Reflect-O-Ray®
EDS 4 for CNG Applications
Products by: Combustion Research Corporation

SUBMITTAL DATA

PROJECT:
Specifications for
Reflect-O-Ray® EDS 4 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).
   c) Compliance with NFPA 30A 7.6 6 - Maximum allowed tube temperatures of 750°F (399°C) for Specialty Fuel Vehicle Repair Building

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 three (3) years 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.

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 40,000 BTU/hr (11.71 kW/hr) and 60,000 BTU/hr (17.568 kW/hr) with natural 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 4" (101.6 mm)-diameter combustion air inlet with a fixed combustion air-metering orifice.
   b) Burners shall be fitted a differential air pressure switch so as to prove adequate combustion air is present before burner fires.
   c) Burners shall be fitted with solid state electronic controls with spark ignition & 100% lockout in event of low fire or main flame failure - Hot surface ignition shall not be allowed.
   d) Regulator to be factory set at 3.5” W.C. (6.54 mm/Hg) for natural gas and 10.0” W.C. (18.68 mm/Hg) for propane gas.
   e) Burner(s) flame sensing shall be by flame rectification with a separate probe.
   f) Burner(s) shall have a minimum 15-second pre-purge before ignition.
   g) Burner(s) shall casing to be constructed of 16 Ga. (1.587mm) aluminized steel, powder coated.
   h) Burner(s) shall have inspection window for visual inspection of spark and flame.
   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 electrically interlocked.

2.2 - VACUUM EXHAUSTER

2.2.1 Dynamically balanced forward inclined fan wheel constructed of stainless steel with a cast iron hub.

2.2.3 Direct Drive.

2.2.4 Inlet cone and venturi plate engineered for maximum efficiency.

2.2.5 16-gauge (1.587 mm) stainless steel housing and mounting bracket to be powder coated.

2.2.6 Motor to be one sixth (1/6) HP (115V, 3.0 amp), 3450 RPM, 60 Hz capacitor start internally protected, class B insulation. Sealed ball bearings front and rear.

2.2.7 Vibration isolating rubber mounts.

2.2.8 Stainless steel bird screen on side wall venting.

2.2.9 Four-inch (4.0" / 101.6 mm) Stainless steel, insulated flexible vibration isolation connector.

2.3 - SYSTEM CONTROLS

2.3.1 Thermostat provided by equipment manufacturer, 115V, 16 amp (1,840 watt) rating.

2.3.2 Control Panels shall be enclosed in a NEMA 4 enclosure.

2.4 - RADIANT TUBE HEAT EXCHANGING NETWORK

2.4.1 Combustion tube shall be 10' long 16 gauge (1.587mm) heat treated aluminized steel 4.0" (101.6 mm) OD swaged one end for the inputs of 40,000 Btu/hr (11.71 kW/hr) and 60,000 Btu/hr (17.5684 kW/hr).

2.4.2 Balance of radiant tubing shall be constructed of patented, spiral wound 22 gauge (0.76 mm) heat treated aluminized steel, 4.0" (101.6 mm) OD.

2.4.3 Elbows and tube coupler to be made of min. 18 gauge (1.32 mm) aluminized steel, swaged at both ends so as to fit into 4.0" (101.6 mm) spiral tube.

2.4.4 Reflectors to be made of minimum 0.025" (0.635 mm), bright one side, aluminum.
2.4.5 Tubing and reflector hangers to be made of 0.25" (6.35 mm) Dia. Zinc plated CRS.

2.4.6 All radiant tube joints are to be sealed and mechanically fastened with self drilling and tapping screws.

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"/25.4 mm) 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 **Maximum radiant tube temperature shall be 750° F (399° C).**

2.4.9 The maximum firing rate shall be 2500 Btu/hr (0.732 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 is to be provided without the use of supplementary supply blowers or fans.

2.5.2 Outside combustion air ducting to be minimum of 4" (101.6 mm) OD (S&D PVC or galvanized stovepipe) as required.

2.6 - SYSTEM PERFORMANCE

2.6.1 System shall operate as vacuum system, whereas the entire radiant tube system will be under a negative pressure to preclude any possibility of the products of combustion venting into the heated space.

2.6.2 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 375°F (190.46°C).

2.6.3 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).

2.6.4 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.

2.6.5 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 owner's manual. Adjust and re-test heating system until entire installation is fully operable and acceptable.

