TYPICAL SPECIFICATIONS
Model: R76

Description: A Direct-fired gas heating and ventilating unit(s), as indicated on the drawings shall be furnished. Orientation shall be horizontal (Down) (Side) discharge. Unit(s) shall be factory assembled, tested and shipped as a complete packaged assembly, for indoor or outdoor mounting, consisting of the following:

1. gas burner;
2. centrifugal blower (forward-curved double width/double inlet);
3. motor starter with thermal overload protection;
4. motor and drive assembly;
5. fuel burning and safety equipment;
6. temperature control system, and
7. gas piping.

Approvals: Unit(s) shall be tested in accordance with ANSI Standard ANSI Z83.4a-2001/CSA 3.7a-2001, and shall bear the ETL label.

Construction:

Housing

Unit housing shall be constructed of 20 Gauge G-90 galvanized steel. The wall panels and roof panels shall be fabricated by forming double-standing, self-locking seams that require no additional support. The floor and wall panels shall be caulked air tight with a silicone caulk. All casing panels shall be attached with sheet-metal, screws or rivets which can be removed to field service large components. The unit base shall be suitable for curb or flat mount. Housing construction should be suitable for outdoor or indoor installation.

An observation port shall be located on the exterior of the unit for observation of the main flame and pilot flame. All controls, gas valves, modulating controls and electrical components shall be mounted within the, burner vestibule. The burner vestibule shall be an integral part of the unit and not extend outside the exterior casing of the unit and not exposed to the main air stream.

The vestibule full-size door shall provide easy access to controls and gas-train components. Blower door shall provide easy access to blower, motor and drives. Access doors shall be provided on both front an back side of unit providing full access to every part of the unit.

Base

The base shall be constructed of galvanized steel for improved rigidity. Base shall be structurally reinforced to accommodate the blower assembly and burner.

Blower

Blower(s) shall be forward-curved, centrifugal, Class I or II, (depending on requirements of the application) double width, double inlet, constructed G-90 galvanized steel. Unit shall have a heavy-duty, solid-steel shaft. Wheels shall be balanced in two planes and done in accordance with AMCA standard 204-96, *Balance Quality and Vibration Levels for Fans*. The wheel blades shall be aerodynamically designed to minimize turbulence, increase efficiency and reduce noise. The wheel blades shall be securely attached to the wheel inlet ring. The wheel shall be firmly attached to the fan shaft with set screws and keys. The blower assembly shall be isolated from the fan structure with vibration isolators.

Blower capacity shall be _____ CFM at 70 degrees F standard air, ____ external static press.

External Static: The sum of duct loss plus duct component static- Example: louvers, diffusers. All blowers shall be tested and set at rated speed after being installed in the factory-assembled unit.

Motor & Motor Compartment

Motors shall be heavy duty ball bearing type and furnished at the specified voltage, phase and enclosure. Motor mounting plate shall be constructed of heavy gauge galvanized steel and shall be designed to provide easy adjustment of belt tension. Blower motor shall be suitable for operation on _____ volts, _____ cycle, _____ phase power. Blower motor shall be a _____ HP motor, Open Drip Proof.

Shaft & Bearings

Shafts shall be precision ground and polished. Heavy duty, pre-lubricated bearings shall be selected for a minimum (L50) life in excess of 200,000 hours of operation at maximum cataloged operating speed. They shall be designed for, and individually tested specifically for use in air handling applications.

Belts & Drives

Belts shall be oil and heat resistant, non-static, grip-notch type. Drives shall be cast type, precision machined and keyed and secured attached to the fan and motor shafts. Fan operating speed shall be factory set using adjustable pitch motor pulleys. Blower drives shall be fully adjustable. All drives shall be a minimum of 2 groove above 2 HP.

Burner

The gas burner shall be a direct-fired, draw-through type, sized to provide an output of _____ BTU/hr using (natural) (propane) gas at an inlet-supply pressure to the unit of _____ inches water column (7" w.c. minimum).

The burner shall be capable of heating the entire air supply from _____F° to _____F° (_____ degrees F temperature rise). The burner shall burn over its entire length at all times when the system is in operation.

The burner shall have non-clogging, 4302B stainless-steel combustion baffles attached to a ductile aluminum gas-supply section with no

moving parts to wear out or fail. The burner shall be capable of 92% combustion efficiency with a maximum turndown ratio of 15 to 1.

The gas burner shall be, furnished with a pilot package arranged so that the pilot flame lights the burner with instantaneous ignition. Pilot assembly includes a flame rod, spark rod and pilot—automatically ignited by a 6,000 volt ignition transformer. A flame-rod rectification system shall be used to **prove** pilot and main flame.

Rear access doors or a removable lid will provide complete access to burner and pilot assembly.

Burner profile plates shall be self-adjusting to operate across the complete CFM range of each model heater. Every unit shall be design for Variable Air Volume capabilities.

