

TECHNICAL SPECIFICATIONS FOR MODEL EEDU

INDOOR COMMERCIAL/INDUSTRIAL ENERGY-EFFICIENT POWER-VENTED GAS-FIRED DUCT FURNACE

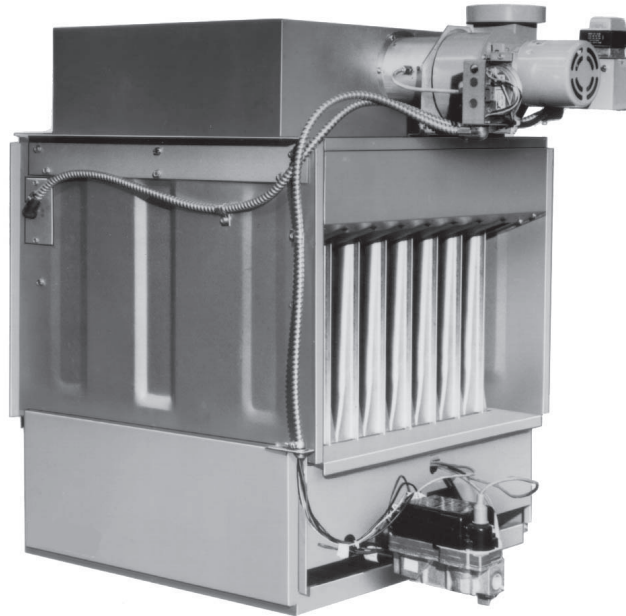


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In keeping with our policy of continuous product improvement, we reserve the right to alter, at any time, the design, construction, dimensions, weights, etc., of equipment information shown here.

TECHNICAL SPECIFICATIONS—CONTINUED

Unit Sizes

These duct furnaces are available in eleven unit sizes based on input heating capacity of 75,000–400,000 BTUh.

Features

- Voltage/phase/Hz options: 115/1/60, 208/1/60, and 230/1/60
- Natural gas or propane
- 80% thermal efficient; energy-efficient (up to 25% annual fuel use improvement compared to gravity-vented duct furnaces)
- Intermittent spark pilot
- Corrosion-resistant Galvalume® cabinet
- Power venter limits burner flue losses and reduces required vent pipe size
- Sealed vent product collection chamber reduces loss of dilution air from room in both ON and OFF cycles
- Aluminized-steel burner with SST insert
- Thermocore® aluminized-steel heat exchanger with venturi tubes (SST heat exchanger recommended for air inlet temperature or temperature rise <40°F)
- When furnace is installed downstream of A/C coil, SST burner and heat exchanger and condensate drain are recommended
- Limit control and combustion air proving pressure switch
- 24V control transformer (designed for field-connection to 24V thermostat for automatic operation)

Factory-Installed Options

| Option | Description |
|--------|---|
| AA1 | Natural gas |
| AA2 | Propane |
| AB1 | Installation elevation of 0–2000 feet |
| AB2 | Installation elevation of 2001–3000 feet |
| AB3 | Installation elevation of 3001–4000 feet |
| AB4 | Installation elevation of 4001–5000 feet |
| AB5 | Installation elevation of 5001–6000 feet |
| AB6 | Installation elevation of 6001–7000 feet |
| AC1 | Aluminized-steel heat exchanger |
| AC2 | 409 SST heat exchanger |
| AD1 | Aluminized-steel burner |
| AD2 | 409 SST burner |
| AE1 | No burner air shutters |
| AE2 | Burner air shutters (required on propane units) |
| AF1 | Aluminized-steel drip pan/bottom panel |
| AF2 | 409 SST drip pan/bottom panel |
| AGA | US installation |
| AG1 | Single-stage combination gas valve |
| AG2 | Two-stage combination gas valve (not available on size 75 propane units) |
| AG3 | Two-stage combination gas valve with unit-mounted ductstat (not available on size 75 propane units) |
| AG8 | Electronic modulation with 2:1 turndown ratio (requires option CQ1 fan control) |
| AG15 | Two-stage combination gas valve with electronic ductstat and remote temperature selector (not available on size 75 propane units) |
| AG21 | Electronic modulation with 2:1 turndown ratio and with Maxitrol signal conditioner and gas regulator |
| AH2 | Intermittent spark pilot (not available on propane units) |
| AH3 | Intermittent spark pilot with timed lockout (for natural gas and propane units) |
| AK1 | Voltage/phase/Hz 115/1/60 |
| AK2 | Voltage/phase/Hz 208/1/60 |
| AK3 | Voltage/phase/Hz 230/1/60 |
| AZ9 | Heat exchanger side panels |
| CGA | Canadian installation |

