

[®]**REZTOR**

PACKAGED DX COOLING & HEATING EQUIPMENT CATALOG

COMMERCIAL/INDUSTRIAL HVAC

CAPACITIES

650 - 11,500 CFM

DX Cooling: 5 - 35 Tons

Gas Heat: 50 - 800 MBH

Electric Heat: 30 - 120 kW

INSTALLATION

Rooftop or Pad Mount

FUEL

Electric

Natural Gas

Propane

Visit ReznorHVAC.com for more information.

114F-0819 (Replaces C-RTU-0416)

BACKGROUND

Reznor was founded in 1888 to manufacture the “Reznor” reflector heater, which used a luminous flame gas burner developed by George Reznor. This technological breakthrough was an immediate success and hastened the expansion of gas heating in residential and commercial applications. Technological development and innovation have been the hallmark of Reznor products through the years. The development of the forced air gas unit heater, the modular Thermocore® heat exchanger, and the high-efficiency, V3® Series unit heaters have kept Reznor products at the forefront of technological advances in commercial and industrial gas heating. As a result of this pioneering role in the heating, makeup air, and ventilating equipment fields, the products offered today are the most advanced in engineering design to satisfy a wide variety of applications.

FACILITIES

Reznor® heaters were first manufactured and sold in Mercer, Pennsylvania (70 miles north of Pittsburgh) in 1888. Over the years, the company has grown and expanded. Today, with sales worldwide, Reznor products are being manufactured at facilities throughout North America and Europe.

PRODUCT SCOPE

Well-equipped engineering laboratories for both product development and testing can be found at many of the manufacturing sites. All domestic lab sites are agency approved.

Reznor products include a complete line of heating, makeup air and ventilating systems, using gas, oil, hot water/steam, or electric heat sources. Reznor heater catalogs are designed to aid the engineer, architect, or contractor in specifying the correct equipment for all standard and special applications. Complete data is presented on unit heaters, duct furnaces, infrared heaters, makeup air systems, pre-engineered custom-designed systems, and evaporative cooling modules. Consult your local Reznor Sales Representative for further assistance in specifying Reznor equipment for your specific application.

SERVICES

Product service requirements are handled through contractors and/or distributors, with backup from local representatives and factory-based service team. Replacement parts inventories for both warranty and non-warranty requirements are maintained at service centers throughout the country and at the manufacturing facilities.

For more information on Reznor HVAC equipment or to be directed to the Reznor Representative in your area call

1-800-695-1901

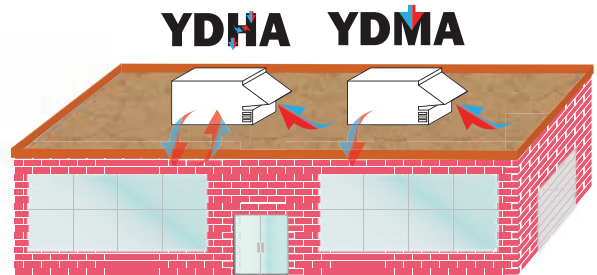
Or, check the website at

www.ReznorHVAC.com

PLATFORM 125

One is designed for the building specific challenges of space temperature control and ventilation and one, a hybrid of the two functions.

- Model YDMA – for 100% outside air to provide DOAS or other makeup air or heavy ventilation functionality.
- Model YDHA – a hybrid of unitary recirculation and DOAS, providing varying ratios up to 50/50 split on recirculation and outside air.



PLATFORM 125

Statement of Unit Performance

Actual Unit airflow also limited by available sizes and unit total static pressure. Maximum and minimum cooling CFM is limited to 200 FPM and 500 FPM air velocities over the main evaporator coils. Maximum and minimum heat is limited to 100°F temperature rise (90° for electric) and 20°F temperature rise.

Reznor provides unit performance values that represent the general performance of our typical unit at a given design condition. With all DX, gas and electric systems the values are to be construed as having an expected mechanical tolerance of 10-15% of stated values. Due to mechanical limitations of the equipment, unknown variables and uncontrollable environmental influences such as gas pressure, actual airflow, pressure differences, refrigerant charge, air delivery (duct & registers), coil factors and other unstated variable, the actual unit values will be different from the stated values. The control system seeks to stage or modulate the equipment to a steady state condition over an extended period of time within the tolerance of the mechanical equipment. The control system setpoints should not be construed as the tolerance or guaranteed performance of the mechanical system.

REZNOR®

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Packaged DX Cooling & Heating Equipment Models YDHA & YDMA



Intertek
UL 1995
ANSI Z83.8



IEC 60335-2-40



Intertek
CENELEC EN 61000-6-2
CENELEC EN 61000-6-4

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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 the equipment information shown here.

Model YDHA

PACKAGE DX HIGH OUTSIDE AIR SPACE CONDITIONING UNITS

Description

Model YDHA space condition unit provides superior control of high volumes of outside air in a package DX system design. The model's feature set allows it to properly condition upward to 50% outside air while maintaining space temperature and humidity conditions. The unit's blower system incorporates superior energy efficient blower design with variable speed control to balance and control the airflow as needed. The DX system maximizes efficiency with the use of digital scroll technology, ECM condenser fans and optimized coil designs. The DX system exceeds ASHRAE standard 90.1 requirements. Model YDHA includes the T_{CORE}³® condensing heat technology. T_{CORE}³ condensing gas heating system maintains greater than 90% efficiency throughout the modulated control range. The system features state of the art stand alone control system that further maximizes energy use while maintaining space temperature condition.

Unit Features



Intertek
UL 1995
ANSI Z83.8



IEC 60335-2-40



Intertek
CENELEC EN 61000-6-2
CENELEC EN 61000-6-4

Supply & Exhaust Fan

- 750 - 10,500 SCFM
- Direct drive backward incline plenum fan
- High external static pressure capability
- Easy CFM verification for all fans

Options

- Supply fan motor
 - » ECM or total enclosed motor with factory installed ABB drive
 - » Duct static pressure control
 - » Summer/winter constant volume
 - » External 0-10V signal
 - » Automatic low & high speed control
- Integrated energy recovery (Total enthalpy wheel)
- ECM power exhaust (Std 62.1 compliant)
- Dirty filter status

Mechanical Cooling

- R410A refrigerant (environmentally friendly)
- High efficiency digital scroll technology
- 10-100% capacity control
- Fully interlaced coils
- Compressor anti-cycle programming
- Mechanical gauge connections
- High & low pressure switches
- Crank case heaters
- Rust proof, dual sloped condensate drain pan
- Froststat, all circuits

Options

- » Low ambient control 35°F (1.7°C)
- » High efficiency ECM condenser fans
- » Hot gas by-pass
- » ReheatPump
- » Hot gas reheat
- » Electrofin® coil coatings (6048 hours)
- » 5 year compressor warranty
- » Compressor sound blanket
- » Hail guards

Gas Heating

- Natural gas or propane furnace
- Patented T_{CORE}³ combustion control (patent # 8,113,269)
- High capacity heat for colder climates
- Minimum 80% thermal efficiency
- 409 stainless steel heat exchanger
- Failure/alarm diagnostics
- 5:1 modulated temperature control
- 10:1 modulated temperature control

Options

- » 91% high efficiency heating
- » Flue gas extension kit
- » Condensate pumps
- » Condensate neutralizers

Electric Heat

- High capacity heat for colder climates
- Failure/alarm diagnostics
- SCR control 0-100% modulation

Construction

- Double wall foam panel construction – R13
- Hinged access doors with slam latches
- G90 Galvanized Steel Substrate, 60 Gloss Finish (1,000 salt spray hours)
- Convenient single door access panel for all controls, heating, and cooling sections)
- 4 point bottom lifting
- 4" pleated MERV 8 filters
- Vertical discharge, roof or pad mounting
- Full perimeter curbs
 - » 16" curb with vertical discharge
 - » 36" curb with horizontal discharge

Options

- » 4" pleated MERV 13 filters
- » 2 year all parts warranty

Controls

- Single point power connections (208/1, 208/3, 230/3, 460/3, 575/3)
- Isolated high voltage compartment
- ABB patented high voltage management system
- DDC unit controller output LED status
- Unit mounted display
- Easy unit & sequence configuration
 - » Thermostat
 - » Single & multi-zone VAV
 - » Variable volume & temperature control
- Unit alarm logging and retrieval
- Unit sensor and command values trending for retrieval
- Easy unit functional test mode

Options

- » Unit mounted disconnect w/ lockout
- » Field mounted fusible disconnect
- » Convenience outlet (field powered)
- » Phase loss
- » Smoke detector
- » Remote display
- » Hand held display
- » Space temperature & humidity sensor
- » Easy DDC system integration (BacNet or Lon)

Intake (Options)

- 100% return (horizontal or vertical)
- Outside air hood
- Mixed air control
- Economizer control with CO₂ demand ventilation
- User adjustable 2 position damper control
- Manual damper positioning external 0-10V signal

Technical Data

Model YDHA		-060	-090	-120	-150
Nominal Capacity	BTU	60,000	90,000	120,000	150,000
	(kW)	(17.6)	(26.4)	(35.2)	(44.0)
Nominal Airflow	scfm	750-1680	1290-2250	1500-3550	1875-3550
	(M ³ /hr)	(1274-2854)	(2192-3823)	(2548-6031)	(3188-6031)
IEER @ AHRI 340/360		11.4	11.2	12.2	11.9
Compressor Qty		1	1	2	2
Evaporator Coil (Row/FPI)		4/14	4/14	4/14	4/14
Condenser Fan		2	2	2	2
Coefficient of Performance (COP) ^A		5.2	4.3	4.5	3.7
Reheat Capacity (MBH)		34			34 or 51
Gas Heat Size Natural/Propane ^B	High Efficiency	75-300		100-400	
	Very High Efficiency	150-300		150-602	
Electric Heat Size (kW)		20, 30		30 - 90	
Power		230/1, 208-575/3 60Hz		208/3, 230/3, 460/3 & 575/3 60Hz	
Cabinet Size Base Unit Weight	Size	1			
	lbs	1,858	2,141	2,273	2,303
	(kg)	(842.8)	(971.2)	(1,031)	(1,045)

Model YDHA		-180	-210	-240	-300	-360
Nominal Capacity	BTU	180,000	210,000	240,000	300,000	360,000
	(kW)	(52.8)	(61.5)	(70.3)	(87.9)	(105.5)
Nominal Airflow	scfm	2250-5500	2625-5500	3000-5500	3750-8700	4500-9350
	(M ³ /hr)	(3823-9344)	(4460-9344)	(5097-9344)	(6371-14781)	(7645-15885)
IEER @ AHRI 340/360		11.7	11.9	11.9	12.9	11.1
Compressor Qty		2	2	2	2	2
Evaporator Coil (Row/FPI)		4/14	4/14	4/14	4/14	4/14
Condenser Fan		4	4	4	4	4
Coefficient of Performance (COP) ^A		4.2	4	3.8	4.2	3.6
Reheat Capacity (MBH)		34 or 51			51 or 72	
Gas Heat Size Natural/Propane ^B	High Efficiency	100-500		150-700	200 - 800	
	Very High Efficiency	150-602			225-602	
Electric Heat Size (kW)		(20 - 120)			(30 - 120)	
Power		208/3, 230/3, 460/3 & 575/3 60Hz				
Cabinet Size Base Unit Weight	Size	2				3
	lbs	2,732	2,901	2,904	2930	2932
	(kg)	(1,239)	(1,316)	(1,317)	(1,329)	(1,330)

^A 80°F/67°F LAT and 95°F ambient (26.7°C/19.4°C LAT and 35°C ambient).

^B See gas heating table for sizes, heating input and output values.

High efficiency gas heating section is 80%ncv/88%gcv. Very high efficiency heating systems are 91%ncv/105%gcv. (Efficiency in North America is measured in ncv. Efficiency in Europe is measured in gcv.)



Model YDHA

Model YDMA

PACKAGE DX HIGH OUTSIDE AIR SPACE CONDITIONING UNITS

Description

Model YDMA space condition unit provides superior control of high volumes of outside air in a package Dx system design. The model's feature set allows it to properly condition 100% outside air. The unit's blower system incorporates superior energy efficient blower design with variable speed control to balance and control the air-flow as needed. The Dx system maximizes efficiency with the use of digital scroll technology, ECM condenser fans and optimized coil designs. The Dx system exceeds ASHRAE standard 90.1 requirements. Model YDMA can utilize the T_{CORE}³® condensing heat technology. T_{CORE}³ condensing gas heating system maintains greater than 90% efficiency throughout the modulated control range. The system features state of the art stand alone control system that further maximizes energy use.

Unit Features



Intertek

UL 1995
ANSI Z83.8



IEC 60335-2-40



Intertek

CENELEC EN 61000-6-2
CENELEC EN 61000-6-4

Supply & Exhaust Fan

- 650 – 7,000 SCFM
- Direct drive backward incline plenum fan
- High external static pressure capability
- Easy CFM verification for all fans

Options

- Supply fan motor
 - » ECM or total enclosed motor with factory installed ABB drive
 - » Duct static pressure control
 - » Summer/winter constant volume
 - » External 0-10V signal
 - » Automatic low & high speed control
- Integrated energy recovery (total enthalpy wheel)
- ECM power exhaust (Std 62.1 compliant)
- Dirty filter status
- Automatic low and high speed control

Mechanical Cooling

- R410A refrigerant (environmentally friendly)
- High efficiency digital scroll technology
- 10-100% capacity control
- Fully interlaced coils
- Compressor anti-cycle programming
- Mechanical gauge connections
- High & low pressure switches
- Crank case heaters
- Rust proof, dual sloped condensate drain pan
- Froststat, all circuits

Options

- » Low ambient control 35°F (1.7°C)
- » High efficiency ECM condenser fans
- » Hot gas by-pass
- » ReheatPump
- » Hot gas reheat
- » Electrofin® coil coatings (6048 hours)
- » 5 year compressor warranty
- » Compressor sound blanket
- » Hail guards

Gas Heating

- Natural gas or propane furnace
- Patented T_{CORE}³ combustion control (patent # 8,113,269)
- High capacity heat for colder climates
- Minimum 80% thermal efficiency
- 409 stainless steel heat exchanger
- Failure/alarm diagnostics
- 5:1 modulated temperature control
- 10:1 modulated temperature control

Options

- » 91% high efficiency heating
- » Flue gas extension kit
- » Condensate pumps
- » Condensate neutralizers

Electric Heat

- High capacity heat for colder climates
- Failure/alarm diagnostics
- SCR control 0-100% modulation

Construction

- Double wall foam panel construction – R13
- Hinged access doors with slam latches
- G90 Galvanized Steel Substrate, 60 Gloss Finish (1,000 salt spray hours)
- Convenient single door access panel for all controls, heating, and cooling section
- 4 point bottom lifting
- 4" pleated MERV 8 filters
- Vertical discharge, roof or pad mounting
- Full perimeter curbs
 - » 16" curb with vertical discharge
 - » 36" curb with horizontal discharge

Options

- » 4" pleated MERV 13 filters
- » 2 year all parts warranty

Controls

- Single point power connections (208/1, 208/3, 230/3, 460/3, 575/3)
 - Isolated high voltage compartment
 - ABB patented high voltage management system
 - DDC unit controller output LED status
 - Unit mounted display
 - Unit alarm logging and retrieval
 - Unit sensor and command values trending for retrieval
 - Easy unit functional test mode
- #### Options
- » Unit mounted disconnect w/ lockout
 - » Field mounted fusible disconnect
 - » Convenience outlet (field powered)
 - » Phase loss
 - » Smoke detector
 - » Remote display
 - » Hand held display
 - » Space temperature & humidity sensor
 - » Easy DDC system integration (BacNet or Lon)

Intake (Options)

- 100% return (horizontal or vertical)
- Outside air hood
- Mixed air control
- User adjustable 2 position damper control
- Manual damper positioning external 0-10V signal

