



Reflect-O-Ray[®]

EDS 6

Products by: Combustion Research Corporation

SUBMITTAL DATA

PROJECT:

Specifications for
Reflect-O-Ray[®] EDS 6 GAS FIRED SYSTEMS

PART 1 - GENERAL

It is the intent of this specification to identify design requirements and minimum standards for the quality, construction, delivery, installation, and operation of the low intensity, vacuum vented, gas fired infrared heating equipment. Minor variations, in accordance with standard practice, shall be indicated on the shop drawings and submitted for approval.

1.1 - CODES AND STANDARDS

- 1.1.1 The entire heating system shall be designed certified to:
- a) American Gas Association "Gas-Fired Low-Intensity Infrared Heaters" conforming to the ANSI Z83.20 - (Current Standard).
 - b) Canadian Gas Association Certified "Gas-Fired Low-Intensity Infrared Heaters" conforming to CSA 2.34 – (Current Standard).
- 1.1.2 Installation shall conform to local codes and local gas authorities including the National Electrical Code, National Fuel Gas Code, and applicable ANSI, NFPA & CAN/CGA & CSA codes.

1.2 - QUALITY ASSURANCE

- 1.2.1 The material construction and operation of the infrared heating equipment shall conform to the performance specifications contained herein. Approved manufacturer is: Combustion Research Corporation, 2516 Leach Rd., Rochester Hills, MI, 48309; Tel. No. 248.852.3611, Fax. No. 248.852.9165.
- 1.2.2 Manufacturer shall warrant mechanical and electrical components for a period of one year from original invoice date.
- 1.2.3 Manufacturer shall warrant radiant tube for a period of ten (10) years (against internally created corrosion) from the original invoice date provided system is installed and maintained in accordance with the owner's manual - see warranty statement for details.
- 1.2.4 System shall be furnished complete with Burner(s), Vacuum Exhauster(s), Tubular infrared emitters, Fittings, Reflector Shields, Hangers and System Controls.

1.3 - MANUFACTURER AND INSTALLER QUALIFICATIONS

- 1.3.1 The low intensity, gas fired infrared heating system shall be a product of a manufacturer who has had at least ten years experience in design and fabrication and who is regularly engaged in the manufacture of the type of gas fired low intensity infrared heating equipment specified herein. Only manufacturers who can submit evidence of actual installations of comparable designed construction, and that the products have proven practical, durable, and require a minimum of maintenance, will be qualified under this specification.
- 1.3.2 Installation of the gas fired low intensity infrared heating equipment shall be by supervised by an authorized representative of the heater manufacturer and shall be in accordance with approved installation drawings. Mechanics shall be skilled and experienced in the erection of the low intensity infrared heating equipment of the type specified herein.

1.4 - DELIVERY AND STORAGE

- 1.4.1 Materials shall be shipped in the manufacturer's standard protective packaging to the designated site.
- 1.4.2 The installing contractor is responsible for receiving, unloading, and storage of materials. Storage shall be in dry locations free from dust and water and available for inspection and handling. Handle equipment carefully to prevent damage. Remove damaged items that cannot be restored to like new condition and replace with new items.

PART 2 - PRODUCT

2.1 - BURNERS

- 2.1.1 Burners shall be capable of firing at 240,000 BTU/hr (70.32 kW) or 360,000 BTU/hr (105.48 kW) inputs with NG (Natural Gas) or LP (propane) gas.
- 2.1.2 Burner power requirements 24 Volt, 60 Hz AC 40VA.
- 2.1.3 Burners shall include the following features:
 - a) Fitted with a 6" (152.5mm)-diameter combustion air inlet with a fixed combustion air-metering orifice.
 - b) Burner(s) shall be fitted a differential air pressure switch so as to prove adequate combustion air is present before burner fires.
 - c) Burner(s) shall be fitted with solid state electronic controls with spark ignition & 100% lockout in event of low fire or main flame failure.
 - d) Burner(s) flame sensing shall be by flame rectification with a separate probe.
 - e) Burner(s) shall have a minimum 15-second pre-purge before ignition.
 - f) Burner(s) shall casing to be constructed of 16 Ga. (1.587mm) aluminized steel, powder coated.
 - g) Burner(s) shall be fitted with inspection window for visual inspection of flame.
 - h) Burner(s) shall be fitted with 3 indicator lights - "Power On", "Air Flow On", & "Burner On".
 - i) Burner controls, differential pressure switch, gas valve, electrical wiring, etc. shall be segregated from the combustion air supply.
- 2.1.4 Burner(s) and vacuum exhauster are to be electrically interlocked.

2.2 - VACUUM EXHAUSTER

- 2.2.1 Dynamically balanced forward inclined fan wheel constructed of stainless steel with a cast iron hub.
- 2.2.2 Direct Drive.
- 2.2.3 Inlet cone and venturi plate engineered for maximum efficiency.
- 2.2.4 16 gauge aluminized steel housing and mounting bracket to be powder coated.
- 2.2.5 Motor to be one half (1/2) HP dual voltage (115/208-230V 6.2/3.1-3.0 Amps - 713 watts) or one (1) HP dual voltage (115/208-230 V 12.4/6.7-6.2 Amps - 1,380 watts) - 3450 RPM, 60 Hz capacitor start internally protected, class B insulation. Sealed ball bearings front and rear. No sub fractional motors allowed.
- 2.2.6 Vibration isolating rubber mounts.
- 2.2.7 Stainless steel bird screen on side wall venting.
- 2.2.8 Six-inch (6.0"/152.5mm) Stainless steel insulated flexible vibration isolation connector.

2.3 - SYSTEM CONTROLS

- 2.3.1 Thermostat provided by equipment manufacturer, 115V, 16 amp (1.84 kW/hr) rating.

2.4 - RADIANT TUBE HEAT EXCHANGING NETWORK

- 2.4.1 Combustion tube shall be 20' (6.096m) long 16 gauge (1.587mm) aluminized steel 6.0" (152.5mm) OD swaged one end.
- 2.4.2 Balance of radiant tubing shall be constructed of patented; spiral wound 22 gauge (0.76mm) aluminized steel, 6.0" (152.5mm) OD.
- 2.4.3 Elbows and tube coupler to be made of min. 18 gauge (1.32mm) aluminized steel, swaged at both ends so as to fit into 6.0" (152.5mm) spiral tube.
- 2.4.4 Reflectors to be made of minimum 0.025" (0.635mm) bright aluminum.
- 2.4.5 Tubing and reflector hangers to be made of 0.25" (6.35mm) Dia. Zinc plated CRS.
- 2.4.6 All tubing joints to be sealed and mechanically fastened with self drilling and tapping screws in accordance with ANSI Standard Z83.6 (current standard), paragraph 1.7, item 1.7.3.

- 2.4.7 All radiant tubing to be continuously covered by the reflector, i.e. radiant tube elbows, "U" bends and fittings to be covered by reflectors -- NO GAPS BETWEEN REFLECTORS. Reflectors are to be overlapped a minimum of one-inch (1" / 25.4mm) and secured together with sheet metal screws allowing for one unsecured overlap joint for expansion on each straight run exceeding ten feet (10' / 3.048m).
- 2.4.8 Minimum lineal length of 6" radiant tubing per 100,000 Btu/hr (29.3 kW/hr) of input shall be 40 feet (12.192 m).
- 2.4.9 The maximum firing rate shall be 1700 Btu/hr (0.586 kW/hr) per square foot (0.0929 square meter) of radiant tubing surface area. The total radiant tubing surface area is the radiant tubing which is covered by reflectors and associated with one vacuum exhauster.

2.5 - COMBUSTION AIR

- 2.5.1 Outside combustion air (if used) is to be provided without the use of supplementary supply blowers or fans.
- 2.5.2 Outside combustion air ducting to be a minimum of 6" (152.5 mm) OD (S&D PVC or galvanized stovepipe).

2.6 - SYSTEM PERFORMANCE

- 2.6.1 System shall attain a net exhaust temperature of not less than 200°F (93.3°C) in a 15 min. run cycle and shall not exceed a maximum net temperature of 325°F (162.8°C).
- 2.6.2 System STEADY STATE EFFICIENCY shall be a minimum of 82%, maximum 87%. The system cyclic efficiency shall be a minimum of 85%, maximum 91% (this is based on a 15 min. run time).
- 2.6.3 System shall be a non-condensing dry tube system, i.e. - After a minimum run time of 8 min. all condensation will cease and moisture will exit the system in a vapor state.
- 2.6.4 Maximum temperature of radiant tube shall not exceed a NET temperature of 1000°F (537.8°C).

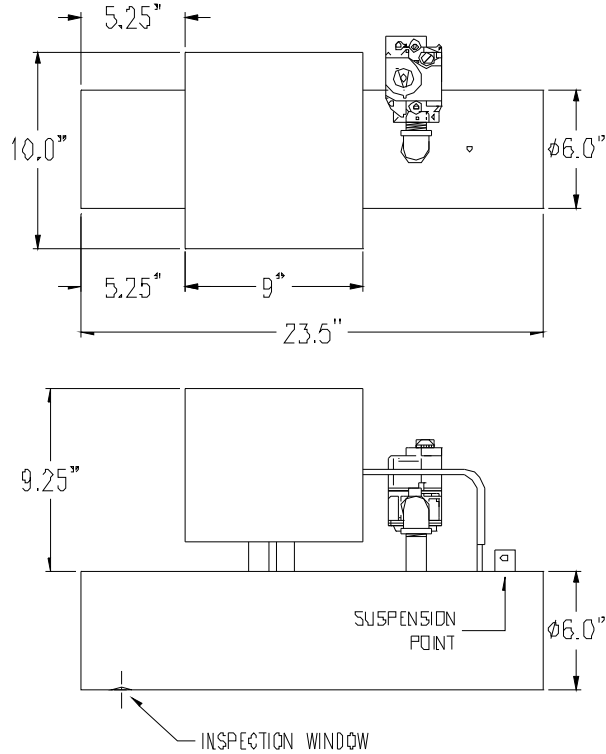
PART 3 - EXECUTION

3.1 - INSTALLATION

- 3.1.1 Power Requirements: It is the installers' responsibility to verify the correct power requirements for the project.
- 3.1.2 Fuel Supply and Distribution:
 - a) A suitably designed gas distribution system shall be installed per shop drawings.
 - b) Each burner assembly shall be furnished with a stainless steel gas connector with manual shut off valve.
- 3.1.3 Assembly: Assemble and install the heating system in accordance with the installation manual and shop drawings.
- 3.1.4 Cleaning: Clean reflectors as may be required and touch up painted surfaces as may be needed.
- 3.1.5 Testing: Upon completion of installation, including work by other trades, adjust and test the heating system in accordance to the manufacturer's owners manual. Adjust and re-test heating system until entire installation is fully operable and acceptable.

END OF SECTION

BURNER DIMENSIONS



GAS INLET PRESSURE

Natural Gas: 7.0" Minimum 14.0" Maximum
 LP Gas: 11.0" Minimum 14.0" Maximum

GAS PRESSURE AT MANIFOLD

Natural Gas: 3.5" W.C.
 LP Gas: 10.0" W.C.
 3/4" NPT Gas Connection

BURNER ASSEMBLY ELECTRICAL RATING

24 VAC, 50/60 Hz, 31 VA (STANDARD)
 (Optional - 115 VAC hook up-available)

ALTITUDE

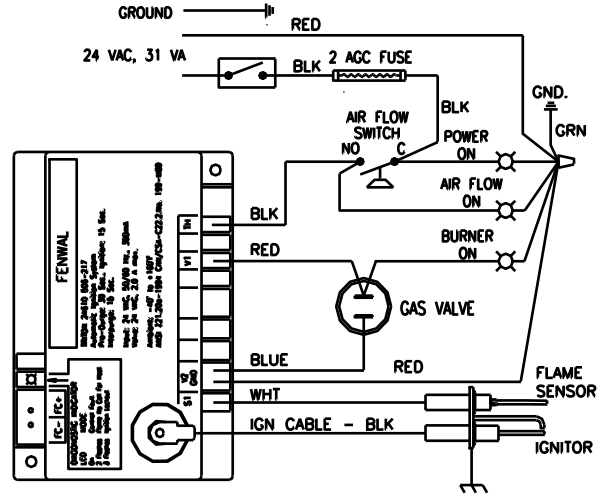
United States: 0 – 2,000 Ft. (0 - 609 m)
 Canada: 0 – 4,500 Ft. (0 - 1,370 m) No de-rating required

BURNER PART NO.	BTU/Hr INPUT	ELECTRICAL RATING
0600.NG	240,000	24 V, 31 VA
0600.LP	240,000	24 V, 31 VA
0610.NG	360,000	24 V, 31 VA
0610.LP	360,000	24 V, 31 VA