Field-Installed Options

| Option | Description |
|--------|---|
| AG7 | Electronic modulation with room thermostat |
| AG9 | Electronic modulation with 2:1 turndown ratio and remote temperature selector |
| CC1 | Vent cap |
| CE1 | Manual gas shutoff valve, natural gas |
| CE2 | Manual gas shutoff valve, propane |
| CL1 | Single-stage thermostat |
| CL9 | Electronic modulating room override |
| CL22 | Two-stage thermostat |
| CL33 | Two-stage digital thermostat |
| CL52 | Single-stage digital thermostat |
| CM1 | Locking cover for CL1 thermostat |
| CM1B | Locking cover for CL22 and CL33 thermostats |
| CK3 | Hanger kit for suspension from 1-inch threaded pipe |
| CR1 | Coupling kit for two furnaces |
| CR2 | Coupling kit for three furnaces |
| CR3 | Coupling kit for four furnaces |
| CR4 | Coupling kit for five furnaces |
| CQ1 | Adjustable fan control |
| CS1 | Condensate drain flange kit |
| — | Base-mounting kit (PN 1034022) |

Technical Data

| Parameter | Unit of Measure | Unit Size (MBTUh) | | | | | | | | | | |
|------------------------------------|------------------------|-------------------|-----------|-----------|-----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | | 75 | 100 | 125 | 140 | 170 | 200 | 225 | 250 | 300 | 350 | 400 |
| Input heating capacity | BTUh | 75,000 | 100,000 | 125,000 | 140,000 | 170,000 | 200,000 | 225,000 | 250,000 | 300,000 | 350,000 | 400,000 |
| | kW | 22.0 | 29.3 | 36.6 | 41.0 | 49.8 | 58.6 | 65.9 | 73.3 | 87.9 | 102.6 | 117.2 |
| Output heating capacity (80%) | BTUh | 60,000 | 80,000 | 100,000 | 112,000 | 136,000 | 160,000 | 180,000 | 200,000 | 240,000 | 280,000 | 320,000 |
| | kW | 17.6 | 23.4 | 29.3 | 32.8 | 39.9 | 46.9 | 52.8 | 58.6 | 70.3 | 82.1 | 93.8 |
| Air volume with finger-baffles | CFM | 615–1105 | 820–1480 | 1025–1850 | 1150–2065 | 1390–2505 | 1635–2945 | 1840–3315 | 2045–3685 | 2455–4420 | 2865–5160 | 3275–5895 |
| | meter ³ /hr | 1045–1877 | 1393–2514 | 1741–3143 | 1954–3508 | 2362–4256 | 2778–5003 | 3126–5632 | 3474–6261 | 4171–7509 | 4867–8767 | 5564–10,015 |
| Air volume without finger-baffles* | CFM | 850–2765 | 1135–3685 | 1420–4605 | 1585–5160 | 1790–6265 | 2105–7370 | 2370–8295 | 2630–9215 | 3160–11,060 | 3685–12,900 | 4210–14,745 |
| | meter ³ /hr | 1444–4698 | 1928–6261 | 2413–7824 | 2693–8767 | 3041–10,644 | 3576–12,521 | 4027–14,093 | 4468–15,656 | 5369–18,790 | 6261–21,916 | 7153–25,051 |

*High CFM conversion requires removal of the finger baffles. This conversion shall be done by a qualified service agency in accordance with the manufacturer's instructions and all applicable codes and requirements of the authority having jurisdiction.

| Parameter | Unit of Measure | Unit Size (MBTUh) | | | |
|---|-----------------|-----------------------------|----------|-----|----------|
| | | 75, 100, 125, 140, 170, 200 | 225, 250 | 300 | 350, 400 |
| Gas connection | inch | 1/2 | | 3/4 | |
| Venter outlet diameter | | 4 | 5 | 6 | |
| Temperature rise with finger-baffles | °F | 50–90 | | | |
| Temperature rise without finger-baffles | | 20–70 | | | |
| Full load amps (115V) | amp | 2.0 | | | |
| Unit control amps (24V) | | 0.7 | | | |

TECHNICAL SPECIFICATIONS—CONTINUED

Certification

The unit is design-certified by the Canadian Standards Association for commercial/industrial use in both the United States and Canada. The unit is approved for use with either natural gas or propane. The type of gas for which the furnace is equipped, the correct firing rate, and electrical characteristics are shown on the unit rating plate.