GAS EQUIPMENT

Standard

All gas equipment shall conform to local-Code requirements

Components:

1. pilot-gas shut-off valve	5. main-gas regulator
2. pilot-gas regulator	6. two solenoid valves
3. pilot-gas valve	7. modulating-gas valve
4. main-gas shut-off valve	8. burner

All gas manifold components shall be piped and wired at the factory.

Optional

high-gas pressure regulator

SAFETY CONTROLS

Standard

1. motor starter with adjustable overloads	5. main-gas regulator
2. air-flow safety switch	6. two solenoid valves
3. electronic flame-safety relay	7. modulating-gas valve
4. high-temperature limit switch	8. burner
9. Adjustable burner ON/OFF inlet air ductstat to shut off burner when inlet air is sufficiently warm to maintain space temperature.	
10. Non-Fused Disconnect.	
11. Casing insulation shall be 1" x 1.5# density with a foil face.	

Optional

1. Adjustable low temperature blower-safety control with bypass timer to shut down unit, if discharge temperature drops below setting.
2. Proof-of-closure switch to energize the main-burner circuit only if the motorized gas valve is in a closed position.

ACCESSORIES

1. **Inlet Dampers**: Manufacturer shall provide and install on unit, when possible, a two-position, motor-operated damper with internal end switch to energize the blower-starter circuit, when damper is 80% open. Blades shall be a maximum of 6" wide 16 Gauge G-90 galvanized steel shall be made to guarantee the absence of noticeable vibration at design air velocities. Damper blades to be mounted on friction-free synthetic bearings. Damper edges shall have PVC coated polyester fabric mechanically locked into blade edge. Jamb seals to be flexible metal, compression type.

2. **Filters**: The filters shall be (2") thick, aluminum mesh, coated with super-filter adhesive. Aluminum-mesh filters shall have aluminum frames with media to be layers of slit and expanded aluminum, varying in pattern to obtain maximum depth loading. Washable 2" filters shall be enclosed in two-piece, die-cut frame with diagonal supports. Frame shall be constructed of heavy-duty beverage board. Filter media is supported on the air leaving side by a metal grid.

   Filter Section: shall be (insulated) (uninsulated) constructed of G-90 galvanized steel with filter supported by internal slides and with removable access panels. Filters shall be provided in a filtered intake.

3. **Fresh-Air Inlet Hood:** Shall be constructed of G-90 galvanized steel with birdscreen.

4. **Curb:** 20" curb shall be constructed of 18 ga G-90 galvanized steel as a completed welded assembly.

TEMPERATURE CONTROL SYSTEMS

Maxitrol Series 14: For building exhaust-air replacement to maintain a constant discharge temperature of supply air. The burner flame modulates to compensate for outdoor temperatures. The optional manual SUMMER-OFF/WINTER selector switch and exhaust system interlock control the heater-blower operation. Supplied with optional remote-control panel with temperature selector dial and SUMMER-OFF/WINTER selector.

Maxitrol Series 14 with room overide: For building-exhaust air replacement and auxiliary-space heating to maintain a constant supply-air discharge temperature. A room override thermostat raises discharge set-point for more heat to maintain room temperature. Discharge temperature probe and room-override thermostat modulate burner flame. Optional SUMMER-OFF/WINTER selector switch and exhaust-system interlock control heater-blower operation. Supplied with optional remote-control panel with temperature-selection dial, SUMMER-OFF/WINTER selector switch and room-override thermostat.

Maxitrol Series 44: For building exhaust-air replacement with modulated space-temperature control. A modulating space thermostat adjusts burner flame to maintain discharge-air temperature to compensate for changing building heat losses or gains. High- and low-discharge air sensor probes limit maximum and minimum discharge-air temperatures. The optional SUMMER-OFF/WINTER selector switch and exhaust-system interlocks control heater-blower operation. Supplied with optional remote-control panel with SUMMER-OFF/WINTER selector switch and a modulating-room thermostat.

OTHER OPTIONS

Operating lights mounted in a remote-control panel to indicate: power, flame failure, burner ON and blower ON.

WIRING AND ELECTRICAL

A single point electrical connection shall be supplied. The control circuit voltage shall be 115 volts. A control transformer shall be provided, when required. The control wiring shall be carried in wire channel or conduit. Wiring in control enclosures shall be in accordance with the National Electrical Code and the local code, as it may affect the installation. Motor starter shall be provided. Starter shall be line voltage, definite purpose type.

Unit(s) shall be complete with all items such as relays, starters, switches, safety controls, conduit and wire as previously mentioned, and as required for proper operation. All factory-mounted controls shall be factory prewired to the unit control panel.

FACTORY TESTED

Unit(s) shall be operated, tested and set at the factory using job-site conditions for electrical and gas input. All operating and safety controls shall be tested and set at the factory. Adjustable, or fixed sheaves shall be set for proper RPM at specified conditions. Gas-pressure regulator shall be set for specified burning rate at specified inlet pressure.

SERVICE AND PARTS

The supplier shall furnish gas piping schematics, **as built** wiring connection and control-circuit diagrams, dimension sheets and a full description of the unit(s). Service manuals, showing service and maintenance requirements, shall be provided with each unit.