Model YDMA (cont'd)

Model YDMA		-060	-090	-120	-150
Nominal Capacity	BTU	60,000	90,000	120,000	150,000
	(kW)	(17.6)	(26.4)	(35.2)	(44.0)
Nominal Airflow	scfm	650-1500	975-1680	1300-3000	1625-3500
	(M ³ /hr)	(1104-2548)	(1656-2854)	(2209-5097)	(2761-5946)
	(L/sec)	(307-708)	(460-793)	(613-1416)	(767-1652)
Compressor Qty		1	1	2	2
Evaporator Coil (Row/FPI)		4/14	4/14	4/14	4/14
Condenser Fan		2	2	2	2
Reheat Capacity (MBH)	MBH	34			34 or 51
	(kW)	(10)			(10 or 15)
Gas Heat Size Natural/Propane ^B	High Efficiency	75-300		100-400	
	Very High Efficiency	150-300		150-602	
Electric Heat Size (kW)		30	30, 60	30 - 90	
Power		230/1, 208-575/3 60Hz		208/3, 230/3, 460/3 & 575/3 60Hz	
Cabinet Size Base Unit Weight	Size	1			
	lbs	1,858	1,905	2,273	2,303
	(kg)	(842.8)	(864.1)	(1,031)	(1,045)

Model YDMA		-180	-210	-240	-300	-360
Nominal Capacity	BTU	180,000	210,000	240,000	300,000	360,000
	(kW)	(52.8)	(61.5)	(70.3)	(87.9)	(105.5)
Nominal Airflow	scfm	2000-4400	2275-5250	2600-5500	3400-7500	3900-9000
	(M ³ /hr)	(3398-7475)	(3865-8919)	(4417-9344)	(5776-12742)	(6626-15291)
	(L/sec)	(944-2076)	(1074-2477)	(1227-2595)	(1604-3539)	(1840-4247)
Compressor Qty		2	2	2	2	2
Evaporator Coil (Row/FPI)		4/14	4/14	4/14	4/14	4/14
Condenser Fan		4	4	4	4	4
Reheat Capacity (MBH)	MBH	34 or 51			51 or 72	
	(kW)	(10 or 15)			(15 or 21)	
Gas Heat Size Natural/Propane ^B	High Efficiency	100-500	150-700		200 - 800	
	Very High Efficiency	150-602			225-602	
Electric Heat Size (kW)		20 - 120			30 - 120	
Power		208/3, 230/3, 460/3 & 575/3 60Hz				
Cabinet Size Base Unit Weight	Size	2			3	
	lbs	2,658	2,901	2,904	2930	2932
	(kg)	(1,206)	(1,316)	(1,317)	(1,329)	(1,330)

^A 80°F/67°F LAT and 95°F ambient (26.7°C/19.4°C LAT and 35°C ambient).

^B See gas heating table for sizes, heating input and output values.

High efficiency gas heating section is 80%ncv/88%gcv. Very high efficiency heating systems are 91%ncv/105%gcv. (Efficiency in North America is measured in ncv. Efficiency in Europe is measured in gcv.)



Model YDMA

OPTION CODES**Power**

AK3 – 230/1
 AK5 – 208/3
 AK6 – 230/3
 AK7 – 460/3
 AK8 – 575/3
 BA6 – Unit mounted disconnects switch
 BA7 – Dual disconnect
 CP_XX – Disconnect, fusible, outdoor, UL
 ZB6 – 575/3 transformer 6 KVA
 ZB9 – 575/3 transformer 9 KVA

DX Cooling & Reheat Options

AUB3 – ElectroFin coil coating, evaporator/condenser
 AUB4 – ElectroFin coil coating, evaporator
 AUB6 – ElectroFin coil coating, evaporator/reheat
 AUB7 – ElectroFin coil coating, condenser
 AUB8 – ElectroFin coil coating, all coils
 AUC8- Main DX system hot gas bypass
 AUR2 - Modulating hot gas reheat
 BE8 – Low ambient DX system operation
 CUF3 –Single speed condenser fan
 CUF4 –ECM speed control condenser fan
 RPLE – High outside air enthalpy, low capacity reheat pump
 RPHE – Low outside air enthalpy, high capacity reheat pump

Heat (Gas)

AA1 – Natural gas
 AA2 – Propane
 AB1 thru 8 – System elevation adjustment
 AC2 – 409 stainless steel heat exchanger
 AC2A – 409 stainless steel primary plus aluminum secondary heat exchanger
 AG71 – 2 stage gas control
 AG72 – 4 Stage gas control
 AG73 – 5:1 modulated control
 AG74 – 10:1 modulated control
 BP1 – Standard manifold
 BP4 – High and low gas pressure switches
 CC3 – Flue extension kit – std eff single furnace
 CC3D – Flue extension kit – std eff dual furnace
 CC4 – Flue extension kit – 90% eff single furnace
 CC4D – Flue extension kit – 90% eff dual furnace
 CSP1 – Condensate pump
 CSN1- Condensate neutralizer
 H75-H802 – Std efficiency heat exchanger MBH size
 G150-G602 – 90% efficiency heat exchanger MBH size

Heat (Electric)

E20-E120 – Electric heat kW sizes
 EG3 – 3 stage control (4-stg 120kW)
 EG4 – SCR modulation

Supply & Exhaust Fan

A10 - Backward incline direct drive medium static fan
 A10E - Backward incline plenum fan with ECM
 A11 – Backward incline direct drive high static fan
 VFC1 - High-low volume fan control
 VFC3 – Duct static pressure control (supply fan)
 VFC4 – Building static pressure control (supply fan)
 VFC6 – Constant mass flow (supply fan)
 VFC9 – Adjustable constant speed volume control (supply fan, winter/summer setpoints)
 PE4 – Power exhaust (0-4,000 CFM)
 PE5 – Power exhaust (0-6,000 CFM)
 PE6 – Power exhaust (0-8,000 CFM)
 PE7 – Power exhaust (0-10,000 CFM)
 EFC1 - High/low exhaust fan speed control
 EFC4 – Building static pressure control (exh fan)
 EFC7 – Supply fan tracking (exh Fan)
 EFC9 – Adjust constant volume control (exh fan)

Damper Control

GF1 – External 0-10 input signal
 GF2 – User adjustable 2 position control
 GF4 – Four position control from 2 external contacts
 GF5 – Economizer package w/ CO₂ control
 GF8 – User adjustable 2 position control

Curbs

CJ31 – 16" height, vertical discharge, no ERV, exposed external insulation
 CJ34 – 16" height, vertical discharge, ERV extended, exposed external insulation
 CJ48 – 36" height, horizontal discharge, no ERV, double wall insulation
 CJ55 – 36" height, horizontal discharge, ERV extended, double wall insulation

Miscellaneous Options

AZ11 – Condenser guard
 XW1 – 5 year compressor warranty
 XW2 – 5 year has heat exchanger warranty
 XW3 – 10 year gas heat exchanger warranty
 XW4 – 5 year electric heat furnace warranty
 XW8 – 2 year all parts warranty

Intake & Damper Options

AR1 – Single unit opening, horizontal/back
 AR4 – Single unit opening, vertical/bottom
 AR7 – Vertical/bottom 100% airflow opening, 30% airflow horizontal outside air opening with motorized damper
 AR8 – Horizontal/back 100% airflow opening, with motorized damper
 AR25 – 100% airflow horizontal and vertical (OA/RA) opening with motorized dampers
 AR2D – 100% airflow horizontal with gravity relief exhaust damper
 AR2G – 100% airflow horizontal and vertical (OA/RA) opening with motorized dampers, gravity relief exhaust damper
 AR2H – 100% airflow horizontal and vertical with connections for power exhaust
 AR2J – 100% air flow horizontal, vertical exhaust air with energy recovery module
 AR2Y – 100% airflow horizontal/back intake. Gravity relief exhaust damper
 AS13 – Outside air hood with bird screen
 AS16 – Outside air hood with pre-filters
 AW21 – 4" disposable pleated filters, MERV 8
 AW24 – 4" Disposable pleated filters, MERV 13
 XF21 – Extra set of 4" pleated filters, MERV8
 XF24 – Extra set of 4" pleated filters, MERV13

Energy Recovery

EW30 - Total enthalpy wheel (750 - 2,000 cfm)
 EW36 - Total enthalpy wheel (1,400 - 3,800 cfm)
 EW46 - Total enthalpy wheel (2,200 5,400 cfm)
 EW52 - Total enthalpy wheel (3,000 - 7,000 cfm)
 EW58 - Total enthalpy wheel (3,500 - 8,000 cfm)
 PH2A – 10 kW preheater for ERM
 PH3A – 20 kW preheater for ERM
 PH4A – 30 kW preheater for ERM

Control Options

D19 – Space temperature control w/thermostat
 D21 – Makeup air control sequence
 D22 – Single zone variable air volume control
 D23 – Variable volume & temperature control
 BUC2 – Duct static pressure control (VVT)
 BE9- Remote exhaust fan start/stop
 BE15– Space mounted CO₂ sensor
 BE14 – Return air humidity sensor
 BE17 – Smoke detector
 BE18 – Main unit dirty filter switch
 BE28 – ERV dirty filter switch
 PL4 – Phase loss/low voltage monitor
 BHB7 – Lon DDC communication
 BHB8 – BacNet DDC communication
 RB5 – Wall mounted remote monitoring display
 RB6 – Hand held remote monitoring display
 BC2 – Convenience outlet (requires 110V supply)
 BD5 – Firestat

OPTIONAL FEATURES (cont'd)

Supply & Exhaust Fan System

The P125 units supply fan provides high performance and reliable air delivery for demanding applications. The fan system utilizes Zie Ziehl-Abegg patented rotating diffusor which reduces noise and helps increase overall system efficiency. The fan sled has rubber dampers to isolate and minimize vibration. The slide out design allows quick inspection of the fan system. The 7 blade, welded construction impeller is dynamically balanced at the factory with hub; admissible vibration level less than 2,8 mm/s (0.11 in/s) in conformity with ANSI/AMCA 204.



Fan Control

Option A10: Backward incline direct drive plenum fan for medium external or total static applications. Fan motor controlled by variable frequency drive and associated VFC sequence.

Option A10E: Backward incline plenum fan with EMC for medium external or total static applications. Fan motor controlled by variable frequency drive and associated VFC sequence.

Option A11: Backward incline direct drive plenum fan for high external or total static applications. Fan motor controlled by variable frequency drive and associated VFC sequence.

Option VFC1 Supply Fan High – Low

Sensor/Signal: 0-10V signal from control system

Sequence: The unit controller indexes the supply fan to high or low speed based upon unit mode (heating or cooling) and a call for active space heating or cooling. When there a call for either space heating or cooling the exhaust fan will increase to high speed; otherwise the exhaust fan will be decrease to low speed. The controller has 4 independent setpoints for the exhaust fan speed: Cooling High, Cooling Low, Heating High, Heating low.

Option VFC3: Duct Static Pressure Control

Sensors/Signal: Unit mounted pressure sensor; sensing range 0 - 2.5" w.c.; 24 Vac, 0-10V signal; ± 1% FS accuracy; 1/4" barb connections. Requires field installed 1/4" pneumatic tubing to the ductwork located 2/3 down the duct.

Sequence: Whenever the supply fan is running in any mode, the fan speed varies to maintain the user selected duct static pressure setpoint. (Default 0.1", adjustable range -0.5" thru 0.5") When the supply fan is OFF, the VFD supply fan signal will be 0%. The control system limits the actual VFD range between a user adjusted minimum and maximum output setting with default values of 25% and 100% output - other mechanical limits may apply.



Option VFC4: Building Static Pressure Control

Sensors/Signal: Unit mounted pressure sensor; sensing range -125 thru 125 Pa; 24 Vac, 0-10V signal; ± 1% FS accuracy; 1/4" barb connection. Requires field installed 1/4" pneumatic tubing to the building.

Sequence: Whenever the supply fan is running in any mode, the fan speed varies to maintain the user selected building static pressure setpoint. (Default 25 Pa, adjustable range -125 thru 125 Pa) When the supply fan is OFF, the VFD supply fan signal will be 0%. The control system limits the actual VFD range between a user adjusted minimum and maximum output setting with default values of 25% and 100% output - other mechanical limits may apply..

Option VFC9: Adjustable Constant Volume Control

Sensors/Signal: none

Sequence: Whenever the supply fan is ON, the VFD will drive to the user defined % based upon the unit display or Network provided value. The control system limits the adjustable drive speed between a minimum of 25% and a maximum of 100%.

OPTIONAL FEATURES (cont'd)**Supply & Exhaust Fan System****Power Exhaust Fan**

The ECM exhaust fan provides superior performance in a compact design. The exhaust air stream flows perpendicular away from the outside air intake meeting ASHRAE 62.1 air quality standard. The ECM communication allows direct speed control from 0-100% as required by the sequence of operation.

Option PE4: 500 - 5,000 cfm

Option PE5: 1,000 - 7,000 cfm

Option PE6: 2,000 - 8,500 cfm

Option EF1 Exhaust Fan High – Low

Sensor/Signal: 0-10V signal from control system

Sequence: The unit controller indexes the exhaust fan to high or low speed based upon unit mode (heating or cooling) and a call for active space heating or cooling. When there a call for either space heating or cooling the exhaust fan will increase to high speed; otherwise the exhaust fan will decrease to low speed. The controller has 4 independent setpoints for the exhaust fan speed: Cooling High, Cooling Low, Heating High, Heating low.

Option EFC4: Building Static Pressure Control

Sensors/Signal: Unit mounted pressure sensor; sensing range -0.5 thru 0.5" w.c.; 24 Vac, 0-10V signal; ± 1% FS accuracy; 1/4" barb connection. Requires field installed 1/4" pneumatic tubing to the building.

Sequence: Whenever the supply fan is running in any mode, the fan speed varies to maintain the user selected building static pressure setpoint. (Default 0.1", adjustable range -0.5" thru 0.5") When the supply fan is OFF, the VFD supply fan signal will be 0%.

Option EFC7: Supply Fan Tracking

Sensors/Signal: none

Sequence: Whenever the supply fan is ON, the exhaust fan VFD drives to the user defined % "off set" from the supply fan speed.

Option EFC9: Adjustable Constant Volume Control

Sensors/Signal: none

Sequence: Whenever the supply fan is ON, the exhaust fan will drive to the user defined % based upon the unit display or Network provided value.

Air Flow and Damper Options

Option AR__: The illustrations (see next page) of the optional air flow and damper arrangements available on these systems. The table matrix on the next page shows which options are available with which models. Damper construction: The control damper(s) are low leak with blade and jamb seals. The damper leakage does not exceed 10 cfm per square foot at 4" sp. The damper are constructed of 16 gage galvanized steel with reinforcement to insure structural integrity. Blade edge seals are PVC coated polyester fabric suitable for -25°F to +180°F (-32°C to +83°C) mechanically locked into the blade edge. Jamb seals shall be flexible stainless steel metal, compression type to prevent leakage between end of the blade and the damper frame.

Damper Control

Option GF1: External 0-10V Input Signal

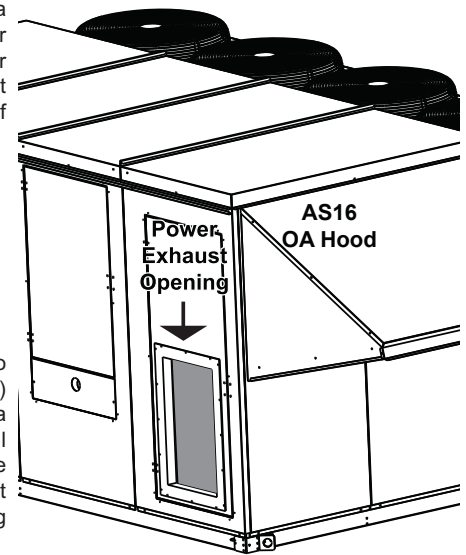
Sensors/Signal: User supplied 0-10 volt , 2 wire signal.

