

TECHNICAL SPECIFICATIONS FOR MODEL RPB

OUTDOOR COMMERCIAL/INDUSTRIAL AIR HANDLER: PACKAGED POWER-VENTED GAS-FIRED DUCT FURNACE WITH BLOWER

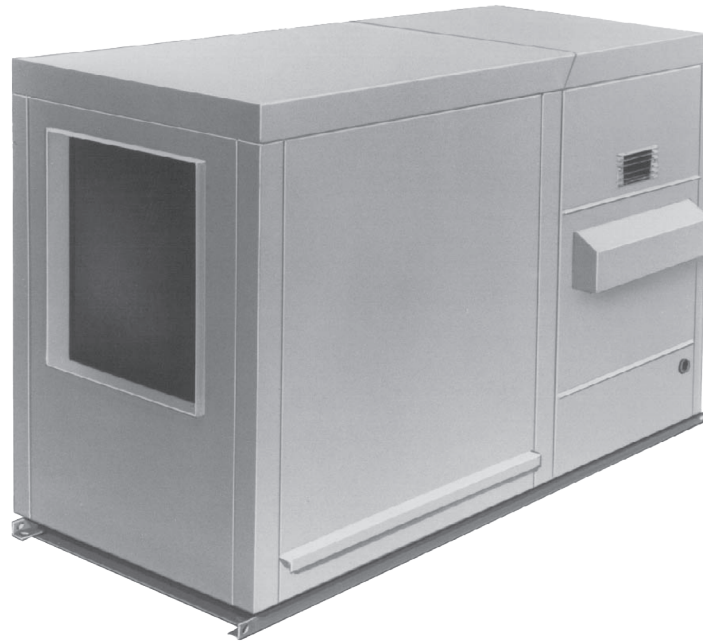


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In keeping with our policy of continuous product improvement, we reserve the right to alter, at any time, the design, construction, dimensions, weights, etc., of equipment information shown here.

TECHNICAL SPECIFICATIONS—CONTINUED

Unit Sizes

These packaged duct furnace/blower units are available in nine unit sizes based on 125,000–400,000 BTUh input.

Features

- Voltage/phase/Hz options: 115/1/60, 208/1/60, 230/1/60, 208/3/60, 230/3/60, 460/3/60, and 575/3/60
- Natural gas or propane
- 80% thermal efficient
- Intermittent spark pilot
- Corrosion-resistant Galvalume® cabinet with interlocking-joint construction and full curb cap for mounting on roof curb or supports
- Outside air hood or evaporative cooling module is required to ensure complete weather resistance
- Aluminized-steel burner with stainless steel insert
- Aluminized-steel heat exchanger (stainless steel heat exchanger recommended for air inlet temperature or temperature rise <40°F)
- Fan control, high limit safety control, reverse air flow limit control, high ambient burner cutoff, and venter pressure switch that verifies power-vent flow for gas valve operation
- Blower motor with adjustable belt drive
- 24V control transformer (designed for field-connection to 24V thermostat for automatic operation)

Factory-Installed Options

Option	Description
AA1	Natural gas
AA2	Propane
AB1–AB8	Installation elevations of 0–9000 feet (may be field-converted)
AC1	Aluminized-steel heat exchanger
AC2	Stainless steel heat exchanger
AD1	Aluminized-steel burner
AD2	Stainless steel burner
AE1	No burner air shutters
AE2	Burner air shutters (required on propane units)
AF1	Aluminized-steel drip pan/bottom panel
AF2	Stainless steel drip pan/bottom panel
AG1	Single-stage combination gas valve
AG2	Two-stage combination gas valve
AG3	Two-stage combination gas valve with unit-mounted ductstat
AG7	Electronic modulation with room thermostat
AG8	Electronic modulation with 2:1 turndown ratio and ductstat
AG9	Electronic modulation with 2:1 turndown ratio and with ductstat and remote temperature selector
AG15	Two-stage combination gas valve with electronic ductstat and remote temperature selector
AG21	Electronic modulation with Maxitrol signal conditioner
AG39	Electronic modulation with 4:1 turndown ratio and remote temperature selector (natural gas units)
AG40	Electronic modulation with 4:1 turndown ratio and DDC interface (natural gas units)
AGA	US installation rating plate
AH2	Intermittent spark pilot
AH3	Intermittent spark pilot with timed lockout
AJ1	Left side controls (facing airstream)

