube.

- ③ Mark locations for hanging points. Figure 3.7.

NOTE: If the available hanging points do not allow for the recommended spacing (or if an alternative hanging method is utilized) then additional hangers may be necessary.

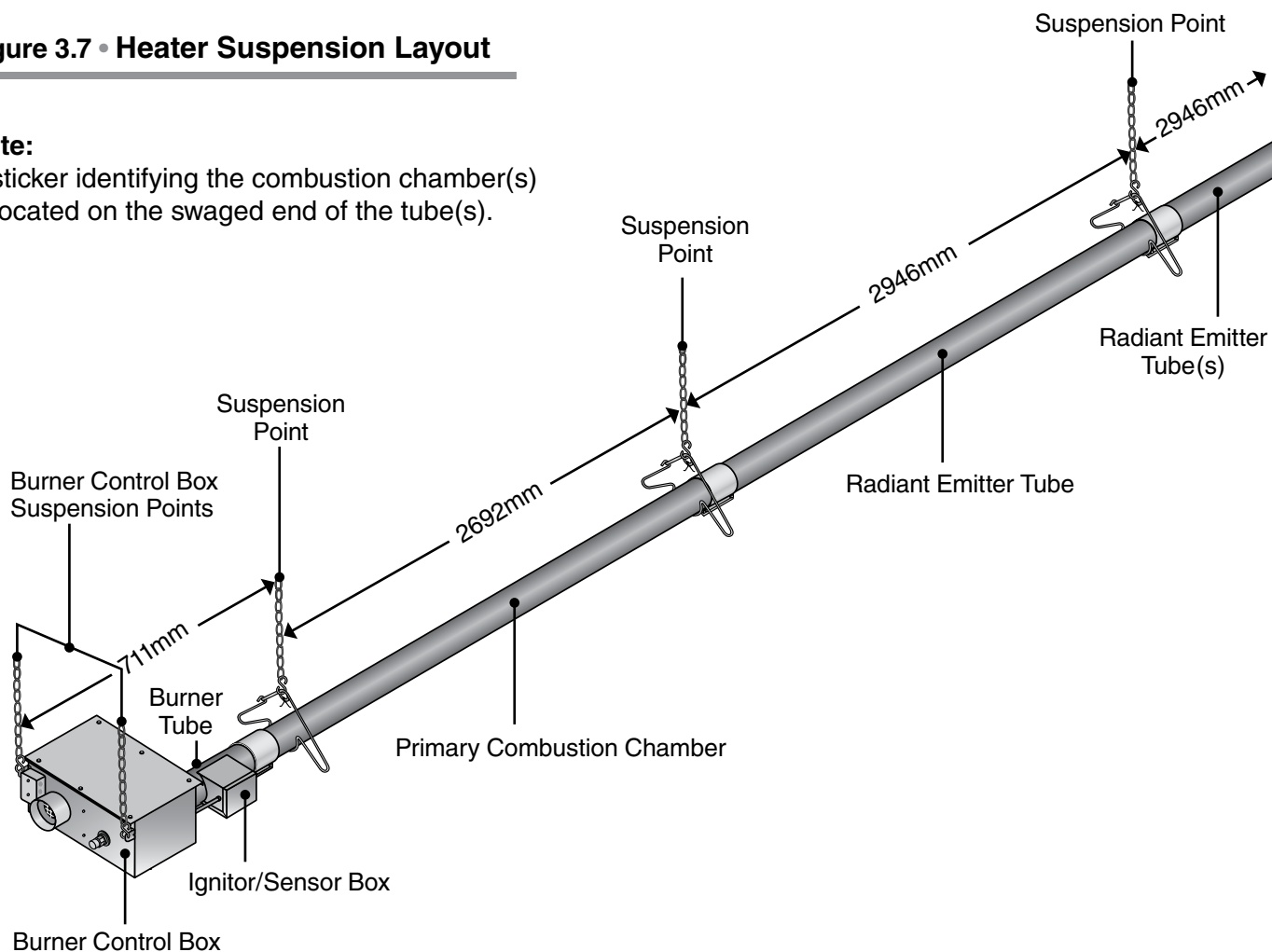
- The spacing between the burner control box mounting brackets and the first hanger should be approximately 711mm.
- The space between the first two hangers placed on the first tube should be approximately 2692mm.
- The space between hangers thereafter, one per tube, should be approximately 2946mm.

Hanger Placement and Suspension

Figure 3.7 • Heater Suspension Layout

Note:

A sticker identifying the combustion chamber(s) is located on the swaged end of the tube(s).



Heater Mounting Requirements and Weights

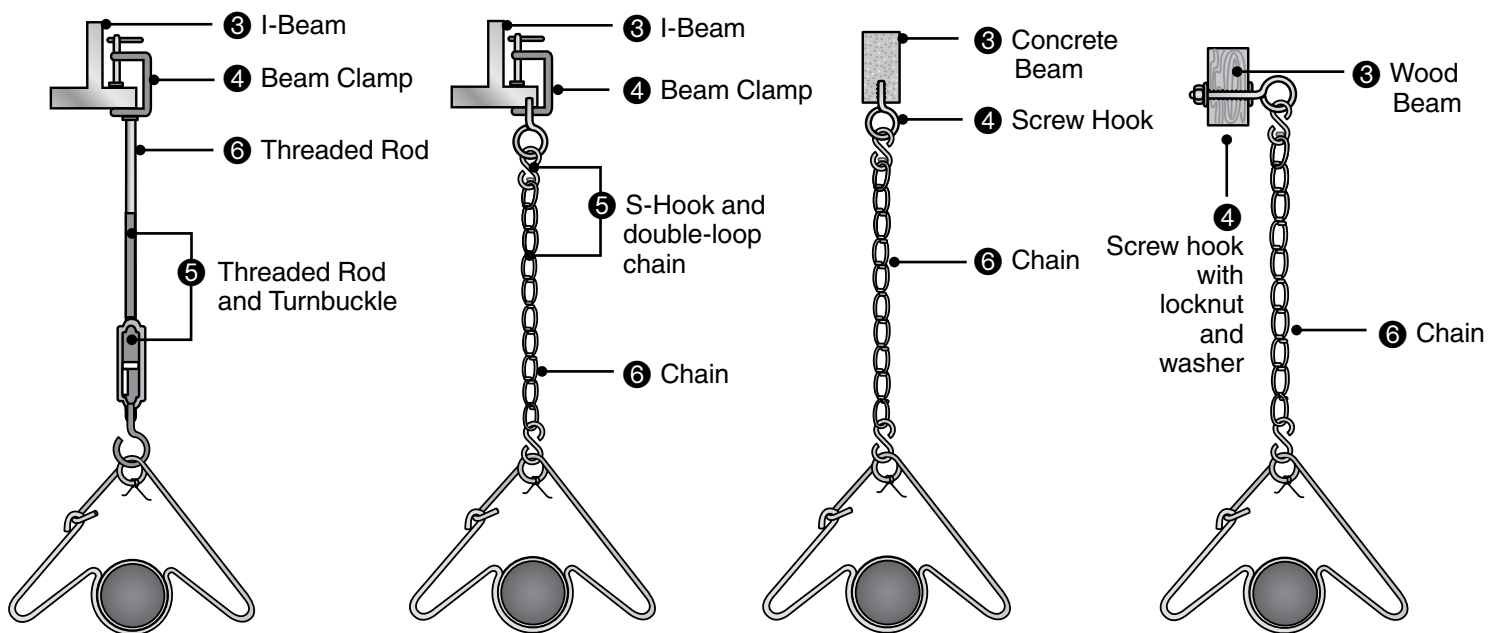
Model Length (M)	Dimension Straight Config. (mm)	Suspension Points	Control Box Stabilizer	Shipping Weight (kg)	Stainless Steel Ship Weight (kg)	Chain Set Qty. Straight Config.	Chain Set Qty. U-Tube Config.	Optional Brass Knuckles (P/N: BK)	Optional Single Mount Bracket (P/N: SMB) U Config. Only.
6M	6580	3	2	54.5	66.0	5	6	3	2
9M	9530	4	2	73.0	88.5	6	7	4	N/A
12M	12470	5	2	86.5	107.0	7	8	5	3
15M	15420	6	2	107.0	132.0	8	9	6	N/A
18M	18360	7	2	120.0	150.0	9	10	7	4

Hanger Placement and Suspension

Suspension of the heater must conform to applicable codes referenced in the Safety section and these instructions.

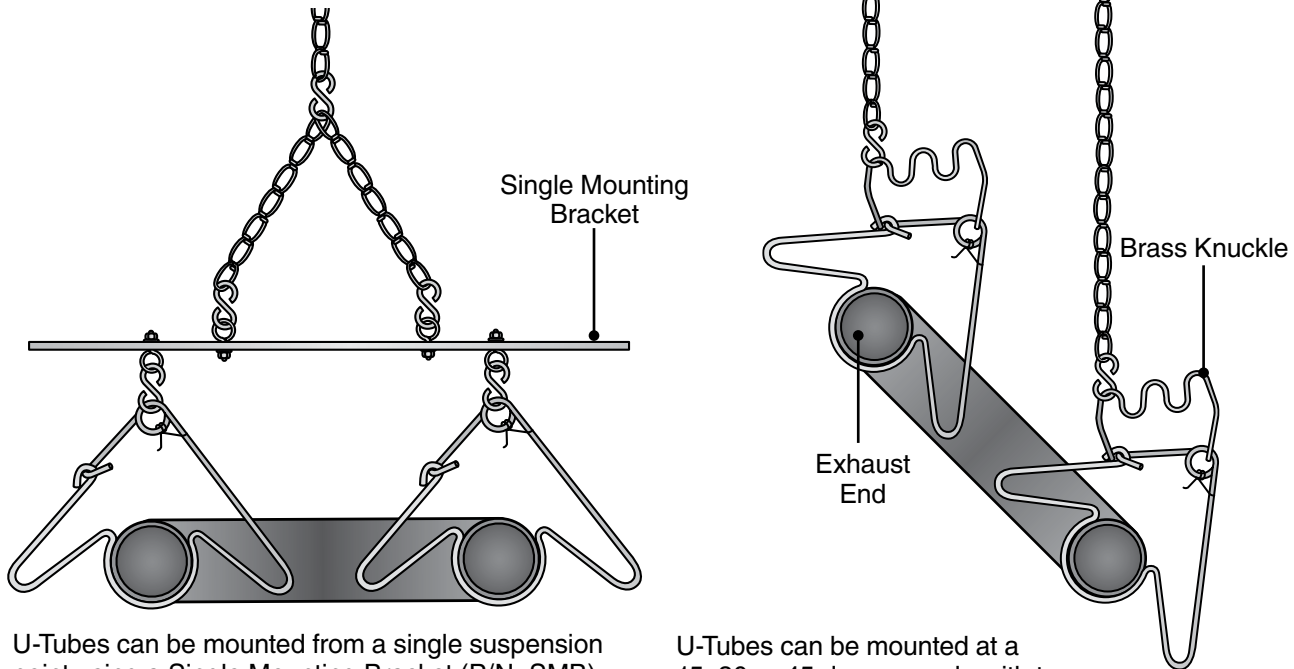
- ③ Prepare the mounting surface. If necessary, weld blocks, drill holes, etc. Figure 3.8.
NOTE: The burner control box and radiant tubes should be in straight alignment and level.
- ④ Fasten beam clamp, screw hook, or other type of suspension anchor to hanging point.
- ⑤ Attach and close S-hook and double-loop chain to anchor. Check that it is securely attached.
NOTE: Threaded rod and turnbuckles may be used.
- ⑥ Attach hangers to chains. Adjust chain lengths until radiant tubing is level and equal weight distribution is achieved. **NOTE:** Chains must be straight up and down. Do not install chains at an angle as this can result in tube warpage or separation.

Figure 3.8 • Mounting the Hangers



3.4 Optional U-Bend or Elbow Accessory Configuration

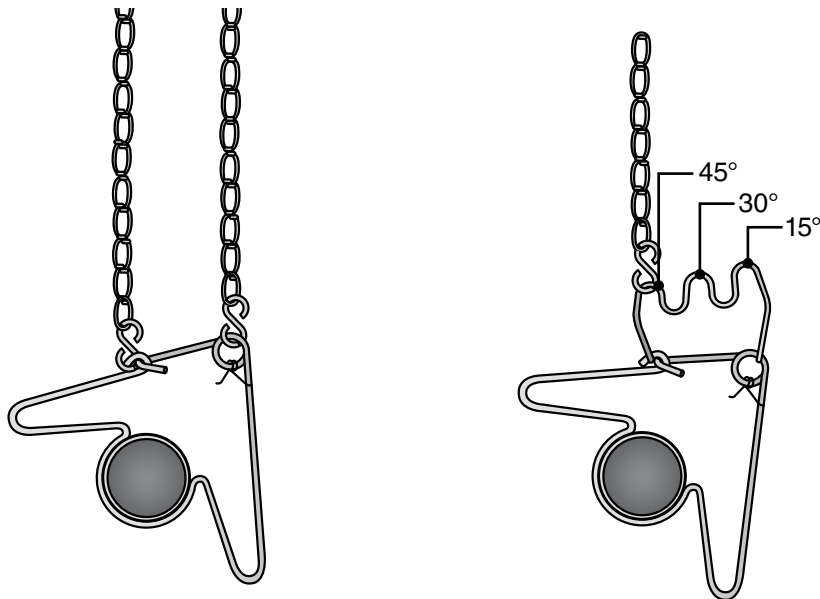
Figure 3.9 • U-Tube Hanger Mounting Options



U-Tubes can be mounted from a single suspension point using a Single Mounting Bracket (P/N: SMB) with five S-hooks and double-loop chains.

U-Tubes can be mounted at a 15, 30 or 45 degree angle with two suspension points, using two Brass Knuckle (P/N: BK) fittings, double-loop chains and S-hooks.

Figure 3.10 • Angled Hanger Mounting Options



For 45 degree hanging angle use two S-hooks and two double-loop chains.

For a variety of hanging angles, use the Brass Knuckle (P/N: BK) fitting with a double-loop chain and S-hook.

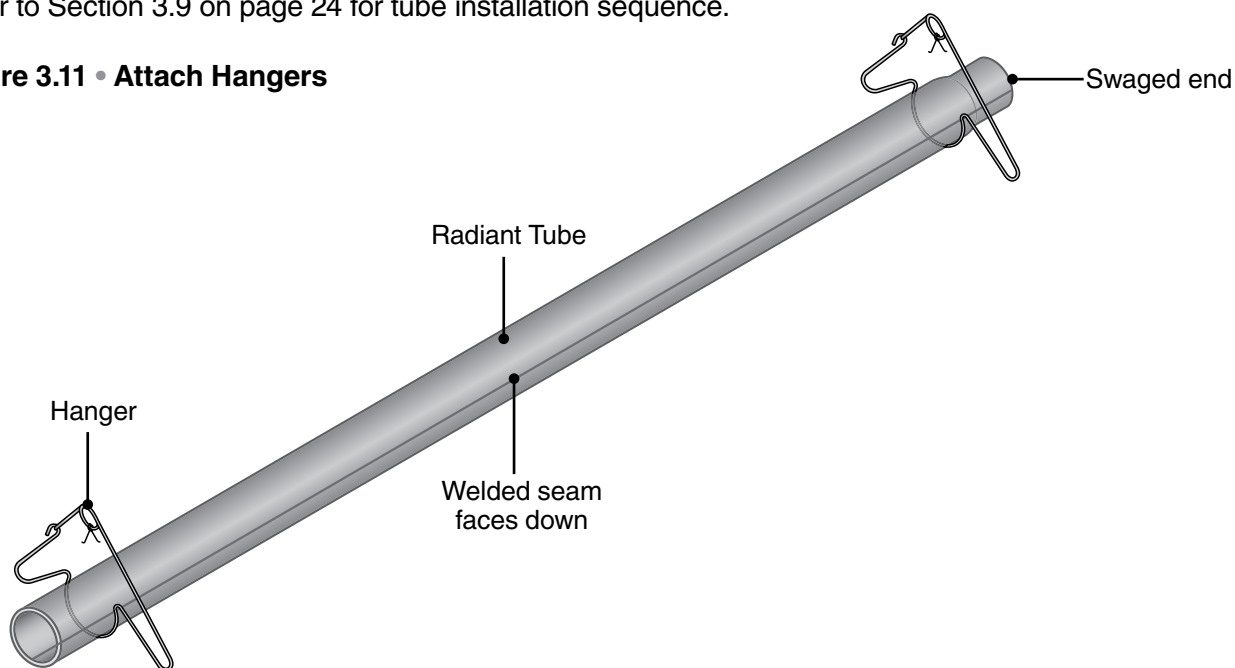
3.5 Radiant Tube Assembly

To install the radiant tubes:

- 1 Place tubes in hangers with the welded seam facing downward and the swaged end of the tube towards the exhaust end of the heater system (see Figure 3.11).