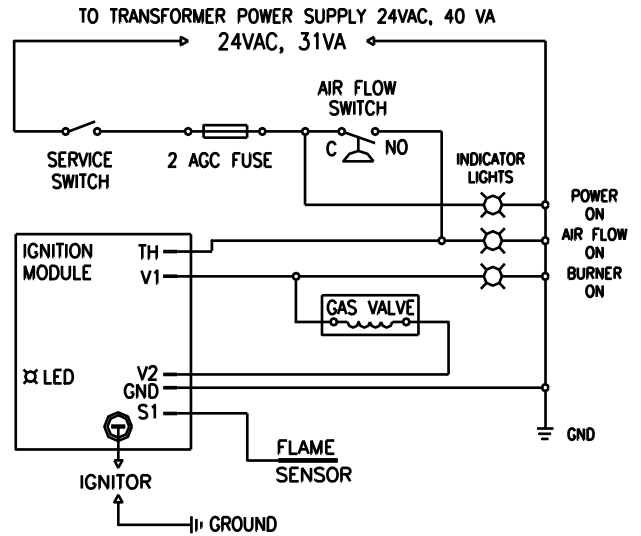
BURNER INTERNAL WIRING DIAGRAM

Internal Wiring Diagram for Reflect-O-Ray® EDS 6 Systems Fenwall Triton Ignition Control

Point To Point Diagram



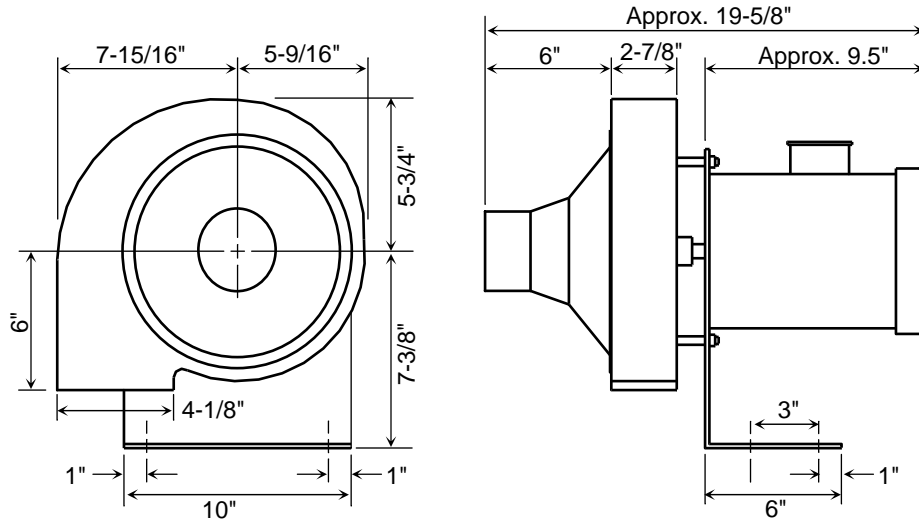
Ladder Diagram



0401.060 & 0402.060 - VACUUM EXHAUSTERS

0401.060 – ½ HP, 115 / 208-230V, 6.2 / 3.1-3.0 FLA, 60 Hz, 1 Ph., 3450 RPM, totally enclosed motor (TENV or TEFC), thermally protected.

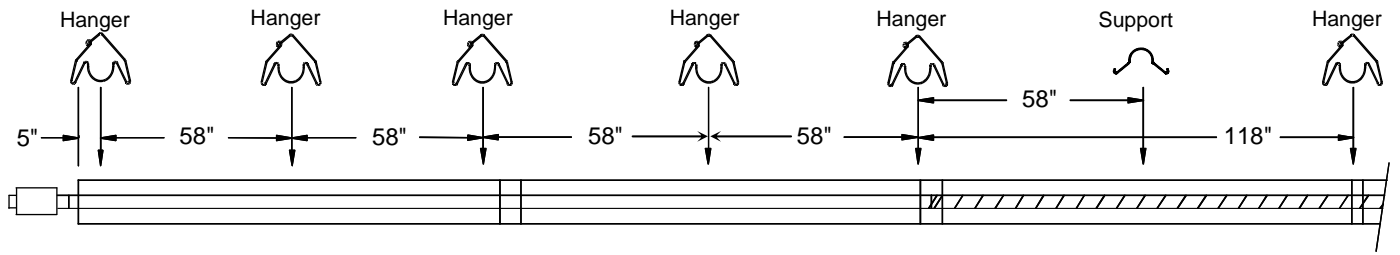
0402.060 – 1 HP, 115 / 208-230V, 12.4 / 6.7-6.2 FLA, 60 Hz, 1 Ph., 3450 RPM, totally enclosed motor (TENV or TEFC), thermally protected.



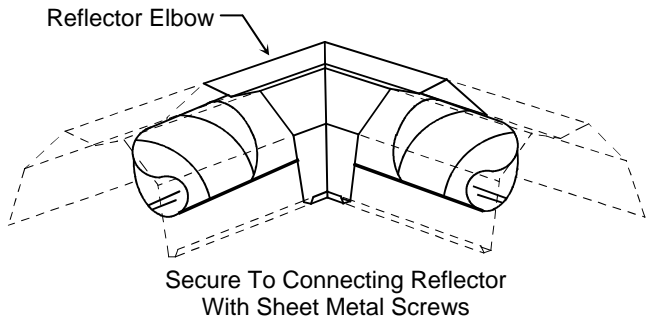
NOTE - Motor substitutions can occur, always refer to the motor manufacturer nameplate for electrical information and wiring instructions.

Note: One 40 VA, 24-volt transformer is shipped with each burner assembly.

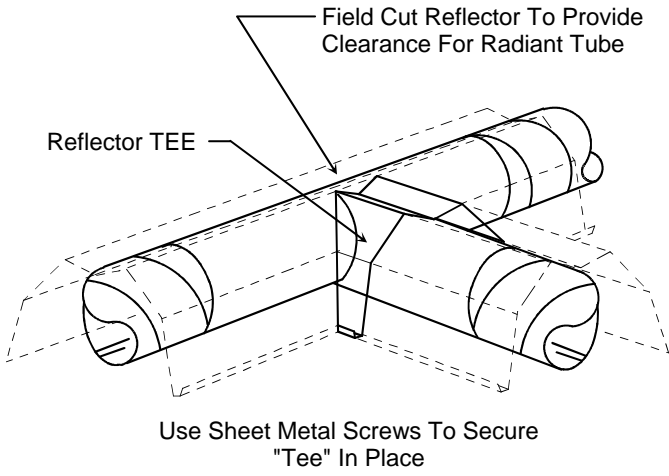
HANGER & SUPPORT LOCATIONS - STANDARD INSTALLATION



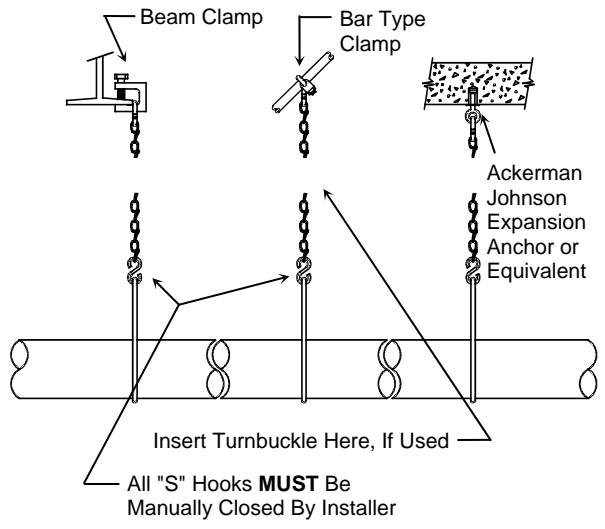
REFLECTOR ELBOW CONNECTION



REFLECTOR TEE CONNECTION



SUSPENSION METHODS



System shall be suspended by chain (trade size #3 or larger), wire rope, etc., minimum workload of 90 Lbs. All suspension hardware must be corrosion resistant. For fine adjustment turnbuckles may be used.



STAINLESS STEEL GAS CONNECTOR

- ◆ Stainless steel construction - Corrosion resistance.
- ◆ No-Neck™ Design - Added safety..

SPECIFICATIONS

CRC Part No.:

0617.00 – Stainless Steel Gas Connector
Wt. 3.0 lbs. (1.36 kg)

Dimensions:

$\frac{3}{4}$ " F.I.P (1" M.I.P) x $\frac{3}{4}$ " F.I.P (1" M.I.P) Connections
1- $\frac{1}{4}$ " O.D. x 1" I.D. Stainless Steel Flex, 36" Long.

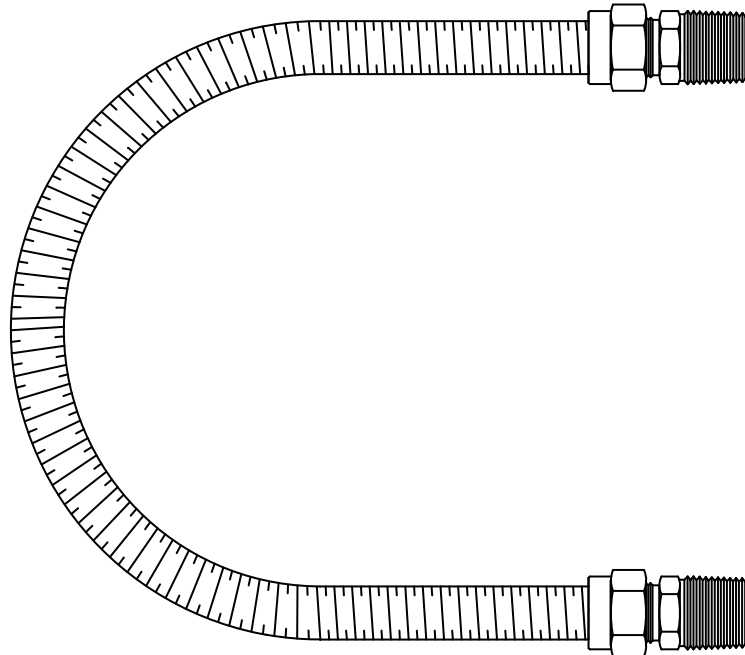
INSTALLATION & CHECKOUT

INSTALLATION

Install the stainless gas connector as outlined in the owner's manual. The stainless steel gas connector is to be installed with the manual gas valve on the up-stream side.

CHECKOUT

Make sure that the gas connector is installed in accordance with the owner's manual. Check connections for leaks with a soap solution. If bubbling occurs tighten flare connections or reapply pipe joint compound to pipe thread connections. Recheck for gas leaks.





BRASS MANUAL GAS VALVE

- ◆ Brass construction - Corrosion resistance.
- ◆ Rated for 125 psi (ANSI/ASME B16.33 for use in gas piping systems).

SPECIFICATIONS

CRC Part No.:

5040.04

Dimensions:

3/4" F.I.P x 3/4" F.I.P Connections

INSTALLATION & CHECKOUT

INSTALLATION

Install the manual gas valve in strict accordance with the information in the owner's manual. This manual gas valve is typically supplied and installed on the up-stream side of the stainless steel gas connector and any high pressure regulators.

CHECKOUT

Make sure that the manual gas valve is installed in a accordance with the owner's manual and local codes. Check connections for leaks with a soap solution. If bubbling occurs tighten connections or reapply pipe joint compound to pipe thread connections. Recheck for gas leaks.





HIGH PRESSURE REGULATOR

- ◆ Maxitrol 325-5A Brand High Pressure Regulator
- ◆ Max certified inlet pressure 5 psi Natural Gas and 2 psi LP – Tested to 10 psi.
- ◆ Set for 7.0" W.C. Outlet Pressure.
- ◆ ¾" NPT female pipe connections.
- ◆ Maximum capacity with 2 psi inlet pressure is 430 CFH based on 1" W.C pressure drop from set point – 0.64 sp. gr. gas.

SPECIFICATIONS

CRC Part No.:

5221.04

Dimensions:

5-1/4" tall, 5-7/8" long, 5-7/16" wide

6-1/8" swing radius

¾" F.I.P x ¾" F.I.P Connections

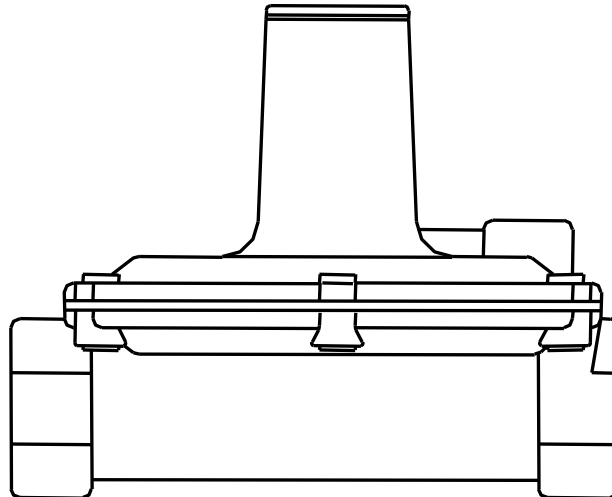
INSTALLATION & CHECKOUT

INSTALLATION

Install the regulator in strict accordance with the information in the owner's manual. This high pressure regulator is typically installed on the up-stream side of the stainless steel gas flex, before the manual gas valve. Regulator should be mounted with diaphragm horizontal and vent on top.

CHECKOUT

Make sure that the gas regulator is installed in accordance with local and national codes. Check connections for leaks with a soap solution. If bubbling occurs tighten connections or reapply pipe joint compound to pipe thread connections. Recheck for gas leaks.