Option	Description
AJ2	Right side controls (facing airstream)
AK1	115/1/60 voltage
AK2	208/1/60 voltage
AK3	230/1/60 voltage
AK5	208/3/60 voltage
AK6	230/3/60 voltage
AK7	460/3/60 voltage
AK8	575/3/60 voltage
AL2	1/4-HP open drip-proof motor
AL3	1/3-HP open drip-proof motor
AL4	1/2-HP open drip-proof motor
AL5	3/4-HP open drip-proof motor
AL6	1-HP open drip-proof motor
AL7	1-1/2-HP open drip-proof motor
AL8	2-HP open drip-proof motor
AL9	3-HP open drip-proof motor
AL10	5-HP open drip-proof motor
AL21	1/2-HP totally-enclosed motor
AL22	3/4-HP totally-enclosed motor
AL23	1-HP totally-enclosed motor
AL24	1-1/2-HP totally-enclosed motor
AL25	2-HP totally-enclosed motor
AL26	3-HP totally-enclosed motor
AM2-AM24	451-1600 RPM belt drives
AN10	Motor starter
AQ5, AQ8	Downturn plenum cabinets
AR1	Cabinet with horizontal inlet
AR4	Cabinet with bottom inlet (required with 100% return air)
AR8	100% outside air hood with motorized damper
AR15	Modulating outside air and return air mixing damper
AR17	Alternating 100% outside air or 100% return air damper
AR18	Modulating 100% outside air and return air mixing damper with remote potentiometer
AR25	Modulating 100% outside air and return air mixing damper with DDC control
ASA1	Moisture elimination pad
ASC4	12-inch rigid cellulose evaporative cooling media
ASC8	12-inch rigid glass fiber evaporative cooling media
AW7, AW9, AW11, AW40	Various filter rack options
AY3	Insulated double-wall cabinet(s)
BC2	Convenience outlet (requires 115V supply)
BD2, BD3	Firestat(s), 200°F
BE2	Adjustable, automatic-reset discharge temperature low limit control with time-delay relay
BG7A-BG7Z, BG9, BH2	Various relay options
BN2	Adjustable (0-100°F) high ambient temperature limit control
BP4	High- and low-pressure gas pressure safety switches
BW1	Air flow pressure proving switch
CGA	Canadian installation rating plate
CT1	Fill and drain kit for float and pump control system (option ECD2)
CT5	Freeze protection for AquaSaver® system (option ECD1)
ECB1	Water hammer arrestor for float and pump control system (option ECD2)
ECC1	Aluminized-steel evaporative cooling module cabinet
ECC2	Stainless steel evaporative cooling module cabinet
ECD1	AquaSaver® timed metering control system
ECD2	Float and pump control system
VFD1, VFD2	Variable frequency drives
VFCA, VFCA, VFC2	Variable frequency drive controls

TECHNICAL SPECIFICATIONS—CONTINUED

Field-Installed Options

Option	Description
AR6	30% outside air inlet hood with manual damper and bottom inlet
AR7	30% outside air hood with motorized damper and bottom inlet
AS2	100% outside air screened intake hood with rain baffles
AU2	CHW cooling cabinet for field-supplied CHW coil
AU11	CHW cooling cabinet for field-supplied CHW coil and downturn plenum cabinet (AQ5)
AU12	CHW cooling cabinet for field-supplied CHW coil and downturn plenum cabinet with dampers (AQ8)
CC3	Vertical flue discharge
CE1	Manual shutoff valve, natural gas
CE2	Manual shutoff valve, propane
CJ1	Roof curb for base unit
CJ2	Roof curb for base unit with factory-installed downturn plenum cabinet (AQ5 or AQ8)
CJ4	Roof curb for base unit with field-installed cooling cabinet (AU2)
CJ5	Roof curb for base unit with field-installed cooling cabinet and downturn plenum (AU11 or AU12)
CL1	Single-stage thermostat
CL9	Electronic modulating room override
CL22	Two-stage thermostat
CL33	Two-stage digital thermostat
CM1	Locking cover for CL1 thermostats
CM1B	Locking cover for CL22 and CL33 thermostat
CN1A–CN3Z	Various remote switch options
CP5–CP8, CP17, CP30	Outdoor raintight disconnect switches (US only)
CP59	Outdoor raintight disconnect switch (Canada only)
SA1	Photoelectric air duct smoke detector