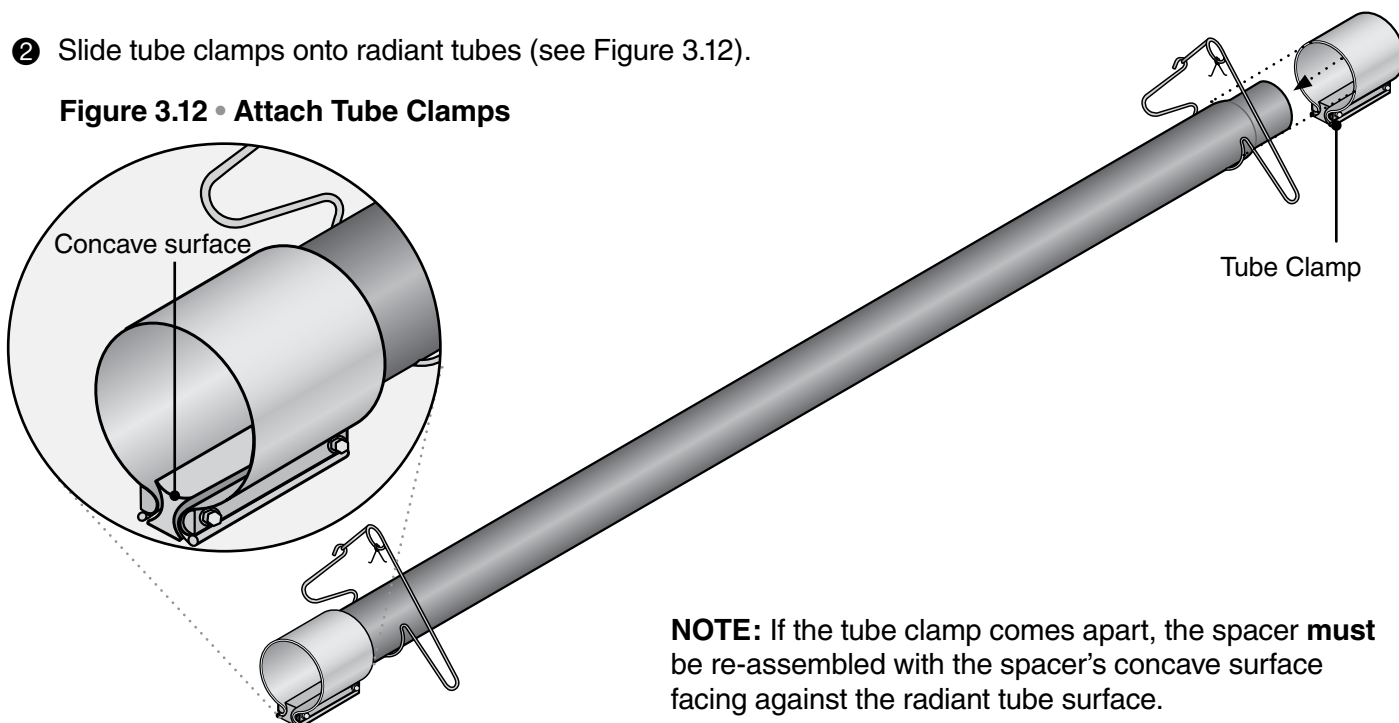
Refer to Section 3.9 on page 24 for tube installation sequence.

Figure 3.11 • Attach Hangers



- 2 Slide tube clamps onto radiant tubes (see Figure 3.12).

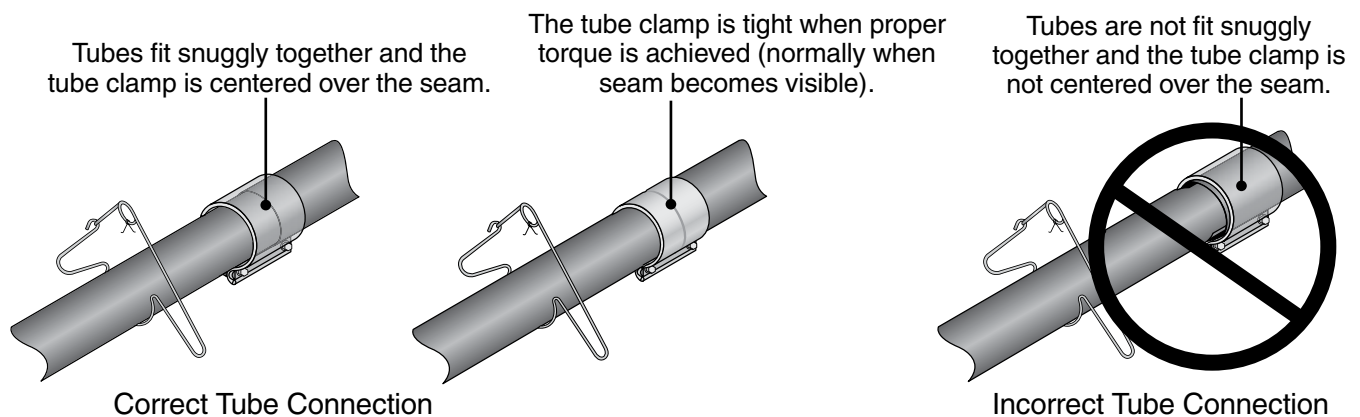
Figure 3.12 • Attach Tube Clamps



Radiant Tube Assembly

- ③ Slip-fit the radiant tube sections together until tightly connected (install swaged end of each tube towards exhaust end). **NOTE:** If it is difficult to mate the tubes, they may be installed incorrectly.
- ④ Center tube clamps over the seams where two radiant tube sections connect. If necessary, rotate tube clamps so they will not interfere with the reflector end caps during expansion and contraction of the heater while operating.
- ⑤ Tighten tube clamp bolts to secure. When proper compression is obtained (30-44 Nm), the tube seam will create a visible mark on the tube clamp. **NOTE:** Excessive torque may damage the tube clamp.
- ⑥ Determine the location of the burner control box and note the placement of the mounting chains.

Figure 3.13 • Tube Connections



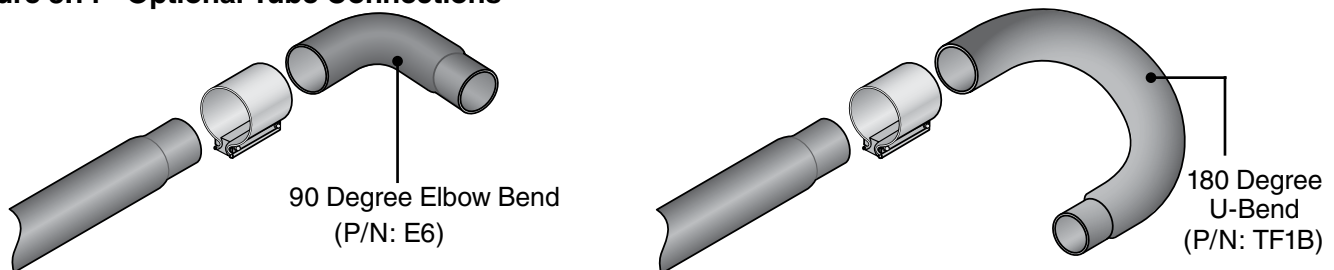
Optional U-Bend or Elbow Accessory Configurations

A 180 degree U-bend or 90 degree accessory fitting may be installed in the radiant tube heater system. Refer to page 19 for minimum distance requirements from the burner control box.

When installing a U-bend or Elbow Accessory Fitting:

- The top clearance of an uncovered (no reflector) U-bend or elbow accessory fitting to combustibles is 458mm.
- If operating the heater un-vented, separate the intake air to the heater from its exhaust products a minimum of 1220mm; further separation may be necessary. Combustion air may also be supplied.
- A maximum of one 180° U-bend or two 90° elbows can be installed on a heater.
- Omit one 840mm section of turbulator baffle. Refer to Baffle Assembly section.

Figure 3.14 • Optional Tube Connections



Radiant Tube Assembly

Figure 3.15 • Elbow and U-Bend Clearances

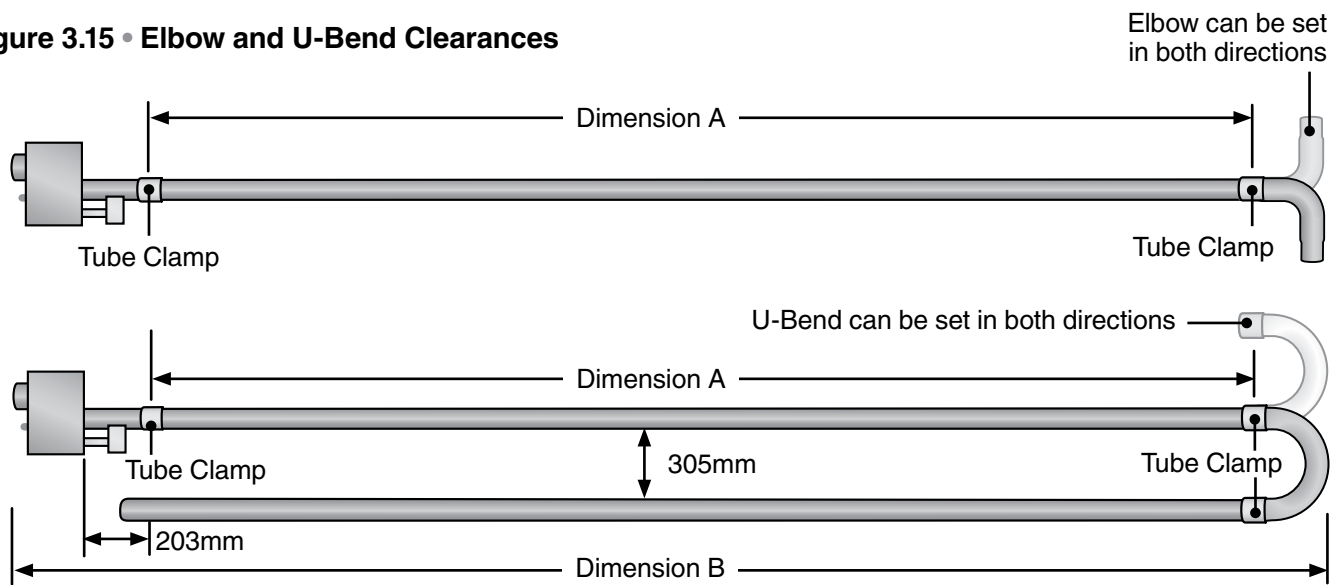
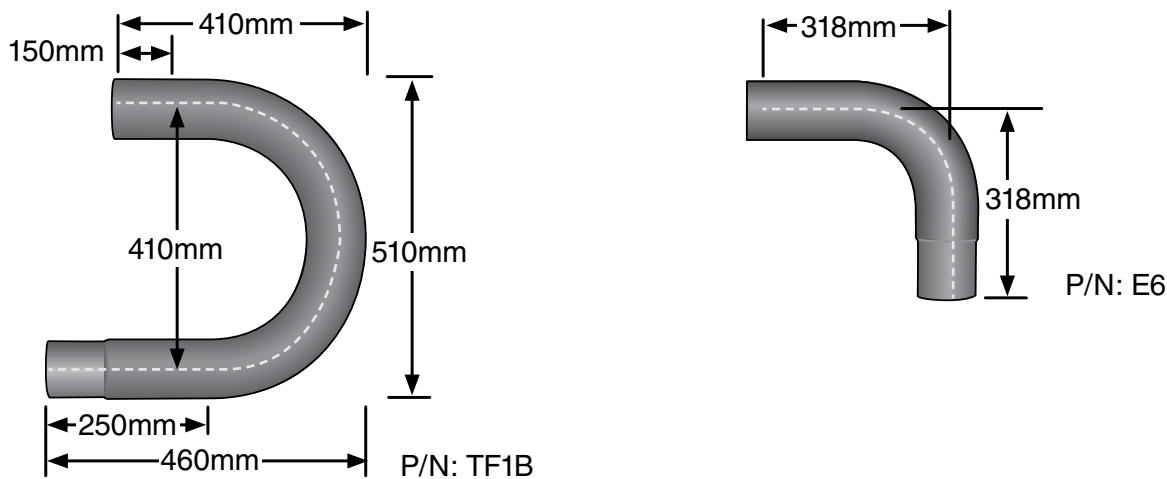


Figure 3.16 • U-Bend and Elbow Dimensions



Minimum Distance from Burner Control Box to U-Bend or Elbow Accessory

Heater Input Range (MJ/h)	Dim. A (mm)
53-109 MJ/h	3050
132 MJ/h	4570
152-163 MJ/h	6100

Overall Dimensions for Heaters Configured with U-Bend (P/N: TF1B)

Model Length	Dim. B (mm)
EHL/EDX 6M	3963
EHL/EDX 9M	5385
EHL/EDX 12M	6909
EHL/EDX 15M	8332
EHL/EDX 18M	9856

3.6 Burner Control Box Suspension

Suspending the burner control box must be done in accordance with applicable codes listed in the Safety section and these instructions.

The burner control box must be in straight alignment with the radiant tubes and level.

- ❶ Determine the mounting chain locations for hanging the burner control box.
- ❷ Fasten beam clamp, screw hook, or other type of suspension anchor to hanging point.
- ❸ Attach and close S-hook and double-loop chain to anchor. Check that it is securely connected.
- ❹ Attach chain assemblies and S-hooks to mounting brackets on the burner control box. Adjust chain lengths until level and in straight alignment with the radiant tubes. The burner sight glass will be visible from the floor.