END OF SECTION
**BURNER DIMENSIONS**

- 3.5" 88.9mm
- 3.5" 88.9mm
- 22.5" 571.5 mm
- 17.314" 439.8 mm
- 10.188" 258.8 mm
- 10.314" 262 mm

**BURNER INTERNAL WIRING DIAGRAM**

Internal Wiring Diagram for Reflect-O-Ray® EDS 4.0 Systems
Fenwall Triton Ignition Control

Point To Point Diagram

Ladder Diagram

TO TRANSFORMER POWER SUPPLY 24VAC, 40 VA
24VAC, 31VA

- GND.
- GND.
- 24 VAC, 31 VA
- BLK 2 ACC FUSE
- AIR FLOW SWITCH
- NO
- IGNITOR
- GND.
- POWER ON
- AIR FLOW ON
- BURNER ON
- GND.
- V1
- TH
- V2
- GND
- S1
- IGNITOR
- FLAME SENSOR
- FLAME SENSOR
- GND.
**BURNER DATA**

<table>
<thead>
<tr>
<th>BURNER PART NO.</th>
<th>BTU/Hr INPUT</th>
<th>ELECTRICAL RATING</th>
<th>VACUUM READING HOT*</th>
</tr>
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<tbody>
<tr>
<td>Qty. of 3</td>
<td>40,000</td>
<td>24 V, 31 VA</td>
<td>0.6 to 0.7” W.C.</td>
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<td>08040.NG.C</td>
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<tr>
<td>Qty. of 1</td>
<td>60,000</td>
<td>24 V, 31 VA</td>
<td>0.6 to 0.7” W.C.</td>
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<td>08060.NG.C</td>
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<td></td>
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</table>

*NOTE - The system must be operating for a minimum of 15 minutes prior to taking any readings. The vacuum settings are for systems equipped with both inside and outside combustion air. Final gas manifold pressure readings must be taken with the regulator cap securely in place.

**0101.040SS VACUUM EXHAUSTER**

**0101.040SS** - 1/6 HP, 115V, 3.0 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.
**GAS PRESSURE AT MANIFOLD**

<table>
<thead>
<tr>
<th>Natural Gas: 3.5&quot; W.C.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot; NPT Gas Connector Size</td>
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</tbody>
</table>

**GAS INLET PRESSURE**

<table>
<thead>
<tr>
<th>Natural Gas: 5.0&quot; Minimum</th>
<th>14.0&quot; Maximum</th>
</tr>
</thead>
</table>

**BURNER ASSEMBLY ELECTRICAL RATING**

<table>
<thead>
<tr>
<th>24 VAC, 50/60 Hz., 31 VA (STANDARD)</th>
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</thead>
<tbody>
<tr>
<td>(Optional - 115 VAC hook up-available)</td>
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</table>

**ALTITUDE**

<table>
<thead>
<tr>
<th>United States: 0 – 2,000 Ft. (0 - 609 m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada: 0 – 2,000 Ft. (0 - 609 m) Inputs of 180K – 50k</td>
</tr>
<tr>
<td>0 - 4,500 Ft. (0 - 1,370 m) Inputs of 40k to 175K</td>
</tr>
</tbody>
</table>

**HONEYWELL GAS VALVE**

PN 5285.06 (NG) & 5285.06LP (LP)

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**NOTE:** Gas pressures must be measured with a water or red oil manometer - NOT A DIAL GAUGE. All measurements must be made when this heater and all other gas burning equipment connected to the gas supply system are operating at maximum capacity. It should be assured by test that the gas pressure at the burner inlet is not greater than the figures given above.

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Maximum inlet pressure is 1/2 lb. or 14.0" W.C.

The installer must provide a 1/8" N.P.T. (3.2mm) plugged tapping, accessible for test gauge connection, immediately upstream of the gas supply.
HANGER & SUPPORT LOCATIONS - STANDARD INSTALLATION

For Btu/hr Inputs 40,000 to 60,000

Hanger Hanger Hanger Support Hanger Support Hanger

5" 58" 58" 118"

0404.AS.16 – Aluminized Steel Tube 0404.AS – Aluminized Steel Spiral Tube

REFLECTOR ELBOW CONNECTION

Secure To Connecting Reflector With Sheet Metal Screws

REFLECTOR TEE CONNECTION

Field Cut Reflector To Provide Clearance For Radiant Tube

Use Sheet Metal Screws To Secure “Tee” In Place

SUSPENSION METHODS

Beam Clamp Bar Type Clamp

Ackerman Johnson Expansion Anchor or Equivalent

All "S" Hooks MUST Be Manually Closed By Installer

Insert Turnbuckle Here, If Used

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.