Sequence: The controller accepts a 0-10 volt signal that will position the damper from 0-100% open between the user set maximum and minimum settings.

Option GF2: User Adjustable Two Position Control

Sensors/Signal: none

Sequence: Whenever the unit supply fan is ON in the occupied mode, the dampers will be open to outside air from 0-100% based upon the user setting.. If the supply fan is ON in the unoccupied mode, the dampers will open to outside air to a second user define setting.. When the supply fan is OFF, the dampers will be closed 100% to the outside air.





Damper Control (cont'd)

OPTIONAL FEATURES (cont'd)

Supply & Exhaust Fan System

Variable Name	Input Switch		Default Damper Position	Display Range	Y1 Output Range
	ID9	ID10			
Aux_1_SP	Open	Open	20%	0-100%	0 – 10V
Aux_2_SP	Close	Open	40%	0-100%	0 – 10V
Aux_3_SP	Open	Close	60%	0-100%	0 – 10V
Aux_4_SP	Close	Close	80%	0-100%	0 – 10V

Option GF4: Four Position Control from 2 External Contacts

Sensors/Signal: Quantity 2, user supplied, dry contact closures. (4 wires)

Sequence: Whenever the supply fan is ON in the occupied mode, the dampers will open to a user defined % of outside air based upon 2 dry contact closure inputs. When the supply fan is OFF, the dampers will be closed to outside air.

Option GF5: Building Static Pressure

Sensors/Signal: Unit mounted pressure sensor; sensing range -0.5" w.c. thru 0.5" w.c.; 24 Vac, 0-10V signal; ± 1% FS accuracy; 1/4" barb connections. Requires field installed 1/4" pneumatic tubing to the sensing zone.

Sequence: Whenever the supply fan is called to run in the occupied mode, the dampers modulate to maintain the user selected building static pressure setpoint. The dampers are limited to 25%-100% open position. When the supply fan is OFF or in the unoccupied mode, the dampers are closed to the outside air.

Option GF8: Economizer Package with CO₂

Sensors/Signal: Reznor supplied, field installed, wall mount CO₂ sensor. Infrared beam technology, 24 Vac, 0-10V output signal, 4 wires, ± 50 ppm accuracy.

Sequence: The dampers will modulate to the user adjustable minimum outside air position setting when the unit is in occupied mode (Default = 10%). When the CO₂ sensor option is selected (input U9), the minimum damper position will be determined as follows: If the Space CO₂ level exceeds the space setpoint (*default = 1,000 ppm*) with a 200 ppm differential (*default = 200 ppm*), the user adjustable CO₂ value will be added to the damper position. (Default = 10%).

CO₂ < 800 ppm = Active Minimum Damper Position 10%

CO₂ > 1,000 ppm = Minimum Position (10%) + CO₂ Addition (10%) = 20% open position.

When cooling is required via the thermostat input and the outdoor air temperature is less than the economizer temperature lockout and the economizer dewpoint lockout, the dampers will modulate using a PID from the minimum position to the maximum position to maintain the mixed air temperature setpoint. (Default = 55°F)

Option AS16: Outside Air Hood with permanent pre-filters

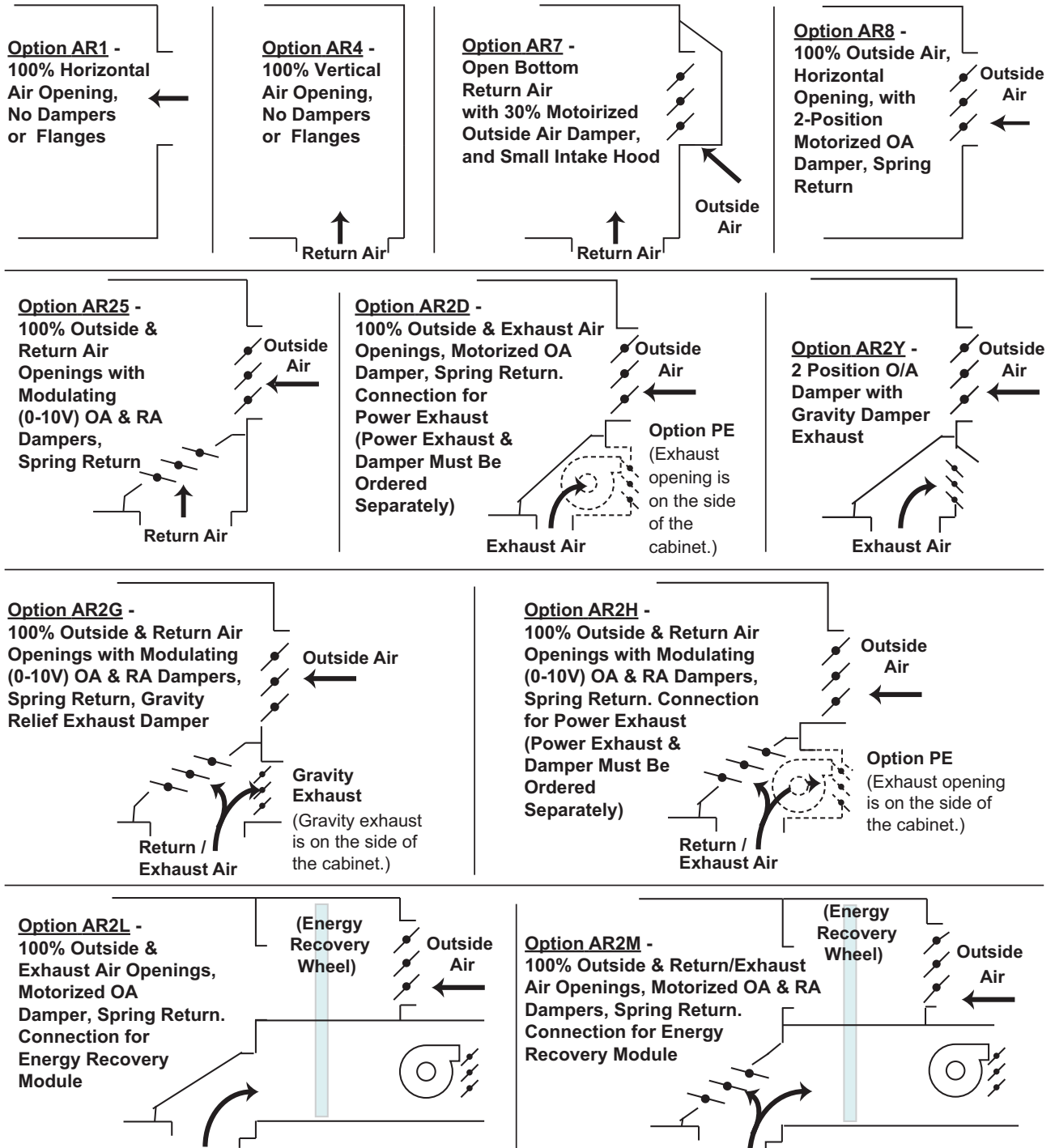
Unit has outdoor air hood designed for 100% airflow and allows uniform coil face velocity and filter loading. Outdoor air inlet hood include 1 inch (25 mm) permanent washable MERV 5 filters and screen. (Dust mites, pollen, and water spray) Hood airflow does not exceed 300 fpm intake velocity to prevent snow and rain entrainment per Std 62.1.

Replacement air systems should typically be specified with a motorized outside damper and interlocking safety to ensure the damper is opened prior to enabling the supply fan (when no return air path is connected). Building codes and national standards may require a motorized damper for specific airflow ranges. The location of the outside air intake should comply with the requirements of ASHRAE 62.1999.

Intake Air Hoods

Air Flow and Damper Options

Model	Air & Damper Option Code										
	AR1	AR4	AR7	AR8	AR25	AR2D	AR2G	AR2H	AR2J	AR2M	AR2Y
YDHA			✓		✓	✓	✓	✓	✓	✓	
YDMA	✓			✓	✓	✓	✓	✓	✓	✓	✓





OPTIONAL FEATURES (cont'd) Gas Heating System Options

Gas Heating

Option H_ : 80% Efficient Gas Heating Section

The heating system is factory installed and design certified to ANSI Standard Z83.8/CSA 2.6. The tubular style Indirect fired single or dual heat sections are selected for 20°F - 100°F temperature rise applications. The power vented system has a minimum 80% thermal efficiency throughout the modulated range of 5:1 or 10:1. The 409 stainless steel heat exchanger is specifically designed to handle the treatment of 100% outside air and other corrosive situations. The gas control system provides ignition control, gas modulation and all necessary safeties. Diagnostic codes include: failed ignition, primary limit failure, value failure, air sensor, as sensor, flame sensor.

Option G_ : 91% Efficient Gas Heating Section

The heating system is factory installed and design certified to ANSI Standard Z83.8/CSA 2.6. The tubular style Indirect fired single or dual heat sections are selected for 20°F - 100°F temperature rise applications. The power vented system has a minimum 91% thermal efficiency throughout the modulated range of 5:1 or 10:1. The 409 stainless steel primary heat exchanger is specifically designed to handle the treatment of 100% outside air and other corrosive situations. The gas system provide complete drainage of the condensate (~4 pH) through the base of the unit. The gas control system provides ignition control, gas modulation and all necessary safeties. Diagnostic codes include: failed ignition, primary limit failure, value failure, air sensor, as sensor, flame sensor.

Heating	Option Code	MBH		(kW)		Cooling Size (MBH)									
		Input	Output	Input	Output	060	090	120	150	180	210	240	300 ^B	360 ^B	
Standard Efficiency (80%) ^B	H50	50	40	(15)	(12)	H - M	H	H							
	H75	75	60	(22)	(18)	H - M	H - M	H - M	H	H					
	H100	100	80	(29)	(23)	H - M	H - M	H - M - S	H - M	H	H	H			
	H102 ^A	100	80	(29)	(23)	H - M	H - M	H - M - S	H - M	H	H	H			
	H125 ^A	125	100	(37)	(29)	H - M	H - M	H - M - S	H - M - S	H - M	H	H			
	H150 ^A	150	120	(44)	(35)	H - M	H - M	H - M - S	H - M - S	H - M - S	H - M	H			
	H175	175	140	(51)	(41)	H - M	H - M	H - M - S	H - M - S	H - M - S	H - M - S	H - M			
	H200	200	160	(59)	(47)	M	H - M	H - M - S	H - M - S	H - M - S	H - M - S	H - M	H - M	H - M	
	H202 ^A	200	160	(59)	(47)	M	H - M	H - M - S	H - M - S	H - M - S	H - M - S	H - M	H - M	H - M	
	H300	300	240	(88)	(70)		H - M	H - M - S	H - M - S	H - M - S	H - M - S	H - M	H - M	H - M	
	H400	400	320	(117)	(94)			H - M - S	H - M - S	H - M - S	H - M - S	H - M	H - M	H - M	
	H402 ^A	400	320	(117)	(94)			H - M - S	H - M - S	H - M - S	H - M - S	H - M	H - M	H - M	
	H502 ^A	500	400	(147)	(117)					H - M - S	H - M - S	H - M	H - M	H - M	
	H602 ^A	600	480	(176)	(141)					H - M	H - M - S	H - M	H - M	H - M	
H702 ^A	700	560	(205)	(164)								H - M	H - M		
H802 ^A	800	640	(234)	(188)								H - M	H - M		
High Efficiency (91%) ^B	G150	150	137	(44)	(40)	H - M	H - M	H - M - S	H - M - S	H - M - S	H - M - S	H - M			
	G225	225	205	(66)	(60)	H - M	H - M	H - M - S	H - M - S	H - M - S	H - M - S	H - M	H - M	H - M	
	G300	300	273	(88)	(80)		H	H - M - S	H - M - S	H - M - S	H - M - S	H - M	H - M	H - M	
	G302 ^A	300	273	(88)	(80)		H	H - M - S	H - M - S	H - M - S	H - M - S	H - M	H - M	H - M	
	G372 ^A	370	337	(108)	(98)				S	H - M - S	H - M - S	H - M	H - M	H - M	
	G452 ^A	450	410	(132)	(120)					H - M - S	H - M - S	H - M	H - M	H - M	
	G525 ^A	525	478	(154)	(140)								H - M	H - M	
	G602 ^A	600	546	(176)	(160)								H - M	H - M	

^A Dual heating sections for improved modulation control.

^B See gas heating table for sizes, heating input and output values.

High efficiency gas heating section is 82%ncv/88%gcv. Very high efficiency heating systems are 92%ncv/105%gcv. (Efficiency in North America is measured in ncv. Efficiency in Europe is measured in gcv.)

H = Available in Model YDHA

M = Available in Model YDMA

Gas Control System

Option AG73: Single Heat Section (5:1 Modulation)

Option AG74: Dual Heat Section (10:1 Modulation)

The burner capacity is controlled by the control system to maintain the active heating setpoint. The control value modulates from 20% - 100% capacity to maintain the setpoint. Gas systems larger with dual heat exchanger modulate from 10-100% capacity.

OPTIONAL FEATURES (cont'd)

Gas/Electric Heating System Options

Gas Manifold

Option BP1: Standard Manifold

Option BP4: Manifold with high and low gas pressure switches

The standard gas manifold includes gas valve(s), tap(s) and all necessary safeties meeting ETL and CQS standards. The gas manifold has option high and low gas pressure switches that will turn off the gas system when activated. The high manifold pressure is 125% of settings. (Natural gas 4.4" w.c., propane 12.5" w.c.) The low is 50% of the setting. (Natural gas 1.75" w.c., propane 5.0" w.c.) All gas options require a minimum inlets of 5.0" w.c. natural gas.

Heat Exchanger

Option AC2: 409 Stainless Steel Heat Exchanger

409 corrosion-resistant stainless steel material option insures the longevity of the heat exchanger caused from flue gas condensate. The flue gas may condense when the entering air temperature is less than 40°F and/or when the leaving air temperature rise is greater than 40°F. The 409 stainless steel provides superior performance well beyond coated material options allowing for 10 year heat exchanger warranties.

Option AC2A: 409 Stainless Steel Primary Plus Aluminum Secondary Heat Exchanger

Electric Heat

Option E10-E120: 10 kW through 120 kW Electric Heating Elements

Option EG3: Stage Control

Option EG4: SCR Control

Factory installed electric resistance heat. An access door allows inspection of heating elements as well as field replacement if necessary. The factory install elements are sub-fused to meet UL-1995 safety standard. The safeties include automatic high temperature shut off switch, air proving switch, color coded wiring and circuit breaker protection for transformers. Heat sections features continuous modulation by SCR (0-100%) or 4 stage control.

Reheat Control

Reznor P125 Series systems are specifically designed for conditioning 30-100% outside mixed conditions. This is accomplished using a DX system matched to high outside air applications requirements.

Options RPLE: Low Enthalpy Reheat Pump Control

Option RPHE: High Enthalpy Reheat Pump Control

The P125 series use a dedicated refrigerant system that precools the incoming air then directly uses the condenser waste heat to reheat the air after it passes through the packaged unit main DX system. The compact commercial grade dehumidifier provides useful precooling of the air. Because the reheat system is mechanical separate from the main DX system, the reheat pump provides the following 4 advantages:

- Superior part load performance: The system can operate stand alone or in conjunction with the package unit's main DX system. The system does not require low ambient kits or other capacity control while delivering more than 17°F of reheat needed for the application.
- Verifiable and predictable reheat performance: The system utilized a modulating digital scroll and an independent DX system which provides predictable and stable performance.
- Simplistic service and maintained: The system can run independent of the main DX, thereby allowing service technical to properly diagnose and verify performance.
- Low energy usage compared to hot gas reheat. The re-heat pump allows for stand alone operation and/or part load operation. The main DX system can remain OFF or run in part load without compromising the reheat capacity. This allows for lower overall energy usage.