Figure 3.17 • Burner Control Box Assembly • Side View

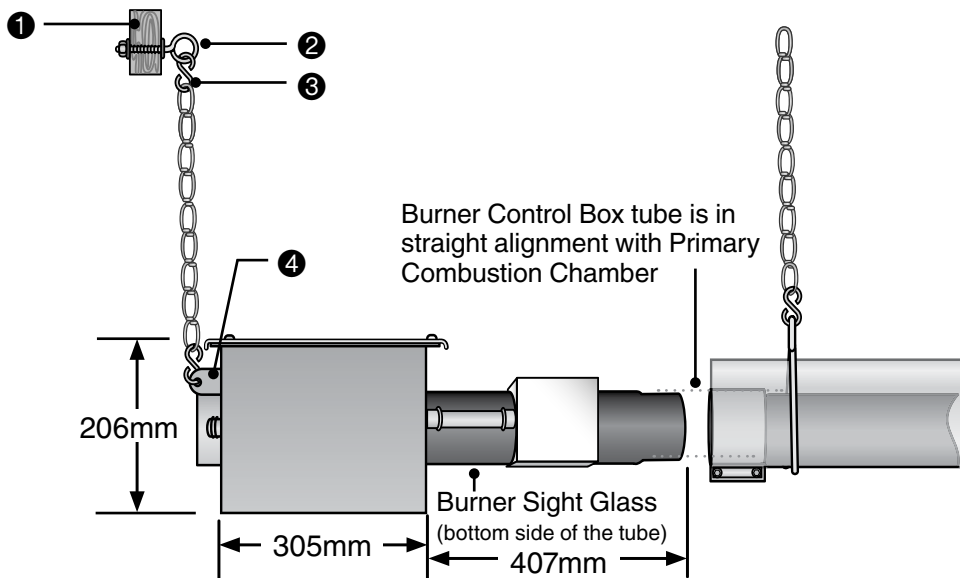
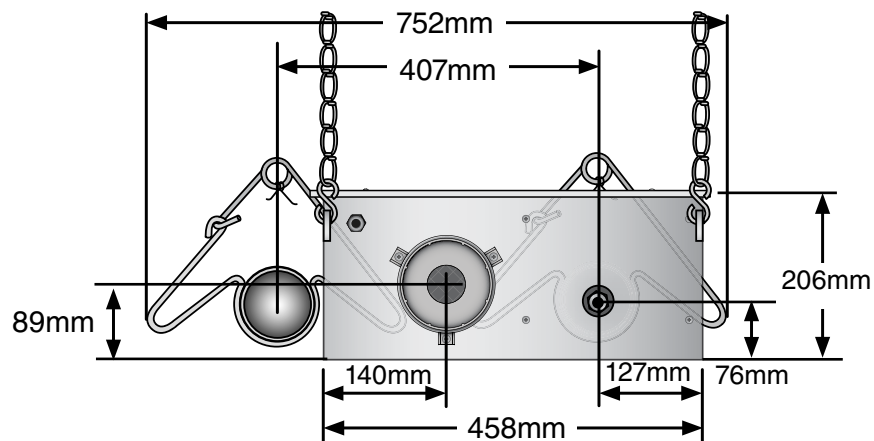


Figure 3.18 • Burner Control Box with U-Bend • End View



3.7 Reflector Assembly

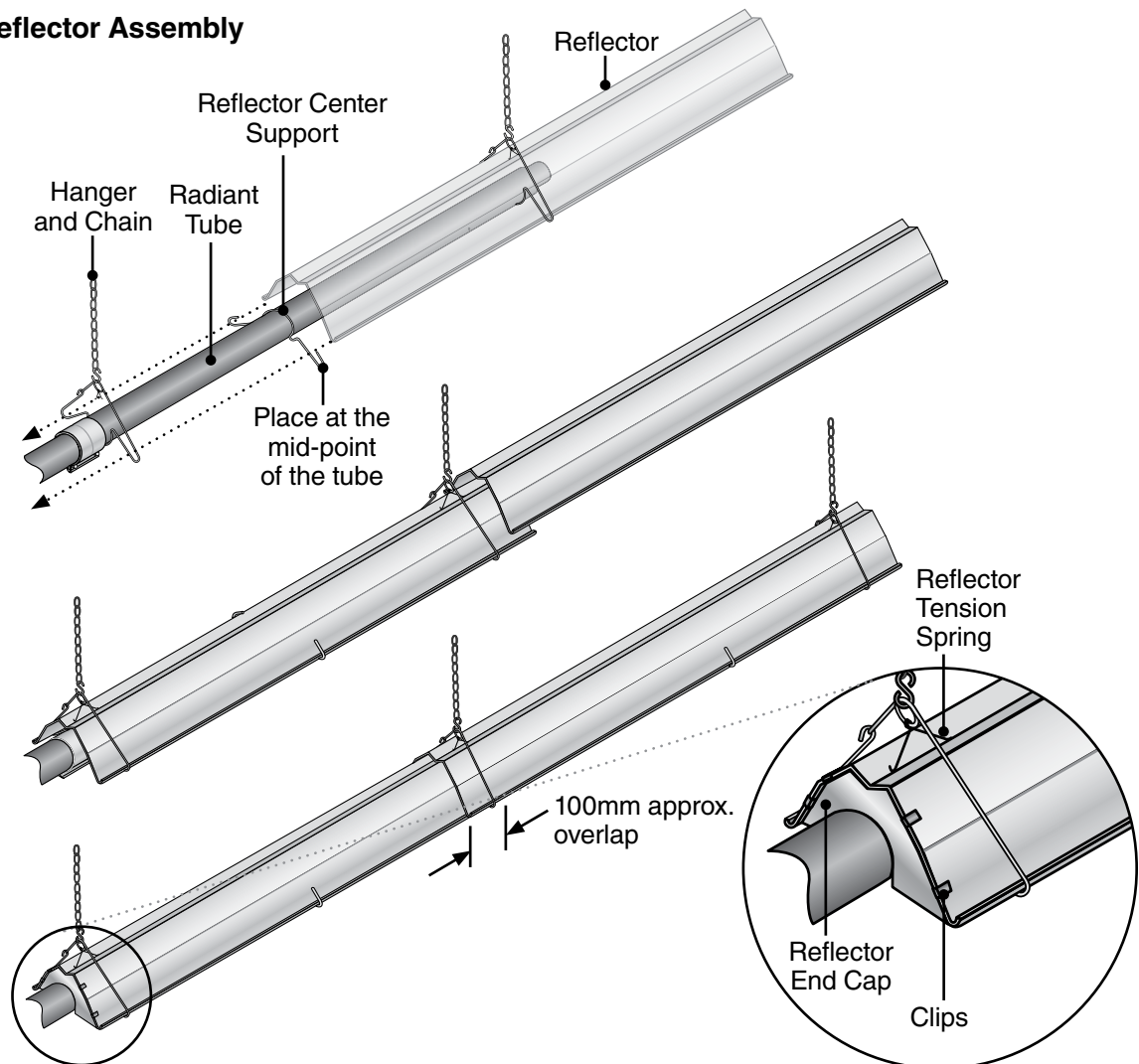
To install the reflectors:

- ① Attach reflector center supports onto radiant tubes.
- ② Slide each reflector section through the hangers and adjust the reflector tension spring into the V-groove on the top of the reflector. The reflectors should overlap approximately 102mm.
- ③ To prevent the reflectors from shifting, secure the reflector sections together using sheet metal screws except at the expansion joint (see page 24). **NOTE:** Installer to provide sheet metal screws.
- ④ Attach reflector end caps, with polished side inward, to each end of the reflector run.

Reflectors, and reflector accessories, direct infra-red energy to the floor level. The reflector assembly depends on the heater configuration, proximity to combustibles and the space surrounding the heater.

Before you begin assembly, determine if the use of reflector accessories are necessary (see page 22).

Figure 3.19 • Reflector Assembly



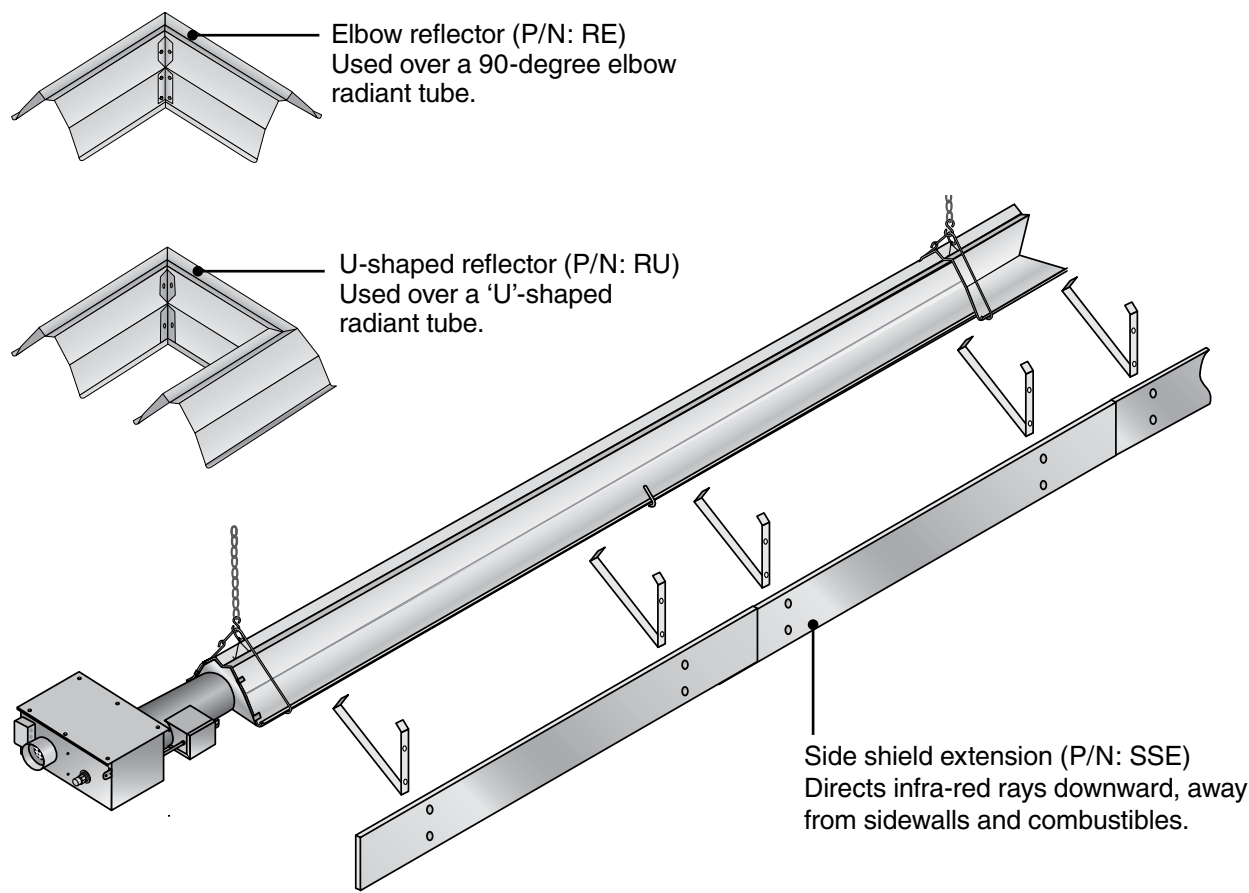
Reflector Assembly

Common Optional Accessories

Reflector Accessories	Description	Part #
Elbow Reflector*	90° bend, highly polished aluminum reflector elbow. Designed to fit atop one elbow accessory fitting.	RE
U-Reflector*	180° bend, highly polished aluminum reflector U-bend. Designed to fit atop one U-bend accessory fitting.	RU
Side Shield Reflector *^	Highly polished side shield extension used to direct infra-red rays downward, away from side walls and combustibles.	SSE
Protective Guard	Used to prevent debris or objects from becoming lodged between the radiant tube and reflector. Required when mounting below 2438 mm.	PG

* Reflectors cannot be rotated when used with this accessory.
^ Refer to the Clearance to Combustibles chart on page 8 for minimum distances to combustibles when side shield extension(s) are used.

Figure 3.20 • Reflector Shield Accessories

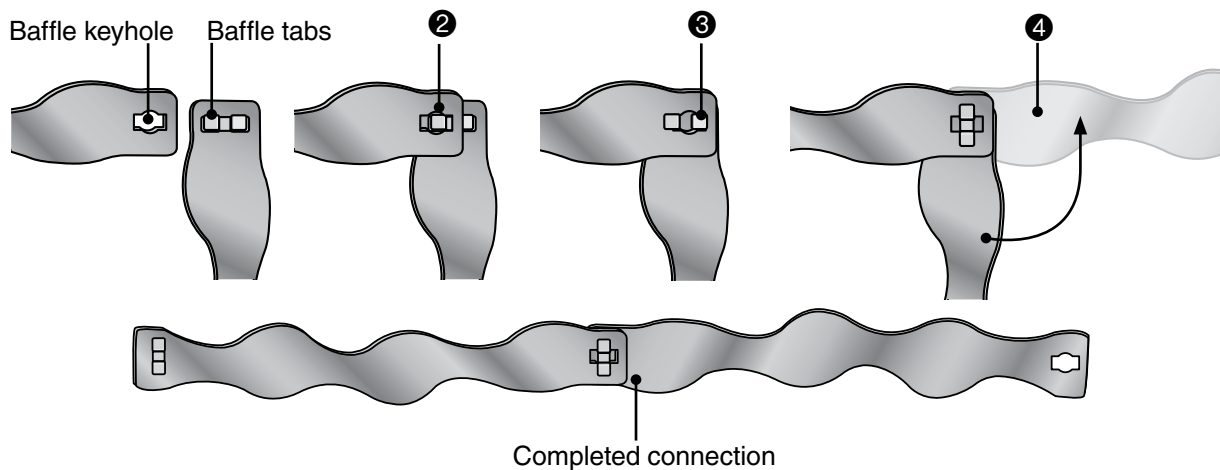


3.8 Baffle Assembly and Placement

To assemble the baffles: **Note:** Baffles may be inserted into the tube while being assembled.

- ❶ Determine the number of baffles needed for your model number. Remove one 840mm baffle section if heater is installed with an elbow or U-bend accessory.
- ❷ Install the baffle tabs at a 90° angle to the baffle keyhole (see Figure 3.21).
- ❸ Insert one baffle tab into keyhole and slide completely to one side until both baffle tabs appear in the keyhole.
- ❹ Adjust the tabs to the center of the keyhole and rotate the baffle 90 degrees to lock the baffle sections together.
- ❺ Repeat this process with remaining baffle sections to complete assembly.

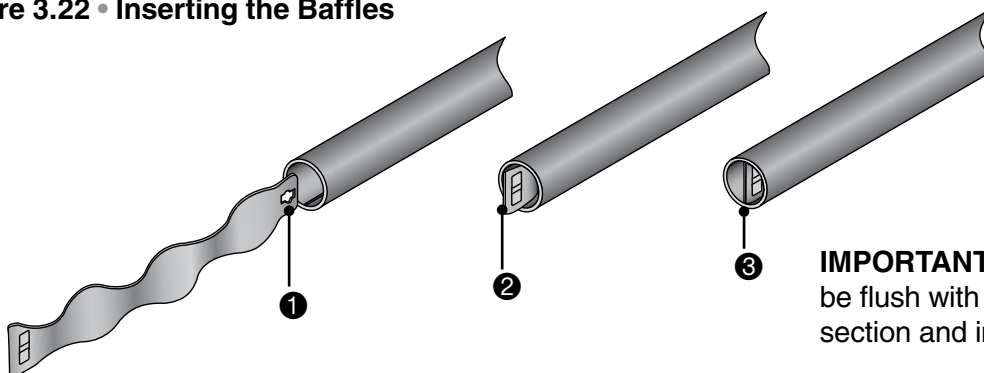
Figure 3.21 • Assembling the Baffles



To insert the baffles:

- ❶ Insert baffles with the keyhole end first.
- ❷ Rotate baffle assembly so that it is in the **vertical position**.
- ❸ Slide baffle assembly into the last radiant tube section, furthest from burner control box.
Note: Baffle assemblies longer than 3048mm will continue to be fed into next tube section.

Figure 3.22 • Inserting the Baffles



IMPORTANT: Baffle assembly must be flush with the end of the last tube section and in the vertical position.