ALUMINIZED STEEL RADIANT TUBE

- ◆ Aluminized Steel Construction
- ◆ Used With Reflect-O-Ray® EDS6 Radiant Tube System
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:

0604.AS.16 - 6.0" diameter radiant tube
Wt. – 80.0 lbs. (36.29 kg)

Dimensions:

Minimum 16 Ga. aluminized steel, 6.0" Tubing
20' Long

Temperature Rating:

1050°F (565°C)

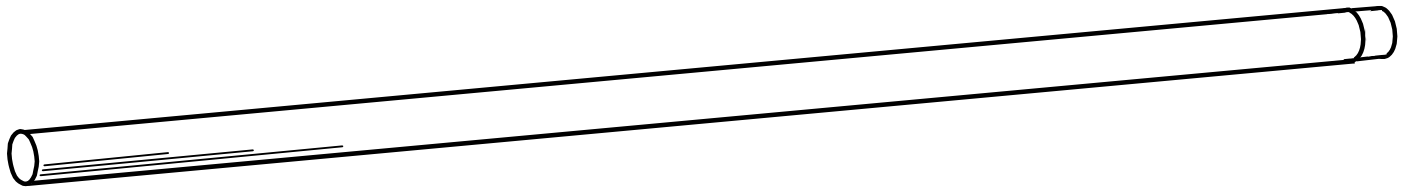
INSTALLATION & CHECKOUT

Installation

Install 16 Ga. burner combustion tube immediately down stream of burner. Note one end is swaged to fit inside the next radiant tube. Position weld seam so that it is on the bottom. Secure radiant tubes burner assembly with 0607.00 drawband coupler. Refer to the owner's manual for installation guidance.

Checkout

Make sure that the weld seam is positioned on the bottom of the tube. Inspect to make sure that all radiant tubes are connected square and straight.





ALUMINIZED STEEL RADIANT TUBE

- ◆ Aluminized Steel Spiral Construction
- ◆ 9'-9" or 19'-6" Long Sections
- ◆ Used With Reflect-O-Ray® EDS6 Radiant Tube System
- ◆ Patented, Strong, Low Mass Tube (Min. 22 Ga.)
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:

- 0604.AS – 9'-9" long, 6.0" diameter radiant tube
Wt. – 21.5 lbs. (9.75 kg)
- 0604.AS.20 – 19'-6" long, 6.0" diameter radiant tube
Wt. – 43.0 lbs. (19.5 kg)

Temperature Rating:

1050°F (565°C)

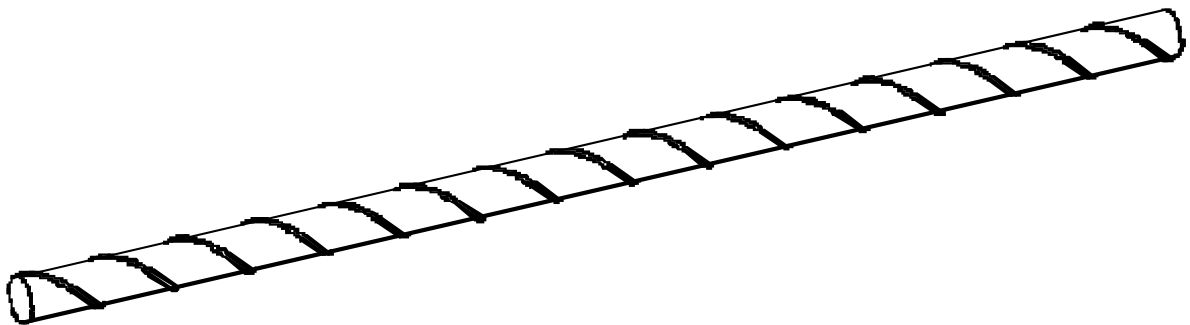
INSTALLATION & CHECKOUT

Installation

Install radiant tube as shown on shop drawing. Note, radiant tubes are connected by swaged couplers (P/N 0611.AS) designed to fit inside the spiral radiant tube. Refer to the owner's manual for installation guidance.

Checkout

Make sure that radiant tubes are installed in accordance with the owner's manual as well as the shop drawing. Inspect to make sure that all radiant tubes are connected square and straight.





ALUMINIZED STEEL RADIANT TUBE & TURBULATOR

- ◆ Aluminized Steel Spiral Construction
- ◆ 19'-6" Long Section with internal turbulator
- ◆ Used With Reflect-O-Ray® EDS6 Radiant Tube System
- ◆ Patented, Strong, Low Mass Tube (Min. 22 Ga.)
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:

0604.TURB-2 – 19'-6" long, 6.0" diameter radiant
tube Wt. – 48.0 lbs. (21.8 kg)

Temperature Rating:

1050°F (565°C)

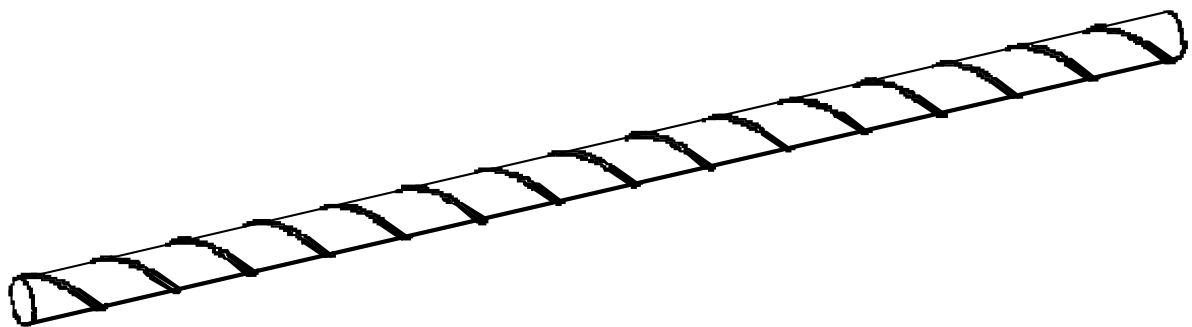
INSTALLATION & CHECKOUT

Installation

Install radiant tube as shown on shop drawing. Note, radiant tubes are connected by swaged couplers (P/N 0611.AS) designed to fit inside the spiral radiant tube. Refer to the owner's manual for installation guidance.

Checkout

Make sure that the turbulated radiant tubes are installed in accordance with the owner's manual as well as the shop drawing. Under no circumstances should the turbulated tube be used in a common run (double flow) connecting to the vacuum exhauster. Inspect to make sure that all radiant tubes are connected square and straight.





ALUMINUM REFLECTOR

- ◆ Bright Finish Aluminum Reflector
- ◆ High Reflectivity
- ◆ Used With Reflect-O-Ray® EDS6 Radiant Tube System
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:

0660.00 – 10'-0" Long – Wt. 7.25 lbs. (3.29 kg)

Dimensions:

Minimum 0.025" Thick Bright Aluminum,
10'-0" Long.

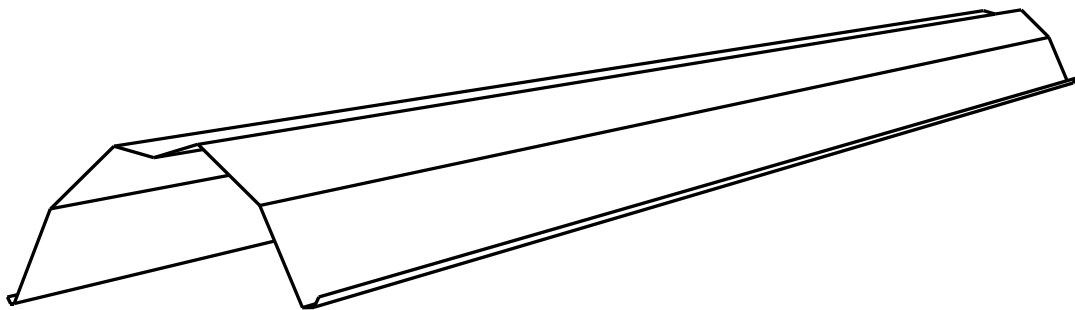
INSTALLATION & CHECKOUT

Installation

Install reflectors over radiant tubes as shown on shop drawing. Note, secure reflectors together at each straight run allowing for one unsecured joint for expansion - Refer to the owner's manual for installation guidance.

Checkout

Make sure that the radiant tubes and reflectors are installed in accordance with the owner's manual as well as the shop drawing. Inspect to make sure that all radiant tubes are connected square and straight. Make sure that one expansion joint for each straight run is installed





COMBINATION HANGER

- ◆ Minimum 0.25" zinc plated steel
- ◆ Combination Reflector and radiant tube hanger
- ◆ Used With Reflect-O-Ray® EDS6 Radiant Tube Systems.
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:

0661.00

Temperature Rating:

Max. 1100°F (593°C)

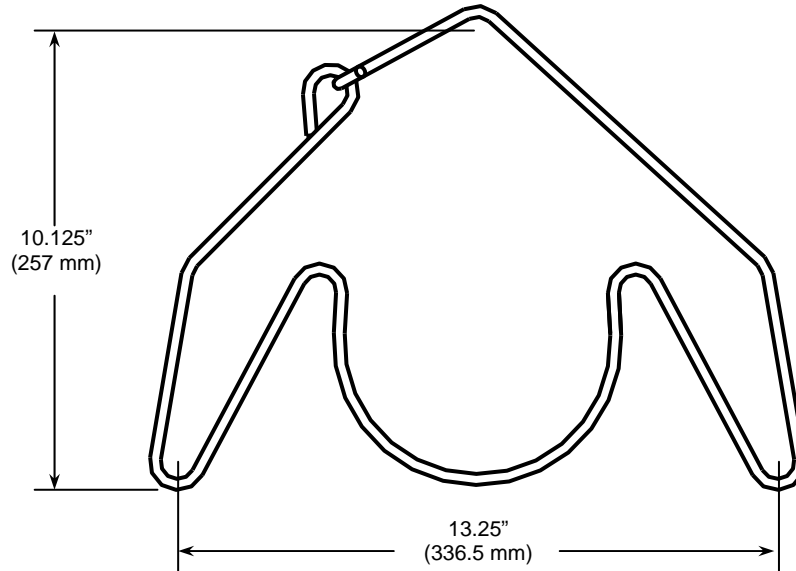
INSTALLATION & CHECKOUT

INSTALLATION

Install combination hanger in the position as outlined on the shop drawing and as described in the Owner's Manual.

CHECKOUT

Make sure that the loop is hooked in the eye as shown below. All hangers should be suspended equally so that none are loose or miss-aligned. Refer to the Owner's Manual for proper installation and suspension.





INTERMEDIATE SUPPORT

- ◆ Minimum 0.25" zinc plated steel
- ◆ Intermediate Support for reflector.
- ◆ Used With Reflect-O-Ray® EDS6 Radiant Tube Systems.
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:

0662.00

Temperature Rating:

Max. 1100°F (593°C)

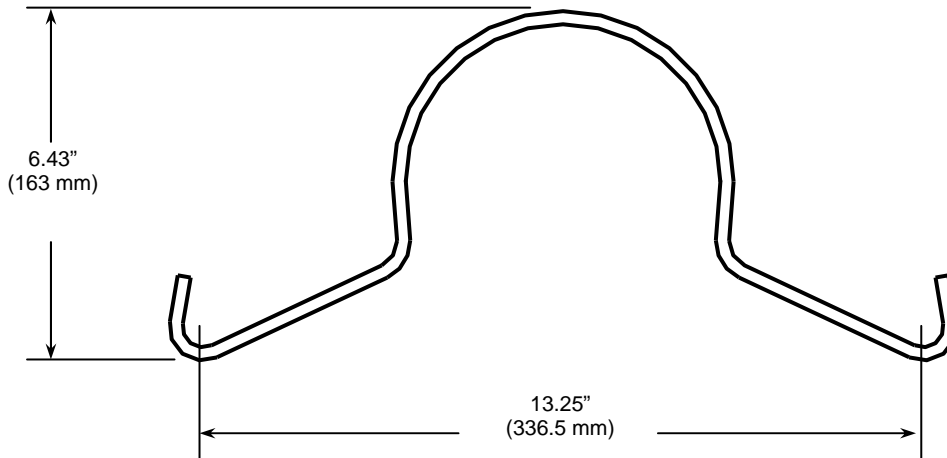
INSTALLATION & CHECKOUT

INSTALLATION

Install intermediate support as outlined in the owner's manual. Typically the intermediate support is positioned midway and in-between two combination hangers spaced 7' to 10' apart.

CHECKOUT

All supports should be in line with the combination hangers. Refer to the Owner's Manual for proper installation and suspension.