Installation Codes

- These units must be installed in accordance with local building codes. In the absence of local codes, in the United States, the unit must be installed in accordance with the *National Fuel Gas Code* (ANSI Z223.1, latest edition). A Canadian installation must be in accordance with the *Natural Gas and Propane Installation Code* (CSA B149, latest edition). This code is available from CSA Information Services, 1-800-463-6727. Local authorities having jurisdiction should be consulted before installation is made to verify local codes and installation procedure requirements.
- Clearances from the heater and vent to construction or material in storage must conform with the *National Fuel Gas Code* (ANSI Z223.1, latest edition) pertaining to gas-burning devices and such material must not attain a temperature over 160°F by continued operation of the heater.
- Installations in aircraft hangars should be in accordance with the *Standard for Aircraft Hangars* (ANSI/NFPA No. 409, latest edition). Installations in public garages should be in accordance with the *Standard for Parking Structures* (ANSI/NFPA No. 88A, latest edition). Installations in repair garages should be in accordance with the *Standard for Repair Garages* (ANSI/NFPA No. 88B, latest edition). In Canada, installations in aircraft hangars should be in accordance with the requirements of the enforcing authorities, and in public garages, in accordance with the CSA B149 code.
- If the heater is being installed in the Commonwealth of Massachusetts, installation must be performed by a licensed plumber or licensed gas fitter.

Unit Location

⚠ CAUTION ⚠

Do not locate the unit where it may be exposed to liquid spray, rain, or dripping water.

- A duct furnace is designed for connection to an inlet and an outlet duct and depends on an external air handler. Location must be in accordance with **Clearances** section.
- There are a variety of factors such as system application, building structure, dimensions, and weight that contribute to selecting the location. Read the installation information in the installation, operation, and maintenance manual provided with the unit and select a location that complies with the requirements.
- The furnace may be suspended or base-mounted. When the furnace is base-mounted on combustible material, a minimum clearance of 12 inches (305 mm) is required. The base or legs used for base-mounting must be made of non-combustible material.
- Service and combustion air clearances (refer to **Clearances** section) apply to both suspended and mounted furnaces.

Combustion Air Requirements

⚠ WARNING ⚠

The unit is designed to take combustion air from the space in which it is installed and is not designed for connection to an outside combustion air intake duct. Connecting this furnace to an outside combustion air intake duct voids the warranty and could cause hazardous operation.

- Requirements for combustion air and ventilation air depend upon whether the unit is located in a confined or unconfined space. A **confined** space is defined as a space whose volume is <50 cubic feet per 1,000 BTUh of the installed appliance input rating. An **unconfined** space is defined as a space whose volume is ≥50 cubic feet per 1,000 BTUh of the installed appliance input rating.
- Sufficient air must enter the equipment location to replace the air exhausted through the vent system. Refer to the installation, operation, and maintenance manual provided with the unit for further information on confined spaces and combustion air requirements.

Halogenated Hydrocarbons

Halogenated hydrocarbons are a family of chemical compounds characterized by the presence of halogen elements (fluorine, chlorine, bromine, etc.). These compounds are used in refrigerants, cleaning agents, and solvents and are heavier than air, a fact that should be kept in mind when determining the installation location of heaters and building exhaust systems.

⚠ CAUTION ⚠

CORROSION HAZARD: Halogenated hydrocarbons, when exposed to flame, precipitate with any condensation present in the heater to form hydrochloric acid, which readily attacks all metals, including 300 grade stainless steel. Care should be taken to separate these vapors from the combustion process. An outside air supply **MUST BE** provided to the burner whenever the presence of these compounds is suspected.