Technical Data

Parameter	Unit of Measure	Unit Size (MBTUh)								
		125	150	175	200	225	250	300	350	400
Input heating capacity	BTUh	125,000	150,000	175,000	200,000	225,000	250,000	300,000	350,000	400,000
	kW	36.6	44.0	51.3	58.6	65.9	73.3	87.9	102.6	117.2
Output heating capacity (80%)	BTUh	100,000	120,000	140,000	160,000	180,000	200,000	240,000	280,000	320,000
	kW	29.3	35.2	41.0	46.9	52.8	58.6	70.3	82.1	93.8
Air volume (US)	CFM	1025–1230	1230–1480	1440–1725	1645–1975	1850–2220	2055–2465	2465–2960	2880–3455	3290–3950
	meter ³ /hr	1835–2202	2202–2649	2578–3088	2945–3536	3312–3974	3679–4413	4413–5299	5156–6185	5890–7071
Air volume (Canada)	CFM	1025–1850	1230–2220	1440–2590	1645–2960	1850–3330	2055–3700	2465–4440	2880–5185	3290–5925
	meter ³ /hr	1835–3312	2202–3974	2578–4637	2945–5299	3312–5961	3679–6624	4413–7948	5156–9282	5890–10,607

Parameter	Unit of Measure	Unit Size (MBTUh)					
		125	150, 175	200, 225	250	300	350
Filter size (quantity)*	inch	20 × 25 (2)	16 × 20 (2)	16 × 20 (1)	20 × 20 (1)	16 × 25 (2)	16 × 20 (1)
				16 × 25 (1)			16 × 25 (1)
		16 × 25 (2)	20 × 20 (1)	20 × 25 (3)	20 × 20 (2)		
			20 × 25 (1)		20 × 25 (2)		
Gas connection, natural gas		1/2			3/4		
Gas connection, propane		1/2					
Full load amps (115V, less motor)	amp	1.9					
Unit control amps (24V)		0.95					

*Filters are optional and are available in 2-inch disposable, permanent, or pleated.

Certification

This unit is design-certified to ANSI and CSA standards by the Canadian Standards Association and is approved for installation in the United States and in Canada. The furnaces are 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 requirements are shown on the unit's 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 B149.1, 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.

Unit Location

- Select a location that complies with the requirements in this manual.
- There are a variety of factors, such as system application, building structure, dimensions, and weight, that contribute to selecting the location.
- The location must be in accordance with the **Clearances** section.
- If the unit is equipped with an outside air hood, it is recommended that the inlet to the hood not be facing into the prevailing wind.

Combustion Air Requirements

The combustion air and flue gas openings are carefully designed screened openings located on the side of the unit just above the control access panel. Location of the flue opening directly above the air intakes discourages recirculation of combustion products.

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.

Curb Cap Base

- Outdoor systems are equipped with a load bearing curb cap which forms an integral part of the unit. This curb cap has welded joints and has a skirt that fits over a roof curb to provide a weatherproof installation. Four holes are provided at the curb cap corners for lifting the unit. These holes do not interfere with unit weatherproofing. The curb cap is not designed to be placed directly on the roof surface.
- The system may be mounted on an optional roof curb purchased with the unit, a field-supplied roof curb, or field-supplied supports. If the system has a downturn plenum and/or a bottom return air opening, a roof curb is recommended to provide a weatherproof installation as well as more workable clearances for ductwork.
- Refer to the installation, operation, and maintenance manual provided with the unit for further information on curb dimensions, assembly, and installation.

TECHNICAL SPECIFICATIONS—CONTINUED

Mounting Support Structure

⚠ DANGER ⚠

Before installation, check the supporting structure to ensure that it has sufficient load-carrying capacity to support the weight of the unit along with any optional equipment.

