

# CB SERIES – Two Stage Modulating

## ARCHITECTURAL/ENGINEERING SHORT FORM SPECIFICATIONS

- A. Gas-fired infrared space heaters shall be furnished and installed in accordance with governing codes and as shown per building drawing(s) as described below:
- B. Heaters shall be SPACE-RAY CB series tube heaters, model number(s) CB \_\_\_\_\_, rated at \_\_\_\_\_ Btu/hr as manufactured by Gas-Fired Products, Inc., Charlotte, North Carolina.
- C. The heaters shall utilize factory assembled, highly-efficient aluminum reflectors with a reflectivity of 97.5% and designed for U-tube heaters. The tube body and u-bend shall be totally enclosed with a single reflector to maximize emitter temperature and radiant heat exchange between the firing and exhaust legs. In addition, the reflector ends shall be enclosed for maximum radiant heat output and minimum convection losses. The single reflector design shall cover the firing and exhaust legs as well as the entire u-bend. U-tube configuration made of straight tubes with individual reflectors covering the firing and exhaust legs shall not be accepted.
- D. The heater's emitter tube shall operate at an average surface temperature of 750°F and shall be made of 16-gauge calorized aluminized steel for long life (3" O.D). The emitter tube shall be calorized for longevity, corrosion resistance, high humidity, harsh environment installations (outdoor covered patios and restaurants, wash bays, golf driving ranges etc.) and high radiant efficiency. The measured surface emissivity shall be 0.80-.82 at operating temperature. The calorization process shall produce an emitter tube that is highly radiant absorptive on the interior (0.95) and highly radiant emissive (0.83-0.86) on the exterior
- E. To assure a high degree of safety and increased radiant efficiency, the heaters shall operate under negative pressure (pull through system) at all times during operation to preclude the escape of combustion gases inside the building. The heater exhaust assembly shall include a 120-volt draft inducer. The draft inducer shall be equipped with a permanently lubricated, totally enclosed and shielded, fan cooled, and heavy-duty ball bearing motor. The motor shall not require maintenance or lubrication for the life of the unit. The draft inducer assembly shall be capable of rotating 90° for vertical or horizontal venting. The positive pressure (or push through system) tube heaters shall not be accepted.
- F. The heaters shall be equipped with a step opening and modulating two stage gas controls for negative pressure operation. The heaters shall be controlled by a digital thermostat with adjustable set points contained in a locked metal box. The 24V thermostat connection shall be external to the control box with quick slip on terminal connection for high/lo operation. Modulating two stage control systems operating under positive pressure will not be accepted..
- G. Heaters shall be equipped with a 24-volt direct spark ignition with automatic 100% shutoff system. Power supplied to each heater shall be 120 VAC, 60 Hz. The heater controls shall include a pressure switch designed to provide complete unit shutoff in the event of combustion air or flue blockage. The heaters shall be equipped with an on-line diagnosis monitoring light system. The four lights shall monitor the power to the heater, insufficient airflow, and the spark ignition/ the combination gas valve operation for the single stage as well as the second stage.
- H. The heaters shall be factory assembled and tested. The only field assembly required is connecting the control/exhauster assembly to the factory assembled body section. This will minimize field assembly to 15 minutes per heater, which will minimize installation cost. The heaters shall not require any field wiring or adjustments to assure maximum performance and safety.
- I. The heater's burner shall consist of a heavy-duty cast iron atmospheric burner. The flame characteristics shall be highly luminous for maximum radiant heat transfer through the emitter tube wall.
- J. The heaters will be CSA design certified for vertical or horizontal venting, maximum 75 feet horizontal sidewall venting, and for 50 feet outside combustion inlet duct. There shall be no draft hoods. The combustion chamber shall be totally enclosed.
- K. Heaters shall operate satisfactorily in any position from horizontal to forty-five degrees (45°) from horizontal, and shall be suitable for vented/indirect vented applications. Heaters shall be designed to operate on natural or propane gas.
- L. Heaters shall be design certified by the Canadian Standards Association (CSA) to American National Standard Z83.20/CSA2.34. The manufacturer shall provide a written limited warranty covering the heavy one-piece cast iron burner for a period of ten (10) years, the emitter tube for a period of five (5) years, and all components utilized in the heater's control assembly for a period of one (1) year.