ALUMINUM REFLECTOR END CAP

- ◆ Bright Finish Aluminum Reflector End Cap
- ◆ High Reflectivity
- ◆ Used With Reflect-O-Ray® EDS6 Radiant Tube System
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:
0660.WH – End Cap

Dimensions:
Minimum 0.025" Thick Bright Aluminum,

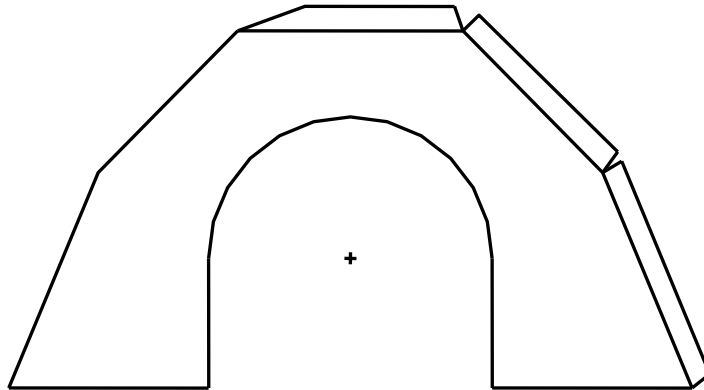
INSTALLATION & CHECKOUT

Installation

Attach reflector end cap to reflector at the burner end and at the vacuum exhaust end. Refer to the owner's manual for installation guidance.

Checkout

Make sure that the radiant tubes and reflectors are installed in accordance with the owner's manual as well as the shop drawing. Inspect to make sure that all radiant tubes are connected square and straight. Make sure that one expansion joint for each straight run is installed





ALUMINUM REFLECTOR ELBOW

- ◆ 0.025" Minimum, Aluminum – Bright one side, minimum 97% reflectivity.
- ◆ 90° Horizontal Reflector Elbow
- ◆ Used With Reflect-O-Ray® EDS6 Radiant Tube Systems.
- ◆ Bright Finish - Corrosion Resistant

SPECIFICATIONS

CRC Part No.:
0660.EB

Dimensions:
Minimum 0.025" Thick Bright Aluminum

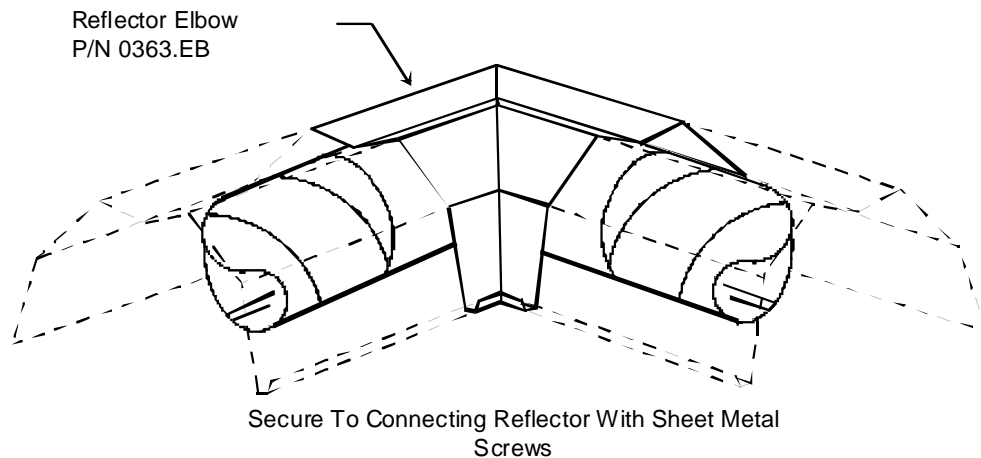
INSTALLATION & CHECKOUT

INSTALLATION

Install reflector elbow as outlined on the shop drawings. Secure reflector elbow to reflectors with pop rivets or screws. Refer to the owner's manual for installation guidance.

CHECKOUT

Make sure that reflectors and reflector elbows are straight and true with a expansion joint in each straight run of reflector. In high wind conditions install a "tether wire" to secure reflectors from swaying. Refer to drawing "660-seismic" for details.





ALUMINUM REFLECTOR ELBOW

- ◆ 0.025" Minimum, Aluminum – Bright one side, minimum 97% reflectivity.
- ◆ Horizontal Reflector Tee
- ◆ Used With Reflect-O-Ray® EDS6 Radiant Tube Systems.
- ◆ Bright Finish - Corrosion Resistant

SPECIFICATIONS

CRC Part No.:
0660.TB

Dimensions:
Minimum 0.025" Thick Bright Aluminum

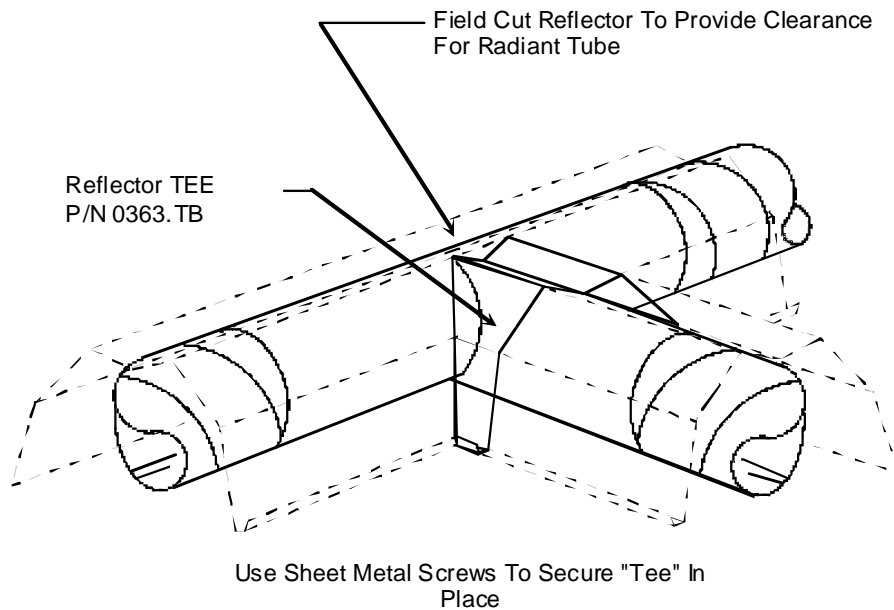
INSTALLATION & CHECKOUT

INSTALLATION

Install reflector Tee as outlined on the shop drawings. Secure reflector elbow to reflectors with pop rivets or screws. Refer to the owner's manual for installation guidance.

CHECKOUT

Make sure that reflectors and reflector Tee is straight and true with a expansion joint in each straight run of reflector. Secure adjoining reflectors with sheet metal screws or pop rivets.





ALUMINUM SIDE SHIELD

- ◆ Bright Finish Aluminum Side Shield
- ◆ High Reflectivity
- ◆ Used With Reflect-O-Ray® EDS6 Radiant Tube System
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:
0663.00 – 10'-0" Long

Dimensions:
Minimum 0.025" Thick Bright Aluminum,
10'-0" Long.
5.0 lbs. (2.27 Kg)

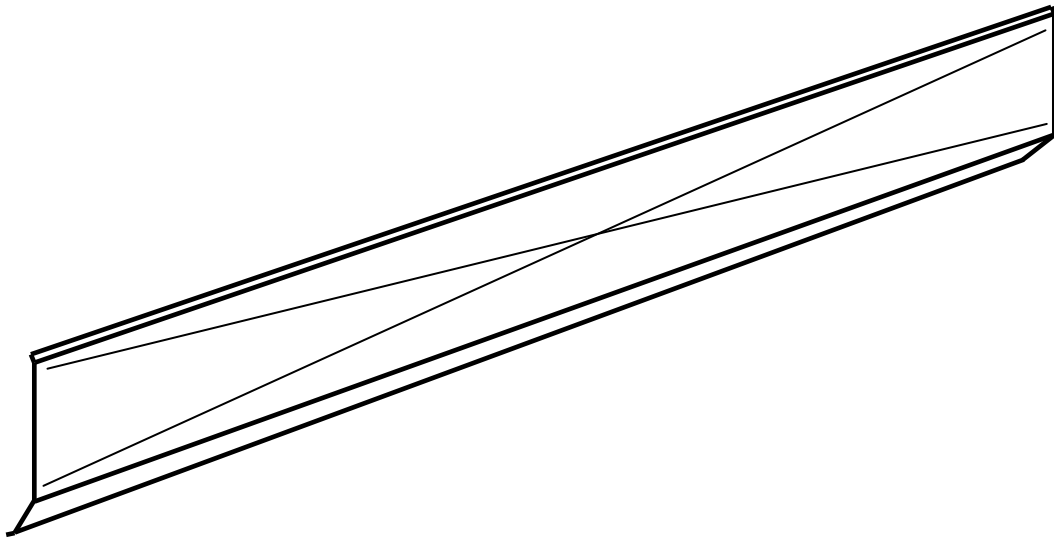
INSTALLATION & CHECKOUT

INSTALLATION

Install side shield as outlined on the shop drawings. Secure to reflectors with sheet metal screws or pop rivets. Expansion joint shall match the reflector expansion joint. Attach side shield supports (P/N 0664.00) - Refer to the owner's manual for installation guidance.

CHECKOUT

Make sure that reflectors and side shields are straight and true with a expansion joint in each straight run of reflector.





SIDE SHIELD SUPPORT

- ◆ 16 Ga. Aluminized steel.
- ◆ Used With P/N 0663.00 Side Shields Installed on P/N 0661.00 Reflectors
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:

0664.00 – Side Shield Support
Wt. 1.0 lbs (0.45 kg)

Dimensions:

1" Wide x 14-1/2" (Approx.) Long

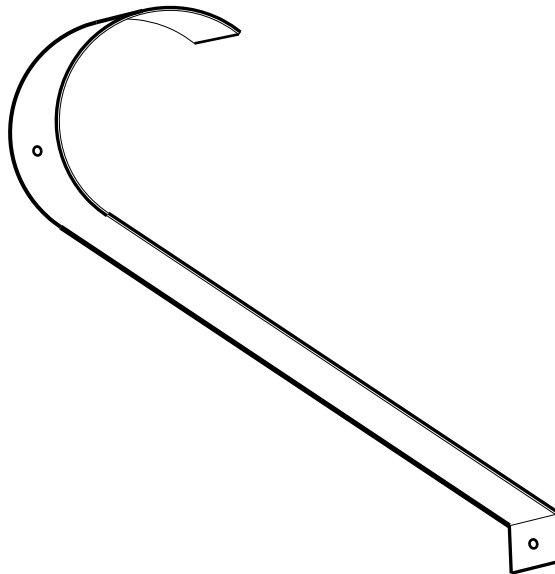
INSTALLATION & CHECKOUT

INSTALLATION

Install side shield as outlined on the shop drawings. Side shield supports are to be installed approximately every five feet (5'). Secure side shield support to radiant tube and side shield with self drilling and tapping screws. Secure side shields to reflector with pop rivets or screws allowing for at least one unsecured expansion joint for each straight run – these should coincide with the expansion joints of the reflector. Refer to the owner's manual for installation guidance.

CHECKOUT

Make sure that reflectors are straight and true with a expansion joint in each straight run.





PROTECTIVE SCREEN

- ◆ Minimum 14 Ga. Galvanized wire construction.
- ◆ 2" x 4" openings.
- ◆ Used With and Reflect-O-Ray® Radiant Tube Systems.
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:

0360.PS

Dimensions:

5' Long Protective Screen

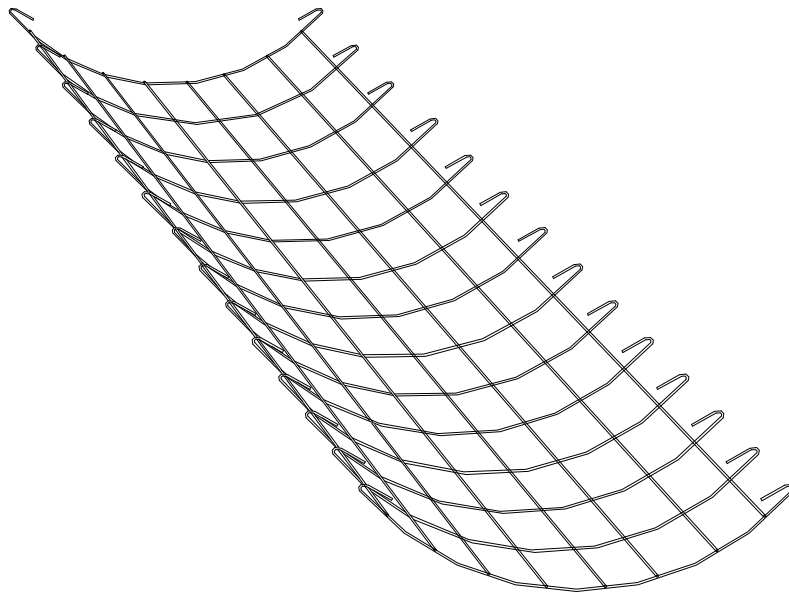
INSTALLATION & CHECKOUT

INSTALLATION

Install Protective Screen as outlined on the shop drawings. Secure Protective Screens to reflector as outlined in the installation instructions.

CHECKOUT

Make sure that reflectors are straight and true with a expansion joint in each straight run. Make sure Protective Screen is secured to the radiant tube and reflector hangers as outlined in the installation instructions. In high wind conditions install a "tether wire" to insure reflectors and protective screens will not sway. Refer to drawing "360-seismic" for details.