⚠ CAUTION ⚠

- Before installing the curb, verify that the size is correct for the system being installed.
 - Whether using an optional roof curb available with the system or a field-supplied curb, the curb must be secure, square and level.
 - **IMPORTANT:** The area enclosed by the roof curb must comply with the [Clearances](#) section. If the roof is constructed of combustible materials, the area within curb must be either ventilated, left open, or covered with non-combustible material that has an R-value of at least 5.0.
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NOTES:

- Prior to installation, ensure that the method of support is in agreement with all local building codes and is suited to the climate.
 - If the area within the curb is left open, higher radiated sound levels may result.
 - The system can have a variety of configurations that affect installation. If the system does not have a downturn plenum, the discharge is horizontal.
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The unit may be mounted on an optional curb (option CJ1, CJ2, CJ4, or CJ5) assembly or on a field-supplied support assembly. Refer to the installation, operation, and maintenance manual provided with the unit for further information on mounting the unit.

Venting Requirements

- Locate power-vented furnaces so that flue discharge is not directed at fresh air inlets. The flue discharge openings are located on the side of the furnace just above the control access panel. The position of this opening discourages recirculation of combustion products and provides for furnace operation in all normal weather conditions.
- **Optional vertical flue discharge (option CC3):** These power vented furnaces are certified with 4 feet of vertical pipe connected. The distance is measured from the top of the unit to the bottom of the vent cap. The vent pipe and supports are field-supplied. Optional vertical vent piping provides compliance with local codes that require either 10-foot horizontal or 4-foot vertical clearance between the flue outlet and the fresh air intake of the heating system and/or building.

Ductwork Requirements

⚠ CAUTION ⚠

- To prevent possible motor overloading, ensure that the external duct system static pressure is within the limits shown on the rating plate and that the motor pulley and belt are properly adjusted.
 - The joint where the supply air duct attaches to the furnace must be sealed securely to prevent air leakage into draft hood or burner rack area. Leakage can cause poor combustion and pilot problems, can shorten heat exchanger life, and can cause poor performance.
-

Depending on how the unit was ordered, the blower cabinet can have a variety of outside air and return air inlets. Check the unit to be aware of the inlet air requirements for your installation. Refer to the installation manual for further information on ductwork requirements.

Clearances

Clearance to combustibles is defined as the minimum distance—from the heater to a surface or object—that is necessary to ensure that a surface temperature of 90°F (50°C) above the surrounding ambient temperature is not exceeded. For safety, adequate combustion air, and convenient installation and service, ensure that clearances are as follows:

Unit Surface	Minimum Clearance (Inches (mm))
Top	36 (915)
Control side	6 (152) + width of furnace
Side opposite controls	6 (152)
Bottom, to combustibles	0 (0)*
Bottom, to noncombustibles	0 (0)

*When the unit is installed on a roof curb on a combustible roof, the roof area enclosed within the curb must be either ventilated, left open, or covered with noncombustible material that has an R-value of at least 5.0.

Weights

NOTE: The total weight of the system will vary based on its factory- and field-installed options, which may include insulated cabinets, air hoods, damper arrangements, and blower motors.

Type	Unit Size (MBTUh)					
	125	150, 175	200, 225	250, 300	350	400
	Pounds (kg)					
Unit	482 (219)	520 (236)	534 (242)	588 (267)	630 (286)	662 (300)
Shipping (base unit)	622 (283)	677 (308)	714 (324)	817 (371)	874 (371)	930 (422)
Unit with AQ5 downturn plenum cabinet	648 (294)	697 (316)	730 (331)	817 (371)	883 (401)	933 (423)
Unit with AQ8 downturn plenum cabinet	671 (305)	723 (329)	759 (345)	850 (386)	919 (418)	972 (441)
Cooling cabinet (option AU2)	—			394 (179)	449 (204)	507 (230)
Cooling cabinet (option AU11 or AU12)	—			553 (251)	617 (280)	684 (311)
Evaporative cooling module (option ECC1 or ECC2)	172 (79)	185 (84)	202 (92)	237 (108)	252 (115)	269 (123)