Venting Requirements

- Safe operation of any gas-fired equipment requires a properly operating vent system, correct provision for combustion air, and regular maintenance and inspection.
- Venting must be in accordance with the *National Fuel Gas Code* (ANSI/Z223.1, latest edition) or the *Natural Gas and Propane Installation Code* (CSA B149.1, latest edition) and all local codes. Local requirements supersede national requirements.
- These power-vented units are designed to operate safely and efficiently with either a horizontal or vertical vent. For maximum fuel savings, a horizontal vent run is recommended.
- Refer to the installation manual for further information on venting requirements.

| Vent Pipe Diameter (Inches) | Unit Size (MBTUh) | Feet (Meters) | | |
|---|----------------------|----------------------|--------------------------------------|-----------------|
| | | Maximum Vent Length* | Reduced Length for Each Elbow Used** | |
| | | | 90-Degree Elbow | 45-Degree Elbow |
| Standard Vent Pipe Diameters | | | | |
| 4 | 75 | 40 (12.2) | 6 (1.8) | 3 (0.9) |
| | 100–200 | 50 (15.2) | 7 (2.1) | 3.5 (1.1) |
| 5 | 225, 250 | 50 (15.2) | 9 (2.7) | 4.5 (1.4) |
| 6 | 300–400 | 50 (15.2) | 11 (3.4) | 5.5 (1.7) |
| Optional (Increased) Vent Pipe Diameters | | | | |
| 5 | 170 | 60 (18.3) | 9 (2.7) | 4.5 (1.4) |
| | 200 | 70 (21.3) | 9 (2.7) | 4.5 (1.4) |
| 6 | 225 | 70 (21.3) | 11 (3.4) | 5.5 (1.7) |
| | 250 | 70 (21.3) | 12 (3.7) | 6 (1.8) |
| 7 | 300 | 70 (21.3) | 13 (4.0) | 6.5 (2.0) |
| | 350 | 80 (24.3) | 13 (4.0) | 6.5 (2.0) |
| | 400 | 90 (27.4) | 14 (4.3) | 7 (2.1) |

*If the system contains all vertical pipe or a combination of vertical and horizontal vent pipe, the length may be increased 1 foot for each foot of vertical pipe—up to a maximum increase of 10 feet for unit sizes 75–125 or 20 feet for unit sizes 140–400.

**Reduce the maximum vent length by the amount indicated for each elbow used.

Ductwork Requirements

⚠ CAUTION ⚠

Joints where ducts attach to furnace must be sealed securely to prevent air leakage into burner rack area. Leakage can cause poor combustion, poor performance, and pilot problems and can shorten heat exchanger life.

NOTE: Make adjustments to ductwork as necessary to obtain a temperature rise and static pressure within the ranges specified on the heater rating plate.

Refer to the installation, operation, and maintenance manual provided with the unit for further information on ductwork requirements.

TECHNICAL SPECIFICATIONS—CONTINUED

Clearances

The unit must be installed so that clearances are provided for combustion air space, for service and inspection, and for proper spacing from combustible construction. Clearance to combustibles is defined as the necessary minimum distance from the heater to a surface or object that ensures that a surface temperature does not exceed 90°F (50°C) above the surrounding ambient temperature. Units must be installed so that clearances are as follows:

| Unit Surface | Minimum Clearance (Inches (mm)) |
|--------------------------------|---------------------------------|
| Front, top, and flue connector | 6 (152) |
| Sides and bottom | 12 (305) |
| Rear | 29 (737) |