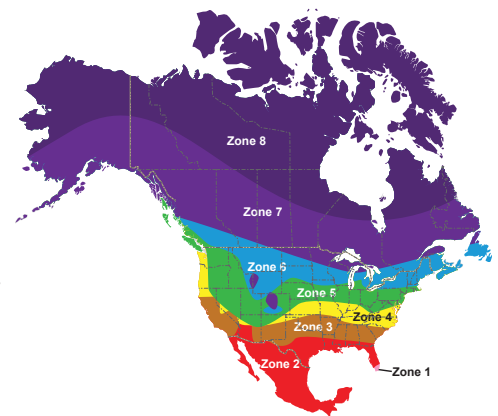
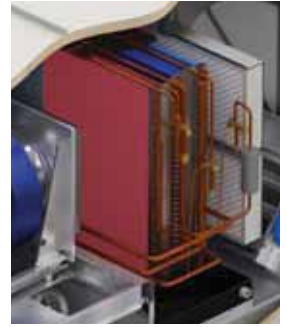
Reheat is typically required, in geographical areas that see a 60°F dewpoint frequency greater than 400 hours per year. In conventional systems, dehumidification occurs by chilling the air below a desired dewpoint. This typically means a 52-55°F dry bulb leaving coil temperature (50% Rh at 75°F). However, not all spaces can accept the 52-55°F air without causing overcooling. Over cooling also has the negative affect of increasing the space relative humidity. Specifying the quality (reheat availability under all load conditions), control of reheat (staged or modulating) and selection of the appropriate reheat system requires a working knowledge of the refrigeration cycle and HVAC system design. Considerations for the reheat system typically fall into three application types:

Constant Reheat: Applied where the space sensible and latent loads are small in comparison to the outside air load. When the outside air load dominates the space load, a neutral air (continuous dehumidified air delivered between 70° and 75°F) approach may be preferred. Typical applications include corridors and locker rooms.

Variable Reheat: Applied where the space sensible or latent loads vary in comparison to the outside air loads. Variable sensible heat gains (solar, electric loads, occupancy etc.) affect the amount of reheat required to maintain space temperature and relative humidity. If the equipment treats both outside air and maintains space temperature (a sole source unit), a variable reheat system will be required. Typical examples include surgical rooms and "clean" rooms.

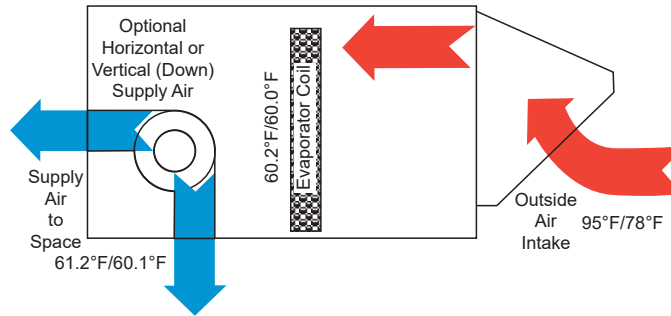
No Reheat: Applied where the space sensible load is constant and much greater than the outside air load. Typical examples include motor and telecommunications centers .

To illustrate the performance, compare the performance of a cooling-only to the cooling/dehumidifying option RPLE at 95°/78°F dry bulb/wet bulb. The dehumidification unit Re-Heat Pump™ system uses a basic heat pump refrigeration circuit for dehumidification and reheat. Evaporator capacity is a small part (approximately 15-20%) of the total design capacity, allowing continuous operation at low loads (between 55 and 60°F ambient dewpoint). The reheat pump™ system precooling evaporator coil is installed upstream of the main evaporator coil, and the reheat pump™ condenser coil is in the downstream position. The upstream precool coil tempers outside air and lowers wet bulb depression of the air entering the main evaporator coil (86.4/75.3). Heat removed from the precool coil is rejected to the downstream reheat coil (71.2/61.5 including compressor and fan heat of compression). In this mode of operation, the system is configured as a stand-alone neutral air unit which conditions only the outside air to the building. If the main evaporator coil were removed, the refrigeration system would resemble a standard residential dehumidifier.

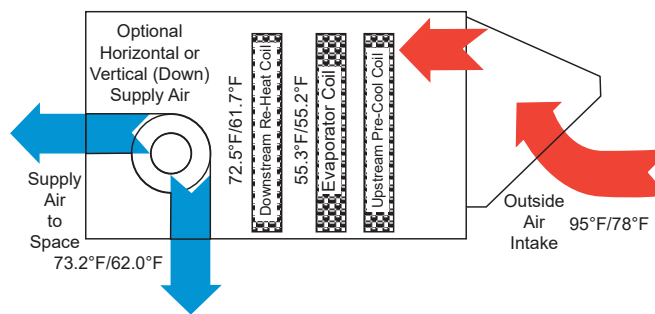


REHEAT OVERVIEW (cont'd)

Performance at 95°/78°F Outside Air and a Nominal Airflow Rate



Performance at 95°/78°F Outside Air and a Nominal Airflow Rate



Reheat Control (cont'd)

Since the dehumidification unit refrigeration circuit is independent of the main evaporative cooling coil, performance is relatively constant (13-20°F.) This translates into ease of commissioning and verification of the high COP Re-Heat Pump™ system performance under mild or extreme conditions. Other package systems that use hot gas reheat must maintain higher than needed condenser head pressures for reliable operation and adequate reheat. Under low load conditions, poor performance of hot gas reheat and subcooling reheat systems can be caused by compressor unloading. Service, diagnosis, and performance of hot gas reheat systems can be difficult to verify at conditions other than design. For equivalent reheat performance, other technologies, such as heat pipes or flat plate heat exchangers may have greater than ten times the air pressure drop of the Re-Heat Pump coils.

Additionally, performance of the heat pump is independent of the main cooling coil, while wrap around heat pipes or flat plate heat exchangers require an active cooling coil for energy transfer. At part load, the reheat pump can operate in a stand alone mode to provide both dehumidification and reheat.

While the dehumidification unit compressor consumes additional energy during dehumidification modes, the year round benefit of reduced fan energy will result in lower annual energy costs.

When evaluating the suitability of staged capacity control, the outside air changeover rate to the zone should be calculated. Use the formula listed below.

High air changeover rates may require special control sequences, air distribution design, and cooling-heating modulation controls versus step control. As a guideline, modulation should be evaluated when the changeover rate exceeds 8 ACH (1 outside air change for every 7.5 minutes). Since heating design temperature difference is typically greater than cooling, modulation of the heating system may be more critical.

As design extremes increase, staging or modulation of equipment capacity becomes increasingly important. Examining the lowest stage or step of equipment capacity relative to the lowest load condition can indicate if capacity modulation is required.

Generally products that deliver 100% outside air quantities fall into one of three basic system types. They include:

Neutral Air: Outside air is cooled, dehumidified, and heated to room conditions (70 to 75°F).

Tempering Air: Outside air is cooled and mixed with conditioned return air.

Sole Source: Conditions both outside air and the internal building loads

Identifying the system type can aid the designer in evaluating the appropriate equipment for each application. In addition, the use of interlaced coils provide excellent part load performance. More importantly the reheat coil should be more than 6" away from the main DX system to prevent re-evaporation of the condensate. Re-evaporation essentially reduces the overall effectiveness of the dehumidification process.



MISCELLANEOUS OPTIONS ENERGY RECOVERY

Applications

Energy recovery systems recover exhaust air energy and reintroduce it into the conditioned space. The energy recovery wheel provides sensible and latent energy exchange between the entering and exhaust air streams of a building. This allows a substantial amount of the energy, which is normally lost in the exhaust air stream to be returned into the entering air. Ideal applications are areas that have cold or hot temperatures with high occupancy loads or high ventilation requirements. Energy recovery units also reduce the design loads for the mechanical cooling equipment, which can mean downsizing the air conditioning equipment. Application software is available to calculate the load reductions and provide the energy and dollar savings for all areas.



Principle of Operation

The energy recovery enthalpy wheel contains parallel layers of a polymeric material that are impregnated with silica gel (desiccant). The wheel is located in the entering (intake) air and exhaust air streams of the ventilation equipment. As the wheel rotates through each air stream, the wheel surface captures sensible and latent energy. In the heating mode, the wheel rotates to provide a constant transfer of heat from the exhaust air stream to the colder intake air stream. During the cooling season, the process is reversed. During periods when the outside air is mild and energy recovery is not desired, the Stop-Start-Jog option is utilized to stop the wheel from turning, thereby providing cool outside air into the space.

Cross Leakage

In space conditioning applications, where the ventilation is operating to maintain acceptable indoor air quality, there are no contaminants in concentrations of concern. Cross leakage in the energy recovery system results in a small amount of the exhaust air, typically less than 5% in balanced airflow, returning to the space. The operation cost of moving this air is far less than that required for a purge sector. Do not use these units in applications that have high concentrations of contaminants (See unit performance pages for cross over leakage values).

- Option EW30:** Total enthalpy wheel 30" (750 - 2,000 cfm)
- Option EW36:** Total enthalpy wheel 36" (1,400 - 3,800 cfm)
- Option EW46:** Total enthalpy wheel 46" (2,200 - 5,400 cfm)
- Option EW52:** Total enthalpy wheel 52" (3,000 - 7,000 cfm)
- Option EW58:** Total enthalpy wheel 58" (3,500 - 8,000 cfm)

Sequence: The wheel will operate/rotate whenever the following three conditions are valid

- The unit is on in the occupied mode
- The unit exhaust fan is running
- The outside air is more than 5°F (adjustable) above or below the unit supply air temperature setpoint.

The unit will be off whenever anyone of the above conditions is not valid or the unit is in alarm condition. Whenever the wheel is off while the unit supply fan is ON, the wheel will jog to prevent dirt and debris build up.

Option PH2A: 10 kW preheater for ERM

Option PH3A: 20 kW preheater for ERM

Option PH4A: 30 kW preheater for ERM

Sequence: The preheat, located in the outside air hood before the wheel, will be on whenever the following two conditions are true.

- The wheel leaving air temperature is below 33°F.
- The outside air temperature is below 32°F

The unit will be off whenever anyone of the conditions is not valid or the unit is in alarm condition.

Outdoor Air Temperature Frost Threshold Temperature		
Indoor Relative Humidity	Indoor Temperature	
	70°F	80°F
20%	-14 °F	-8 °F
30%	-3 °F	3 °F
40%	5 °F	11 °F
50%	12 °F	18 °F

The table illustrates when frost may occur based on ambient indoor and outdoor conditions, i.e. frost occurs at -14°F outdoor air temperature with the space temperature of 70°F and 20% RH.

Control Option

Option CL23



Option CL33

Communication Protocols**Remote Controls****Extended Warranty****Hail Guard****Filter Options**

Option CL23: 24v 2-stage Heating/Cooling Touch-Screen 7-Day Programmable Thermostat

Option CL33: Electronic 24v Programmable Thermostat for up to 2 stages heating and/or cooling. Has auxiliary relay for damper changeover. - Do not use with any Remote Console having switches

Option CL78: Wall mounted DDC temperature monitor and setpoint adjustment

Sensor: Space temperature and humidity sensor with room setpoint adjustment. 5 wire device: 24V power and ground, 3 wire communication.

Sequence: The compact room module allows the user to access the unit's internal time schedule, space temperature setpoints, space humidity and temperature values and unit mode commands. See unit installation manual for detail information.

Option BE15: (or Option GF8) Space CO₂ Sensor (Range 0-2000 ppm). Field installed in space.

Option BE17: Smoke Detector (Photoelectric), field installed, DDC Monitored

Option BD5: Firestat, 200°F. Shipped separately for field installation in return air and/or outlet duct. Review local building codes for compliance.

Option BHB7: Lon DDC communication bus

Option BHB8: BacNet DDC communication bus

Option RB5: Wall mounted remote monitoring display

The factory installed display allows complete access to unit test features, schedules, discharge air setpoints, fan control, alarms and other unit operational setpoints. The RB5 is a second remote mounted display allowing the same unit access. The 4 wire device can be mounted up to 500 feet way from the unit (2-wire 24 Vac power; 2-wire communication).

Option RB6: Hand held remote monitoring display with cable

The standard warranty on Reznor HVAC equipment is for 12 months from the date of installation or 18 months from the date of purchase (whichever occurs first). Optional warranties extend the standard warranty by 4, 9, or 1 year for a total warranty period as shown below.

XW1 - 5 Year compressor warranty

XW2 - 5 Year gas heat exchanger warranty

XW3 - 10 Year gas heat exchanger warranty

XW4 - 5 Year electric heat furnace warranty

XW8 - 2 Year all parts warranty

Option AZ11: Wire mesh cover for condensers

The unit has an optional hail guard providing protection from large debris and hail that can cause significant damage to the condenser coils.

Option AW21 - 4" MERV 8 pleated filters



Option CL78



Option BE17

BacNet Card
Ferrite Core

Option RB5/6

V-configuration filters are installed in a slide out rack before the DX cooling coils. Average arrestance is 93%; MERV Rating 13 per ASHRAE 52.2-99. The filters are manufactured from recycled synthetic material with moisture & microbial growth resistant properties. Less than 0.36" w.c. pressure drop at 500 fpm air velocity.

Option AW24 - 4" MERV 13 filters

V-configuration filters are installed in a slide out rack before the DX cooling coils. Average arrestance is 95%; MERV Rating 13 per ASHRAE 52.2-99. The filters are manufactured from recycled synthetic material with moisture & microbial growth resistant properties. Less than 0.36" w.c. pressure drop at 500 fpm air velocity.

100% outside air systems typically require more frequent inspection than return air systems.

Pleated filters are preferred only if existing makeup air installations have shown no evidence of filter degradation due to heavy moisture loading. Permanent filters may be preferred in ASHRAE defined humid climates or areas with heavy rainfall. Pleated filters are recommended for any environments with a history of particulate loading and coil cleaning.

Extra Set of Filters

Option XF21: Extra set of 4" pleated filters shipped with unit - MERV8.

Option XF24: Extra set of 4" pleated filters shipped with unit - MERV13.

Coil Corrosion Protection

Electrofin® coating protects the coils from higher than normal corrosive air environments, such as sea salt. The factory installed coating can be applied to the main evaporator coil, condenser coil or both.

Option AUB3: Evaporator and condenser coils

Option AUB4: Evaporator coils only

Option AUB6: Evaporator and reheat coils

Option AUB7: Condenser coils only

Option AUB8: Evaporator, reheat, and condenser coils

Hot Gas Bypass

Option AUC8: Main coil hot gas by-pass (for fixed capacity circuits only)

Hot gas bypass reduces excess evaporator capacity and extends compressor operation as opposed to cycling (ON/OFF) excess capacity. Only the fixed capacity circuit has HGBP.