Dimensions

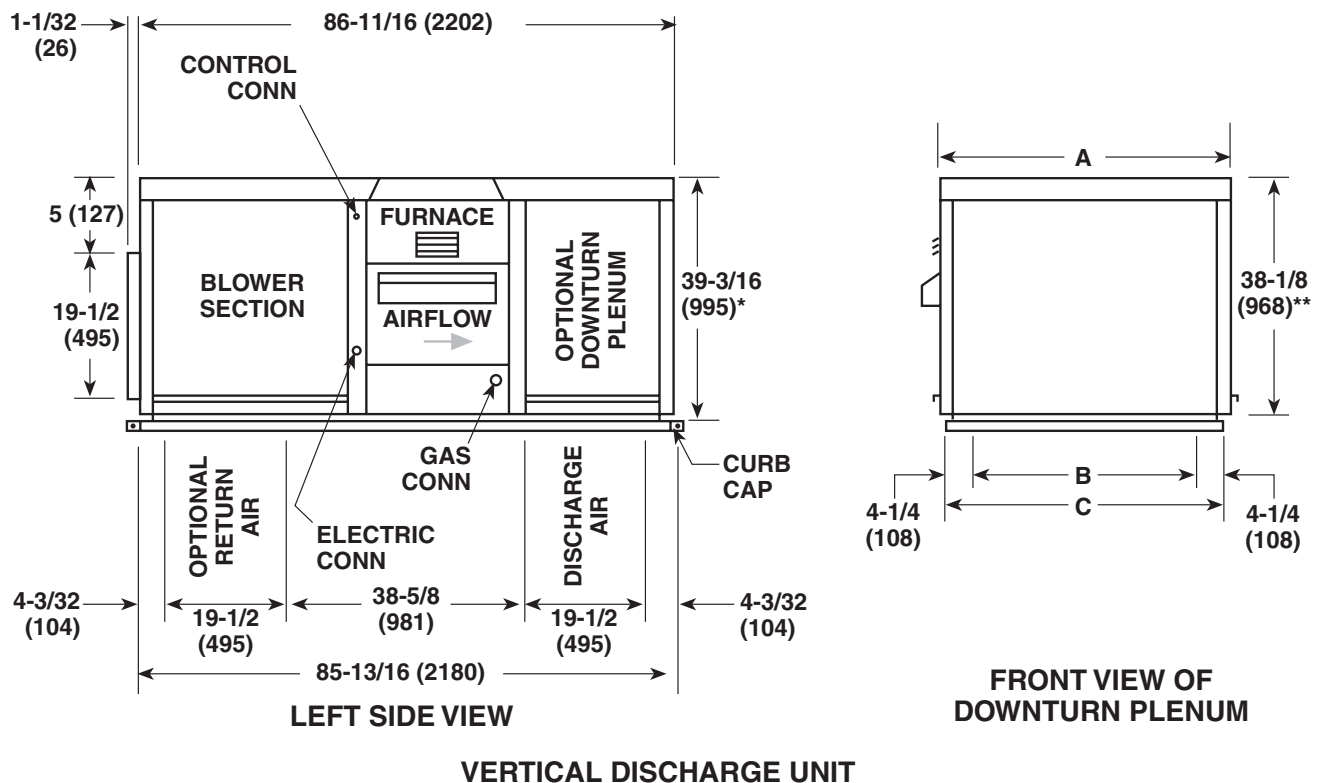
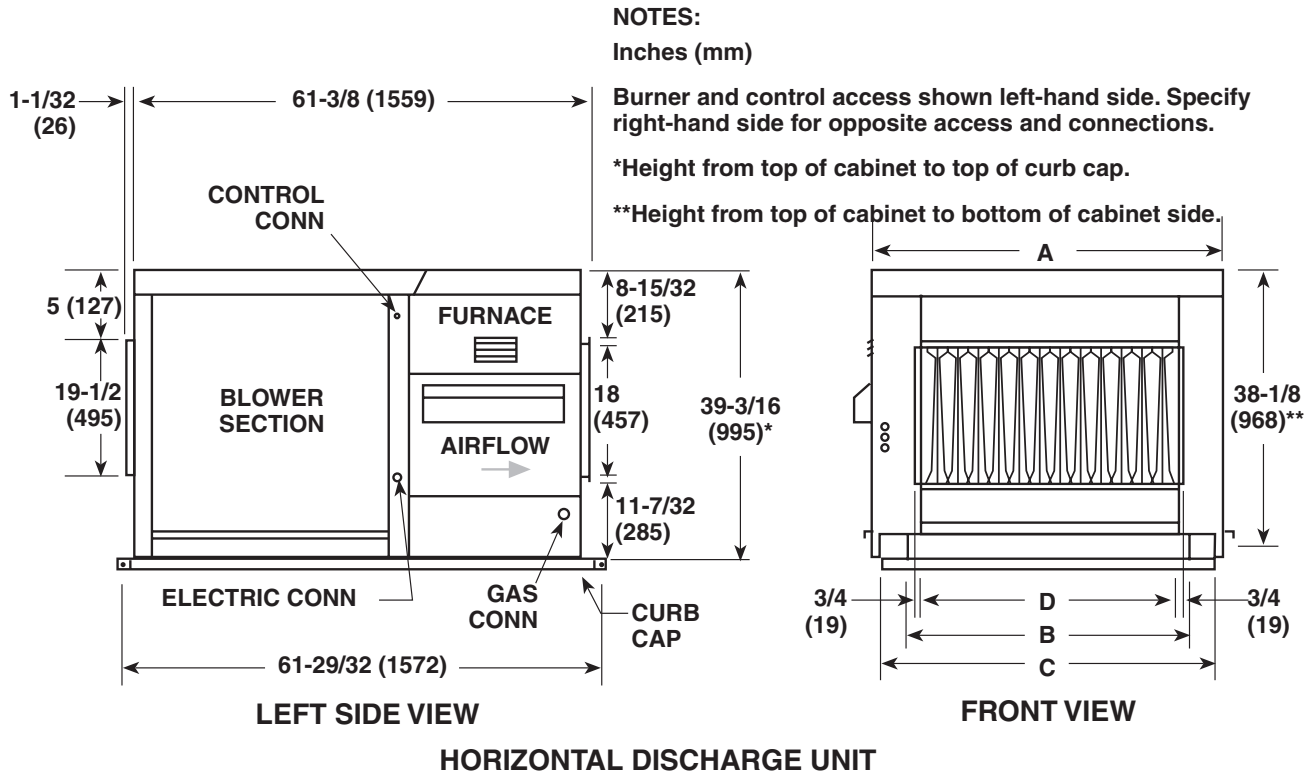
Dimension (See Graphic Below)	Unit Size (MBTUh)					
	125	150, 175	200, 225	250, 300	350	400
	Inches (mm)					
A	28-5/8 (727)	34-1/8 (867)	39-5/8 (1006)	47-7/8 (1216)	53-3/8 (1356)	58-7/8 (1495)
B	17-3/8 (441)	22-7/8 (581)	28-3/8 (721)	36-5/8 (930)	42-1/8 (1070)	47-5/8 (1210)
C	25-7/8 (657)	31-3/8 (797)	36-7/8 (937)	45-1/8 (1146)	50-5/8 (1286)	56-1/8 (1426)
D	15-1/4 (387)	20-3/4 (527)	26-1/4 (667)	34-1/2 (876)	40 (1016)	45-1/2 (1156)
Standard horizontal air inlet	19-1/2 (495) × B					
Optional return air (bottom)						
Optional vertical discharge air with option AQ5 or AQ8 plenum						
Standard horizontal discharge air	18 (457) × D					