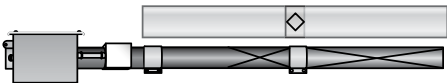
3.9 Final Heater Assembly

NOTICE

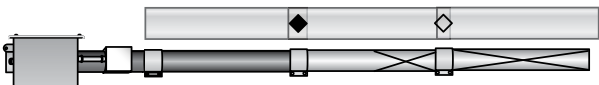
Different inputs and models utilize different baffle lengths. Remove all enclosed baffle sections from box and retain with applicable heater. Reference shipping label for proper baffle size.

Each 840mm baffle section must be assembled with other baffles and placed in the radiant tube section furthest from the burner. **IMPORTANT:** Omit one section of baffle if heater is configured with a U-bend or Elbow accessory fitting.

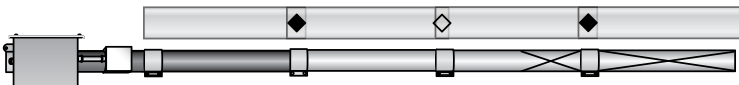
Figure 3.23 • Secured Reflector Joints and Baffle Location



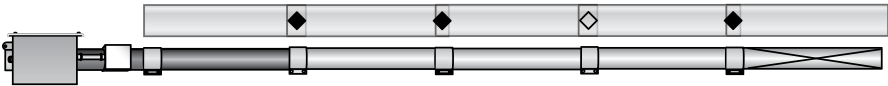
EHL/EDX 6m



EHL/EDX 9m



EHL/EDX 12m



EHL/EDX 15m



EHL/EDX 18m

Key	
	Burner Control Box with Burner Tube
	Expansion joint on Reflectors
	Secured joint on Reflectors
	Primary Combustion Chamber Tube with clamp
	Radiant Tube with clamp
	Baffle location

* 153-163 MJ/h models utilize a secondary aluminized steel combustion chamber placed immediately downstream of the primary combustion tube.

3.10 Flueing

⚠ WARNING



Insufficient ventilation and/or improperly sealed flues may release gas into the building which could result in health problems, carbon monoxide poisoning or death.

Improper flueing may result in fire, explosion, injury or death.



Seal flue pipes with high temperature sealant and three (3) sheet metal screws. Flue enclosed spaces and buildings according to the guidelines in this manual and applicable national, state, provincial and local codes.

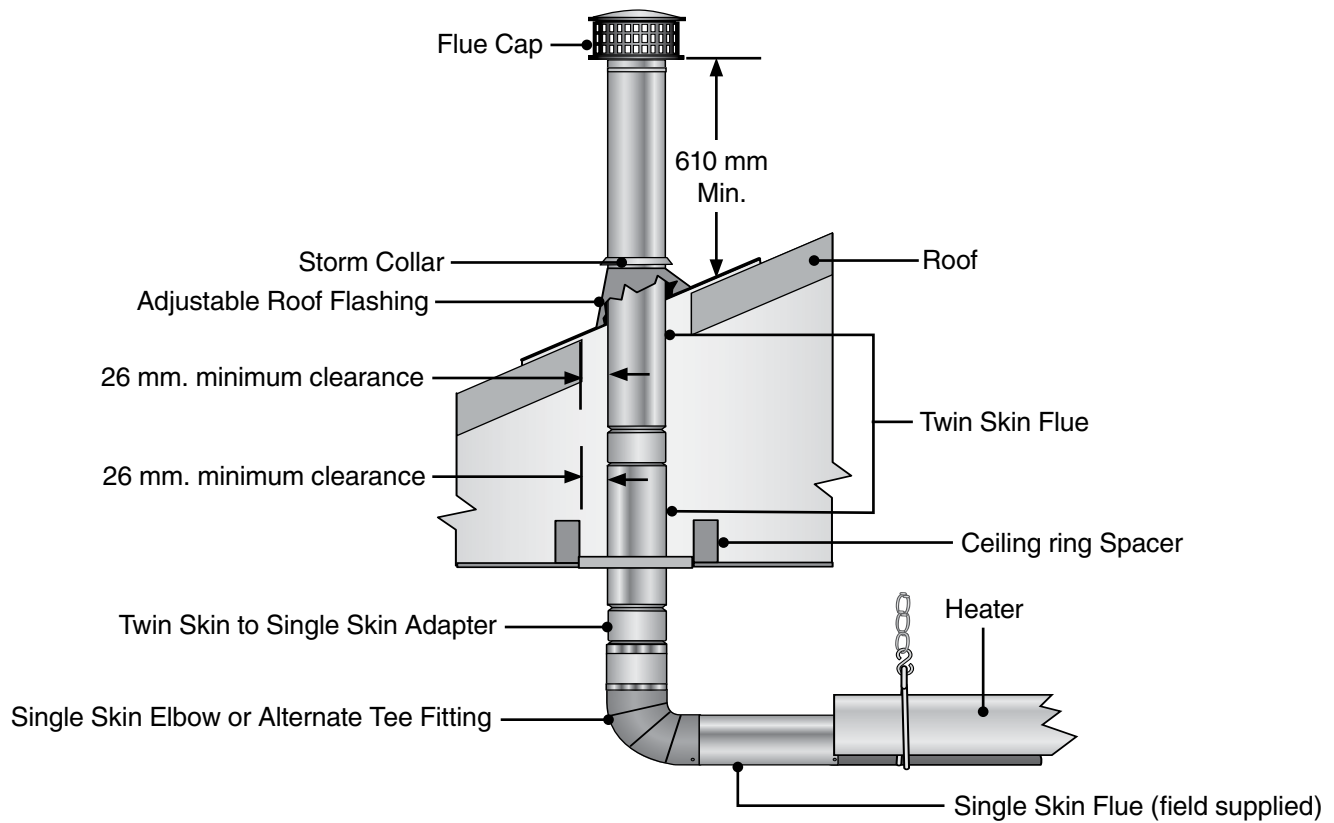
The heating system may operate either flued or un-flued (see page 29). Flueing can terminate through the sidewall (horizontal) or the roof (vertical) and be individually flued only.

Flueing Requirements

- Seal single skin flue with high temperature sealant and three (3) sheet metal screws.
- Single skin galvanized flue pipe must be insulated in cold environments.
- Do not use more than two 90 degree elbows in the exhaust flue.
- To maintain clearances to combustibles, the use of an approved wall or roof thimble and double-wall flue is required for the portion of flue pipe that runs through combustible material in the building wall or roof (see Figures 3.24 & 3.25).
- The maximum flue length is 6100mm.
- Dual flueing of two or more units is prohibited. Ensure that all units are individually flued when applicable.

Flue Assembly

Figure 3.24 • General Flue Requirements



Flue Assembly

Flue Termination

- Flue must terminate a minimum of 1200mm below, 1200mm horizontally from and 300mm above any window or door that may be opened and gravity air inlet into the building.
- Flue must terminate a minimum of 900mm above any forced air inlet that is located within 3100mm.
- The bottom of the flue terminal must be located a minimum of 300mm above grade level and must extend beyond any combustible overhang. Flues adjacent to public walkways must terminate a minimum a 2100mm above grade level.
- The flue terminal must be installed to prevent blockage by snow and protect building materials from degradation by flue gases.
- The flue cap must be a minimum of 152mm from the sidewall of the building.
- Flues must extend beyond any combustible or be a minimum of 915mm below a combustible overhang.

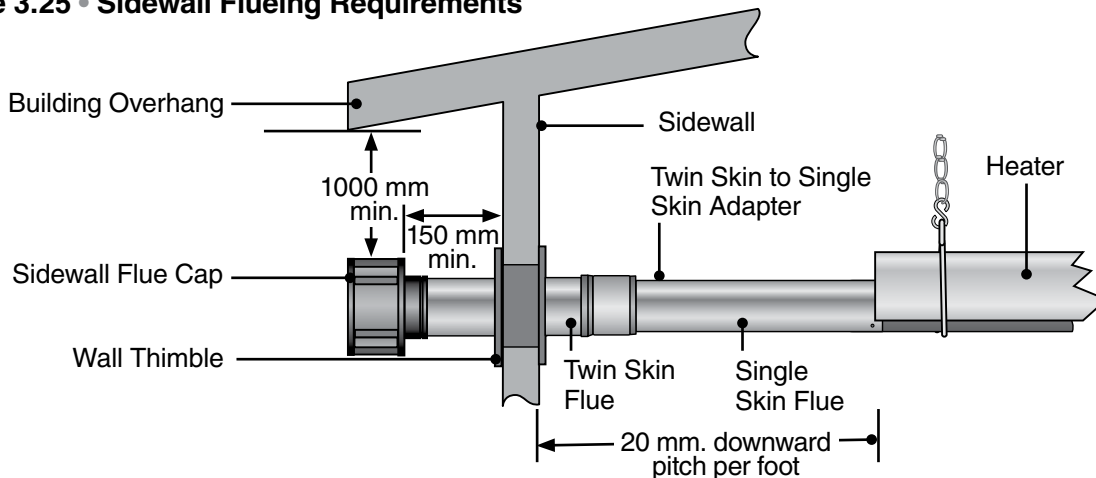
Sidewall Flueing

Guidelines:

Flue Pipe Angle

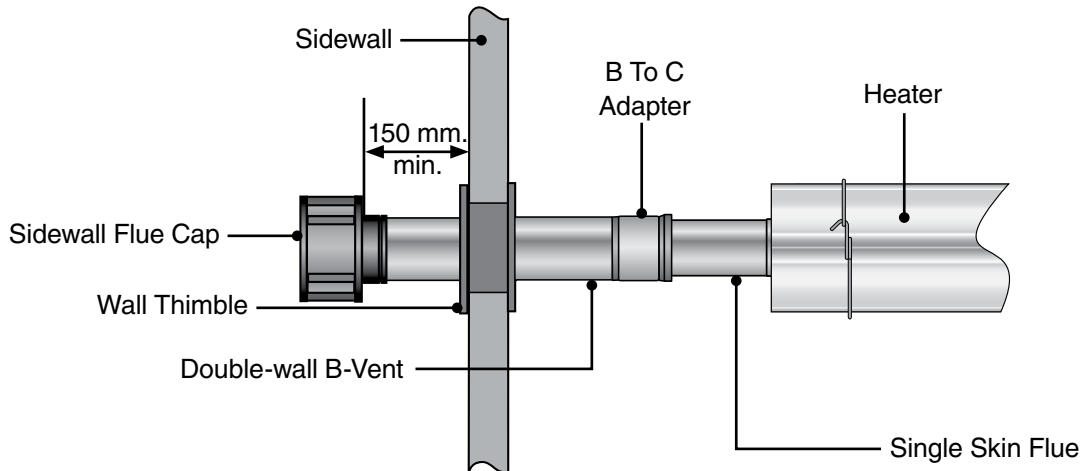
- To prevent moisture from entering the heater system, slope the flue pipe down toward the outlet 20 mm. per foot of length. **Do not** pitch the heater.
- Flue must be a minimum of 1000 mm. below or extend beyond any combustible overhang.

Figure 3.25 • Sidewall Flueing Requirements



Flue Requirements

Figure 3.26 • Sidewall Flueing - Top View

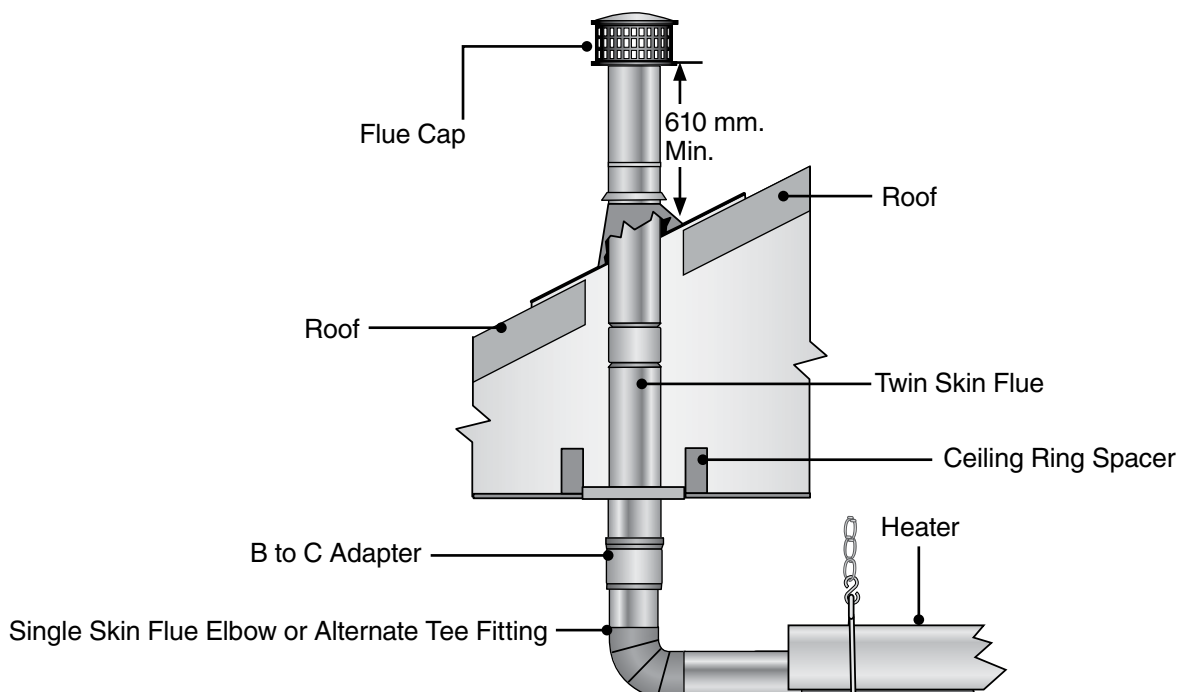


Rooftop Flueing

Guidelines:

- Separate air intake duct from flue pipe a minimum of 1200mm by placing flue pipes higher than adjacent air intake duct.
- Flueing may utilize standard B-vent cap.
- The flue terminal must extend a minimum of 610mm above the roof.

Figure 3.27 • Rooftop Flueing - Side View



Optional Unflued Operation

⚠ WARNING



Not for residential use. The use of unflued tube heaters in residential indoor spaces may result in property damage, serious injury or death. Use unflued operation in commercial and industrial installations with proper ventilation rates only.

When installing in an un-flued configuration:

- A factory supplied flue cap/diffuser (P/N: WVE-GALV) must be used.
- Ventilation of the space is required to dilute the by-products of combustion. Sufficient displacement of fresh air intake and exhaust by-product must be provided according to AS5601 or local authorities.
- The minimum clearance between the air intake and the exhaust terminal is 1220mm. **NOTE:** When installing in a U-bend configuration, use caution to separate flue gases from heater intake.
- A minimum positive natural or mechanical air displacement (circulation) for **natural gas**: 2m³/hr per kW is required.
- A minimum positive natural or mechanical air displacement (circulation) for **propane gas**: 2.3m³/hr per kW is required.

NOTE: Gravity or mechanical means may be used to accomplish the air displacement. Local authority rules or AS 5601 should be followed.

- The use of combustion air intake is recommended.
- When installed in a U-shaped configuration, ensure that the products of combustion can not be recycled into the fresh air intake.

Figure 3.28 • Minimum end clearances



3.11 Combustion Air Requirements

NOTICE

This heater has a factory preset air orifice for proper combustion air supply. If combustion air is to be provided for a tightly closed area, 123 ccm of free air opening must be provided for per mj/h of heater input.

Non-contaminated air for combustion must be ducted to the heater if chlorinated or fluorinated contaminants, high humidity and other contaminants such as sawdust or welding smoke are present in the area where the heater is installed, or if the building has a negative pressure.

Combustion air intake may be located on either the sidewall or the roof. Figures 3.30 - 3.32.