NOTES:
- DO NOT HANG VACUUM EXHAUSTER WITH CHAIN.
- SECURE TURNBUCKLES SO THAT THEY WILL NOT UNWIND OR UN-SCREW.
- CRIMP "S" HOOKS CLOSED BEFORE LEAVING JOB.
- LISTED MATERIALS ARE MINIMUM REQUIRED, USE EQUIVALENT OR BETTER MATERIALS
CLEARANCE TO COMBUSTIBLES

WARNING

FIRE HAZARD
Can cause death, severe injury and/or property damage.

In all situations the clearance to combustibles must be maintained. Failure to observe clearances to combustibles will result in death, severe injury, or property damage. In storage areas where stacking of materials may occur, the installer must provide signs, which specify the maximum stacking height so as to maintain the required clearance to combustibles. Minimum clearances must be maintained from vehicles parked below the heater. Ensure that adequate clearance is maintained where vehicles are in operation or being serviced. Consideration must be given when running the radiant tube next to wood, paper, storage racks, hoists, building construction, etc. For building personnel safety, it is recommended that the system not be mounted lower than 9' from the floor unless fitted with protective screens. The following illustrations and information give minimum acceptable clearance to combustibles.

### Horizontal Reflector

<table>
<thead>
<tr>
<th>MODEL</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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<tbody>
<tr>
<td>08040</td>
<td>4</td>
<td>41</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>08060</td>
<td>4</td>
<td>50</td>
<td>24</td>
<td>24</td>
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08040 – 08060 "B,C & D" Clearances can be reduced by 50% 25’ downstream of burner

### Angled Reflector - Max 45°

<table>
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<tr>
<th>MODEL</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>08040</td>
<td>6</td>
<td>41</td>
<td>4</td>
<td>36</td>
</tr>
<tr>
<td>08060</td>
<td>6</td>
<td>45</td>
<td>4</td>
<td>40</td>
</tr>
</tbody>
</table>

08040 – 08060 "B & D" Clearances can be reduced by 50% 25’ downstream of burner
One Side Shield Reflector

MODEL | A | B | C | D
--- | --- | --- | --- | ---
08040 | 4 | 45 | 6 | 34
08060 | 4 | 45 | 6 | 34

08040 – 08060 “B &D” Clearances can be reduced by 50% 25’ downstream of burner

Two Side Shield Reflectors

MODEL | A | B | C | D
--- | --- | --- | --- | ---
08040 | 4 | 47 | 12 | 12
08060 | 4 | 62 | 16 | 16

08040 – 08060 “B” Clearances can be reduced by 50% 25’ downstream of burner

Reflector Mounted Above 2-Foot Wide Decorative Grille

MODEL | A | B | C | D
--- | --- | --- | --- | ---
08040 | 4 | 41 | 12 | 12
08060 | 4 | 50 | 24 | 24

08040 – 08060 “B, C & D” Clearances can be reduced by 50% 25’ downstream of burner
ALUMINIZED STEEL TUBE

♦ Aluminized Steel Construction
♦ Used With Reflect-O-Ray® EDS 4.0 Radiant Tube System
♦ Corrosion Resistant

SPECIFICATIONS

CRC Part No.: 0404.16.HT

Dimensions:
Minimum 16 Ga. aluminized steel, 4" Tubing 9'-9" long (Heat Treated)

Temperature Rating:
1050°F (565°C)

INSTALLATION & CHECKOUT

Installation
Install 16 Ga. Aluminized steel burner combustion tube immediately down stream of burner for inputs up to and including 60,000 Btu/hr. Note one end is swaged to fit inside the next radiant tube. Position weld seam so that it is on the bottom. 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" Long Sections
- Used With Reflect-O-Ray® EDS 4 Radiant Tube System
- Patented, Strong, Low Mass Tube (Min. 22 Ga.)
- Corrosion Resistant

**SPECIFICATIONS**

**CRC Part No.:**
0404.AS.HT – 9’-9” Long

**Dimensions:**
Minimum 22 Ga. aluminized steel, 4.0" Spiral Tubing

**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 (PN 0411.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.
ALUMINUM REFLECTOR