CAPACITY & PERFORMANCE TABLES

DX Unit Performance

Model YDMA

Entering air conditions 95°F/75°F @ 95° ambient

CFM	Size	60	90	120	150	180	210	240	300	360
800	LAT [#]	56.5/56.5								
	Capacity	51.4/34.3								
900	LAT	58.7/58.3								
	Capacity	53/36.2								
1000	LAT	60.8/59.8	53.1/52.9							
	Capacity	54.5/37.9	74/46.4							
1100	LAT		55.4/54.7							
	Capacity		76.1/48.3							
1200	LAT		57.3/56.2							
	Capacity		77.9/50.1							
1300	LAT		59/57.5	51.6/51.6						
	Capacity		79.5/51.8	100.5/64.6						
1400	LAT			53.2/53.2						
	Capacity			102.3/66.5						
1500	LAT			54.6/54.6						
	Capacity			103.9/68.5						
1600	LAT			55.8/55.8						
	Capacity			105.5/70.3						
1800	LAT			57.9/57.8	53/53					
	Capacity			108.5/74	132.8/84.4					
2000	LAT				55.2/55					
	Capacity				136.6/88.2					
2200	LAT				57.3/56.7	52.5/52.5				
	Capacity				139.9/91.8	165.3/106.5				
2400	LAT				59.2/58.1	54.3/54.3				
	Capacity				143/95.2	168.8/110.4				
2600	LAT					55.8/55.8	52.1/52.1			
	Capacity					172.1/114.2	197.9/125.3			
2800	LAT					57/57	53.6/53.6			
	Capacity					175.2/117.9	202/129.3			
3000	LAT					58.5/58.1	54.9/54.9	52.1/52.1		
	Capacity					178.1/121.5	205.8/133.2	228.1/142.9		
3200	LAT					59.8/59.1	56.4/56	53.6/53.4		
	Capacity					180.8/124.9	209.4/136.9	232.5/146.9		
3400	LAT						57.7/57	55/54.5	49.6/49.6	
	Capacity						212.8/140.6	236.5/150.8	280.1/179.7	
3600	LAT						58.9/57.9	56.3/55.6	51/51	
	Capacity						216/144.1	240.3/154.5	283.8/183.9	
3800	LAT							57.4/56.5	52.3/52.3	
	Capacity							243.8/158.1	287.4/188.1	
4000	LAT							58.5/57.3	53.4/53.4	
	Capacity							247.1/161.6	290.9/192.2	
4200	LAT							59.5/58.1	54.3/54.3	49.5/49.5
	Capacity							250/165	294.3/196.2	347.1/218.8
4400	LAT								55.2/55.2	50.6/50.6
	Capacity								297.6/200.1	351.3/223
4600	LAT								56/56	51.6/51.6
	Capacity								300.7/204	355.4/227.2
4800	LAT								56.8/56.8	52.6/52.6
	Capacity								303.8/207.8	359.3/231.3
5000	LAT								57.4/57.4	53.4/53.4
	Capacity								306.8/211.5	363.2/235.3
5200	LAT								58.1/58.1	54.2/54.2
	Capacity								309.7/215.2	366.8/239.3
5400	LAT								58.6/58.6	54.9/54.9
	Capacity								312.4/218.7	370.4/243.2
5600	LAT								59.2/59.2	55.6/55.6
	Capacity								315.1/222.2	373.8/247
5800	LAT								59.9/59.7	56.2/56.2
	Capacity								317.6/225.7	377/250.7
6000	LAT								60.6/60.1	56.8/56.8
	Capacity								320.1/229	380.2/254.3
6200	LAT								61.2/60.6	57.5/57.3
	Capacity								322.4/232.3	383.1/257.9
6400	LAT								61.8/61	58.1/57.8
	Capacity								324.7/235.5	386/261.4
6600	LAT									58.8/58.3
	Capacity									388.7/264.8
6800	LAT									59.4/58.8
	Capacity									391.2/268.2

[#] LAT = Coil drybulb/wetbulb; Total Sensible capacity.

REZNOR® CAPACITY & PERFORMANCE TABLES (cont'd)

DX Unit Performance

Model YDMA

Entering air conditions 95°F/78°F @ 95° ambient

CFM	Size	60	90	120	150	180	210	240	300	360
800	LAT [#]	59.7/59.7								
	Capacity	54.4/31.7								
900	LAT	61.7/61.6	54.2/54.2							
	Capacity	56/33.4	75.6/41.4							
1000	LAT	63.6/63.1	56.4/56.4							
	Capacity	57.5/35	77.9/43.2							
1100	LAT	65.2/64.3	58.4/58.2							
	Capacity	58.8/36.5	80/44.9							
1200	LAT	66.7/65.3	60.3/59.7							
	Capacity	59.9/37.9	81.8/46.4							
1300	LAT			54.9/54.9						
	Capacity			106.5/59.3						
1400	LAT			56.6/56.6						
	Capacity			108.1/61.1						
1500	LAT			58/58						
	Capacity			109.7/62.9						
1600	LAT			59.2/59.2						
	Capacity			111.3/64.6						
1800	LAT				56.5/56.5					
	Capacity				139.6/78.2					
2000	LAT				58.5/58.5	53.6/53.6				
	Capacity				143.3/81.6	171.3/94.3				
2200	LAT					55.8/55.8				
	Capacity					174.8/98				
2400	LAT					57.7/57.7	53.7/53.7			
	Capacity					178.1/101.6	204.6/112.5			
2600	LAT					59.2/59.2	55.5/55.5	52.4/52.4		
	Capacity					181.3/105.1	208.9/116.2	230.7/125.5		
2800	LAT						57/57	54.1/54.1		
	Capacity						212.9/119.8	235.6/129.3		
3000	LAT						58.3/58.3	55.6/55.6	49.4/49.4	
	Capacity						216.7/123.3	240.2/133	289.3/156.7	
3200	LAT						59.5/59.5	56.9/56.9	51.3/51.3	
	Capacity						220.2/126.6	244.6/136.5	293.1/160.8	
3400	LAT							58.1/58	53/53	
	Capacity							248.6/139.9	296.7/164.8	
3600	LAT							59.3/59.1	54.4/54.4	48.8/48.8
	Capacity							252.4/143.2	300.3/168.8	352.2/190.5
3800	LAT								55.7/55.7	50.4/50.4
	Capacity								303.7/172.6	356.8/194.5
4000	LAT								56.8/56.8	51.8/51.8
	Capacity								307.1/176.4	361.2/198.5
4200	LAT								57.8/57.8	53.1/53.1
	Capacity								310.3/180.1	365.5/202.4
4400	LAT								58.7/58.7	54.2/54.2
	Capacity								313.5/183.8	369.6/206.3
4600	LAT								59.5/59.5	55.2/55.2
	Capacity								316.5/187.4	373.6/210
4800	LAT									56.1/56.1
	Capacity									377.5/213.7
5000	LAT									57/57
	Capacity									381.2/217.3
5200	LAT									57.7/57.7
	Capacity									384.8/220.8
5400	LAT									58.4/58.4
	Capacity									388.3/224.3
5600	LAT									59.1/59.1
	Capacity									391.6/227.7
5800	LAT									59.7/59.7
	Capacity									394.8/231

[#] LAT = Coil leaving air drybulb/wetbulb temperature(s); Total capacity (MBH)/Sensible capacity.

REZNOR CAPACITY & PERFORMANCE TABLES (cont'd)

DX Unit Performance

Model YDHA

Entering air conditions 85°F/70°F @ 95° ambient

CFM	Size	60	90	120	150	180	210	240	300	360
800	LAT ^a	51.1/51.1								
	Capacity	47/30.5								
900	LAT	53/53								
	Capacity	48.4/32								
1000	LAT	54.7/54.5								
	Capacity	49.8/33.5								
1100	LAT	56.3/55.7								
	Capacity	51/34.8								
1200	LAT	57.8/56.8								
	Capacity	52/36.1								
1300	LAT	59.1/57.7	50.6/50.6							
	Capacity	53/37.2	78/51.3							
1400	LAT	60.2/58.5	51.9/51.9							
	Capacity	53.7/38.3	79.2/52.8							
1500	LAT	61.3/59.2	53.1/53.1	49/49						
	Capacity	54.3/39.2	80.3/54.3	95.7/61.3						
1600	LAT	62.3/59.8	54.1/54.1	50.3/50.3						
	Capacity	54.8/40.1	81.3/55.7	97.2/62.9						
1800	LAT		55.7/55.7	52.3/52.3						
	Capacity		83.3/58.5	100/65.9						
2000	LAT		57.4/57	53.9/53.9	49.3/49.3					
	Capacity		85.1/61	102.5/68.7	126.2/79.6					
2200	LAT		58.9/58.1	55.6/55.2	51/51					
	Capacity		86.7/63.4	104.8/71.4	129.4/82.5					
2400	LAT			57.1/56.4	52.8/52.5	48.6/48.6				
	Capacity			106.8/73.9	132.2/85.3	155.6/99				
2600	LAT			58.5/57.3	54.4/53.7	50.2/50.2				
	Capacity			108.6/76.2	134.7/87.9	158.7/102.2				
2800	LAT			59.7/58.2	55.8/54.8	51.5/51.5	48/48			
	Capacity			110.1/78.3	136.8/90.3	161.5/105.3	185.9/116.4			
3000	LAT			60.8/58.9	57.1/55.8	52.6/52.6	49.3/49.3	46.6/46.6		
	Capacity			111.3/80.2	138.5/92.5	164.2/108.2	189.5/119.7	208.9/128.8		
3200	LAT			61.8/59.6	58.2/56.6	53.6/53.6	50.5/50.5	47.9/47.9		
	Capacity			112.3/82	139.9/94.6	166.8/111.1	192.9/122.8	213/132.1		
3400	LAT			62.7/60.2	59.3/57.4	54.7/54.5	51.5/51.5	49.1/49.1		
	Capacity			113.1/83.6	140.9/96.4	169.1/113.8	196/125.8	216.7/135.3		
3600	LAT					55.7/55.3	52.6/52.4	50.2/50.1		
	Capacity					171.3/116.4	198.9/128.7	220.2/138.4		
3800	LAT					56.7/56	53.7/53.3	51.3/51.1		
	Capacity					173.3/118.9	201.6/131.4	223.4/141.3		
4000	LAT					57.5/56.6	54.7/54	52.4/51.9		
	Capacity					175.2/121.2	204/134	226.3/144.1		
4200	LAT					58.4/57.2	55.6/54.7	53.4/52.7		
	Capacity					176.9/123.5	206.2/136.5	228.9/146.8		
4400	LAT					59.1/57.7	56.4/55.4	54.3/53.4	49.7/49.7	
	Capacity					178.4/125.6	208.2/138.9	231.3/149.3	274.1/178.5	
4600	LAT								50.5/50.5	
	Capacity								277/181.8	
4800	LAT								51.2/51.2	
	Capacity								279.9/184.9	
5000	LAT								51.9/51.9	
	Capacity								282.6/188	
5200	LAT								52.6/52.6	
	Capacity								285.3/191.1	
5400	LAT								53.2/53.2	49.2/49.2
	Capacity								287.8/194	342.4/218.5
5600	LAT								53.7/53.7	49.9/49.9
	Capacity								290.3/196.9	345.6/221.6
5800	LAT								54.2/54.2	50.5/50.5
	Capacity								292.6/199.7	348.6/224.7

^a LAT = Coil leaving air drybulb/wetbulb temperature(s); Total capacity (MBH)/Sensible capacity.

REZNOR CAPACITY & PERFORMANCE TABLES (cont'd)

DX Unit Performance

Model YDHA

Entering air conditions 85°F/70°F @ 95° ambient (cont'd)

CFM	Size	60	90	120	150	180	210	240	300	360
6000	LAT								54.7/54.7	51.1/51.1
	Capacity								294.8/202.4	351.5/227.7
6200	LAT								55.1/55.1	51.7/51.7
	Capacity								297/205.1	354.3/230.6
6400	LAT								55.6/55.6	52.2/52.2
	Capacity								299/207.6	356.9/233.4
6600	LAT								56.2/56	52.7/52.7
	Capacity								300.9/210.2	359.4/236.2
6800	LAT								56.7/56.4	53.2/53.2
	Capacity								302.7/212.6	361.8/238.8
7000	LAT								57.2/56.7	53.8/53.6
	Capacity								304.4/214.9	364/241.5
7200	LAT								57.7/57.1	54.3/54.1
	Capacity								306/217.2	366.1/244
7400	LAT								58.1/57.4	54.8/54.5
	Capacity								307.5/219.4	368/246.4
7600	LAT								58.6/57.7	55.3/54.9
	Capacity								308.9/221.6	369.8/248.8
7800	LAT								59/58	55.8/55.2
	Capacity								310.2/223.6	371.5/251.1
8000	LAT									56.3/55.6
	Capacity									373/253.4
8200	LAT									56.8/56
	Capacity									374.4/255.5
8400	LAT									57.2/56.3
	Capacity									375.7/257.6
8600	LAT									57.7/56.6
	Capacity									376.8/259.6
8800	LAT									58.1/56.9
	Capacity									377.7/261.5
9000	LAT									58.5/57.2
	Capacity									378.6/263.4
9200	LAT									58.9/57.5
	Capacity									379.3/265.1

^a LAT = Coil leaving air drybulb/wetbulb temperature(s); Total capacity (MBH)/Sensible capacity.

REZNOR®

Summer/Winter RPM Considerations

TEMPERATURE RISE

For a Heating/Cooling makeup air unit, if blower RPM is the same in winter as it is in summer, SCFM will usually be substantially higher in winter than in summer. The net result is more or less capacity at design condition.

Temperature rises shown in the blower tables assume a 70°F blower temperature at sea level (standard conditions). Brake HP is shown for standard conditions and will increase with lower blower temperatures and decrease at higher altitudes. For 100% makeup air applications using indirect fired gas furnaces and electric heat, in winter the blower temperature is essentially the same as the outdoor temperature (motor heat may add 1 to 4°F).

To calculate temperature rise, first calculate the net BTUH output at elevation (gas) or for voltage (electric). Then use the formula:

$$\text{Temp Rise} = \frac{\text{BTUH net output}}{1.08 \times \text{Blower ACFM}} \times \frac{(460^\circ\text{F} + \text{Blower Temp})}{530^\circ\text{R}} \times \frac{14.7 \text{ psi}}{\text{Air Pressure (elev)}}$$

Example:

Consider a YDMA-210-H400 heating/cooling 100% makeup air unit with cooling reheat. The blower is balanced for 3750 cfm in the summer with reheated air at 70°F. The goal is to maintain 70°F discharge year round. What is the temp rise in the winter with incoming air at -10°F?

It can be seen for 3750 cfm at "standard conditions", a YDMA-210-H400 would have an 80 degree temperature rise. "Standard conditions" is sea level with a 70°F blower temperature.

Without considering motor heat, the blower temp is -10°F incoming air, so

$$\text{Temp Rise} = \frac{324,000 \text{ BTUH}}{1.08 \times 3,750} \times \frac{(460 - 10)}{530} \times 1 = 68^\circ\text{F}$$

Note that the full fire unit discharge temperature is only 58°F when outside air temperature is -10°F.

The problem is not too little heat; it is too much RPM in the winter. To maintain a constant SCFM (air mass flow) regardless of blower temperature, a variable frequency drive or volume damper may be required.

Looking at it another way, the amount of SCFM being moved in the winter is:

$$\text{SCFM} = \text{Blower ACFM} \times \frac{530^\circ}{(460^\circ + \text{Blower Temp})} \times \frac{\text{Air Pressure (elev.)}}{14.7 \text{ psi}}$$

$$\text{SCFM} = 3,750 \times \frac{530}{(460 - 10)} \times 1 = 4,417 \text{ SCFM}^*$$

Using a familiar formula:

$$\text{BTUH net output} = 1.08 \times \text{SCFM} \times \text{Temp. Rise}$$

Calculate as before - all units are equipped with variable speed fans to avoid the issue.

Elevation (ft)	Air Pressure PSI	Air Density Multiplier	Gas Derate *	Gas Derate Multiplier
0	14.700	1.000	None	1.000
1000	14.175	0.965	None	1.000
2000	13.664	0.930	4.00%	0.960
3000	13.173	0.896	6.00%	0.940
4000	12.682	0.863	8.00%	0.920
5000	12.230	0.832	10.00%	0.900
6000	11.778	0.801	12.00%	0.880
7000	11.341	0.772	14.00%	0.860
8000	10.914	0.743	16.00%	0.840
9000	10.506	0.715	18.00%	0.820
10000	10.108	0.688	20.00%	0.800

* See "High Altitude Capacity Changes" in this Catalog.