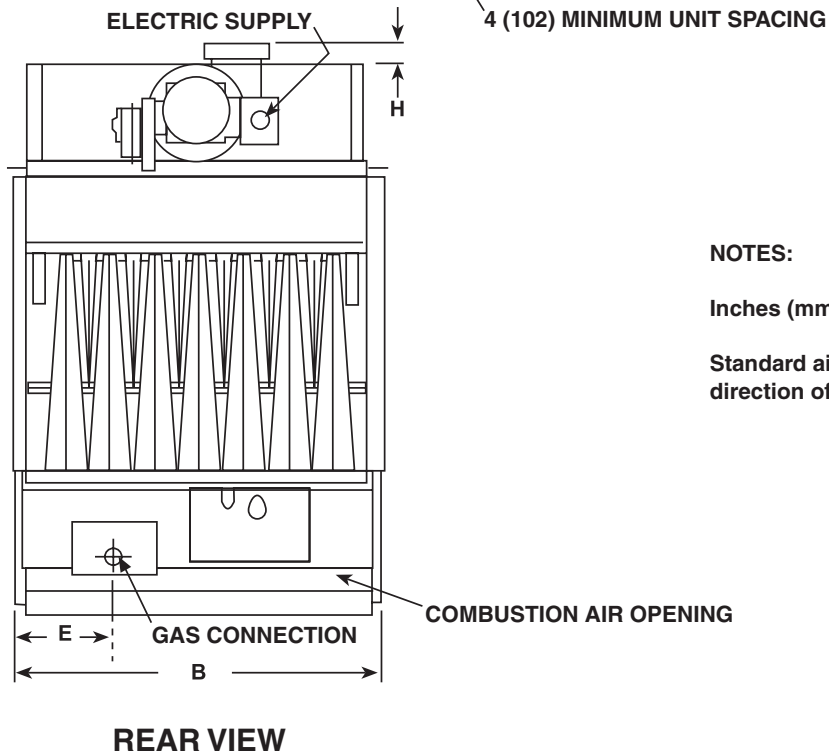
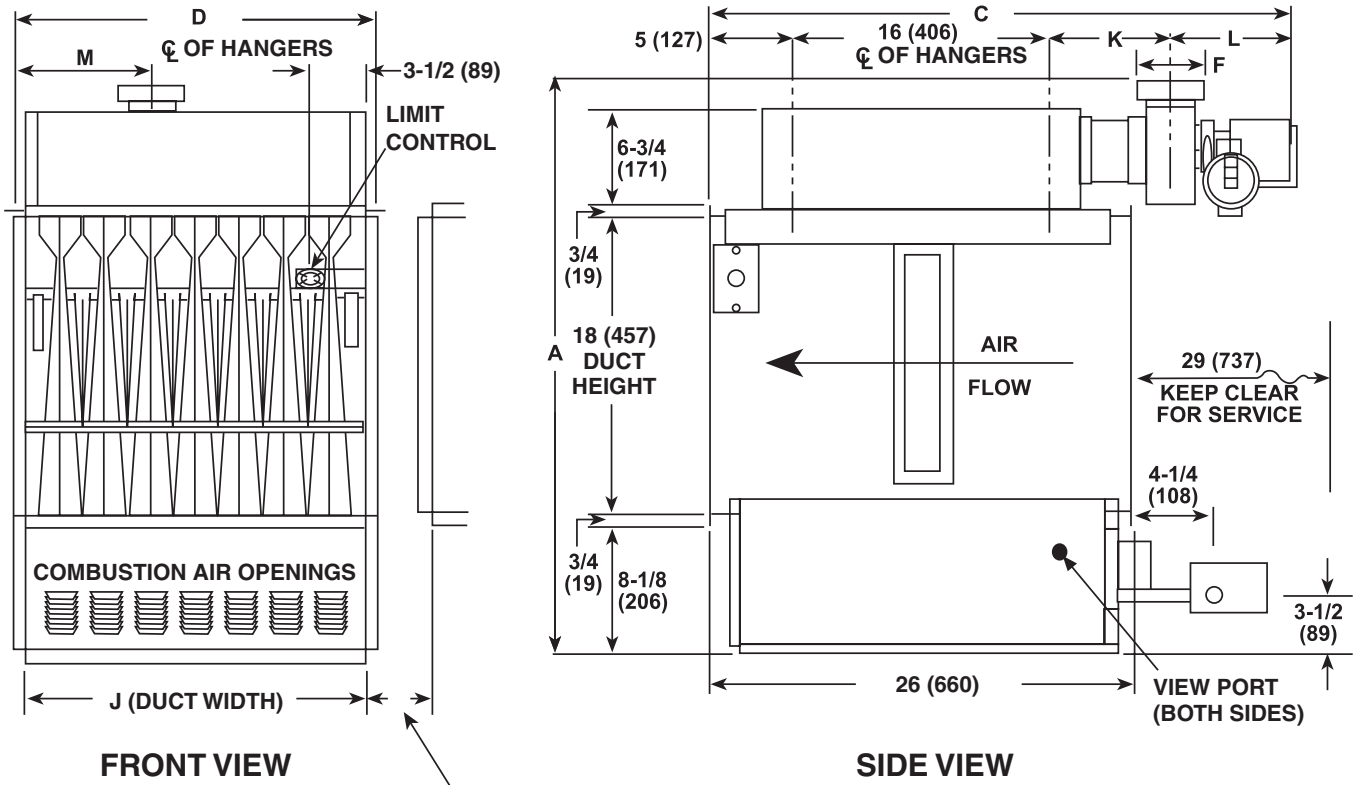
NOTE: The service clearance is shown in the unit dimensions graphic below.