Figure 3.30
Vertical Outside Air Supply
for Single Heater • Side View

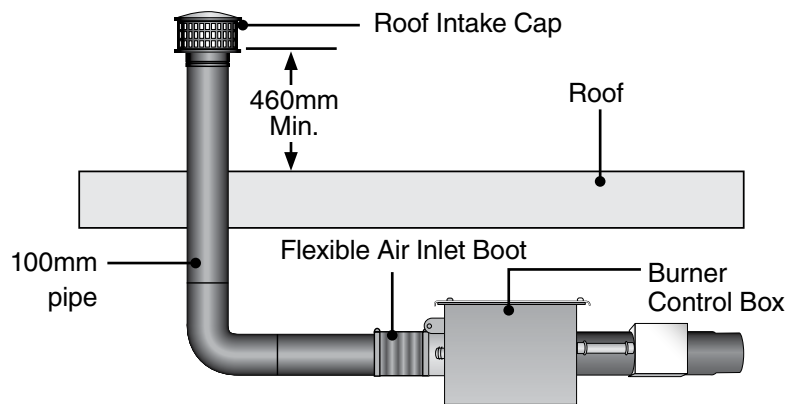


Figure 3.31
Horizontal Outside Air Supply
for Single Heater • Side View

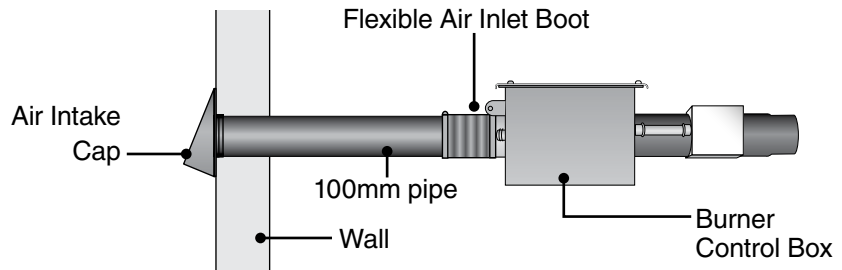
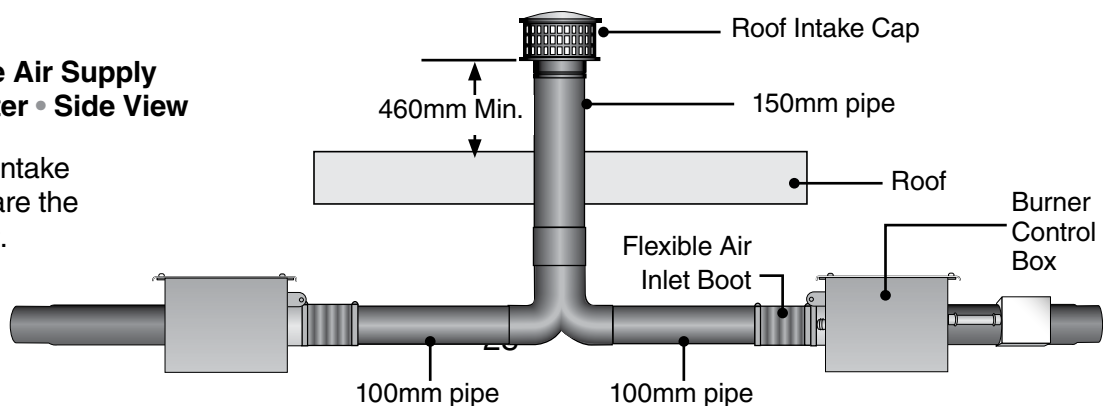


Figure 3.32
Vertical Outside Air Supply
for Double Heater • Side View

Note: Common intake heaters must share the same thermostat.



Combustion Air Requirements

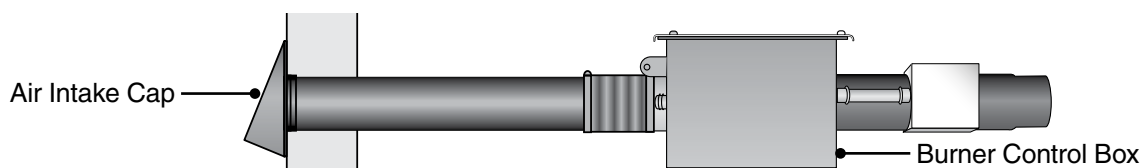
Guidelines:

Limitations for length and size of combustion air intake duct

Single Heater Intake		Dual Heater Intake	
Air Intake Duct Size	Max. Intake Length	Duct Size	Max. Intake Length
100mm	6100mm	100mm.(single)/150in.(dual)	6100mm
130mm	9140mm	100mm.(single)/200mm.(dual)	6100mm
150mm	12200mm	Consult factory for longer intake lengths.	

General Requirements:

- No more than two 90 degree elbows are allowed.
- Allow for expansion. Use a 100mm diameter flexible hose to connect the duct to the burner control box.
- In humid environments, use insulated intake duct, PVC pipe to prevent condensation on the outer surface.
- Do not draw air from attic space.
- A factory approved wall intake cap (P/N: WIV-4) must be used with horizontal outside air intake ducts. The wall intake cap must be installed to prevent blockage. Locate the intake where dirt, steam, snow, etc. will not contaminate or clog the intake screen.
- Separate air intake duct from flue pipe a minimum of 100mm. Also, place pipe higher than adjacent air intake duct.



Agricultural Applications:

- Non-contaminated air for combustion must be ducted to the heater in all agricultural applications.
- Do not take combustion air from pressurized attic spaces, except in broiler houses.
- Locate intake away from any steam source.
- Use caution when placing intake above curtain walls as they leak.
- The use of light gauge, 100mm. PVC is recommended for span between curtain wall and heater. Do not exceed 7620mm. Using an elbow, drop below curtain top and cap with a 6.35mm birdscreen.

3.12 Gas Supply

⚠ WARNING



Improperly connected gas lines may result in fire, explosion, poisonous fumes, toxic gases, asphyxiation or death. Connect gas lines in accordance to national, state, provincial and local codes.

Important! Before connecting the gas supply to the burner control box:

- Verify that the heater's gas type (as listed on the rating plate) matches that of your application.
- Check that the gas piping and service has the capacity to handle the total gas consumption of all heaters being installed, as well as any other gas appliances being connected to the supply line.
- Check that the main gas supply line is of proper diameter to supply the required fuel pressures.
- If utilizing used pipe, verify that its condition is clean and comparable to a new pipe. Test all gas supply lines in accordance with local codes.
- Test and confirm that inlet pressures are correct. Refer to the rating plate on the burner control box for required minimum and maximum pressures. The gas supply pipe must be of sufficient size to provide the required capacity and inlet pressure to the heater (if necessary, consult the local gas company). Do not exceed the maximum allowed pressure for the heater, the space or the gas piping system.

Gas Supply and Pressure Chart

Model (MJ/h)	Type of Gas	Chart	Composition	Chlorific Value	Burner Setting Pressure (kPa)		Minimum Inlet Pressure*	Maximum Inlet Pressure
					Max.	Min.		
50	Natural	17	CH ₄ = 100 [methane]	37.78MJ/m ³	0.75	N/A	1.13 kPa	3.5 kPa
60					0.75	N/A		
75					0.75	0.61		
100					0.75	0.40		
125					0.75	0.47		
150					0.60	0.42		
50	L.P.	18	C ₃ H ₈ = 100 [petroleum]	95.65MJ/m ³	2.50	N/A	2.75 kPa	3.50 kPa
60					2.50	N/A		
75					2.50	1.12		
100					2.50	1.22		
125					2.50	1.27		
150					2.50	1.09		

* For purpose of adjustment

NOTE: Check manifold pressure at the tap on the gas valve. Readings will be above atmospheric pressure.

Gas Connection

WARNING



Failure to install, operate or service this appliance in the approved manner may result in property damage, injury or death. Only trained, authorized gas installation and service personnel may install or service this equipment.

To connect the gas:

This heater must be installed and service by trained gas installation and service personnel only.

The installation must conform with local building codes and regulations.

Important! The heating system will expand and contract during operation. Allowances for expansion must be made between the connection to the heater and the gas supply. Excessive bending, kinks, twists or vibration must be avoided. A flexible gas connection of approved type is required. A flexible gas hose assembly (AS/NZS 1869) installed in one plane, and without sharp bends, kinks or twists is recommended.

The main gas supply line **must** be connected with an approved hose assembly to AS/NZS 1869.

The gas outlet must be in the same room as the appliance and accessible. It may not be concealed within or run through any wall, floor or partition. When installing the heater in a corrosive environment (or near corrosive substances), use a gas connector suitable for the environment. Do not use the gas piping system to electrically ground the heater.

- ❶ Install a sediment trap / drip leg if condensation may occur at any point of the gas supply line. This will decrease the possibility of loose scale or dirt in the supply line entering the heater's control system and causing a malfunction. **Note:** High pressure gas above 50 Mbar requires a high pressure regulator and ball valve.
- ❷ Ensure that the flexible gas hose assembly forms a smooth C-shape allowing 300+mm between the end connections (see Figure 3.33).
- ❸ Attach the ball valve to the gas supply pipe. Apply pipe compound to ISO/BSP adapter threads to seal the joint. Use only a pipe compound resistant to LP.
- ❹ Attach the flexible gas hose to the adapter and burner control box inlet. Seal the joints.
NOTE: Excessive torque on the manifold may misalign the orifice. **Always** use two wrenches to tighten mating pipe connections.

NOTE: Refer to AS 5601 for pipe sizing requirements.

Gas Supply

⚠ WARNING



Testing for gas leaks with an open flame or other sources of ignition may lead to a fire or explosion and cause serious injury or death. Test in accordance with AS 5601 or other relevant codes of practice.

NOTICE

When using a flexible gas hose, connect in accordance with the hose manufacturer's instructions.

Figure 3.33 • Gas hose to AS/NZS 1869 • Side View

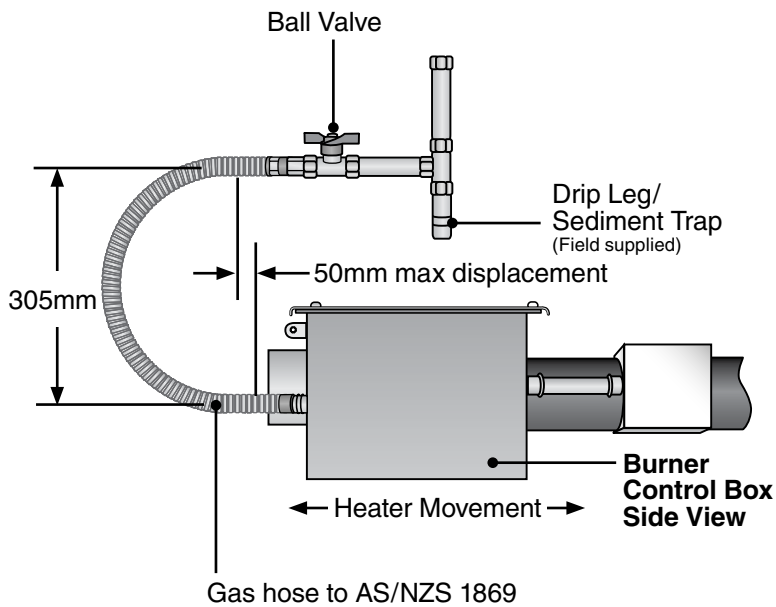
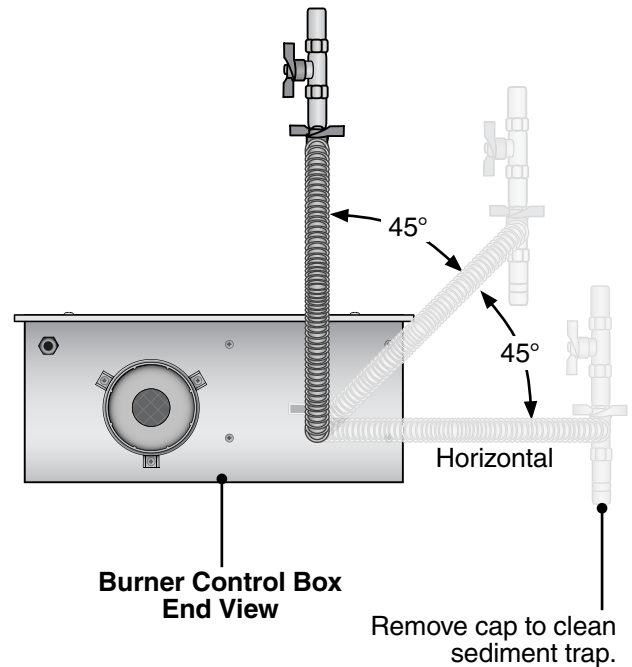


Figure 3.34 • Gas hose to AS/NZS 1869 • End View

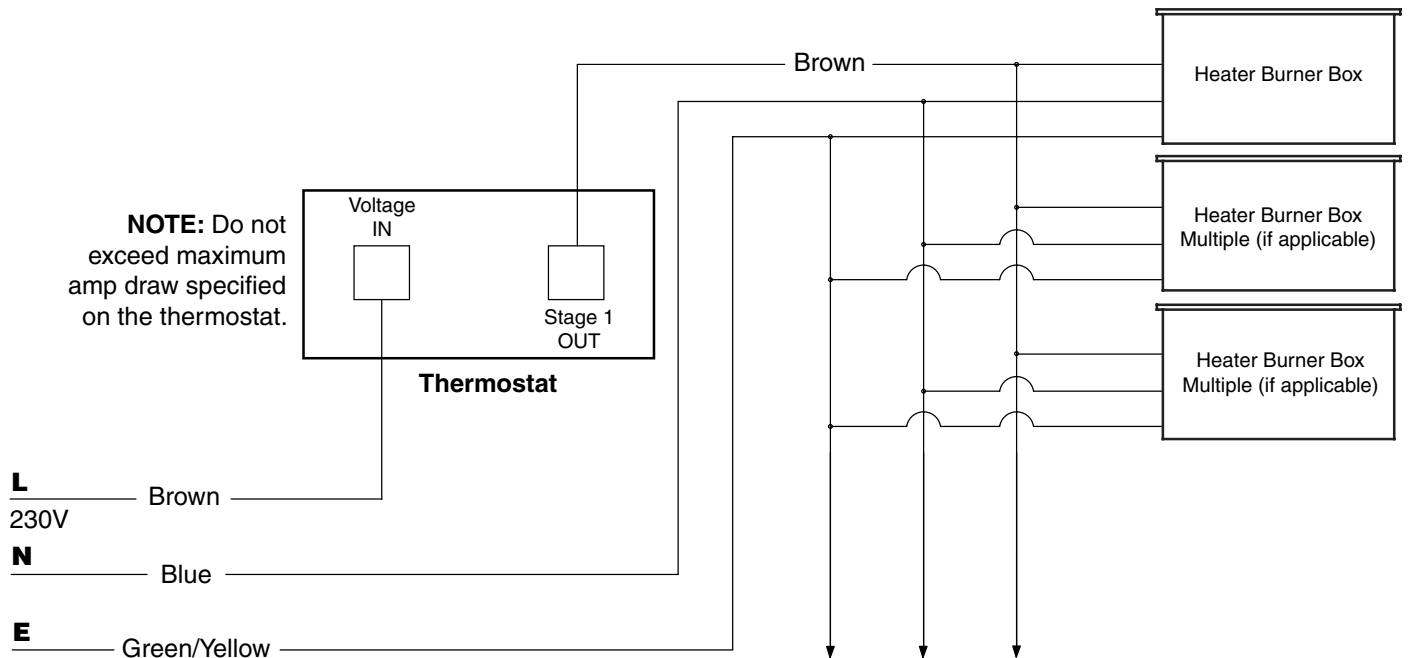


4.0 EDX Series Specific

EDX Series Electrical Requirements

- Verify that the heater's voltage (as listed on the rating plate) matches that of your application.
- Heaters operate on 230 volts, 50Hz., single phase. The amperage requirement is 0.6 Amps running current per heater.
- The heater must be grounded in accordance with local codes.
- Observe proper electrical polarity.
- The method of connection to the electrical supply must facilitate complete isolation and should preferably be made via a fuse isolator having a contact separation of at least 3mm in all poles and supplying the appliance only.
- Clearance to combustibles must be maintained between electrical apparatus and wiring (see page 8).
- Wiring must not be run above or below the heater or exposed to the radiant output.