SCFM	Temperature Rise (°F)																				
	Natural Gas 80% Efficiency (Input MBH)										Natural Gas 92% Efficiency (Input MBH)										
	75	100	150	200	300	400	500	600	700	800	150	225	300	375	452	525	602	30 kW	60 kW	90 kW	120 kW
650	85.5																				
825	67.3	89.8																94.8			
1,000	55.6	74.1																75.8			
1,250	44.4	59.3	88.9							103.3								63.2			
1,500	37.0	49.4	74.1	98.8						86.1								54.2			
1,750	31.7	42.3	63.5	84.7						73.8								47.4	94.8		
2,000	27.8	37.0	55.6	74.1						64.6	96.9							42.1	84.3		
2,250	24.7	32.9	49.4	65.8	98.8					57.4	86.1							37.9	75.8		
2,500	22.2	29.6	44.4	59.3	88.9					51.7	77.5	103.3						34.5	68.9	103.4	
2,750	20.2	26.9	40.4	53.9	80.8					47.0	70.5	93.9						31.6	63.2	94.8	
3,000		24.7	37.0	49.4	74.1	98.8				43.1	64.6	86.1						29.2	58.3	87.5	
3,250		22.8	34.2	45.6	68.4	91.2				39.7	59.6	79.5	99.4					27.1	54.2	81.2	
3,500		21.2	31.7	42.3	63.5	84.7				36.9	55.4	73.8	92.3					25.3	50.6	75.8	101.1
3,750		19.8	29.6	39.5	59.3	79.0	98.8			34.4	51.7	68.9	86.1	103.8				23.7	47.4	71.1	94.8
4,000			27.8	37.0	55.6	74.1	92.6			32.3	48.4	64.6	80.7	97.3				22.3	44.6	66.9	89.2
4,250			26.1	34.9	52.3	69.7	87.1	104.6		30.4	45.6	60.8	76.0	91.6				21.1	42.1	63.2	84.3
4,500			24.7	32.9	49.4	65.8	82.3	98.8		28.7	43.1	57.4	71.8	86.5	100.5			20.0	39.9	59.9	79.8
4,750			23.4	31.2	46.8	62.4	78.0	93.6		27.2	40.8	54.4	68.0	81.9	95.2						
5,000			22.2	29.6	44.4	59.3	74.1	88.9	103.7	25.8	38.8	51.7	64.6	77.8	90.4	103.7					
5,250			21.2	28.2	42.3	56.4	70.5	84.7	98.8	24.6	36.9	49.2	61.5	74.1	86.1	98.7					
5,500			20.2	26.9	40.4	53.9	67.3	80.8	94.3	23.5	35.2	47.0	58.7	70.8	82.2	94.3					
5,750			19.3	25.8	38.6	51.5	64.4	77.3	90.2	22.5	33.7	44.9	56.2	67.7	78.6	90.2					
6,000				24.7	37.0	49.4	61.7	74.1	86.4	21.5	32.3	43.1	53.8	64.9	75.3	86.4					
6,250				23.7	35.6	47.4	59.3	71.1	83.0	20.7	31.0	41.3	51.7	62.3	72.3	82.9					
6,500				22.8	34.2	45.6	57.0	68.4	79.8	19.9	29.8	39.7	49.7	59.9	69.6	79.8					
6,750				21.9	32.9	43.9	54.9	65.8	76.8	19.1	28.7	38.3	47.8	57.7	67.0	76.8					
7,000				21.2	31.7	42.3	52.9	63.5	74.1	84.7											
7,500				19.8	29.6	39.5	49.4	59.3	69.1	79.0											
8,000					27.8	37.0	46.3	55.6	64.8	74.1											
8,500					26.1	34.9	43.6	52.3	61.0	69.7											
9,000					24.7	32.9	41.2	49.4	57.6	65.8											
9,500					23.4	31.2	39.0	46.8	54.6	62.4											
10,000					22.2	29.6	37.0	44.4	51.9	59.3											
10,500					21.2	28.2	35.3	42.3	49.4	56.4											
11,000					20.2	26.9	33.7	40.4	47.1	53.9											
11,500					19.3	25.8	32.2	38.6	45.1	51.5											



PRESSURE DROP TABLE

Supply Fan

Applies to Cabinet 1: Models YDHA060; YDMA060 & 090

Option A10 & A11

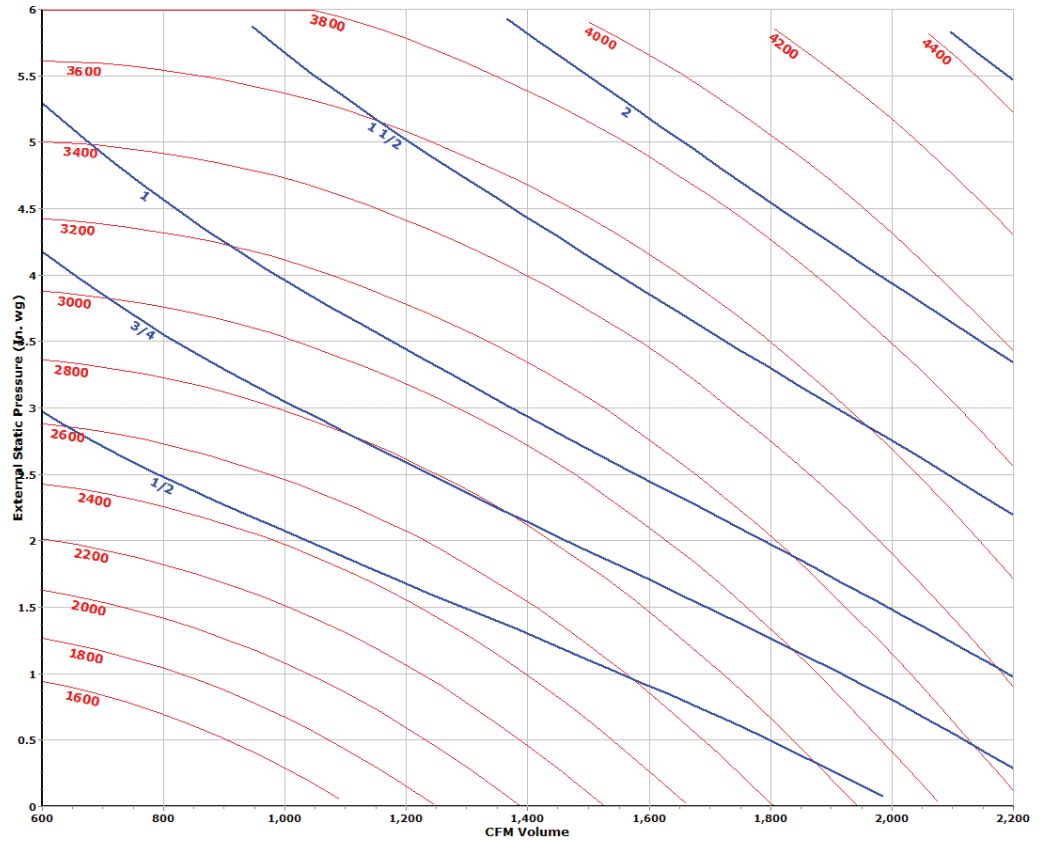
ACFM	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
650	1330/0.08	1665/0.16	1945/0.24	2204/0.34	2436/0.43	2660/0.52	2857/0.62	3045/0.75	3214/0.85	3403/0.98	3560/1.08	3673/1.21
700	1377/0.09	1695/0.17	1978/0.26	2225/0.35	2443/0.45	2651/0.55	2864/0.67	3039/0.78	3236/0.88	3368/1.00	3560/1.14	3719/1.26
800	1483/0.11	1769/0.19	2034/0.29	2278/0.39	2498/0.49	2687/0.61	2906/0.73	3062/0.85	3236/0.97	3431/1.09	3560/1.23	3699/1.35
900	1594/0.13	1863/0.22	2108/0.32	2339/0.43	2543/0.54	2738/0.67	2939/0.79	3111/0.93	3269/1.06	3445/1.18	3600/1.31	3726/1.47
1000	1712/0.15	1956/0.25	2184/0.36	2405/0.48	2618/0.60	2803/0.73	2992/0.87	3150/1.01	3327/1.14	3456/1.28	3633/1.42	3787/1.57
1100	1830/0.18	2061/0.29	2277/0.40	2478/0.53	2682/0.66	2858/0.80	3036/0.93	3210/1.08	3347/1.23	3528/1.38	3660/1.55	3802/1.71
1200	1951/0.21	2169/0.32	2373/0.45	2573/0.58	2756/0.72	2926/0.86	3096/1.02	3261/1.17	3418/1.32	3560/1.50	3715/1.63	3849/1.83
1300	2085/0.24	2280/0.37	2475/0.50	2660/0.64	2839/0.79	3005/0.93	3170/1.09	3329/1.25	3480/1.42	3616/1.57	3763/1.75	3889/1.94
1400	2215/0.28	2396/0.42	2582/0.56	2754/0.71	2915/0.86	3077/1.02	3236/1.17	3390/1.34	3535/1.50	3692/1.68	3805/1.85	3956/2.05
1500	2342/0.33	2519/0.47	2683/0.62	2856/0.76	3017/0.93	3160/1.09	3317/1.26	3468/1.44	3608/1.62	3734/1.81	3870/1.99	4015/2.19
1600	2477/0.38	2637/0.53	2806/0.68	2967/0.84	3113/1.01	3255/1.19	3411/1.36	3538/1.55	3675/1.71	3823/1.90	3956/2.12	4069/2.32
1700	2609/0.43	2763/0.59	2924/0.75	3072/0.92	3219/1.10	3362/1.28	3498/1.47	3624/1.66	3759/1.86	3905/2.06	4008/2.24	4145/2.45
1800	2750/0.50	2900/0.66	3037/0.82	3188/1.00	3320/1.19	3464/1.38	3600/1.57	3726/1.77	3860/1.97	3980/2.17	4108/2.36	4216/2.57
1900	2878/0.57	3020/0.73	3161/0.91	3300/1.09	3434/1.29	3560/1.47	3696/1.69	3821/1.90	3933/2.11	4050/2.32	4175/2.51	4308/2.73
2000	3017/0.65	3150/0.82	3281/1.01	3423/1.20	3542/1.39	3670/1.58	3787/1.81	3912/2.00	4023/2.22	4140/2.46	4263/2.66	4368/2.88
2100	3154/0.73	3279/0.91	3414/1.10	3543/1.29	3665/1.49	3776/1.72	3894/1.93	4019/2.16	4130/2.38	4248/2.60	4347/2.85	

A11 Supply Fan ER28C Cab 1A Only, All Voltages (230/1 - Max 3 hp, 4025 RPM) (208/230/460/575/3 - Max 3 hp, 4450 RPM)

Shaded Area N/A for Single Phase Motor

Range at Sea Level is Approximately 650-1700 ACFM

Below: A11 Supply Fan ER28C-1 Cab 1A Only, All Voltages (230/1 - Max 3 hp, 4025 RPM) (208/230/460/575/3 - Max 3 hp, 4450 RPM):





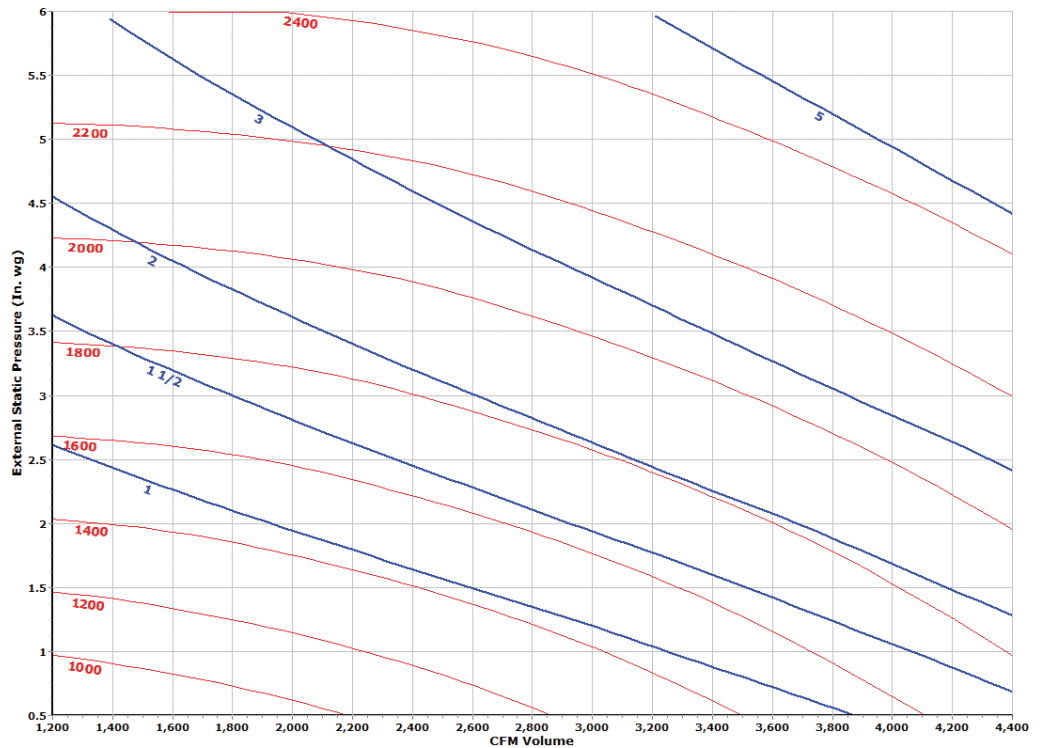
PRESSURE DROP TABLE (cont'd) Supply Fan

Applies to Cabinet 1: Models YDHA090, 120, & 150; YDMA120 & 150

Option A10 & A11

ACFM	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
1290	786/0.16	1023/0.34	1220/0.53	1391/0.75	1548/0.98	1685/1.23	1821/1.47	1935/1.75	2064/2.03	2173/2.32	2272/2.62	2382/2.91
1400	807/0.18	1038/0.36	1227/0.57	1400/0.78	1554/1.02	1691/1.28	1829/1.54	1948/1.82	2068/2.12	2168/2.41	2278/2.69	2379/3.03
1600	851/0.21	1070/0.40	1254/0.63	1416/0.87	1567/1.11	1707/1.38	1840/1.66	1957/1.95	2062/2.27	2179/2.58	2276/2.90	2381/3.22
1800	898/0.24	1108/0.46	1285/0.69	1440/0.95	1585/1.22	1719/1.49	1848/1.80	1964/2.11	2082/2.43	2187/2.73	2289/3.08	2383/3.44
2000	950/0.28	1146/0.51	1320/0.76	1471/1.03	1613/1.31	1738/1.62	1864/1.92	1979/2.23	2087/2.56	2194/2.93	2299/3.28	2400/3.63
2200	1003/0.33	1190/0.57	1354/0.83	1503/1.12	1637/1.41	1767/1.73	1886/2.06	2002/2.38	2112/2.75	2212/3.08	2308/3.46	
2400	1059/0.38	1235/0.63	1392/0.91	1541/1.21	1670/1.53	1793/1.85	1912/2.20	2021/2.55	2124/2.92	2226/3.28	2327/3.66	
2600	1119/0.44	1283/0.70	1434/1.00	1575/1.31	1704/1.64	1829/1.98	1942/2.35	2046/2.71	2152/3.11	2249/3.47	2344/3.89	
2800	1179/0.50	1334/0.78	1481/1.09	1614/1.43	1740/1.76	1860/2.12	1969/2.50	2076/2.88	2177/3.28	2278/3.68	2368/4.10	
3000	1241/0.57	1388/0.87	1528/1.20	1660/1.54	1778/1.90	1895/2.27	2007/2.66	2110/3.04	2207/3.48	2304/3.88	2390/4.34	
3200	1304/0.66	1442/0.97	1575/1.30	1702/1.67	1823/2.04	1932/2.42	2041/2.83	2141/3.22	2242/3.66	2336/4.10		
3400	1369/0.75	1501/1.08	1628/1.42	1750/1.79	1865/2.18	1972/2.60	2079/3.00	2176/3.42	2275/3.87	2365/4.31		
3600	1431/0.85	1560/1.19	1682/1.55	1795/1.93	1909/2.34	2015/2.77	2114/3.18	2215/3.65	2312/4.10	2400/4.55		
3800	1498/0.96	1621/1.32	1737/1.70	1847/2.09	1956/2.50	2061/2.94	2159/3.38	2252/3.86	2346/4.32			
4000	1564/1.08	1681/1.45	1790/1.84	1901/2.25	2005/2.69	2104/3.12	2201/3.61	2293/4.07	2385/4.54			
4200	1629/1.20	1742/1.59	1850/2.01	1953/2.44	2052/2.87	2150/3.33	2246/3.83	2337/4.30				
4400	1696/1.35	1805/1.76	1907/2.19	2007/2.62	2101/3.08	2200/3.55	2289/4.04	2380/4.56				