ALUMINIZED STEEL TUBE COUPLER

- ◆ Aluminized Steel Construction
- ◆ Swaged For Internal Connection to 0604.AS Radiant tubes.
- ◆ Used With Reflect-O-Ray® EDS6 Radiant Tube System
- ◆ Aluminized Steel, Min. 18 Ga.
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:

0611.AS – Radiant Tube Coupler
Wt. 4.0 lbs. (1.81 kg)

Dimensions:

Minimum 18 Ga. aluminized steel, 6" Dia.
Tubing Swaged on Both Ends

Temperature Rating:

1050°F (565°C)

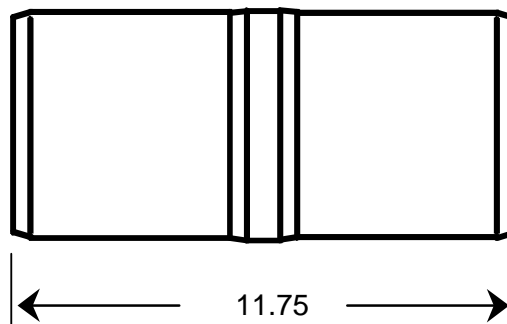
INSTALLATION & CHECKOUT

Installation

Install coupler as shown on shop drawing. Note couplers are designed to fit inside the spiral radiant tube. Apply sealer to internal surface of radiant tube before inserting coupler. Secure with three self drilling and taping screws on each swaged end. Refer to the owner's manual for installation guidance.

Checkout

Make sure that the radiant tubes and couplers are installed in accordance with the owner's manual as well as the shop drawing. Inspect to make sure that all radiant tubes are securely connected, and are square and straight.





ALUMINIZED STEEL TUBE ELBOW

- ◆ Aluminized Steel Construction
- ◆ Swaged Ends For Internal Connection To 0604.AS Radiant tubes.
- ◆ Used With Reflect-O-Ray® EDS6 Radiant Tube System
- ◆ Aluminized Steel, Min. 18 Ga.
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:
0606.AS

Dimensions:
Minimum 18 Ga. Aluminized Steel, 6.0" Dia.,
90° Elbow, Swaged on Both Ends

Temperature Rating:
1050°F (565°C)

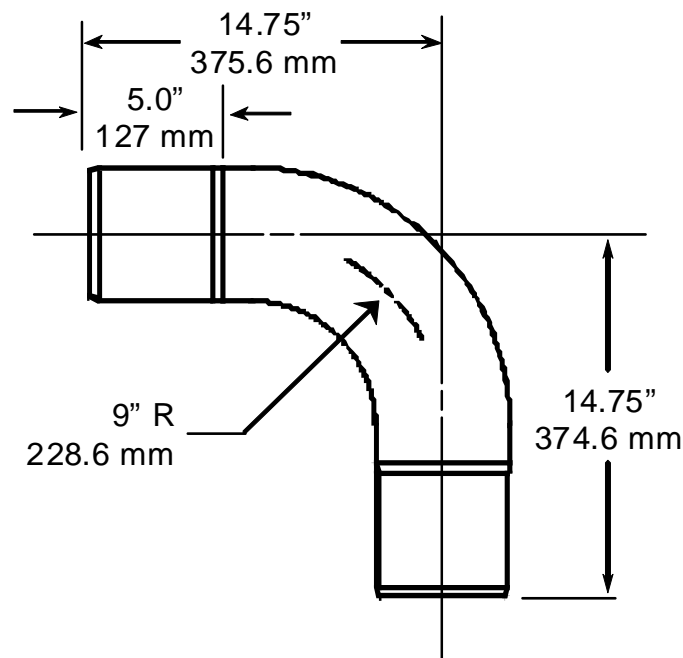
INSTALLATION & CHECKOUT

Installation

Install elbow as shown on shop drawing. Note elbows are designed to fit inside the spiral radiant tube. Apply sealer to internal surface of radiant tube before inserting coupler. Secure with three self drilling and taping screws on each swaged end. Refer to the owner's manual for installation guidance.

Checkout

Make sure that the radiant tubes and couplers are installed in accordance with the owner's manual as well as the shop drawing. Inspect to make sure that all radiant tubes are securely connected, and are square and straight.





ALUMINIZED STEEL TUBE ELBOW

- ◆ Aluminized Steel Construction
- ◆ Swaged Ends For Internal Connection To 0404.AS Radiant tubes.
- ◆ Used With Reflect-O-Ray® EDS6 Radiant Tube System
- ◆ Aluminized Steel, Min. 18 Ga.
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:
0636.AS

Dimensions:
Minimum 18 Ga. Aluminized Steel, 6.0" Dia.,
45° Elbow, Swaged on Both Ends

Temperature Rating:
1050°F (565°C)

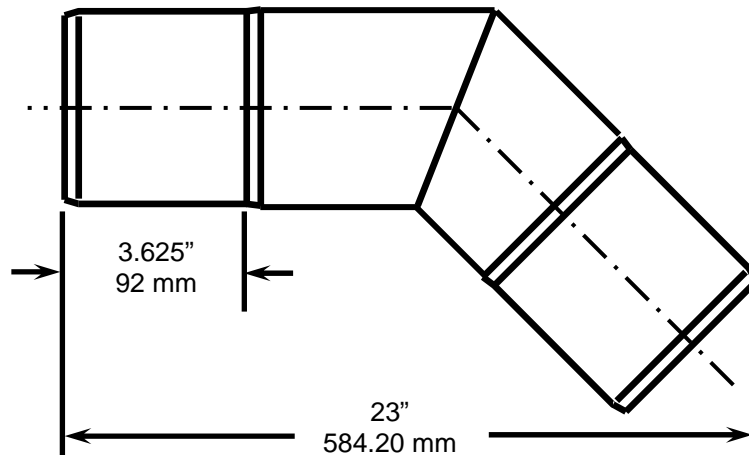
INSTALLATION & CHECKOUT

Installation

Install elbow as shown on shop drawing. Note elbows are designed to fit inside the spiral radiant tube. Apply sealer to internal surface of radiant tube before inserting coupler. Secure with three self drilling and taping screws on each swaged end. Refer to the owner's manual for installation guidance.

Checkout

Make sure that the radiant tubes and couplers are installed in accordance with the owner's manual as well as the shop drawing. Inspect to make sure that all radiant tubes are securely connected, and are square and straight.





ALUMINIZED STEEL TEE

- ◆ Aluminized Steel Construction
- ◆ Swaged Ends For Internal Connection To 0604.AS Radiant tubes.
- ◆ Used With Reflect-O-Ray® EDS6 Radiant Tube System
- ◆ Aluminized Steel, Min. 18 Ga.
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:
0607.AS

Dimensions:
Minimum 18 Ga. Aluminized Steel, 6.0" x 6.0" x 6.0" Tee, Swaged Ends

Temperature Rating:
1050°F (565°C)

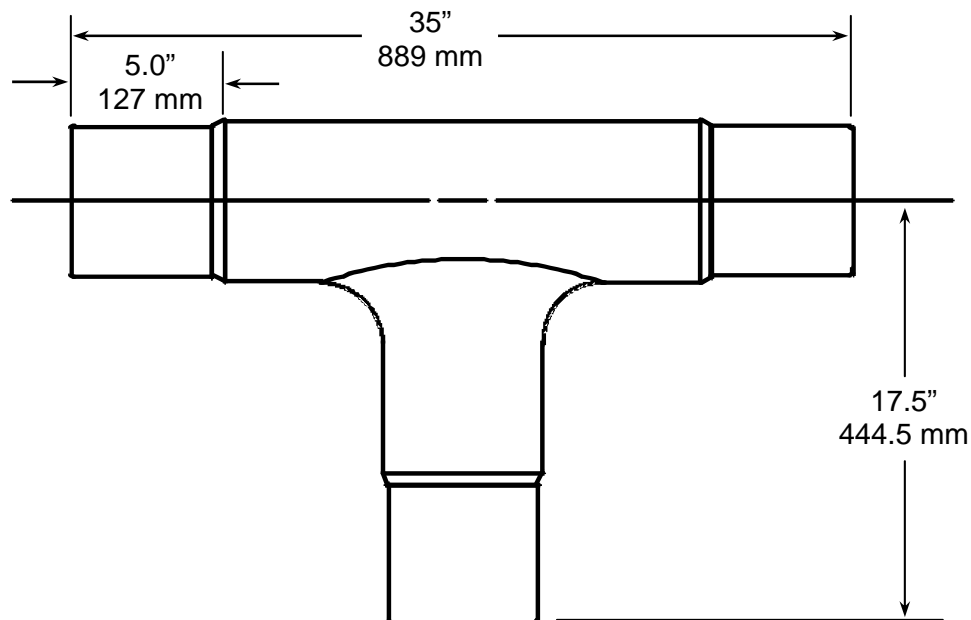
INSTALLATION & CHECKOUT

Installation

Install tee as shown on shop drawing. Note tee is designed to fit inside the spiral radiant tube. Apply sealer to internal surface of radiant tube before inserting coupler. Secure with three self drilling and taping screws on each swaged end. Refer to the owner's manual for installation guidance.

Checkout

Make sure that the radiant tubes and tee's are installed in accordance with the owner's manual as well as the shop drawing. Inspect to make sure that all radiant tubes are securely connected, and are square and straight.





ALUMINIZED STEEL TEE WITH DAMPERS INLINE

- ◆ Aluminized Steel Construction
- ◆ Swaged Ends For Internal Connection To 0604.AS Radiant tubes.
- ◆ Dampers Installed Inline
- ◆ Used With Reflect-O-Ray® EDS6 Radiant Tube System
- ◆ Aluminized Steel, Min. 18 Ga.
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:
0607.AS.B

Dimensions:
Minimum 18 Ga. Aluminized Steel, 6.0" x 6.0" x
6.0" Tee With Dampers, Swaged Ends

Temperature Rating:
850°F (454°C)

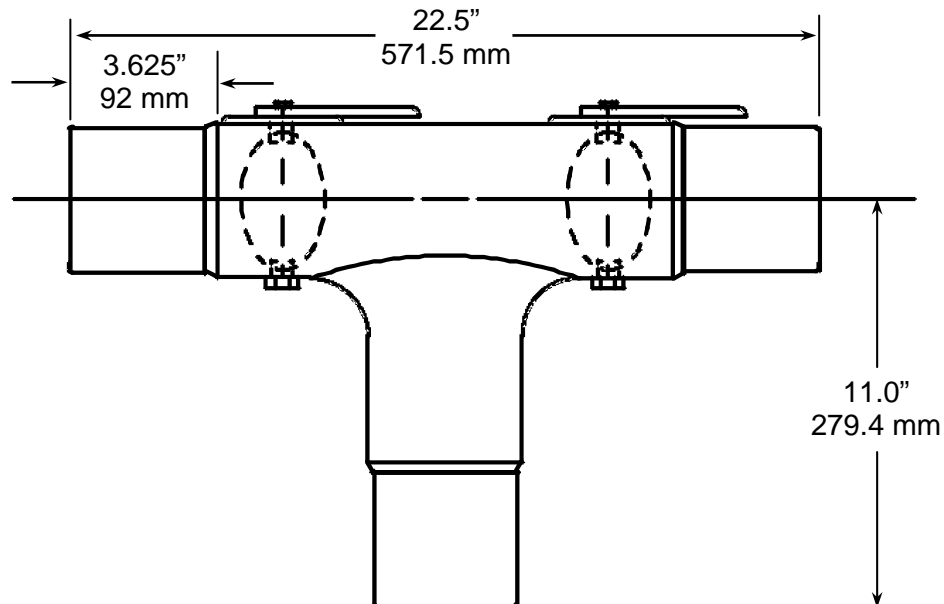
INSTALLATION & CHECKOUT

Installation

Install damper tee as shown on shop drawing. Note tee is designed to fit inside the spiral radiant tube. Apply sealer to internal surface of radiant tube before inserting coupler. Secure with three self drilling and taping screws on each swaged end. Refer to the owner's manual for installation guidance and method for setting the system vacuum.

Checkout

Make sure that the radiant tubes and tee's are installed in accordance with the owner's manual as well as the shop drawing. Inspect to make sure that all radiant tubes are securely connected, and are square and straight.