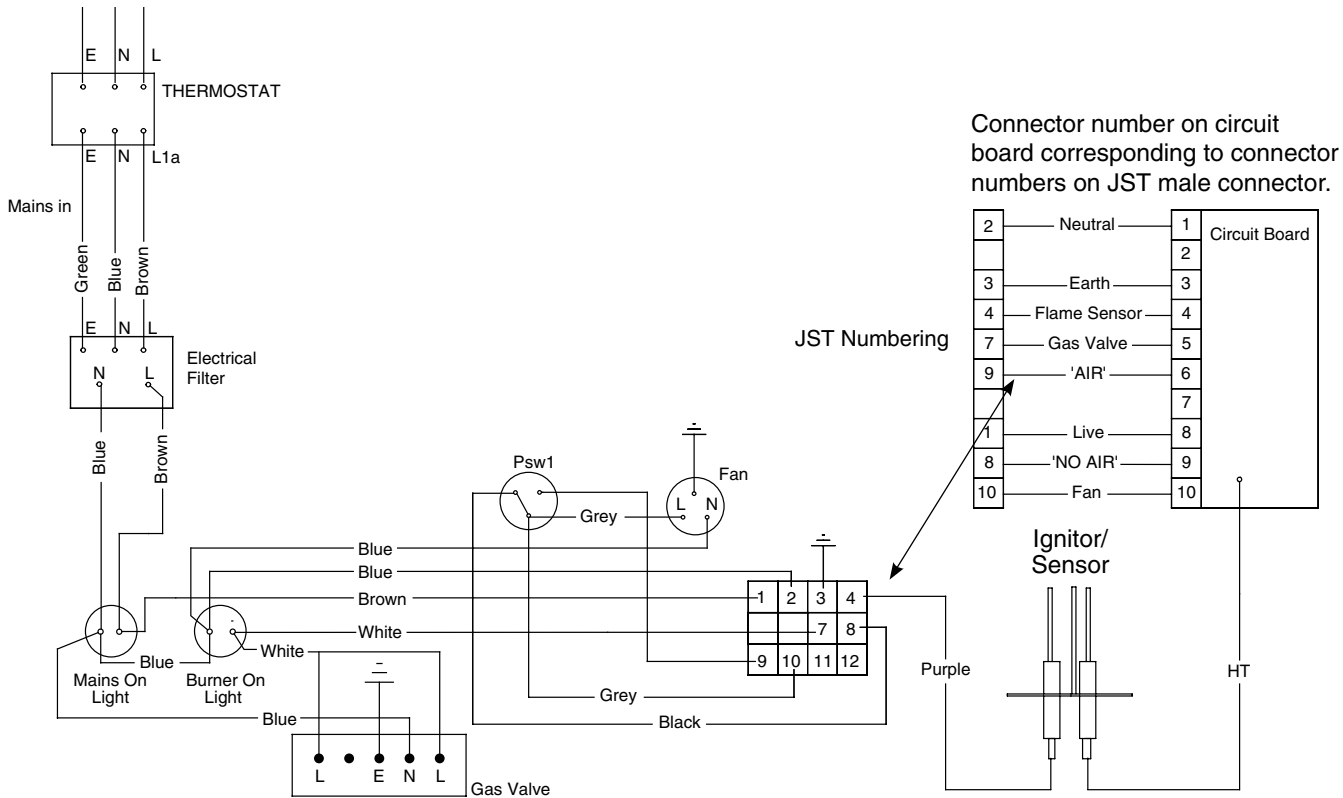
Figure 4.1 - EDX Series Field Wiring Diagram



EDX Series Internal Wiring Diagram

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

Figure 4.2 - EDX Series Internal Wiring Diagram



4.2 EDX Series Operation

WARNING



This heater is not equipped with a pilot ignition system.
Do not attempt to light the system manually.

EDX Series Commissioning Procedures:

- ① Ensure that ball valve to the heater is turned “OFF”.
- ② Purge air from the gas supply line and test for gas soundness in accordance with relevant Standards.
- ③ Check that all electrical connections are made to the heater and that the unit has a sound earth connection.
- ④ Remove operating pressure test point screw and connect the pressure gauge.
- ⑤ Switch on power to the heater. After a purge period, the gas valve is energized and will attempt to ignite for 5-10 seconds. (If ignition fails, the heater will lock out). To reset the heater, briefly interrupt power to the heater.
- ⑥ With the heater running, test operating pressure. Refer to the Technical Specifications chart on page 42 for details on your particular gas type.

EDX Series Lighting Procedures:

- ① Verify that service lid is secured.
- ② Open (turn on) gas supply to the heater.
- ③ Close (turn on) electrical circuit (typically thermostat).
- ④ If the heater fails to light, turn off gas, open electrical circuit (set thermostat to lowest setting or to off). Wait five (5) minutes before repeating above steps.

EDX Series Shutdown Procedures:

- ① Open (turn off) electrical circuit.
- ② Close (turn off) gas supply to the heater.
- ③ Wait five (5) minutes before relighting heater.

EDX Series Sequence of Operation

Starting Circuit

The blower fan is mounted in the control box and rated to supply sufficient air for combustion. Air pressure generated by the blower will cause the differential switch to close. The system is purged for 10 seconds and the control module sends a spark through the electrode. The gas valve is opened and an attempt at ignition is made for 10 seconds. If ignition fails, the heater will go into lockout until the electrical supply is interrupted for more than two seconds.

Running Circuit

After ignition, the flame rod monitors the flame. As long as flame is present, the valve is held open. If the flame is lost, the control acts to close the valve within one second and a new trial sequence identical to that at startup is initiated. If proof of flame is not established within 10 seconds, the unit will lock out. If lockout occurs, the control can be reset by briefly interrupting the power source.

4.3 EDX Series Troubleshooting Guide

Chart 4.1 EDX Troubleshooting Guide

Symptom	Possible Cause	Corrective Action
Thermostat closed, fan doesn't operate.	<ul style="list-style-type: none"> Blown fuse. Faulty thermostat. Loose or disconnected wire. Faulty fan. 	<ul style="list-style-type: none"> Replace. Replace. Repair as required. Lubricate, repair or replace.
Thermostat closed. Fan operates. Electrode does not spark.	<ul style="list-style-type: none"> Loose or disconnected wire. Box lid or gasket not in place. Plugged pressure switch lines. Plugged or restricted exhaust flue. Faulty electrode set. Faulty pressure switch. Faulty circuit control. 	<ul style="list-style-type: none"> Repair as required. Put in place. Clean as necessary. Remove foreign matter. Replace. Replace only. Do not adjust. Replace circuit control.
Thermostat closed. Fan and electrode operate. After 10 seconds electrode stops sparking. No ignition.	<ul style="list-style-type: none"> Closed gas supply. Dirty or restricted orifice. Faulty valve or disconnected valve wire. 	<ul style="list-style-type: none"> Open all gas connections. Remove and clean with soft object. Repair or replace.
Thermostat closed. Fan and electrode operate. Ignition occurs. Burner cycles off and will not recycle.	<ul style="list-style-type: none"> No electrical ground. Faulty circuit control. Low gas pressure. Poor circuit control connection. 	<ul style="list-style-type: none"> Connect electrical ground to junction box. Replace. Provide required gas pressure. Repair or replace.
Thermostat closed. Fan and electrode operate. Ignition occurs. Burner cycles off. Burner cycles on.	<ul style="list-style-type: none"> Low gas pressure. Baffle improperly positioned. Faulty pressure switch. Restricted flue flue. 	<ul style="list-style-type: none"> Provide required gas pressure. Reposition baffle. Replace. Remove foreign matter.
Loss of heater efficiency.	<ul style="list-style-type: none"> Low gas pressure. Dirty or restricted orifice. Foreign matter inside burner. Unit cycles on and off. Reflector is dirty or not in place. Clogged fan blower. 	<ul style="list-style-type: none"> Provide required gas pressure. Remove. Clean with a soft object. Clean as necessary. Check previous symptom. Clean with aluminum cleaner and soft cloth. Clean.
Radiant tube leaking burnt gases.	<ul style="list-style-type: none"> Loose tube connections. Holes or cracks in radiant tubes. 	<ul style="list-style-type: none"> Ensure that tubes are fully connected and clamped properly. Replace.
Condensation.	<ul style="list-style-type: none"> Stack length is too long. Light gauge flue stack used. Contaminated combustion air. 	<ul style="list-style-type: none"> Shorten stack length. Minimum of 26 ga. flue pipe required. Provide fresh air inlet duct.
Tube bowing.	<ul style="list-style-type: none"> Insufficient combustion air. Overfired. Contaminated combustion air. Heater unable to expand properly. 	<ul style="list-style-type: none"> Provide 123 ccm. of free air per mj/h of input. Check gas pressure and orifice size. Provide fresh air inlet duct. Remount with flexible inlet or flue pipe.
Tube corroding.	<ul style="list-style-type: none"> Contaminated combustion air. 	<ul style="list-style-type: none"> Provide fresh air inlet duct.
Visual inspection of burner operation not possible.	<ul style="list-style-type: none"> Dirty or sooted sight glass. Unit mounted upside-down. 	<ul style="list-style-type: none"> Remove, clean or replace. Mount correctly.
Stack sooting.	<ul style="list-style-type: none"> Insufficient combustion air. Improper gas. Dirty fan or blockage. 	<ul style="list-style-type: none"> Provide 123 ccm. of free air per mj/h of input. Correct with proper gas input (or clean). Clean and/or remove blockage.
Odor or fumes in space (normal during first firing and will subside after initial burn off, approximately 20 minutes).	<ul style="list-style-type: none"> Vaporized solvents decomposing when contacting radiant tubes. Evaporation of oils, solvents at floor level. Fork lifts. Loose tube / flue connections. 	<ul style="list-style-type: none"> Provide proper ventilation. Provide proper ventilation. Tighten tube clamps to 30-44 Nm. Seal flue pipes.