Weights

| Type | Unit Size (MBTUh) | | | | | | | | | |
|----------|-------------------|----------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|
| | 75, 100 | 125 | 140 | 170 | 200 | 225 | 250 | 300 | 350 | 400 |
| | Pounds (kg) | | | | | | | | | |
| Unit | 104 (47) | 126 (57) | 128 (58) | 150 (68) | 172 (78) | 194 (88) | 216 (98) | 262 (119) | 306 (139) | 328 (149) |
| Shipping | 128 (58) | 142 (64) | 144 (65) | 168 (76) | 192 (87) | 216 (98) | 240 (109) | 292 (132) | 338 (153) | 362 (164) |

Dimensions

| Dimension (See Graphic Below) | Unit Size (MBTUh) | | | | | | | | | |
|-------------------------------------|-------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------|--|
| | 75, 100 | 125, 140 | 170 | 200 | 225 | 250 | 300 | 350 | 400 | |
| | Inches (mm) | | | | | | | | | |
| A | 35 (889) | | | | 35-3/4 (908) | | | 36 (914) | | |
| B | 14-1/4 (362) | 17 (432) | 19-3/4 (502) | 22-1/2 (572) | 25-1/4 (641) | 28 (711) | 33-1/2 (851) | 39 (991) | 44-1/2 (1130) | |
| C | 35-11/16 (906) | | | | | | 38-1/8 (968) | | | |
| D | 14-5/8 (371) | 17-3/8 (441) | 20-1/8 (511) | 22-7/8 (581) | 25-5/8 (651) | 28-3/8 (721) | 33-7/8 (860) | 39-3/8 (1000) | 44-7/8 (1140) | |
| E | 4-3/8 (111) | | | | | 7-1/8 (181) | 9-7/8 (251) | 12-5/8 (321) | 15-3/8 (391) | |
| F | 4 (102) | | | | 5 (127) | | | 6 (152) | | |
| H | 5/8 (16) | | | | 1-3/8 (35) | | | 1-5/8 (41) | | |
| J | 12-1/2 (318) | 15-1/4 (387) | 18 (457) | 20-3/4 (527) | 23-1/2 (597) | 26-1/4 (667) | 31-3/4 (806) | 37-1/4 (946) | 42-3/4 (1086) | |
| K | 7-1/4 (184) | | | | | | 9-9/16 (243) | | | |
| L | 7-7/16 (189) | | | | | | 7-5/8 (194) | | | |
| M | 4-5/8 (117) | 6 (152) | 7-3/8 (187) | 8-3/4 (222) | 10-1/8 (257) | 11-1/2 (292) | 13-7/8 (352) | 16-5/8 (422) | 19-3/8 (492) | |



NOTES:

Inches (mm)

Standard airflow may be reversed by changing direction of heat exchanger air baffles.

TECHNICAL SPECIFICATIONS—CONTINUED

Duct Furnace Airflow

- The duct furnace must be installed on the positive pressure side of the field-supplied blower.
- The air distribution must be even over the entire heat exchanger. Turning vanes should be employed in elbows or turns in the air inlet to ensure proper air distribution.
- The air throughput must be within the CFM range stated on the heater rating plate.
- If it is determined that the blower CFM is greater than allowed or desirable, refer to the installation, operation, and maintenance manual provided with the unit for determining the correct size of bypass duct required or for instructions on converting the furnace for a higher CFM application.
- To determine temperature rise, the inlet and outlet air temperatures should be measured at points not affected by heat radiating from the heat exchanger. The following table lists the approved temperature rise range with the required CFM and the internal pressure drop for each size of unit.

