

## **Specifications for the STERLING Rooftop Makeup Air Units**

### **1.0 Makeup Air Units**

Packaged air handling units suitable for heating, cooling, ventilating applications; 100% outside air or controlled return air.

#### **1.1 General**

All makeup air units must use AGA certified duct furnaces that conform to the latest ANSI standards for safe performance. The entire unit must be ETL certified for electrical safety in compliance with UL-1995 safety standard for heating and cooling equipment. Units shall also comply with Factory Mutual (FM) requirements.

#### **1.2 Construction**

Cabinetry shall be die-formed, 18 gauge galvanized steel finished in air-dry enamel. Service and access panels shall be provided through easily removable side access panels with captive fasteners. Blower door shall be hinged with quarter turn latches and shall have a mechanical fastener to prevent door from blowing closed during service. Blower section and supply plenum shall be insulated with fire resistant, one inch fiber material. Unit shall also be mounted on metal rails with lifting and anchor holes and be suitable for slab or curb mounting.

The furnace heat exchanger shall be constructed of 20 gauge 409 stainless steel tubes, mechanically bonded and 18 gauge headers. Burners shall be die formed corrosion resistant aluminized steel with stamped porting and stainless steel port protectors to prevent scale or foreign matter from obstruction the burner ports. Burners must be individually removable for ease of cleaning and servicing. The pilot must be accessible through a pilot access plate without removing the burner assembly.

#### **1.3 Blower and motor**

Supply blower shall be belt driven, forward curved, centrifugal type, statically and dynamically balanced with double inlet. The blower wheel shall be fixed on a keyed shaft, supported in in-shear vibration isolators. Blower motor shall be single speed or two speed two winding as shown on the schedule. Motor wiring shall be enclosed in flexible metallic sheathed BX conduit. Motor shall have IEC overload protection.

#### **1.4 Gas Controls and Ignition System**

Makeup air unit furnace shall have a solid state ignition control system that ignites the pilot by spark or hot surface during each cycle of operation. Pilot and burners must be extinguished during the off cycle. Gas valve shall be NEC Class 2 for a maximum inlet pressure of 0.5 psi. The gas valve train shall be 24 VAC and include a main operating valve, pilot safety valve, pressure regulator, manual main and pilot shutoff valve and adjustable pilot valve. Main gas valve shall be single stage (standard), two stages or modulating as shown on the schedule.

#### **1.5 Evaporative Cooling Section**

Evaporative cooling section shall use 8" or 12" UL listed GlasDek media. Non UL medias are not acceptable. The evaporative cooler shall be of a self-cleaning design with a stainless steel water tank, regulated water flow and overflow protection. The cooler shall have a cabinet assembly of heavy-gauge

aluminized steel with weatherproof finish, a UL recognized thermally protected sealed recirculating pump motor, two inch distribution pad, and corrosion resistant copper water distribution tubes. An automatic fill and drain assembly shall be provided. A SPDT switch shall actuate the fill and drain assembly.

#### 1.6 Electrical Systems

All electrical components and fixtures shall carry UL or ETL listing, certification and/or recognition. All wire shall be rated to meet or exceed electrical requirements for voltage, ampacity, dielectric strength of sheathing and temperature rating per location. The wire contained within the duct furnace shall have a temperature rating of at least 200° C. Wire shall have a temperature rating of at least 105° C outside of the duct furnace compartment. Standard control relays shall be socket mounted with terminal block connections. All high voltage wiring shall be enclosed in flexible metallic sheathed BX and include an identifying marker corresponding to the wiring diagram. All control wiring shall terminate at terminal strips (single point connection) and include an identifying marker corresponding to the wiring diagram.

#### 1.7 Standard Safety and Control Provisions

Rooftop unit shall be provided with a low voltage circuit breaker rated for 150% of the unit's normal 24 volt operating load. An access interlock switch shall be installed in the blower compartment and disengage the blower upon removing the service panel. An override or service switch shall be incorporated into the interlock switch for serviceability. Each duct furnace shall be provided with an internal 24V high temperature limit switch and an external 24V primary high temperature limit switch. The unit shall contain a Reverse AirFlow Interlock Switch that shall cause gas valves to close when activated. A Drafter Prove Switch shall be installed in all power vented units and disengage gas flow if, for any reason, the drafter has failed to operate. Warning labels shall be visible in accessible areas of the rooftop unit where unsafe conditions could occur.

A Remote Control Panel shall be provided with the unit. The remote panel shall be interior mount and provide System, Heating, Cooling, Fan and Auxiliary control with long-life LED type indicator lamps. Remote panel shall also have plug-in type terminal block connection for easy installation.

*Specifications are available on disk or via E-mail. Please call your nearest Toro-Aire office for a copy.*

## **Specifications for the STERLING Gas Unit Heaters**

### 2.0 Gas Unit Heaters

Packaged gas-fired unit heaters with propeller supply fan and power exhaust.

### 2.1 General

All unit heaters must use AGA certified duct furnaces that conform to the latest ANSI standards for safe performance. The entire unit must be ETL certified for electrical safety in compliance with UL-1995 safety standard for heating and cooling equipment. Units shall also comply with Factory Mutual (FM) requirements.

### 2.2 Construction

Cabinetry and trim pieces shall be on all four sides, fabricated of 20-gauge metal and finished with baked gray enamel. Heat exchanger shall consist of 2" seamless aluminized steel tubes not lighter than 20-gauge. Burners are to be of the "inshot" design and capable of firing 25,000 BTU each. Propeller supply fan shall have rubber grommets between the motor and fan guard to prevent any motor vibration from effecting the unit. Air deflection louvers shall be painted and individually adjustable and removable. Units shall be suspended from 3/16" steel brackets bolted directly to the heat exchanger. Units hung from the cabinetry are not acceptable.

### 2.3 Gas Controls, Ignition System and Wiring

A 24 volt hot surface pilot ignition system shall be utilized which includes a ceramic composite hot surface element, flame rectification circuit and pilot head. The ignition control module must be integral to the single stage redundant gas valve. All controls must be easily accessible without removing cabinetry. All line voltage shall be completely enclosed in flexible conduit. Heaters shall be equipped with a 120/24 volt transformer. Factory wiring shall permit the use of the propeller fan for continuous air circulation when combined with manufacturer's 24 volt summer/winter single stage thermostat. The control transformer, fan time delay switch, power venter relay and pressure switch shall be factory mounted in a main control panel located on the side of the unit. This panel shall be hinged for easy access and all wiring information will be indicated on the inside control panel door. Unit heaters that require cabinetry to be removed for access to wiring are not acceptable.

### 2.4 Power Flue Gas Exhaust

Unit heater shall have a power venter assembly with a heavy duty 1/20 HP totally enclosed fan cooled ball bearing motor, permanently high temperature lubricated. Power venters that require periodic oiling are not acceptable. In addition, power venter must be field adjustable up to 180° rotation for ease of installation of flue pipe.

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