4.4 EDX Series Parts

Figure 4.1 EDX Series Burner Assembly Components

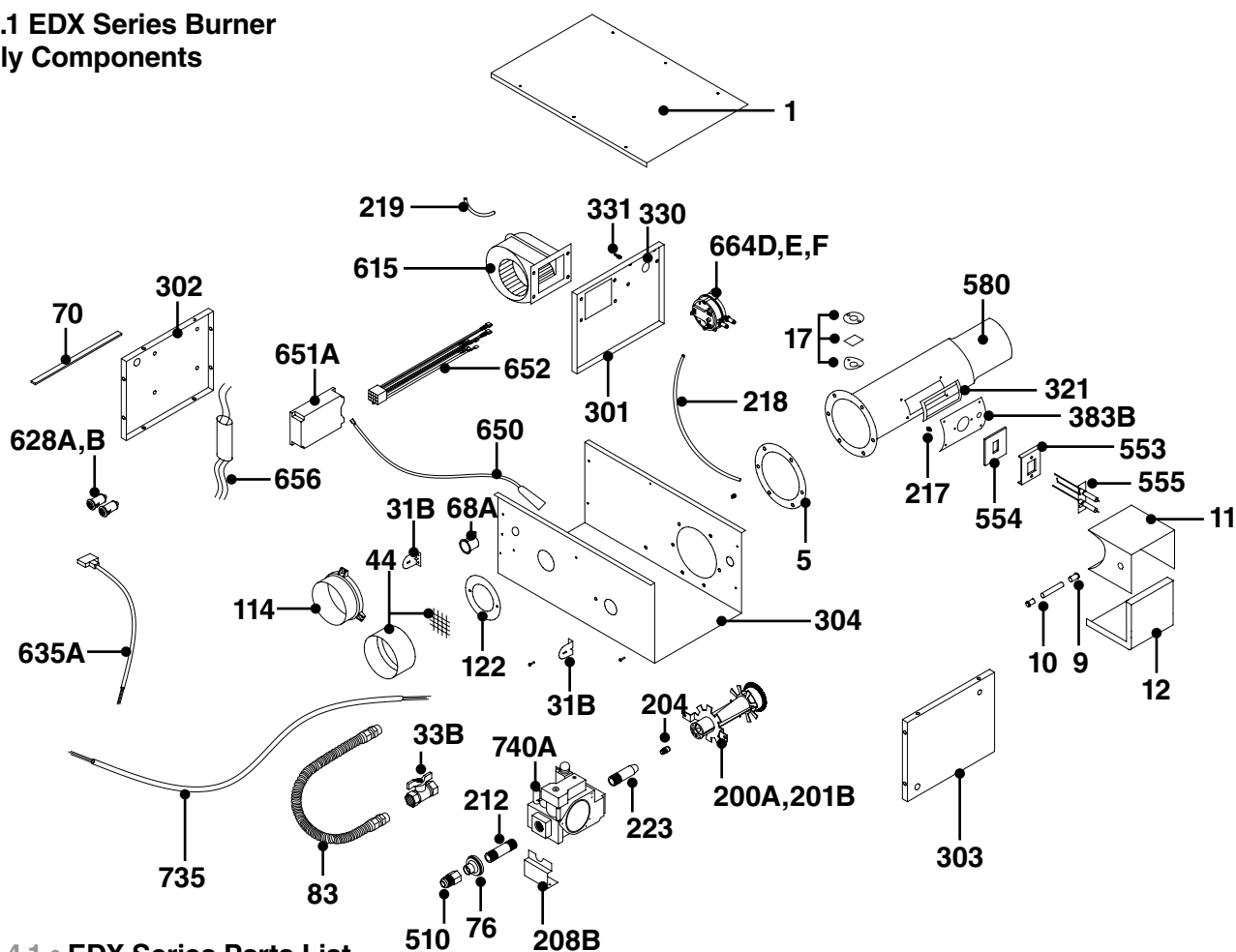


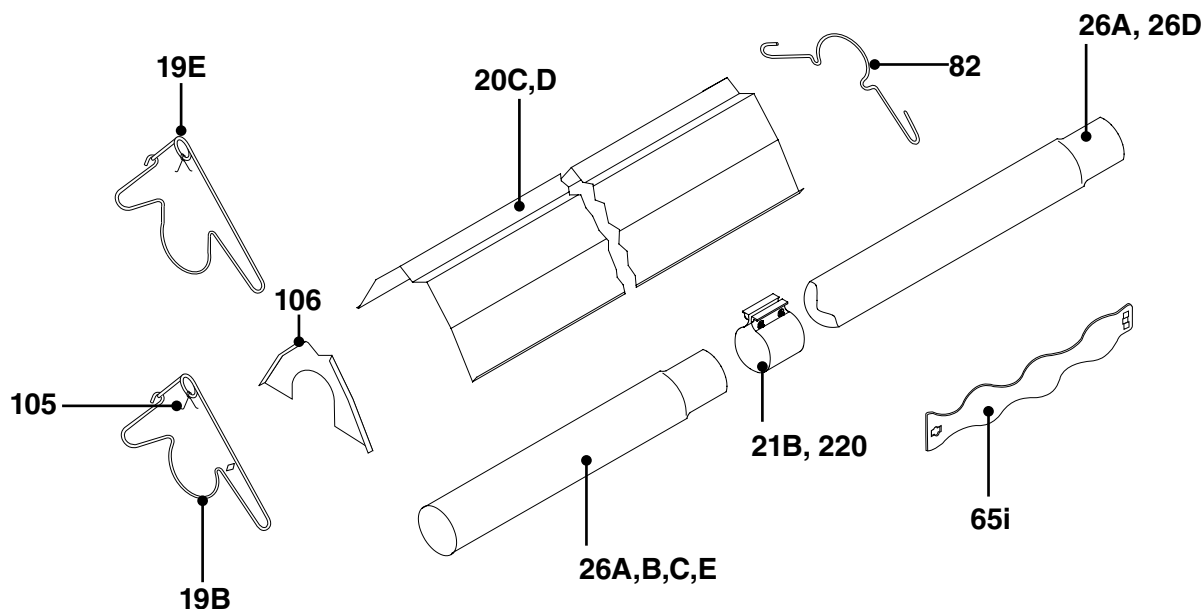
Chart 4.1 • EDX Series Parts List

Part #	Description	Part #	Description
TP-1	Control Box Cover	TP-33B	Ball Valve Shut-off
TP-5	Flange Gasket	TP-44	Metal Air Orifice w/ Screen - Consult Factory
TP-9	Conduit Coupling	TP-65i	Interlocking 838mm Baffle Section
TP-10	Conduit	TP-68A	Strain Relief Bushing
TP-11	Electrode Set Ignitor Box	TP-70^	Control Box Cover Gasket (per meter)^
TP-12	Electrode Set Box Cover	TP-76	Rubber Grommet
TP-17	Sight Glass Kit	TP-82	Reflector Center Support
TP-19B	101mm Wire Hanger with Tension Spring	TP-83	Stainless Steel Flexible Gas Connector
TP-19E	Optional Elongated Agricultural Hanger	TP-105	Reflector End Cap
TP-20C	3050mm Aluminum Reflector	TP-106	Reflector End Cap Clips (8)
TP-20D	3050mm Stainless Steel Reflector	TP-108	1525mm Coated Alum-Titan Tube w/ Clamp
TP-21B	101mm Tube Clamp	TP-111	1525mm Coated Aluminized Tube w/ Clamp
TP-26A	3050mm Alum. Combustion/Radiant Tube	TP-112	1525mm Aluminum Reflector
TP-26B	3050mm Titanium Combustion Tube	TP-114	Plastic Air Orifice Collar - Consult Factory
TP-26C	3050mm Uncoated Hot Rolled Radiant Tube	TP-122	Gasket for Air Orifice and Air Collar
TP-26D	3050mm Stainless Steel Radiant Tube	TP-200A	Burner (52.8-105.5 MJ/h)
TP-26E	3050mm Stainless Steel Combustion Tube	TP-201B	Burner (131.9-158.3 MJ/h)
TP-31B	Control Box Mounting Bracket	TP-204	Gas Orifice - Consult Factory

^ 1.83m total required to cover outer edges of the burner control box.

EDX Series Basic Parts List

Figure 4.2 EDX Series Tube & Reflector Components



Part #	Description	Part #	Description
TP-208B	Gas Valve Mounting Bracket	TP-554	Ignitor Mounting Bracket Gasket
TP-212	Gas Valve Pipe Nipple	TP-555	Spark Ignitor Electrode
TP-217	Pressure Barb Fitting	TP-580	Spark Burner Tube with Flange
TP-218	Differential Switch Vinyl Sensing Tube (Exhaust)	TP-615	220-240V 50/60Hz Fan
TP-219	Differential Vinyl Sensing Tube (Burner)	TP-628A	Red Indicator Light
TP-220	101mm Stainless Steel Tube Clamp	TP-628B	Green Indicator Light
TP-223	Gas Manifold	TP-635A	Valve Main Coil Cord
TP-301	Divider Panel - Specify Model	TP-650	12kv High Temperature Lead w/ Rubber Boot
TP-302	Left End Panel - Specify Model	TP-651A	Circuit Control Board
TP-303	Right End Panel - Specify Model	TP-652	Wiring Harness
TP-304	Control Box Outer Shell - Specify Model	TP-656	Ignition Filter
TP-321	Ignition Plate Gasket	TP-664D	Normally Open Pressure Switch - .10 (25Pa)
TP-330	Divider Grommet	TP-664E	Normally Open Pressure Switch - .14 (35Pa)
TP-331	Green Self-Tap Ground Screw	TP-664F	Normally Open Pressure Switch - .20 (50Pa)
TP-383B	Spark Ignitor Plate	TP-735	3 Core Cable Wire
TP-510	Flexible Gas Connector Attachment Fitting	TP-740A	230V Gas Valve Assembly
TP-553	Ignitor Mounting Bracket	TP-745	Pilot Blanking Plug

4.5 EDX Series Technical Specifications

EDX Series Technical Specifications

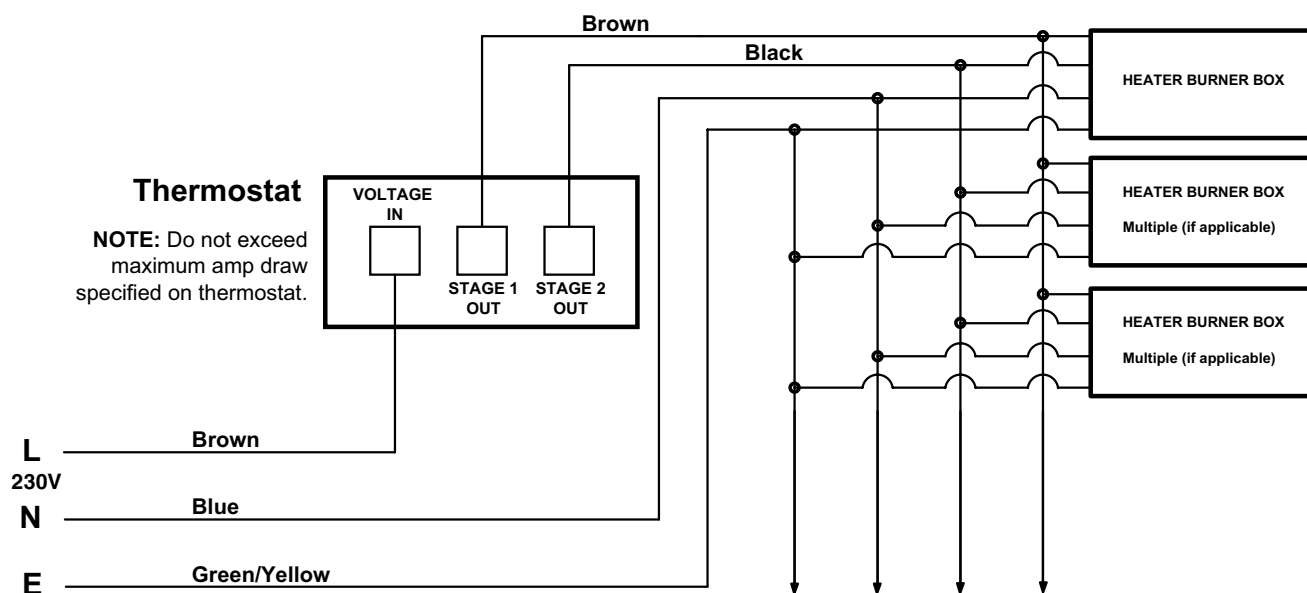
Inlet Supply Pressure																		
Model	Gas Type	Input MJ/h		Heater Lengths		Pressure (kPa)		Volts	Freq.	Injector Mark	Heater Length Baffle Length (mm)			DRP Burner	Burner TP#	Air Size	Switch Setpoint	
		High	Low	6M	9M	12M	Min.				Max	6M	9M					12M
EDX-50	Nat	52.8	N/A	6M	9M	12M	1.13	3.5	240V	50 Hz	30	4216	3353	1676	Low	200A	1-7/16	25 Pa
EDX-60	Nat	63.3	N/A	6M	9M	12M	1.13	3.5	240V	50 Hz	26	6M	9M	12M	Low	200A	1-7/16	25 Pa
EDX-75	Nat	79.1	N/A	6M	9M	12M	1.13	3.5	240V	50 Hz	19	4216	3353	1676	Low	200A	1-9/16	25 Pa
EDX-100	Nat	105.5	N/A	9M	12M	15M	1.13	3.5	240V	50 Hz	11	9M	12M	15M	Low	200A	1-5/8	35 Pa
EDX-125	Nat	131.9	N/A	12M	15M	18M	1.13	3.5	240V	50 Hz	5	12M	15M	18M	High	201B	1-13/16	40 Pa
EDX-150	Nat	158.3	N/A	12M	15M	18M	1.13	3.5	240V	50 Hz	3	12M	15M	18M	High	201B	1-7/8	50 Pa
EDX-50	LP	52.8	N/A	6M	9M	12M	2.75	3.5	240V	50 Hz	45	6M	9M	12M	Low	200A	1-1/2	25 Pa
EDX-60	LP	63.3	N/A	6M	9M	12M	2.75	3.5	240V	50 Hz	42	6M	9M	12M	Low	200A	1-1/2	25 Pa
EDX-75	LP	79.1	N/A	6M	9M	12M	2.75	3.5	240V	50 Hz	37	6M	9M	12M	Low	200A	1-5/8	25 Pa
EDX-100	LP	105.5	N/A	9M	12M	15M	2.75	3.5	240V	50 Hz	32	9M	12M	15M	Low	200A	1-7/8	35 Pa
EDX-125	LP	131.9	N/A	12M	15M	18M	2.75	3.5	240V	50 Hz	30	12M	15M	18M	High	201B	2	40 Pa
EDX-150	LP	158.3	N/A	12M	15M	18M	2.75	3.5	240V	50 Hz	27	12M	15M	18M	High	201B	2-1/8	50 Pa

5.0 EHL Series Specific

5.1 EHL Series Electrical Requirements

- Verify that the heater's voltage (as listed on the rating plate) matches that of your application.
- Heaters operate on 230 volts, 50Hz., single phase. The amperage requirement is 0.6 Amps running current per heater.
- The heater must be grounded in accordance with local codes.
- Observe proper electrical polarity.
- The method of connection to the electrical supply must facilitate complete isolation and should preferably be made via a fuse isolator having a contact separation of at least 3mm in all poles and supplying the appliance only.
- Clearance to combustibles must be maintained between electrical apparatus and wiring (see page 8).
- Wiring must not be run above or below the heater or exposed to the radiant output.

Figure 5.1 - EHL Series Field Wiring using Line Voltage Thermostat.



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

Wiring diagram for a two-stage thermostat system. The diagram shows the connection of a two-stage thermostat to a gas valve, a differential pressure switch, a fan, and an ignitor/sensor. The thermostat has terminals for E, N, L, L1b, and L1a. The gas valve has terminals for L, E, N, and L. The differential pressure switch has terminals for L and N. The fan has terminals for L and N. The ignitor/sensor has terminals for L and N. The diagram includes a legend for the JST connector, showing the mapping of connector numbers to circuit board pins and JST male connector pins.

Connector number on circuit board corresponding to connector numbers on JST male connector.

Connector number on circuit board	Connector number on JST male connector
1	Neutral
2	Earth
3	Flame Sensor
4	Gas Valve
5	'AIR'
6	Live
7	'NO AIR'
8	Fan
9	
10	

5.2 EHL Series Operation

WARNING



This heater is not equipped with a pilot ignition system.
Do not attempt to light the system manually.

EHL Series Commissioning Procedures:

- ① Ensure that ball valve to the heater is turned “OFF”.
- ② Purge air from the gas supply line and test for gas soundness in accordance with relevant Standards.
- ③ Check that all electrical connections are made to the heater and that the unit has a sound earth connection.
- ④ Remove operating pressure test point screw and connect the pressure gauge.
- ⑤ Switch on power to the heater. After a purge period, the gas valve is energized and will attempt to ignite for 5-10 seconds. (If ignition fails, the heater will lock out). To reset the heater, briefly interrupt power to the heater.
- ⑥ With the heater running, test operating pressure. Refer to the Technical Specifications chart on page 50 for details on your particular gas type.

EHL Series Lighting Procedures:

- ① Verify that service lid is secured.
- ② Open (turn on) gas supply to the heater.
- ③ Close (turn on) electrical circuit (typically thermostat).
- ④ If the heater fails to light, turn off gas, open electrical circuit (set thermostat to lowest setting or to off). Wait five (5) minutes before repeating above steps.

EHL Series Shutdown Procedures:

- ① Open (turn off) electrical circuit.
- ② Close (turn off) gas supply to the heater.
- ③ Wait five (5) minutes before relighting heater.

EHL Series Sequence of Operation

Starting Circuit

The blower fan is mounted in the control box and rated to supply sufficient air for combustion. Air pressure generated by the blower will cause the differential switch to close. The system is purged for 10 seconds and the control module sends a spark through the electrode. The gas valve is opened and an attempt at ignition is made for 10 seconds. If ignition fails, the heater will go into lockout until the electrical supply is interrupted for more than two seconds.

Running Circuit

After ignition, the flame rod monitors the flame. As long as flame is present, the valve is held open. If the flame is lost, the control acts to close the valve within one second and a new trial sequence identical to that at startup is initiated. If proof of flame is not established within 10 seconds, the unit will lock out. If lockout occurs, the control can be reset by briefly interrupting the power source.

5.3 EHL Series Troubleshooting Guide

Chart 5.1 EHL Troubleshooting Guide

Symptom	Possible Cause	Corrective Action
Thermostat closed, fan doesn't operate.	<ul style="list-style-type: none"> • Blown fuse. • Faulty thermostat. • Loose or disconnected wire. • Faulty fan. 	<ul style="list-style-type: none"> • Replace. • Replace. • Repair as required. • Lubricate, repair or replace.
Thermostat closed. Fan operates. Electrode does not spark.	<ul style="list-style-type: none"> • Loose or disconnected wire. • Box lid or gasket not in place. • Plugged pressure switch lines. • Plugged or restricted exhaust flue. • Faulty electrode set. • Faulty pressure switch. • Faulty circuit control. 	<ul style="list-style-type: none"> • Repair as required. • Put in place. • Clean as necessary. • Remove foreign matter. • Replace. • Replace only. Do not adjust. • Replace circuit control.
Thermostat closed. Fan and electrode operate. After 10 seconds electrode stops sparking. No ignition.	<ul style="list-style-type: none"> • Closed gas supply. • Dirty or restricted orifice. • Faulty valve or disconnected valve wire. 	<ul style="list-style-type: none"> • Open all gas connections. • Remove and clean with soft object. • Repair or replace.
Thermostat closed. Fan and electrode operate. Ignition occurs. Burner cycles off and will not recycle.	<ul style="list-style-type: none"> • No electrical ground. • Faulty circuit control. • Low gas pressure. • Poor circuit control connection. 	<ul style="list-style-type: none"> • Connect electrical ground to junction box. • Replace. • Provide required gas pressure. • Repair or replace.
Thermostat closed. Fan and electrode operate. Ignition occurs. Burner cycles off. Burner cycles on.	<ul style="list-style-type: none"> • Low gas pressure. • Baffle improperly positioned. • Faulty pressure switch. • Restricted flue. 	<ul style="list-style-type: none"> • Provide required gas pressure. • Reposition baffle. • Replace. • Remove foreign matter.
Loss of heater efficiency.	<ul style="list-style-type: none"> • Low gas pressure. • Dirty or restricted orifice. • Foreign matter inside burner. • Unit cycles on and off. • Reflector is dirty or not in place. • Clogged fan blower. 	<ul style="list-style-type: none"> • Provide required gas pressure. • Remove. Clean with a soft object. • Clean as necessary. • Check previous symptom. • Clean with aluminum cleaner and soft cloth. • Clean.
Radiant tube leaking burnt gases.	<ul style="list-style-type: none"> • Loose tube connections. • Holes or cracks in radiant tubes. 	<ul style="list-style-type: none"> • Ensure that tubes are fully connected and clamped properly. • Replace.
Condensation.	<ul style="list-style-type: none"> • Stack length is too long. • Light gauge flue stack used. • Contaminated combustion air. 	<ul style="list-style-type: none"> • Shorten stack length. • Minimum of 26 ga. flue pipe required. • Provide fresh air inlet duct.
Tube bowing.	<ul style="list-style-type: none"> • Insufficient combustion air. • Overfired. • Contaminated combustion air. • Heater unable to expand properly. 	<ul style="list-style-type: none"> • Provide 123 cmm. of free air per mj/h of input. • Check gas pressure and orifice size. • Provide fresh air inlet duct. • Remount with flexible inlet or flue pipe.
Tube corroding.	<ul style="list-style-type: none"> • Contaminated combustion air. 	<ul style="list-style-type: none"> • Provide fresh air inlet duct.
Visual inspection of burner operation not possible.	<ul style="list-style-type: none"> • Dirty or sooted sight glass. • Unit mounted upside-down. 	<ul style="list-style-type: none"> • Remove, clean or replace. • Mount correctly.
Stack sooting.	<ul style="list-style-type: none"> • Insufficient combustion air. • Improper gas. • Dirty fan or blockage. 	<ul style="list-style-type: none"> • Provide 123 ccm. of free air per mj/h of input. • Correct with proper gas input (or clean). • Clean and/or remove blockage.
Odor or fumes in space (normal during first firing and will subside after initial burn off, approximately 20 minutes).	<ul style="list-style-type: none"> • Vaporized solvents decomposing when contacting radiant tubes. • Evaporation of oils, solvents at floor level. • Fork lifts. • Loose tube / flue connections. 	<ul style="list-style-type: none"> • Provide proper ventilation. • Provide proper ventilation. • Tighten tube clamps to 30-44 Nm. • Seal flue pipes.