Range at Sea Level is approximately 1290 to 3600 ACFM.
 A11 Fan ER45C, Cabinet 1, All Voltages (Max 5 hp, 2400 rpm)
 Below: A11 Fan ER45C, Cabinet 1, All Voltages (Max 5 hp, 2400 rpm)





PRESSURE DROP TABLE (cont'd)

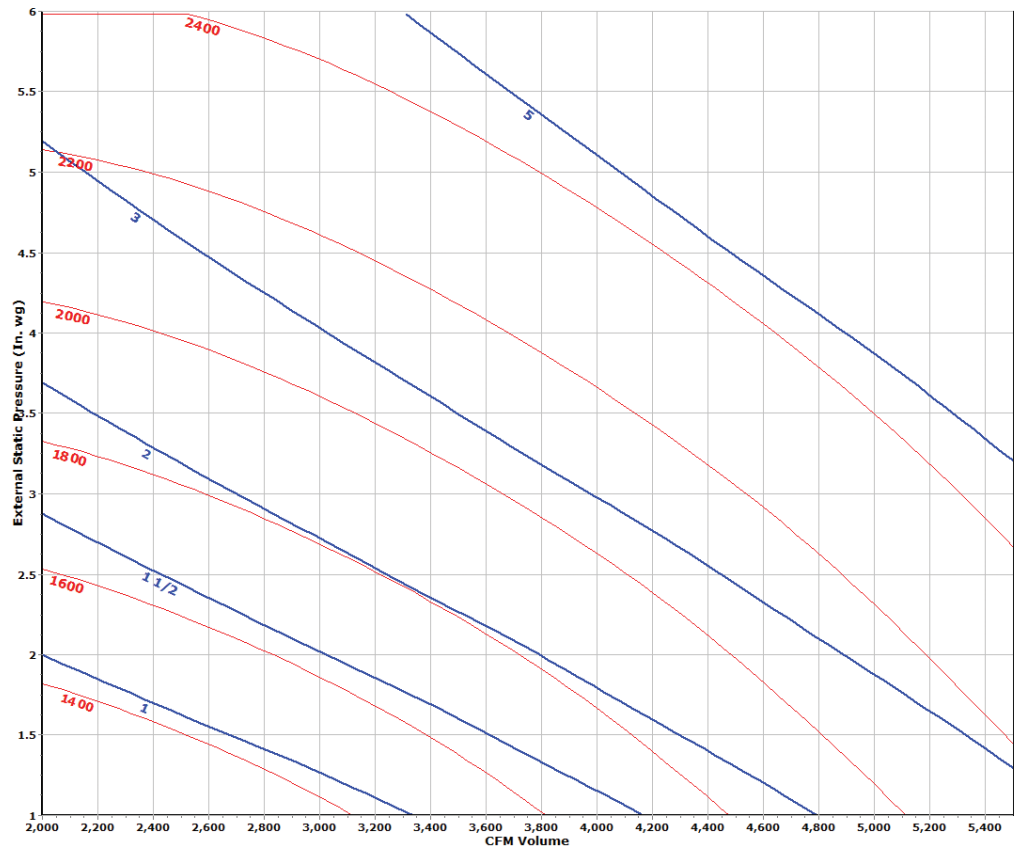
Supply Fan

Applies to Cabinet 2: Model YDMA180

Option A10 & A11

ACFM	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
2000	934/0.27	1129/0.49	1297/0.73	1449/1.00	1587/1.27	1714/1.56	1837/1.88	1949/2.20	2065/2.50	2169/2.85	2272/3.19	2356/3.53
2200	987/0.31	1173/0.55	1337/0.81	1482/1.09	1618/1.37	1738/1.68	1861/2.01	1974/2.33	2081/2.69	2177/3.04	2283/3.37	2373/3.75
2400	1043/0.36	1216/0.61	1376/0.89	1516/1.17	1646/1.48	1772/1.80	1881/2.13	1995/2.47	2095/2.82	2194/3.21	2293/3.57	2388/3.95
2600	1102/0.42	1264/0.68	1414/0.96	1555/1.27	1681/1.58	1802/1.93	1913/2.29	2021/2.63	2124/3.01	2219/3.39	2311/3.76	2400/4.17
2800	1161/0.48	1314/0.75	1457/1.05	1591/1.37	1718/1.70	1835/2.05	1941/2.43	2044/2.80	2150/3.18	2240/3.57	2337/3.97	
3000	1220/0.55	1365/0.84	1504/1.15	1632/1.49	1756/1.84	1870/2.20	1973/2.56	2079/2.96	2174/3.38	2268/3.76	2361/4.21	
3200	1283/0.63	1422/0.93	1552/1.25	1679/1.60	1796/1.96	1902/2.34	2008/2.74	2111/3.14	2210/3.56	2301/3.98	2391/4.43	
3400	1343/0.71	1477/1.03	1600/1.37	1722/1.72	1834/2.10	1943/2.50	2046/2.90	2147/3.31	2243/3.77	2331/4.19		
3600	1408/0.80	1536/1.14	1654/1.49	1768/1.86	1878/2.25	1986/2.67	2088/3.08	2180/3.50	2274/3.96	2367/4.39		
3800	1471/0.91	1593/1.25	1709/1.62	1819/2.00	1925/2.41	2027/2.83	2127/3.28	2218/3.71	2309/4.18	2400/4.62		
4000	1536/1.02	1652/1.38	1761/1.77	1869/2.16	1974/2.56	2070/3.02	2169/3.48	2259/3.92	2349/4.40			
4200	1603/1.15	1712/1.52	1820/1.91	1920/2.34	2021/2.75	2117/3.19	2209/3.67	2304/4.15	2386/4.64			
4400	1666/1.28	1775/1.67	1877/2.08	1974/2.51	2071/2.95	2166/3.39	2253/3.88	2347/4.37				
4600	1735/1.42	1836/1.83	1937/2.25	2030/2.69	2123/3.14	2214/3.61	2300/4.11	2387/4.62				
4800	1800/1.58	1900/2.01	1995/2.45	2085/2.90	2174/3.36	2264/3.85	2351/4.35					
5000	1868/1.75	1963/2.19	2056/2.63	2143/3.12	2233/3.60	2313/4.09	2400/4.60					
5200	1935/1.94	2025/2.39	2115/2.85	2204/3.34	2285/3.84	2366/4.35						
5400	2002/2.13	2090/2.60	2178/3.08	2259/3.58	2340/4.09							

Range at Sea Level is approximately 2000 to 4400 ACFM
 A11 Fan ER45C, Cabinet 2, All Voltages (Max 5 hp, 2400 rpm)
 Below: A11 Fan ER45C, Cabinet 2, All Voltages (Max 5 hp, 2400 rpm)





PRESSURE DROP TABLE (cont'd)

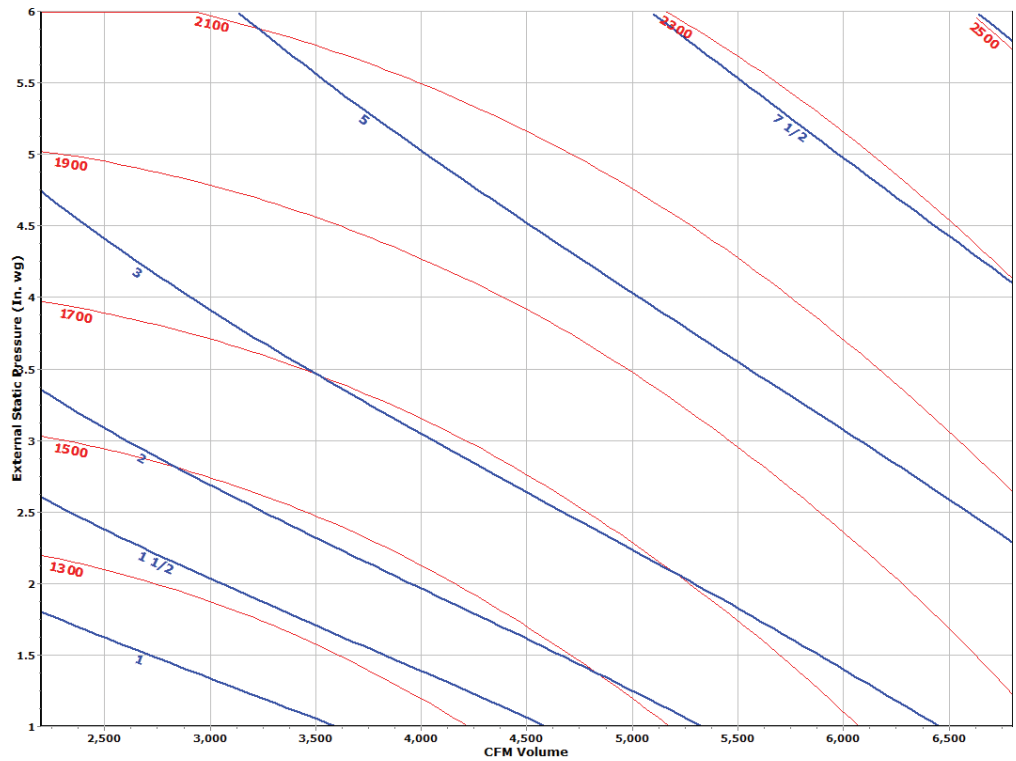
Supply Fan

Applies to Cabinet 2: Models YDHA 180, 210, & 240; YDMA210 & 240

Option A10 & A11

ACFM	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
2250	779/0.30	956/0.55	1112/0.83	1252/1.14	1378/1.45	1493/1.79	1604/2.14	1708/2.49	1804/2.84	1895/3.23	1987/3.61	2069/4.02
2500	824/0.34	991/0.62	1140/0.92	1274/1.24	1399/1.58	1513/1.93	1621/2.29	1721/2.66	1815/3.06	1905/3.45	1996/3.86	2079/4.30
2750	872/0.40	1029/0.69	1171/1.01	1302/1.35	1419/1.71	1530/2.09	1634/2.47	1738/2.87	1830/3.26	1920/3.70	2004/4.11	2087/4.54
3000	921/0.46	1070/0.77	1204/1.11	1329/1.47	1444/1.85	1552/2.24	1655/2.66	1752/3.07	1849/3.49	1932/3.93	2024/4.38	2102/4.85
3250	972/0.53	1114/0.86	1242/1.22	1361/1.60	1472/1.99	1580/2.40	1682/2.83	1774/3.26	1865/3.71	1955/4.18	2034/4.66	2121/5.12
3500	1026/0.61	1158/0.96	1281/1.34	1396/1.73	1504/2.15	1607/2.57	1705/3.02	1797/3.48	1889/3.96	1975/4.43	2056/4.91	2137/5.42
3750	1080/0.70	1207/1.06	1324/1.46	1433/1.88	1538/2.31	1636/2.76	1734/3.22	1823/3.69	1911/4.20	1997/4.71	2075/5.19	2152/5.74
4000	1136/0.80	1255/1.18	1366/1.59	1472/2.02	1573/2.49	1668/2.95	1764/3.43	1850/3.93	1935/4.45	2018/4.96	2097/5.48	2177/6.04
4250	1191/0.91	1305/1.31	1413/1.74	1514/2.19	1611/2.67	1705/3.14	1795/3.66	1883/4.17	1965/4.69	2046/5.24	2122/5.80	2199/6.36
4500	1249/1.03	1356/1.45	1460/1.89	1558/2.37	1650/2.85	1742/3.36	1827/3.89	1913/4.41	1993/4.97	2071/5.53	2151/6.10	2225/6.67
4750	1306/1.16	1408/1.59	1507/2.06	1603/2.55	1692/3.07	1781/3.59	1865/4.12	1945/4.68	2023/5.25	2104/5.82	2176/6.43	2249/7.00
5000	1365/1.30	1461/1.76	1556/2.24	1649/2.74	1735/3.28	1820/3.82	1903/4.38	1982/4.96	2060/5.54	2134/6.12	2210/6.75	2281/7.37
5250	1424/1.46	1516/1.94	1607/2.43	1695/2.96	1781/3.51	1863/4.06	1943/4.64	2017/5.23	2094/5.83	2167/6.45	2241/7.09	2310/7.72
5500	1483/1.63	1570/2.13	1658/2.64	1745/3.18	1826/3.75	1905/4.34	1984/4.92	2058/5.55	2130/6.17	2202/6.81	2270/7.46	2343/8.10
5750	1543/1.83	1625/2.33	1710/2.87	1793/3.42	1871/4.00	1951/4.62	2026/5.22	2097/5.87	2168/6.50	2240/7.16	2307/7.82	2374/8.48
6000	1603/2.03	1682/2.56	1763/3.11	1842/3.68	1922/4.29	1995/4.89	2067/5.53	2141/6.18	2208/6.83	2279/7.50	2341/8.22	2407/8.89
6250	1663/2.25	1740/2.79	1816/3.37	1893/3.95	1970/4.57	2041/5.20	2113/5.85	2183/6.52	2250/7.22	2317/7.91	2383/8.61	2444/9.34
6500	1725/2.48	1797/3.04	1872/3.64	1945/4.24	2017/4.88	2088/5.52	2158/6.19	2228/6.88	2295/7.57	2357/8.32	2423/9.03	2483/9.73
6750	1785/2.73	1856/3.32	1927/3.92	1999/4.56	2069/5.19	2138/5.88	2204/6.55	2271/7.27	2338/7.99	2400/8.72	2461/9.45	

A10 & A11 Fans ER50C, Cabinet 2, All Voltages (A10: Max 7.5 hp, 2265 rpm) (A11: Max 10 hp, 2500 rpm)
 Shaded region is for A11 fan only. A10 or A11 fan in non-shaded region.
 Range at Sea Level is approximately 2250 to 5500 ACFM.
 Below: A10 & A11 Fans ER50C-2, Cabinet 2, All Voltages (A10: Max 7.5 hp, 2265 rpm) (A11: Max 10 hp, 2500 rpm)





PRESSURE DROP TABLE (cont'd)