TECHNICAL SPECIFICATIONS—CONTINUED

Dimensions—Continued

⚠ CAUTION ⚠

To ensure complete weather resistance, an outside air hood or evaporative cooling module is required.



Gas Supply Pressure

- The unit is equipped for a maximum gas supply pressure of 1/2 psi, 3.5 kPa, or 14 IN WC for natural gas or propane. The minimum supply pressure, as measured while the unit is operating at full fire, is 5 IN WC for natural gas or 11 IN WC for propane.
- Supply pressure higher than 1/2 psi requires the installation of an additional service regulator external to the unit.
- **Pressure testing supply piping:** For test pressures **above** 1/2 psi, disconnect the heater and manual valve from the gas supply line to be tested and cap or plug the supply line. For test pressures **below** 1/2 psi, before testing, close the manual valve on the heater.

Gas Supply Piping

- The heater is orificed for operation with natural gas having a heating value of 1,000 (± 50) BTU per cubic foot or with propane gas having a heating value of 2,550 (± 100) BTU per cubic foot. Sizing of gas supply lines depends on piping capacity and is based on cubic feet per hour based on a 0.3 IN WC pressure drop, a 0.6 specific gravity for natural gas at 1,000 BTU per cubic feet, and a 1.6 specific gravity for propane at 2,550 BTU per cubic feet. If the gas at the installation does not meet this specification, consult the factory for proper orificing.
- Variables for sizing gas supply lines are listed below. When sizing supply lines, consider the possibility of future expansion and increased requirements. Refer to the *National Fuel Gas Code* for additional information on line sizing.

Pipe Length (Feet)	Natural Gas						Propane					
	Pipe Diameter (Inches)											
	1/2	3/4	1	1-1/4	1-1/2	2	1/2	3/4	1	1-1/4	1-1/2	2
	Cubic Feet per Hour											
20	92	190	350	730	1100	2100	56	116	214	445	671	1281
30	73	152	285	590	890	1650	45	93	174	360	543	1007
40	63	130	245	500	760	1450	38	79	149	305	464	885
50	56	115	215	440	670	1270	34	70	131	268	409	775
60	50	105	195	400	610	1105	31	64	119	244	372	674
70	46	96	180	370	560	1050	28	59	110	226	342	641
80	43	90	170	350	530	990	26	55	104	214	323	604
90	40	84	160	320	490	930	24	51	98	195	299	567
100	38	79	150	305	460	870	23	48	92	186	281	531
125	34	72	130	275	410	780	21	44	79	168	250	476
150	31	64	120	250	380	710	19	39	73	153	232	433
175	28	59	110	225	350	650	17	36	67	137	214	397
200	26	55	100	210	320	610	16	34	61	128	195	372

Disconnect Switch

A disconnect switch is a required part of this installation. Switches are available as options or parts or may be supplied locally. When ordered as an optional component, the disconnect switch is shipped separately. The disconnect switch may be fusible or non-fusible. When providing or replacing fuses in a fusible disconnect switch, use dual element time delay fuses and size according to $1.25 \times$ maximum total input amps. When installing, ensure that the conduit and switch housing are clear of furnace panels and inspection plates. Allow at least 4 feet (1.2 meters) of service room between the switch and removable panels. Refer to the installation, operation, and maintenance manual provided with the unit for further information on electrical connections.

TECHNICAL SPECIFICATIONS—CONTINUED

Optional Evaporative Cooling Module Specifications

NOTE: The evaporative cooling module is factory-assembled, -installed, and -wired. No additional roof mounting is necessary.

Parameter	Unit of Measure	Unit Size (MBTUh)								
		125	150	175	200	225	250	300	350	400
Evaporative efficiency with 12-inch media*	%	90								
Maximum cooling air flow	CFM	3800	4700	5000	5100	5150	5800	6300	6800	7100
	meter ³ /hour	6456	7985	8495	8665	8750	9854	10,703	11,553	12,063
Media face size	inch	24 × 36	24 × 32		24 × 37		24 × 45		24 × 51	24 × 56
	foot ²	4.33	5.33		6.17		7.50		8.50	9.33
Maximum face velocity**	FPM	878	882	938	827	835	773	840	800	761
	mm/second	4458	4480	4765	4199	4240	3929	4267	4064	3866
Pump size	HP	1/70								
Amps @ 115V/1Ph	amp	0.92								
Wattage	watt	85								
*The cooling efficiency is determined at the maximum allowable CFM without the moisture elimination pad and with an inlet dry bulb temperature of 95°F and an inlet wet bulb temperature of 65°F. Evaporative cooling efficiency is a function of inlet temperature (wet and dry bulbs) and face velocity through the pads. The stated cooling efficiency rises with the decrease of velocity and the increase of inlet temperature.										
**Velocity (FPM) = CFM ÷ media face size (foot ²). Optional moisture elimination pad is required above 600 FPM (3,000 mm/second).										

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**