ALUMINIZED STEEL TEE WITH DAMPERS AT 90°

- ◆ Aluminized Steel Construction
- ◆ Swaged Ends For Internal Connection To 0604.AS Radiant tubes.
- ◆ Dampers Installed Inline
- ◆ Used With Reflect-O-Ray® EDS6 Radiant Tube System
- ◆ Aluminized Steel, Min. 18 Ga.
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:
0607.AS.C

Dimensions:
Minimum 18 Ga. Aluminized Steel, 6.0" x 6.0" x 6.0" Tee With Dampers, Swaged Ends

Temperature Rating:
850°F (454°C)

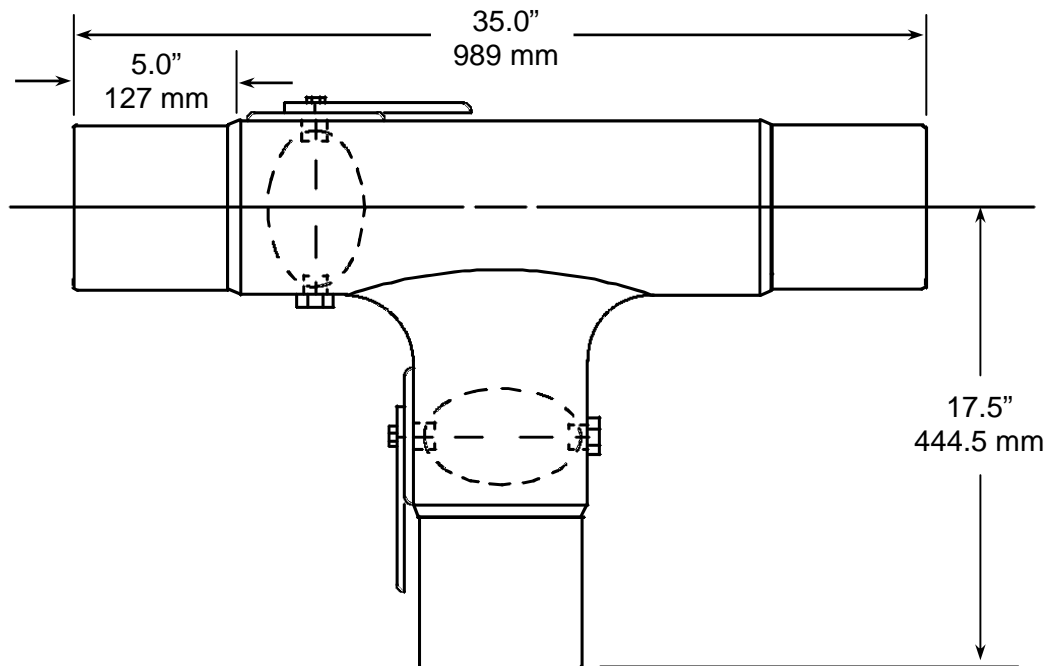
INSTALLATION & CHECKOUT

Installation

Install damper tee as shown on shop drawing. Note tee is designed to fit inside the spiral radiant tube. Apply sealer to internal surface of radiant tube before inserting coupler. Secure with three self drilling and taping screws on each swaged end. Refer to the owner's manual for installation guidance and method for setting the system vacuum.

Checkout

Make sure that the radiant tubes and tee's are installed in accordance with the owner's manual as well as the shop drawing. Inspect to make sure that all radiant tubes are securely connected, and are square and straight.





ALUMINIZED STEEL DAMPER

- ◆ Aluminized Steel Construction
- ◆ Swaged End For Internal Connection To 0604.AS Radiant tubes.
- ◆ Single Flow Damper Application
- ◆ Used With Reflect-O-Ray® EDS6 Radiant Tube System.
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:
0641.00 - Damper

Dimensions:
15" section of 6" dia. spiral tube with damper assembly installed in the center. A 0611.AS coupler is inserted in one end.

Temperature Rating:
850°F (454°C)

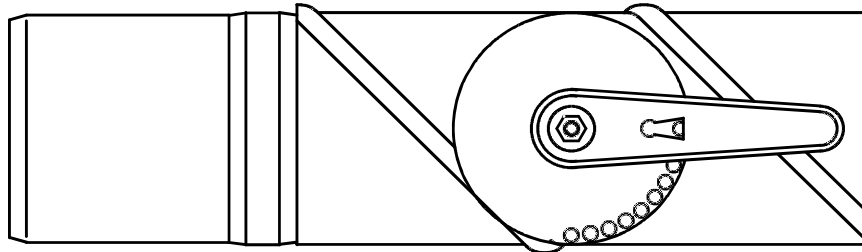
INSTALLATION & CHECKOUT

Installation

Install the damper as shown on shop drawing. Note coupler in damper assembly is designed to fit inside the spiral radiant tube. Apply sealer to internal surface of radiant tube before inserting coupler. Secure with three self drilling and taping screws on each swaged end. Refer to the owner's manual for installation guidance and method for setting the system vacuum.

Checkout

Make sure that the radiant tubes and couplers and fittings are installed in accordance with the owner's manual as well as the shop drawing. Inspect to make sure that all radiant tubes are securely connected, and are square and straight.





STAINLESS STEEL EXHAUST FLEX

- ◆ Stainless steel inner liner with black fiberglass outer liner.
- ◆ 6.0" (152.5 mm) ID, 30" (762 mm) Long
- ◆ High temperature rating
- ◆ Two stainless steel hose clamps included
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:

0634.SS – Stainless Steel Exhaust Flex & Clamps
Wt.. 2.5 lbs. (1.13 kg)

Dimensions:

6.0" (152.5 mm), 40" (1016 mm) Long

Temperature Rating:

Max. 850°F (454°C)

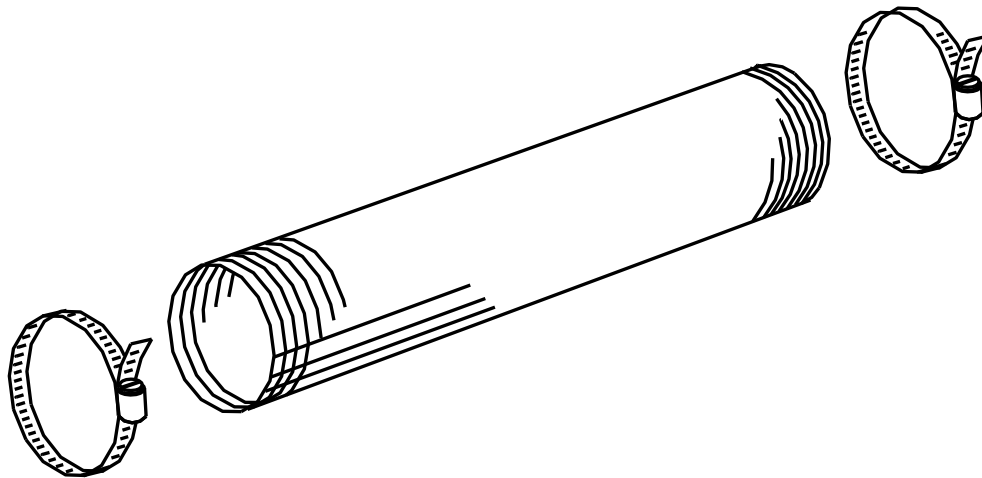
INSTALLATION & CHECKOUT

Installation

Install the flex assembly as shown on shop drawing. Refer to the owner's manual for installation guidance and method for setting the system vacuum.

Checkout

Make sure that the exhaust flex is installed in accordance with the owner's manual as well as the shop drawing. Inspect to make sure that all radiant tubes are securely connected, and are square and straight.





FRESH AIR INLET ASSEMBLY

- ◆ Galvanized Steel Inlet Hood and Aluminum / Vinyl Flex Construction
- ◆ Weather Proof
- ◆ Inlet Flex & Clamps Included
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:
0614.00 – Fresh Air Inlet, Flex & Clamps

Dimensions:
6.0" (152.5mm) OD on Inlet Hood
48" (1219.2mm) Long PVC Coated Aluminum Flex & Clamps.

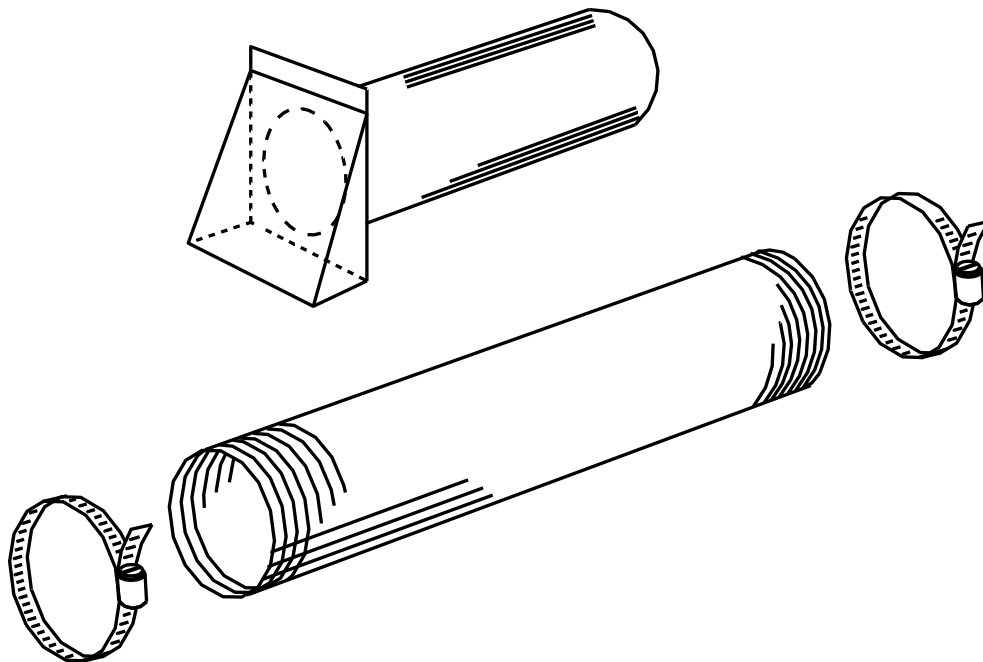
INSTALLATION & CHECKOUT

Installation

Install the fresh air assembly as shown on shop drawing. Apply silicone sealer to external surface that mounts against wall. Secure to wall with three screws. Refer to the owner's manual for installation guidance.

Checkout

Make sure that the fresh air assembly and flex is installed in accordance with the owner's manual as well as the shop drawing. Inspect to make sure flex is securely fastened with clamps provided.





FRESH AIR FLEX & CLAMPS

- ◆ PVC and Aluminum Construction
- ◆ Weather Proof
- ◆ Clamps Included
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:

0614.AC – Fresh Air Inlet Flex & Clamps

Dimensions:

6.0" (152.5mm) ID, 48" (1219.2mm) Long PVC
Coated Aluminum Flex & Clamps

Temperature Rating:

Min. -40°F (-40°C)
Max. 200°F (93°C)

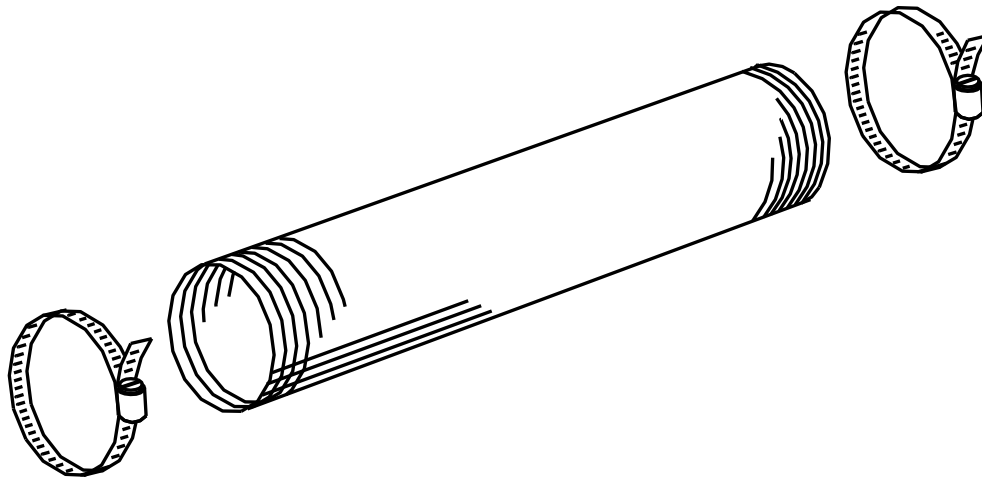
INSTALLATION & CHECKOUT

Installation

Install the fresh air assembly as shown on shop drawing. Apply silicone sealer to external surface that mounts against wall. Secure to wall with three screws. Refer to the owner's manual for installation guidance.

Checkout

Make sure that the fresh air assembly and flex is installed in accordance with the owner's manual as well as the shop drawing. Inspect to make sure flex is securely fastened with clamps provided.





THERMOSTAT FEATURES

- N.E.M./A. 4X enclosure complies with N.E.C Article 547 when used with appropriate watertight connections
- Rugged weather resistant enclosure made of corrosion resistant materials.
- Low Mass, high surface area of stainless steel coiled sensor provides rapid response to temperature change.
- Underwriters Laboratories (UL) listed and CSA Certified
- Multi-positional mounting meets new or existing wiring.
- Insulated enclosure
- Easily removable knockouts in sides, ends and back of enclosure
- Large wiring compartment with water tight cover separated from thermostat compartment.
- Large dial with temperature in Fahrenheit (40° F to 110° F) & Celsius (5° C to 113° C)

SPECIFICATIONS

CRC Part No.:
5487.00 - Heating only use.