5.4 EHL Series Parts

5.2 EHL Series Burner
Assembly Components

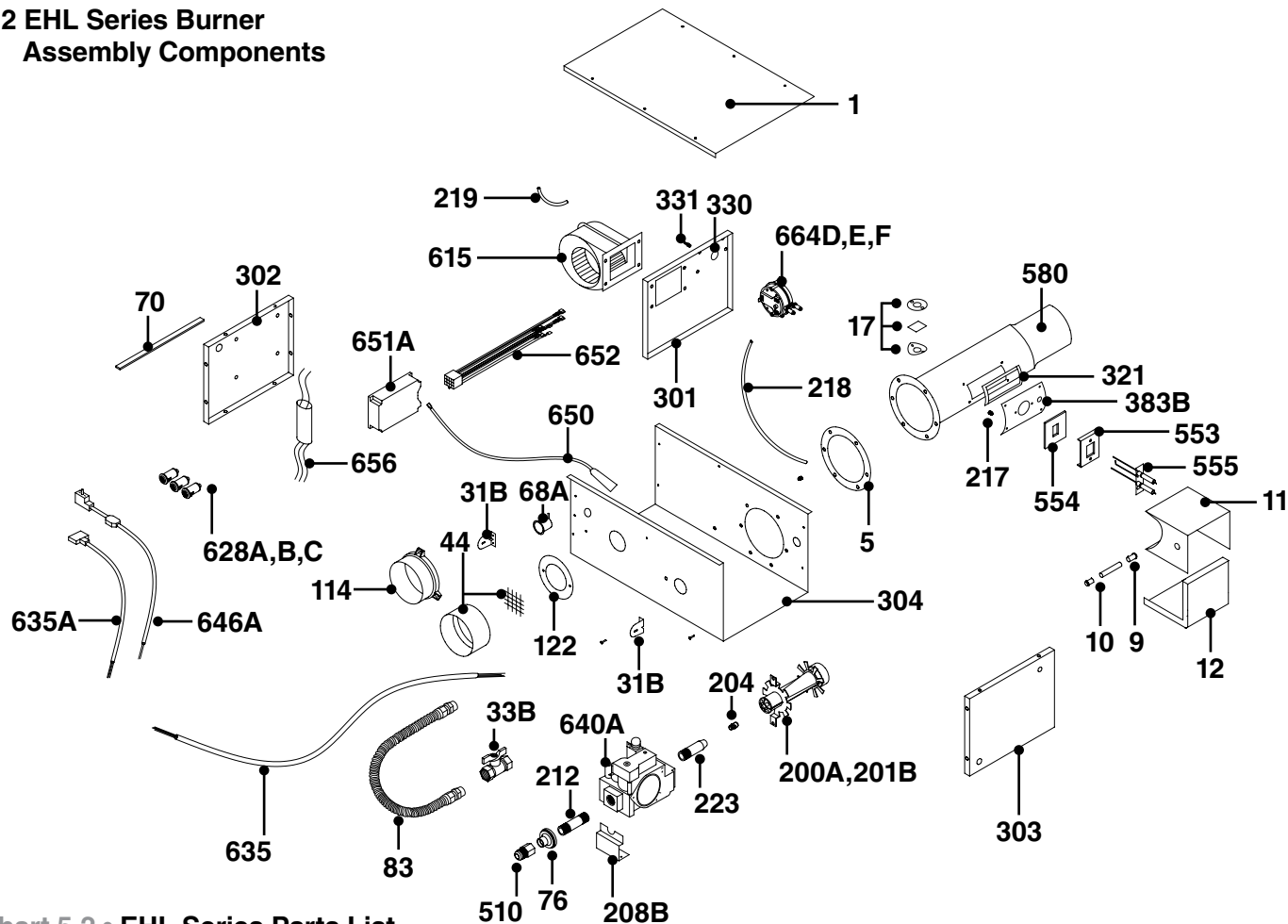


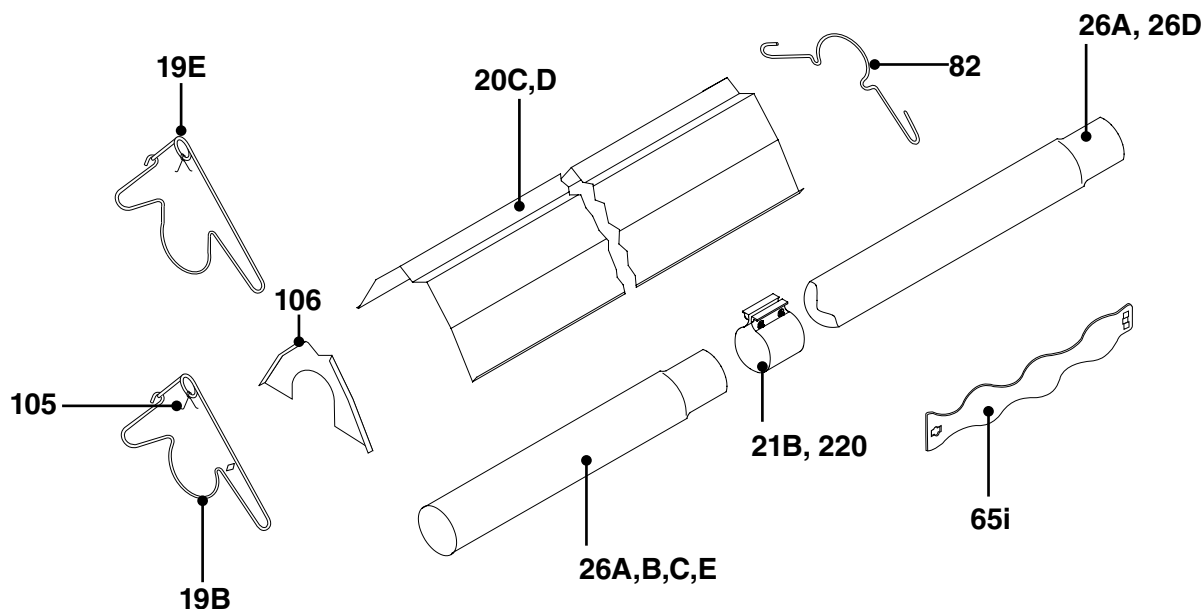
Chart 5.2 • EHL Series Parts List

Part #	Description	Part #	Description
TP-1	Control Box Cover	TP-33B	Ball Valve Shut-off
TP-5	Flange Gasket	TP-44	Metal Air Orifice w/ Screen - Consult Factory
TP-9	Conduit Coupling	TP-65i	Interlocking 838mm Baffle Section
TP-10	Conduit	TP-68A	Strain Relief Bushing
TP-11	Electrode Set Ignitor Box	TP-70^	Control Box Cover Gasket (per meter)^
TP-12	Electrode Set Box Cover	TP-76	Rubber Grommet
TP-17	Sight Glass Kit	TP-82	Reflector Center Support
TP-19B	101mm Wire Hanger with Tension Spring	TP-83	Stainless Steel Flexible Gas Connector
TP-19E	Optional Elongated Agricultural Hanger	TP-105	Reflector End Cap
TP-20C	3050mm Aluminum Reflector	TP-106	Reflector End Cap Clips (8)
TP-20D	3050mm Stainless Steel Reflector	TP-108	1525mm Coated Alum-Titan Tube w/ Clamp
TP-21B	101mm Tube Clamp	TP-111	1525mm Coated Aluminized Tube w/ Clamp
TP-26A	3050mm Alum. Combustion/Radiant Tube	TP-112	1525mm Aluminum Reflector
TP-26B	3050mm Titanium Combustion Tube	TP-114	Plastic Air Orifice Collar - Consult Factory
TP-26C	3050mm Uncoated Hot Rolled Radiant Tube	TP-122	Gasket for Air Orifice and Air Collar
TP-26D	3050mm Stainless Steel Radiant Tube	TP-200A	Burner (52.8-105.5 MJ/h)
TP-26E	3050mm Stainless Steel Combustion Tube	TP-201B	Burner (131.9-158.3 MJ/h)
TP-31B	Control Box Mounting Bracket	TP-204	Gas Orifice - Consult Factory

^ 1.83m total required to cover outer edges of the burner control box.

EHL Series Basic Parts List

5.3 EHL Series Tube & Reflector Components



Part #	Description		
TP-208B	Gas Valve Mounting Bracket	TP-555	Spark Ignitor Electrode
TP-212	Gas Valve Pipe Nipple	TP-580	Spark Burner Tube with Flange
TP-217	Pressure Barb Fitting	TP-615	220-240V 50/60Hz Fan
TP-218	Differential Switch Vinyl Sensing Tube (Exhaust)	TP-628A	Red Indicator Light
TP-219	Differential Vinyl Sensing Tube (Burner)	TP-628B	Green Indicator Light
TP-220	101mm Stainless Steel Tube Clamp	TP-628C	Blue Indicator Light
TP-223	Gas Manifold	TP-635	4 Core Cable Wire
TP-301	Divider Panel - Specify Model	TP-635A	Valve Main Coil Cord
TP-302	Left End Panel - Specify Model	TP-640A	230V Gas Valve Assembly
TP-303	Right End Panel - Specify Model	TP-646A	AC Rectifier Cord
TP-304	Control Box Outer Shell - Specify Model	TP-650	12kv High Temperature Lead w/ Rubber Boot
TP-321	Ignition Plate Gasket	TP-651A	Pactrol Circuit Control Board
TP-330	Divider Grommet	TP-652	Wiring Harness
TP-331	Green Self-Tap Ground Screw	TP-656	Ignition Filter
TP-383B	Spark Ignitor Plate	TP-664D	Normally Open Pressure Switch - .10 (25Pa)
TP-510	Flexible Gas Connector Attachment Fitting	TP-664E	Normally Open Pressure Switch - .14 (35Pa)
TP-553	Ignitor Mounting Bracket	TP-664F	Normally Open Pressure Switch - .20 (50Pa)
TP-554	Ignitor Mounting Bracket Gasket	TP-745	Pilot Blanking Plug

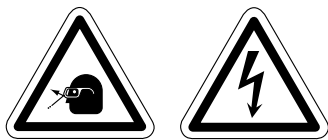
5.5 EHL Series Technical Specifications

EHL Series Technical Specifications

Inlet Supply Pressure																					
Model	Gas Type	Input (MJ/h)			Heater Lengths			Pressure (kPa)		Volts	Freq.	Injector Mark	Heater Length Baffle Length (mm)						DRP Burner TP#	Air Size	Switch Setpoint
		High	Low		6M	9M	12M	Min.	Max				6M	9M	12M	15M					
EHL-75	Nat	79.1	52.8	6M	9M	12M	1.13	3.5	240V	50 Hz	18		4216	3353	1676	Low	200A	1-9/16	25 Pa		
EHL-100	Nat	105.5	68.5	9M	12M	15M	1.13	3.5	240V	50 Hz	11		9M	12M	15M	Low	200A	1-5/8	35 Pa		
EHL-125	Nat	131.9	100.2	12M	15M	18M	1.13	3.5	240V	50 Hz	5		12M	15M	18M	High	201B	1-13/16	40 Pa		
EHL-150	Nat	158.3	105.5	12M	15M	18M	1.13	3.5	240V	50 Hz	3		12M	15M	18M	High	201B	1-7/8	50 Pa		
EHL-75	LP	79.1	52.8	6M	9M	12M	2.75	3.5	240V	50 Hz	37		6M	9M	12M	Low	200A	1-5/8	25 Pa		
EHL-100	LP	105.5	68.5	9M	12M	15M	2.75	3.5	240V	50 Hz	32		9M	12M	15M	Low	200A	1-7/8	35 Pa		
EHL-125	LP	131.9	100.2	12M	15M	18M	2.75	3.5	240V	50 Hz	30		12M	15M	18M	High	201B	2	40 Pa		
EHL-150	LP	158.3	105.5	12M	15M	18M	2.75	3.5	240V	50 Hz	27		12M	15M	18M	High	201B	2-1/8	50 Pa		

6.0 Maintenance

⚠ WARNING



Use protective glasses when cleaning the heater.
Disconnect power to heater before servicing.
Do not operate unit if repairs are necessary.

Maintenance Checks for Abnormal Operation and Maintenance Schedule:

Infra-red heaters require minimum routine maintenance to keep them operating at peak performance.

NOTE: Service and replacement parts are detailed on page 40-41 and 48-49.

- Ensure that the squirrel cage in the blower is kept clean annually. If dirt becomes a problem, installation of outside air intake ducts for combustion is recommended.
- Oiling the blower motor annually will extend bearing life significantly.
- Annually check the integrity of the combustion tube and heat exchangers. Replace if there are signs of structural failure. Contact service personnel if repairs are necessary. Do not operate unit.
- Annually inspect the integrity of the gas connection to the heater. Check for leaks, damage, fatigue or corrosion. Do not operate if repairs are necessary and turn off gas supply to the heater. Contact service personnel.
- Annually inspect the integrity of the heater flueing system. Check for leaks, damage, fatigue or corrosion. Do not operate heater if repairs are necessary. Contact service personnel.
- To maintain effective infra-red heating, always keep reflectors clean by vacuuming or blowing off dirt and/or dust from both sides of the reflector annually.
- Check integrity of the electrode. If damaged, it must be replaced complete with holder.

Maintenance Log

Date	Maintenance Period	Replacement Parts Required

Replacement parts can be purchased from your local dealer. Contact Detroit Radiant Products at 011-586-756-0950 or store.reverberray.com

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Printed in U. S. A.