| Temperature Rise | Unit Size (MBTUh) | | | | | | | | | | |
|-----------------------------|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|-------------|-------------|
| | 75 | 100 | 125 | 140 | 170 | 200 | 225 | 250 | 300 | 350 | 400 |
| CFM/Pressure Drop (IN WC) | | | | | | | | | | | |
| 80% Thermal Efficient | | | | | | | | | | | |
| 50°F | 1105/0.24 | 1475/0.43 | 1840/0.49 | 2065/0.65 | 2505/0.67 | 2945/0.67 | 3315/0.69 | 3685/0.67 | 4420/0.70 | 5160/0.75 | 5895/0.77 |
| 60°F | 920/0.16 | 1225/0.30 | 1535/0.33 | 1720/0.43 | 2085/0.46 | 2455/0.46 | 2765/0.47 | 3070/0.45 | 3685/0.47 | 4300/0.52 | 4915/0.52 |
| 70°F | 790/0.10 | 1050/0.21 | 1315/0.25 | 1475/0.32 | 1790/0.33 | 2105/0.35 | 2370/0.36 | 2630/0.34 | 3160/0.35 | 3685/0.38 | 4210/0.38 |
| 80°F | 695/0.07 | 920/0.16 | 1150/0.20 | 1290/0.24 | 1565/0.25 | 1840/0.26 | 2070/0.27 | 2300/0.26 | 2765/0.27 | 3225/0.28 | 3685/0.28 |
| 90°F | 615/0.05 | 815/0.12 | 1020/0.17 | 1145/0.20 | 1390/0.19 | 1635/0.20 | 1840/0.21 | 2045/0.20 | 2455/0.22 | 2865/0.23 | 3275/0.22 |
| With Finger Baffles Removed | | | | | | | | | | | |
| 20°F | 2765/0.60 | 3685/1.09 | 4605/1.14 | 5160/1.50 | 6265/1.64 | 7370/1.64 | 8295/1.69 | 9215/1.67 | 11,060/1.64 | 12,900/1.64 | 14,745/1.64 |
| 30°F | 1840/0.28 | 2455/0.50 | 3070/0.52 | 3440/0.66 | 4175/0.73 | 4915/0.73 | 5530/0.75 | 6140/0.72 | 7370/0.73 | 8600/0.73 | 9830/0.73 |
| 40°F | 1380/0.16 | 1840/0.28 | 2300/0.27 | 2580/0.36 | 3130/0.38 | 3685/0.39 | 4145/0.40 | 4605/0.40 | 5530/0.39 | 6450/0.40 | 7370/0.38 |
| 50°F | 1105/0.12 | 1475/0.18 | 1840/0.18 | 2065/0.22 | 2505/0.24 | 2945/0.24 | 3315/0.26 | 3685/0.24 | 4420/0.24 | 5160/0.25 | 5895/0.24 |
| 60°F | 920/0.10 | 1225/0.13 | 1535/0.14 | 1720/0.17 | 2085/0.17 | 2455/0.17 | 2765/0.18 | 3070/0.17 | 3685/0.17 | 4300/0.18 | 4915/0.17 |
| 65°F | 850/0.08 | 1130/0.11 | 1415/0.12 | 1585/0.15 | 1925/0.14 | 2265/0.14 | 2552/0.15 | 2835/0.14 | 3400/0.14 | 3970/0.15 | 4535/0.15 |
| 70°F | — | — | — | — | 1790/0.12 | 2105/0.12 | 2370/0.13 | 2630/0.11 | 3160/0.12 | 3685/0.13 | 4210/0.13 |

NOTES

⚠ DANGER ⚠

FIRE OR EXPLOSION HAZARD

- Failure to follow safety warnings exactly could result in serious injury, death, or property damage.
- Improper installation, adjustment, alteration, service, or maintenance can cause serious injury, death, or property damage.
- Installation and service must be performed by a qualified installer, service agency, or the gas supplier.
- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Leave the building immediately.
- Immediately call your gas supplier from a phone remote from the building. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

For more information on Reznor HVAC products:

- **Contact your local Reznor representative at 1-800-695-1901**
- **Refer to the manuals and additional consumer materials found at www.reznorhvac.com**