- Bright Finish Aluminum Reflector
- High Reflectivity
- Used With Reflect-O-Ray® EDS 4 Radiant Tube System
- Corrosion Resistant

SPECIFICATIONS

CRC Part No.: 0363.00 – 10'-0" Long

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.
ALUMINIZED STEEL TUBE COUPLER

- Aluminized Steel Construction
- Swaged For Internal Connection to 0404.AS Radiant tubes.
- Used With Reflect-O-Ray® EDS 4 Radiant Tube System
- Aluminized Steel, Min. 18 Ga.
- Corrosion Resistant

SPECIFICATIONS

CRC Part No.:
0411.AS

Dimensions:
- Minimum 18 Ga. aluminized steel, 4” 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 tapping 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.

7.75”
ALUMINIZED STEEL TUBE ELBOW

- Aluminized Steel Construction
- Swaged Ends For Internal Connection To 0404.AS Radiant tubes.
- Used With Reflect-O-Ray® EDS 4 Radiant Tube System
- Aluminized Steel, Min. 18 Ga.
- Corrosion Resistant

SPECIFICATIONS

CRC Part No.:
0406.AS

Dimensions:
Minimum 18 Ga. Aluminized Steel, 4.0° - 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 TEE WITH DAMPERS AT 90°**

- Aluminized Steel Construction
- Swaged Ends For Internal Connection To 0404.AS Radiant tubes.
- Dampers Installed At 90° To Each Other
- Used With Reflect-O-Ray® EDS 4 Radiant Tube System
- Aluminized Steel, Min. 18 Ga.
- Corrosion Resistant

**SPECIFICATIONS**

**CRC Part No.:**
0407.AS.C

**Dimensions:**
Minimum 18 Ga. Aluminized Steel, 4.0” x 4.0” x 4.0” Tee With Dampers, Swaged Ends

**Temperature Rating:**
850°F (454°C)

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**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.
**STAINLESS STEEL EXHAUST FLEX**

♦ Stainless steel inner liner with black fiberglass outer liner.
♦ 4.0” (101.6 mm) ID, 30” (762 mm) Long
♦ High temperature rating
♦ Two stainless steel hose clamps included
♦ Corrosion Resistant

**SPECIFICATIONS**

CRC Part No.:
0434.SS – Stainless Steel Exhaust Flex & Clamps

Dimensions:
6.0” (914.4 mm) ID, 30” (762mm) 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**

- PVC and Aluminum Construction
- Weather Proof
- Inlet Flex & Clamps Included
- Corrosion Resistant

**SPECIFICATIONS**

CRC Part No.:
0314.00 – Fresh Air Inlet, Flex & Clamps

Dimensions:
- 4.0" (1501.9mm) OD on Inlet Hood
- 24" (609.6mm) 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.
**INSTALLATION & CHECKOUT**

**Installation**
Position control panel on inside wall about 5' (1.5m) above floor. Connect thermostat, burner(s) and vacuum exhauster. Wire as shown in the figures.

**SETTING AND CHECKOUT**
Turn on power. Raise the temperature setting to energize the heating load. The Vacuum exhauster and pre purge cycle will begin. Burner(s) will then be powered. When thermostat is satisfied, burner will shut off and vacuum exhauster post purge cycle will commence. Vacuum exhauster will shut down.
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.

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

Electrical Ratings:

<table>
<thead>
<tr>
<th>50-60Hz</th>
<th>120 V</th>
<th>240 V</th>
<th>277 V</th>
<th>480V</th>
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</thead>
<tbody>
<tr>
<td>Full Load Amp</td>
<td>16</td>
<td>12</td>
<td>10</td>
<td>- -</td>
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<tr>
<td>LRA</td>
<td>80</td>
<td>60</td>
<td>50</td>
<td>- -</td>
</tr>
<tr>
<td>Resistive Amp</td>
<td>25</td>
<td>25</td>
<td>22</td>
<td>5</td>
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<tr>
<td>Pilot Duty</td>
<td>125 VA</td>
<td>125 VA</td>
<td>125 VA</td>
<td>125 VA</td>
</tr>
</tbody>
</table>

Note: This thermostat is suitable for 24 VAC operation

Wiring:

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 knock-out 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.
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" (152mm) Inlet 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’ (30,481mm) 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

- Double Loop Hanging Chain – 100’ Long
- Galvanized steel construction

SPECIFICATIONS

CRC Part No.:
1800.SH.000

Dimensions:
100’ Pieces of “S” Hook – 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.