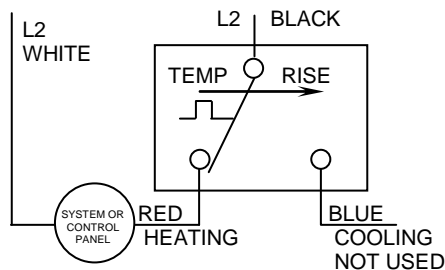
Control Range:
40°F (5°C) to 110°F (113°C)

Electrical Ratings:

50-60Hz	120 V	240 V	277 V	480V
Full Load Amp	16	12	10	--
LRA	80	60	50	--
Resistive Amp	25	25	22	5
Pilot Duty	125 VA	125 VA	125 VA	125 VA

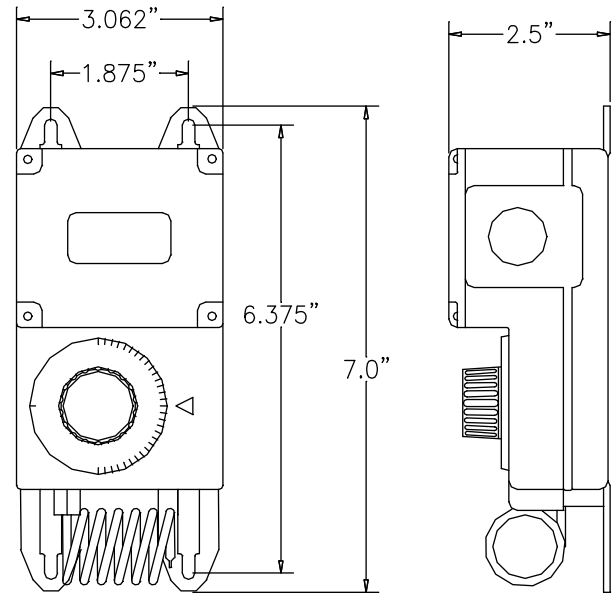
NOTE: This thermostat is suitable for 24V operation

Wiring:



(Figure 1)

Dimensions:



INSTALLATION & CHECKOUT

MOUNTING:

Position thermostat on inside wall about 5' (1.5m) above floor, mount on wall with 4 screws (not provided) through 4 slotted feet on thermostat. Remove the desired knockout and install electrical conduit. In wet applications use of appropriate watertight conduit (4X Listed) is required. Install conduit with a drip loop so that water or other liquids cannot enter the thermostat.

CAUTION: Failure to use suitable watertight connections and suitable drip loop could result in water or other liquids entering the enclosure which can cause control failure, personal injury and/or property damage.

Do not mount thermostat where it can be affected by drafts, direct radiant heat from the heater as well as the sun or other sources of heating or cooling. Do not bend, crimp or damage the sensor - the calibration and operation may be affected.

Wire as shown in figure 1.

SETTING AND CHECKOUT:

Turn on power. Raise the temperature setting to energize the heating load. The heater will turn on. The heater will turn off when the temperature rises to the set point.

Lower the temperature setting to lowest setting to de-energize the heating load. The heater will turn off.



LOCKING THERMOSTAT GUARD FEATURES

- ◆ Metal construction with beige coating.
- ◆ Keyed lock
- ◆ Ring Base: 6.625" L x 4.5"
- ◆ Vertical or horizontal mounting

SPECIFICATIONS

CRC Part No.:

5485.LC – Locking Thermostat Guard

Dimensions:

6.625" L (168 mm) x 4.5" H (114mm) x 3.375" D (86mm)

INSTALLATION & CHECKOUT

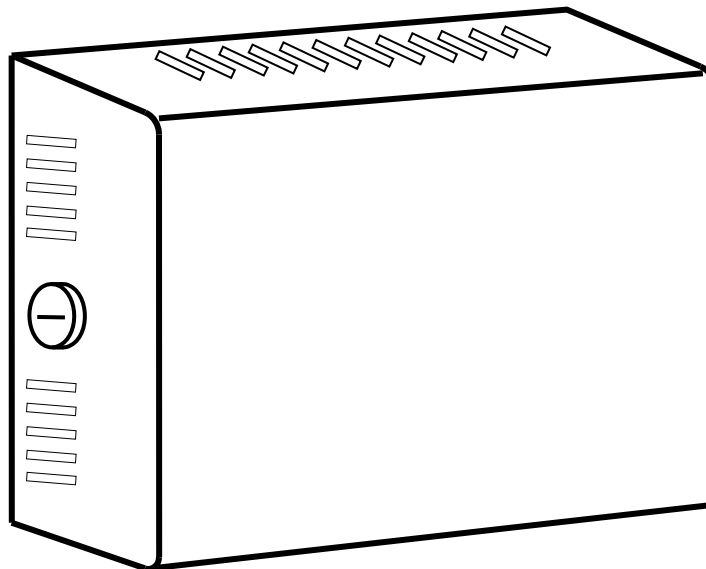
MOUNTING

Position thermostat and guard on inside wall about 5' (1.5m) above floor, mounted on 2" x 4" vertical electrical outlet box. Do not mount thermostat where it can be affected by drafts, direct radiant heat from the heater as well as the sun or other sources of heating or cooling.

Remove cover by pulling out at the bottom. Install thermostat by screwing base to electrical box. **DO NOT** press on the bimetal sensor or set point knob to seat the thermostat to the electrical box - thermostat will be damaged.

CHECKOUT

Make sure that the thermostat guard locks and un-locks properly. Leave keys with building owner



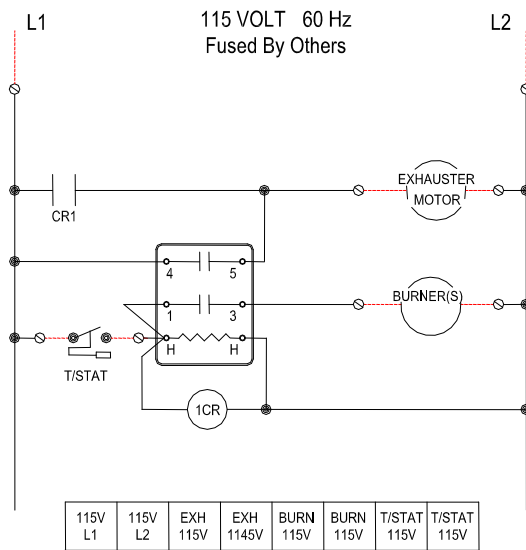


CONTROL PANEL

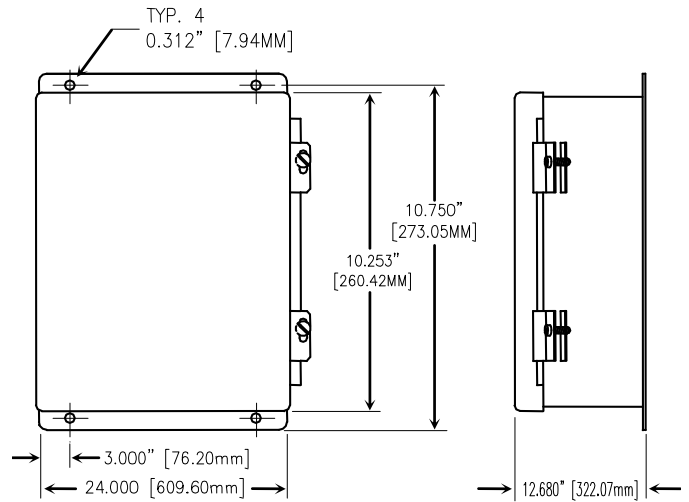
- ◆ JIC Enclosure
- ◆ Corrosion Resistant
- ◆ Approximately 60 seconds pre purge
- ◆ Approximately 80 seconds post purge

SPECIFICATIONS

CRC Part No.:
5500.00 – Control Panel, Pre & Post Purge



Dimensions:



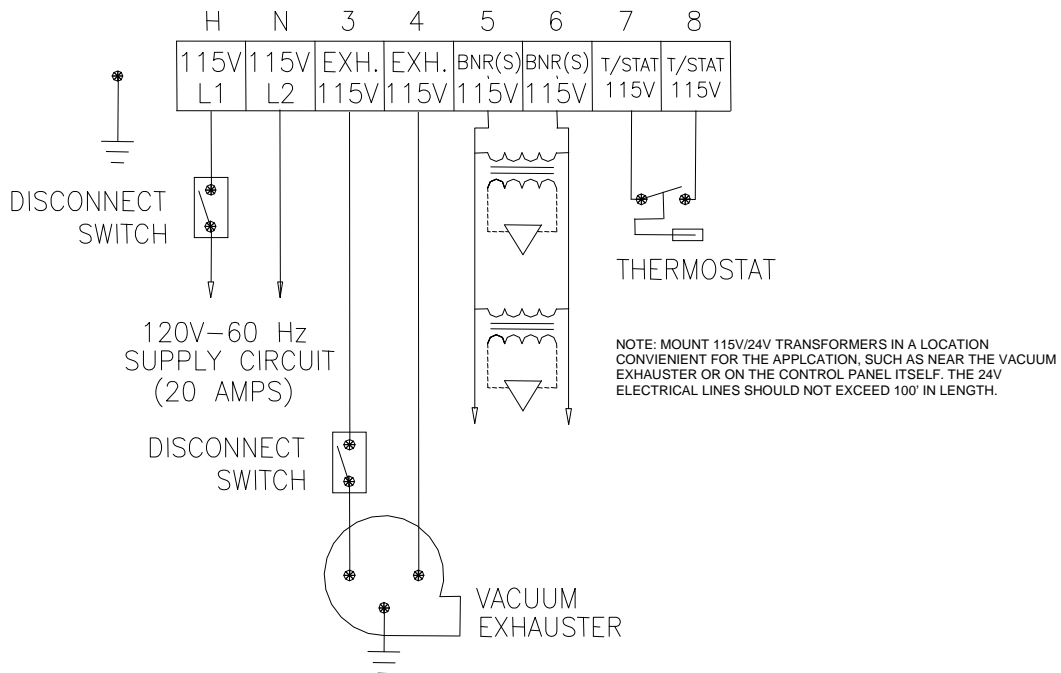
INSTALLATION & CHECKOUT

Installation

Install the fresh air assembly as shown on shop drawing. Apply silicone sealer to external surface that mounts against wall. Secure to wall with three screws. Refer to the owner's manual for installation guidance.

Checkout

Make sure that the fresh air assembly and flex is installed in accordance with the owner's manual as well as the shop drawing. Inspect to make sure flex is securely fastened with clamps provided.



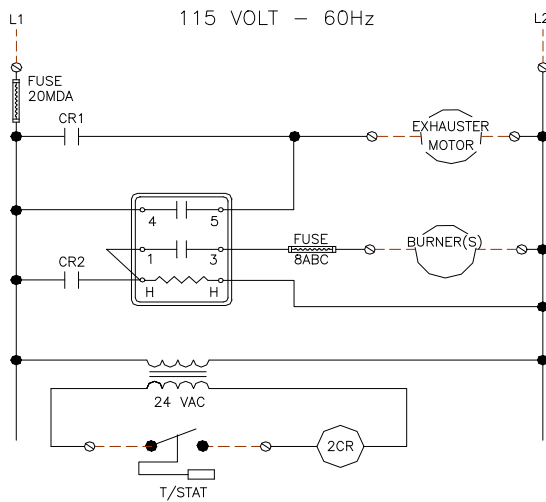


CONTROL PANEL

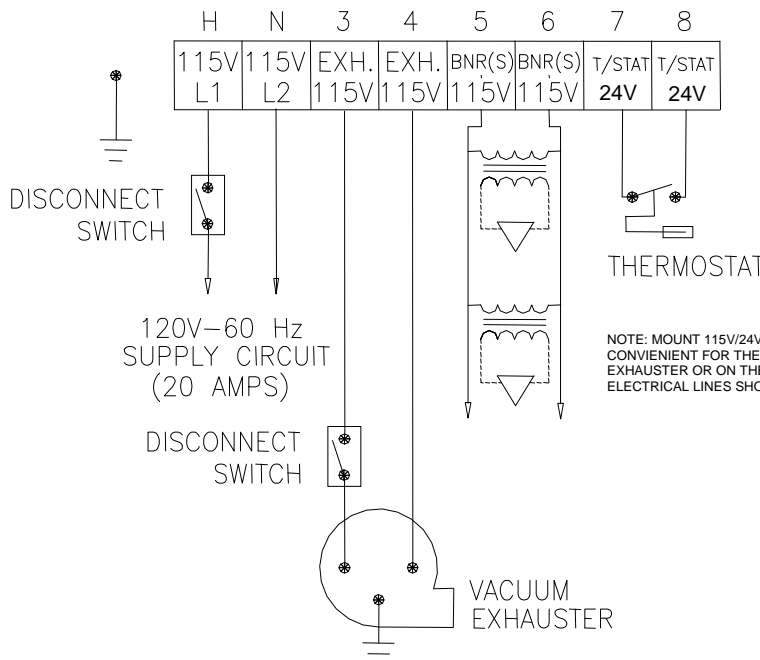
- ◆ JIC Enclosure
- ◆ Corrosion Resistant
- ◆ Approximately 60 seconds pre purge
- ◆ Approximately 80 seconds post purge

SPECIFICATIONS

CRC Part No.:
5500.04 – Control Panel, Pre & Post Purge With
24 Volt Thermostat Control

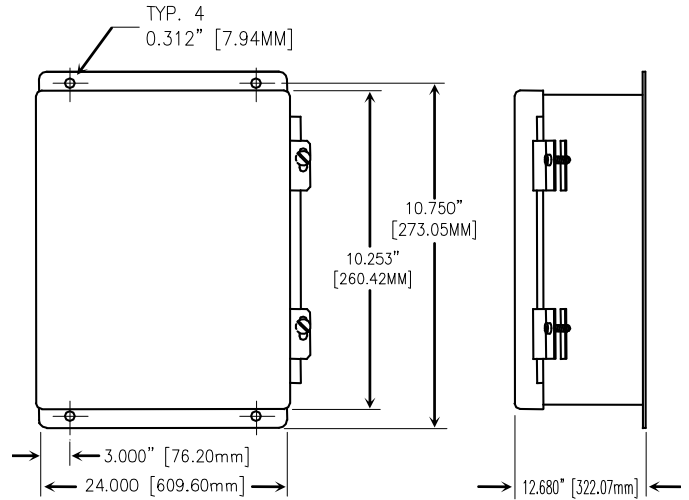


115V L1	115V L2	EXH. 115V	EXH. 115V	BURN 115V	BURN 115V	T/STAT 24V	T/STAT 24V
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NOTE: MOUNT 115V/24V TRANSFORMERS IN A LOCATION CONVENIENT FOR THE APPLICATION, SUCH AS NEAR THE VACUUM EXHAUSTER OR ON THE CONTROL PANEL ITSELF. THE 24V ELECTRICAL LINES SHOULD NOT EXCEED 100' IN LENGTH.

Dimensions:



INSTALLATION & CHECKOUT

Installation

Install the fresh air assembly as shown on shop drawing. Apply silicone sealer to external surface that mounts against wall. Secure to wall with three screws. Refer to the owner's manual for installation guidance.

Checkout

Make sure that the fresh air assembly and flex is installed in accordance with the owner's manual as well as the shop drawing. Inspect to make sure flex is securely fastened with clamps provided.



SIDE WALL VENT TERMINAL

- ◆ Powder Coated Aluminized Steel Construction
- ◆ Stainless Steel Bird Screen
- ◆ Powder Coated
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:

0419.00 – Used with 0401 & 0402 Series
Vacuum Exhausters

Dimensions:

0419.00 – 2.5" (63.5mm) x 5.312" (134.9mm)
(ID Dimensions), 24" (609.6mm) Long

Temperature Rating:

450°F (232°C)

INSTALLATION & CHECKOUT

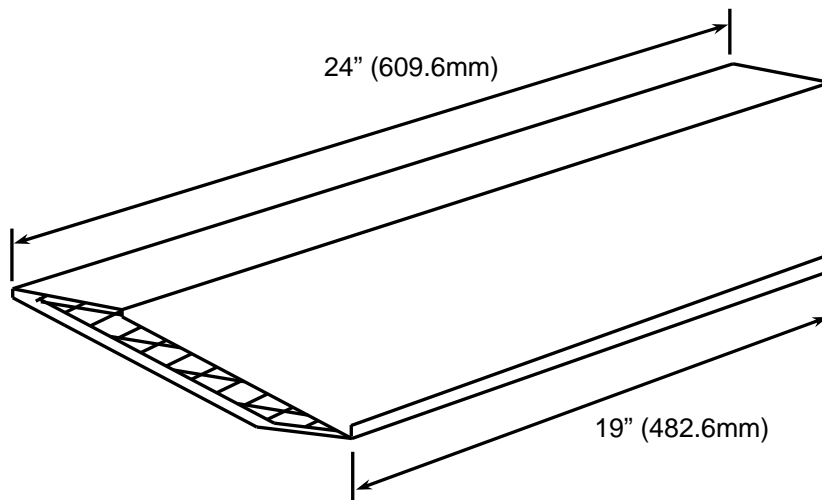
MOUNTING

Position thermostat and guard on inside wall about 5' (1.5m) above floor, mounted on 2" x 4" vertical electrical outlet box. Do not mount thermostat where it can be affected by drafts, direct radiant heat from the heater as well as the sun or other sources of heating or cooling.

Remove cover by pulling out at the bottom. Install thermostat by screwing base to electrical box. **DO NOT** press on the bimetal sensor or set point knob to seat the thermostat to the electrical box - thermostat will be damaged.

CHECKOUT

Make sure that the thermostat guard locks and un-locks properly. Leave keys with building owner





SQUARE TO ROUND ADAPTER

- ◆ Minimum 22 Ga. Galvanized steel.
- ◆ Vent adapter for connecting round exhaust vent to vacuum exhauster
- ◆ Used With Reflect-O-Ray® Radiant Tube Systems.
- ◆ Corrosion Resistant

SPECIFICATIONS

CRC Part No.:

0420.01 – Square to Round Adapter

Wt. 1.0 lb. (0.45 kg)

Dimensions:

Approx. 8.25" (209.5 mm) Long

Inlet – 5.25" (133.3 mm) x 2.875" (73 mm)

Outlet – 6" (152.5 mm) Diameter

Temperature Rating:

Max. 600°F (316°C)

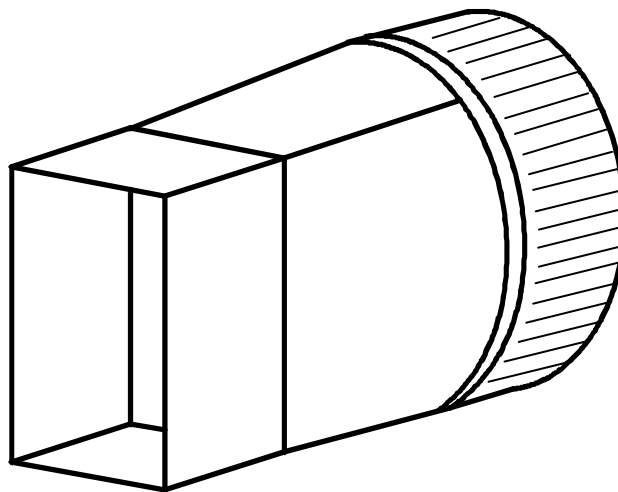
INSTALLATION & CHECKOUT

INSTALLATION

Attach adapter to vacuum exhauster using sheet metal screws. Connect 6" vent material to round outlet of adapter. Refer to the owner's manual for installation guidance.

CHECKOUT

Make sure adapter and vent materials are securely fastened together. All venting should be done in accordance with the owner's manual as well as local and State codes





SIDE WALL & ROOF VENT TERMINAL

- ◆ High Wind Vent Cap
- ◆ 6" Diameter Inlet
- ◆ Aluminum Construction
- ◆ Corrosion resistant

SPECIFICATIONS

CRC Part No.:

1811.VT.600

Dimensions:

6", "B" Vent Connection

Maximum Temperature:

Maximum 600°F (315°C)

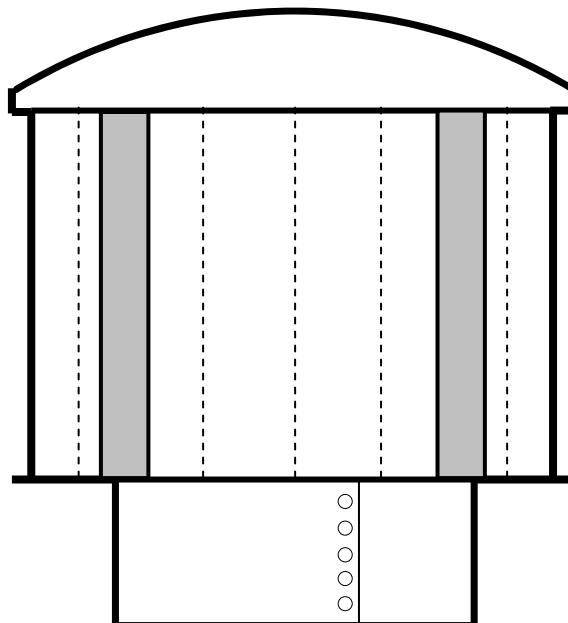
INSTALLATION & CHECKOUT

INSTALLATION

Install the vent cap as shown in the Owners' Manual and shop drawings. Observe any clearance to combustibles and applicable installation codes.

CHECKOUT

Make sure that vent terminal is securely fastened to venting pipe (supplied by installer). Install as outlined in the Owners' Manual and in accordance with applicable codes.





HANGING CHAIN

- ◆ Double Loop Hanging Chain – 100' Long
- ◆ Galvanized steel construction

SPECIFICATIONS

CRC Part No.:

1800.CH.000

Dimensions:

100' (30,481 mm) Hanging Chain – Workload rating of 90 pounds – Galvanized steel construction.

Maximum Temperature:

Maximum 600°F (315°C)

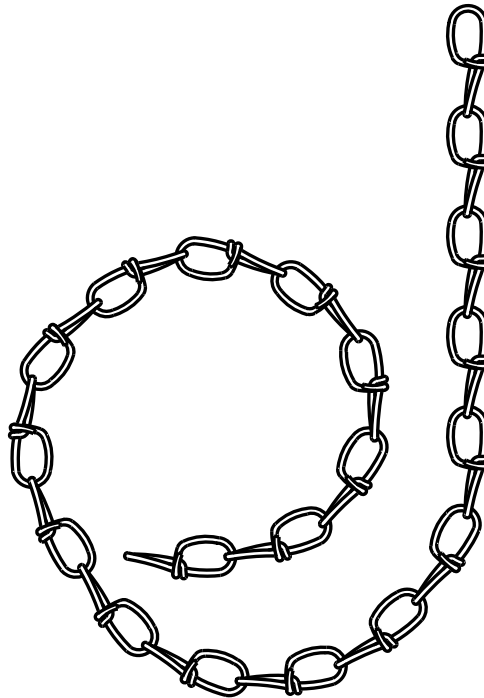
INSTALLATION & CHECKOUT

INSTALLATION

Install chain and “S” hooks as shown in the Owners' Manual and shop drawings.

CHECKOUT

Make sure that all “S” are crimped closed Install as outlined in the Owners' Manual and in accordance with applicable codes.





"S" HOOK

- ◆ Zinc plated or galvanized steel construction

SPECIFICATIONS

CRC Part No.:

1800.SH.000

Dimensions:

50 Pieces of "S" Hook – Workload rating of 90 pounds – Zinc plated or galvanized steel construction.

Maximum Temperature:

Maximum 600°F (315°C)

INSTALLATION & CHECKOUT

INSTALLATION

Install chain and "S" hooks as shown in the Owners' Manual and shop drawings.

CHECKOUT

Make sure that all "S" are crimped closed Install as outlined in the Owners' Manual and in accordance with applicable codes.

S



TURNBUCKLE

- ◆ Zinc plated or galvanized steel construction

SPECIFICATIONS

CRC Part No.:

1800.TB.000

Dimensions:

Turnbuckle – Minimum workload rating of 90 pounds – Zinc plated or galvanized steel construction.

Maximum Temperature:

Maximum 600°F (315°C)

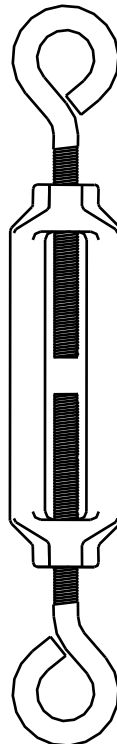
INSTALLATION & CHECKOUT

INSTALLATION

Install turnbuckle as shown in the Owners' Manual and shop drawings.

CHECKOUT

Make sure that all turnbuckles are wired closed – see Owners' Manual for details.





SCREW & SEALER

- ◆ #10 TEC Self drilling and taping metal screws.
- ◆ High temperature sealer

SPECIFICATIONS

CRC Part No.:

0315.AS

Dimensions:

Screws – ½" long #10 TEC screw
Sealer – 5 oz. Tube.

Maximum Temperature:

Screws & Sealer - Maximum 1030°F (555°C)

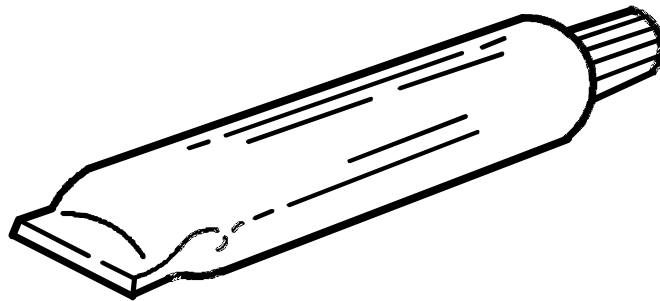
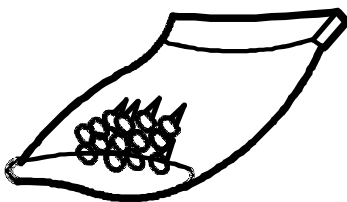
INSTALLATION & CHECKOUT

INSTALLATION

Apply sealer and install screws as shown in the Owners' Manual and shop drawings.

CHECKOUT

Make sure that all excess sealer is wiped away before sealer dries – see Owners' Manual for details.





RELAY / CONTACTOR

- ◆ DPST Relay
- ◆ 120v Coil
- ◆ 120V / 240V, 25 amp min. contact rating

SPECIFICATIONS

CRC Part No.:

5540.00

Dimensions:

Approximately 2" Wide, 3.25" Long & 3" Tall

INSTALLATION & CHECKOUT

INSTALLATION

Install relay in accordance with the electrical requirements.

CHECKOUT

Make sure that relay is installed in accordance with local and national code requirements.