Supply Fan

Applies to Cabinet 3: Model YDHA 300 & 360; YDMA 300 & 360

Option A10 & A11

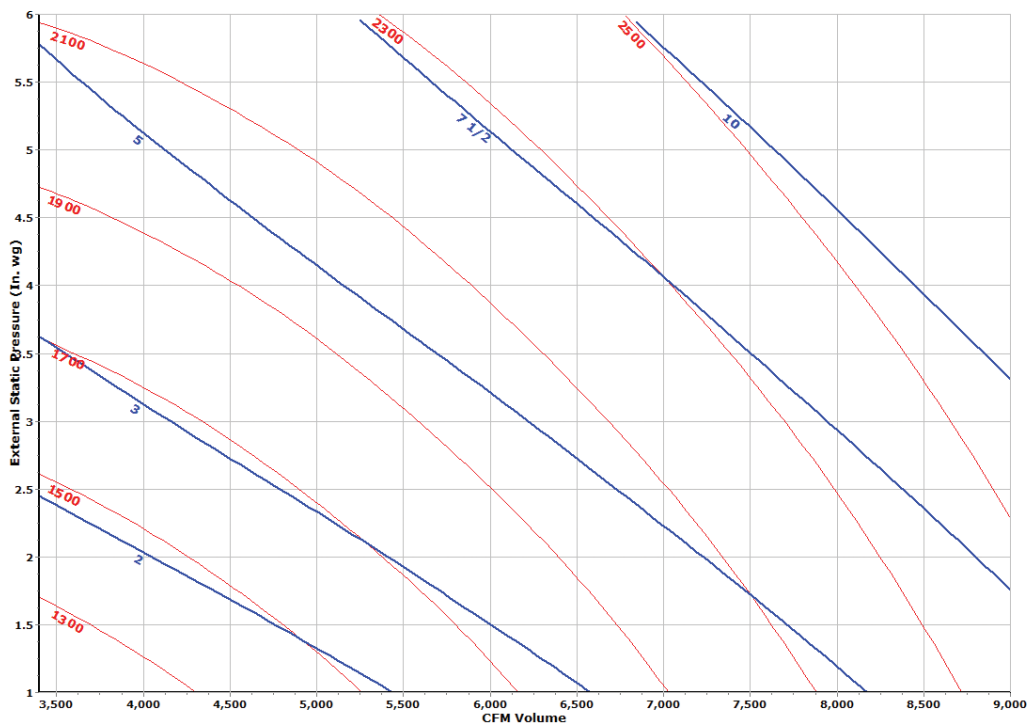
ACFM	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
3400	992/0.55	1127/0.89	1251/1.25	1367/1.63	1477/2.04	1580/2.45	1677/2.88	1769/3.32	1860/3.79	1946/4.25	2027/4.71	2109/5.21
3500	1012/0.59	1145/0.93	1267/1.29	1382/1.68	1488/2.09	1589/2.51	1689/2.96	1779/3.41	1869/3.88	1953/4.34	2032/4.84	2112/5.30
4000	1121/0.77	1239/1.14	1352/1.54	1456/1.97	1555/2.41	1651/2.87	1745/3.36	1833/3.84	1916/4.34	1998/4.87	2075/5.37	2153/5.91
4500	1234/0.98	1338/1.39	1441/1.82	1540/2.28	1632/2.77	1722/3.26	1809/3.79	1893/4.32	1972/4.83	2052/5.40	2125/5.95	2203/6.54
5000	1350/1.25	1442/1.69	1537/2.16	1627/2.65	1717/3.17	1800/3.70	1881/4.25	1959/4.83	2035/5.40	2112/5.99	2186/6.59	2255/7.19
5500	1468/1.57	1550/2.04	1638/2.55	1723/3.08	1805/3.62	1885/4.19	1963/4.78	2035/5.39	2109/5.98	2180/6.63	2247/7.26	2318/7.88
6000	1586/1.94	1663/2.44	1740/2.99	1820/3.55	1897/4.13	1972/4.72	2046/5.36	2115/5.98	2184/6.64	2254/7.32	2319/7.97	2383/8.66
6500	1705/2.37	1777/2.91	1848/3.49	1922/4.10	1992/4.71	2065/5.34	2133/5.98	2202/6.67	2267/7.33	2332/8.04	2396/8.77	2455/9.49
7000	1826/2.87	1893/3.45	1959/4.06	2025/4.70	2094/5.34	2159/6.03	2224/6.70	2289/7.40	2355/8.11	2416/8.83	2476/9.59	
7500	1947/3.45	2009/4.05	2070/4.69	2132/5.36	2195/6.07	2257/6.77	2320/7.47	2383/8.20	2441/8.95			
8000	2069/4.09	2126/4.74	2184/5.41	2242/6.12	2301/6.84	2362/7.59	2419/8.35	2479/9.10				
8500	2192/4.82	2244/5.51	2299/6.21	2356/6.95	2410/7.72	2466/8.48						
9000	2312/5.63	2364/6.36	2418/7.09	2467/7.86								

A10 & A11 Fans ER50C, Cabinet 3, All Voltages (A10: Max 7.5 hp, 2265 rpm) (A11: Max 10 hp, 2500 rpm)

Shaded region is for A11 fan only. A10 or A11 fan in non-shaded region.

Range at Sea Level is approximately 3400 to 9000 ACFM.

Below: A10 & A11 Fans ER50C-3, Cabinet 3, All Voltages (A10: Max 7.5 hp, 2265 rpm) (A11: Max 10 hp, 2500 rpm)





PRESSURE DROP TABLE (cont'd)

Supply Fan

Applies to Cabinet 1: Models YDHA 060; YDMA060 & 090

Option A10E

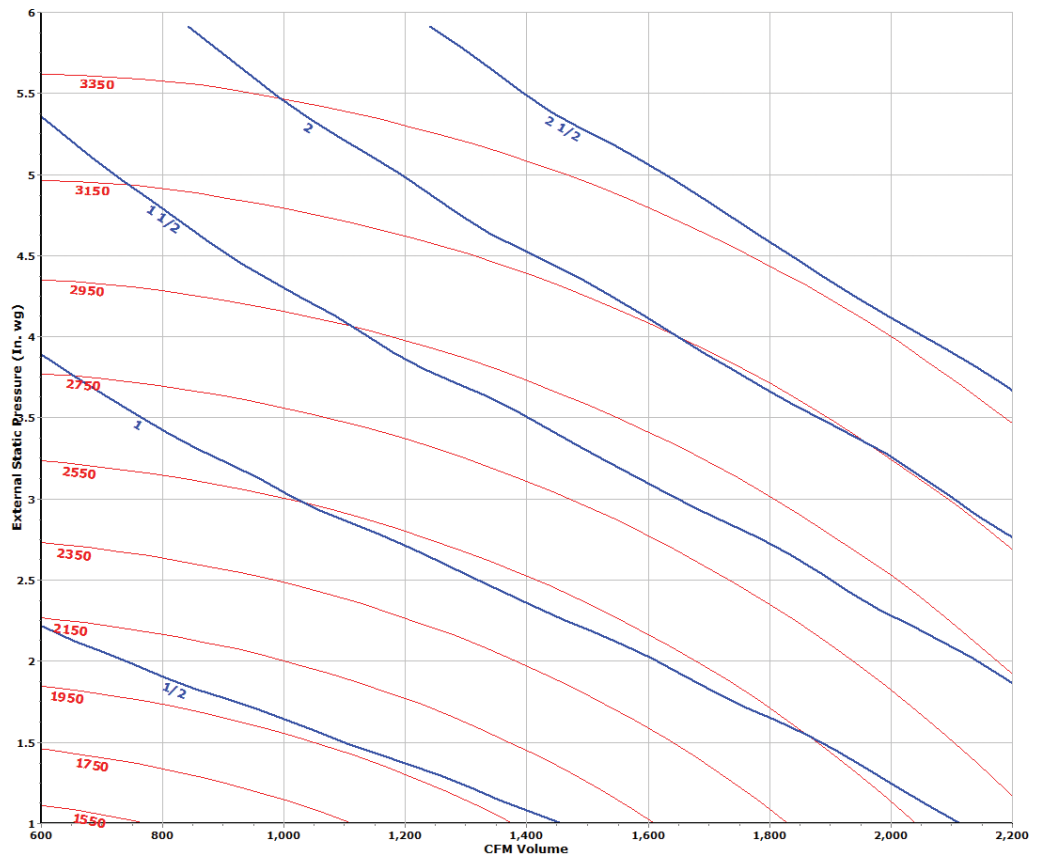
ACFM	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50
650	1149/0.10	1489/0.20	1775/0.33	2020/0.46							
700	1176/0.11	1514/0.21	1786/0.34	2035/0.48	2253/0.63						
800	1243/0.12	1556/0.24	1833/0.38	2060/0.52	2277/0.67	2486/0.84					
900	1315/0.15	1612/0.27	1872/0.41	2098/0.58	2318/0.73	2509/0.91	2704/1.10	2863/1.27			
1000	1394/0.17	1669/0.30	1918/0.46	2146/0.61	2351/0.79	2527/0.97	2731/1.16	2877/1.35	3038/1.55	3181/1.79	
1100	1480/0.19	1739/0.34	1970/0.50	2187/0.67	2380/0.85	2564/1.05	2754/1.23	2916/1.46	3066/1.66	3233/1.90	
1200	1568/0.23	1813/0.38	2028/0.54	2238/0.72	2440/0.92	2617/1.10	2773/1.33	2950/1.53	3090/1.76	3245/2.00	3380/2.22
1300	1666/0.27	1880/0.42	2092/0.59	2298/0.78	2475/0.98	2663/1.19	2812/1.40	2979/1.62	3139/1.86	3285/2.09	3428/2.37
1400	1761/0.31	1961/0.47	2163/0.64	2351/0.85	2541/1.04	2704/1.27	2868/1.48	3028/1.71	3181/1.98	3321/2.22	3435/2.51
1500	1852/0.35	2048/0.52	2241/0.71	2414/0.91	2583/1.14	2759/1.35	2918/1.60	3073/1.83	3219/2.06	3352/2.34	3469/2.64
1600	1949/0.40	2131/0.58	2314/0.78	2486/0.99	2654/1.21	2809/1.45	2963/1.67	3113/1.94	3253/2.17	3341/2.35	3499/2.77
1700	2052/0.46	2221/0.64	2394/0.85	2554/1.07	2720/1.28	2873/1.55	3024/1.80	3170/2.04	3307/2.32	3376/2.47	3550/2.88
1800	2154/0.53	2318/0.72	2471/0.92	2631/1.16	2781/1.39	2932/1.64	3081/1.90	3223/2.18	3357/2.42	3408/2.59	
1900	2253/0.60	2412/0.80	2569/1.00	2718/1.24	2854/1.49	3004/1.73	3152/1.99	3272/2.27	3331/2.44	3459/2.74	
2000	2351/0.68	2504/0.89	2651/1.10	2788/1.33	2939/1.60	3073/1.84	3219/2.11	3338/2.40	3381/2.59	3506/2.90	
2100	2458/0.76	2605/0.98	2743/1.21	2882/1.45	3020/1.72	3155/1.98	3282/2.23	3313/2.45	3428/2.73		

A10E Fan ECER31C, Cabinet 1 (208-230/3: Max 2.55 HP, 3380 RPM) (460/3: Max 2.95 HP, 3550 RPM)

Range at Sea Level is Approximately 650-1700 ACFM

Shaded region is for 460/3 voltage only. Unshaded region is for 208/230/460/3/60 operation.

Below: A10E Fan ECER31C-1 BHP, Cabinet 1 for 208-230/3 (Max 2.55 HP, 3380 RPM)





PRESSURE DROP TABLE (cont'd)

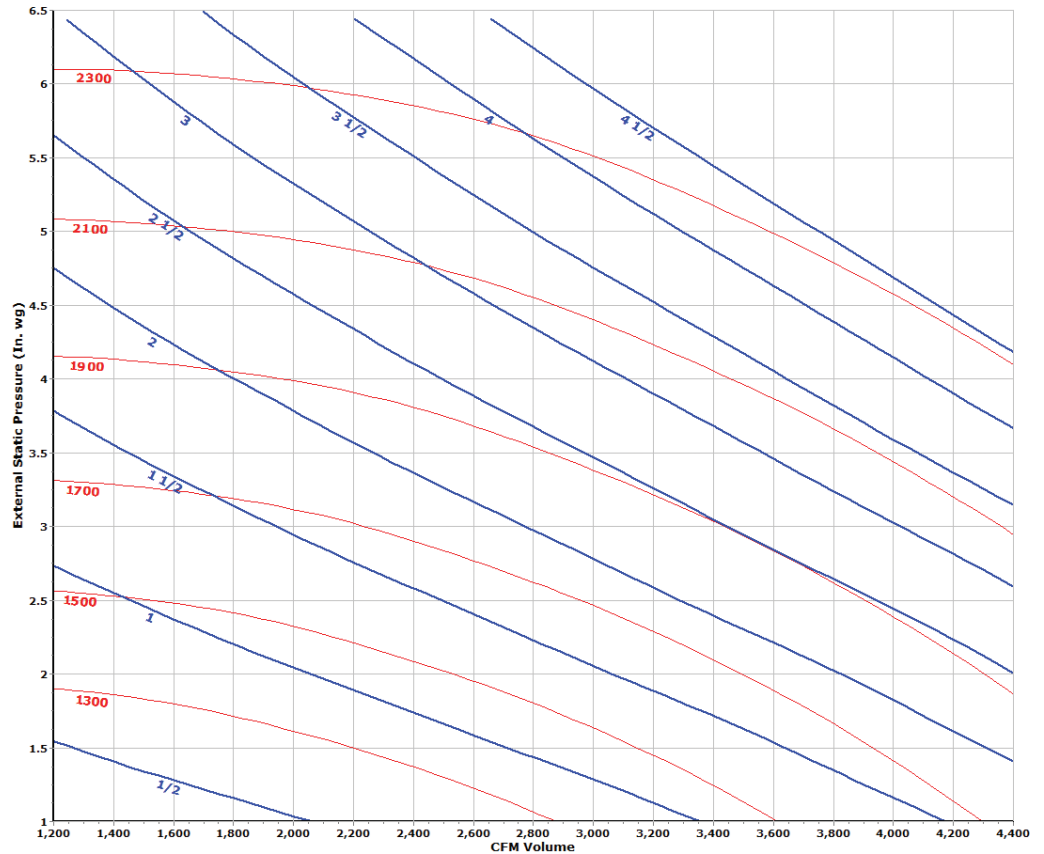
Supply Fan

Applies to Cabinet 1: Models YDHA 090, 120, & 150; YDMA 120 & 150

Option A10E

ACFM	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50
1290	754/0.15	981/0.32	1169/0.51	1333/0.71	1484/0.92	1615/1.16	1745/1.39	1854/1.66	1978/1.92	2082/2.20	2178/2.48
1400	774/0.17	995/0.34	1176/0.54	1342/0.74	1489/0.97	1620/1.22	1752/1.46	1867/1.72	1982/2.01	2077/2.28	2183/2.55
1600	816/0.20	1026/0.38	1202/0.59	1357/0.82	1502/1.05	1636/1.31	1763/1.57	1875/1.84	1976/2.15	2088/2.45	2181/2.75
1800	860/0.23	1062/0.43	1231/0.65	1380/0.90	1519/1.15	1648/1.41	1771/1.70	1882/2.00	1995/2.30	2096/2.59	2193/2.92
2000	911/0.27	1099/0.48	1265/0.72	1410/0.98	1546/1.24	1665/1.53	1786/1.82	1897/2.11	2000/2.43	2103/2.78	2204/3.11
2200	962/0.31	1140/0.54	1297/0.79	1441/1.06	1569/1.34	1694/1.64	1807/1.95	1918/2.26	2024/2.61	2119/2.92	2212/3.28
2400	1015/0.36	1184/0.60	1334/0.87	1477/1.15	1600/1.45	1718/1.75	1832/2.08	1937/2.42	2035/2.77	2133/3.11	2230/3.47
2600	1073/0.42	1230/0.67	1375/0.95	1509/1.24	1633/1.55	1752/1.88	1861/2.23	1961/2.57	2062/2.95	2155/3.29	2246/3.68
2800	1130/0.48	1278/0.74	1419/1.04	1547/1.35	1667/1.67	1783/2.01	1887/2.37	1989/2.73	2086/3.11	2183/3.49	2270/3.88
3000	1190/0.54	1330/0.83	1464/1.13	1591/1.46	1704/1.80	1816/2.15	1923/2.52	2022/2.88	2115/3.29	2208/3.67	2290/4.11
3200	1250/0.62	1382/0.92	1510/1.24	1631/1.58	1747/1.93	1852/2.29	1956/2.68	2052/3.05	2149/3.47	2239/3.88	
3400	1312/0.71	1438/1.02	1560/1.35	1677/1.70	1787/2.07	1890/2.46	1992/2.84	2085/3.24	2180/3.66	2267/4.08	
3600	1371/0.80	1495/1.13	1612/1.47	1721/1.83	1830/2.22	1931/2.62	2026/3.01	2123/3.45	2215/3.88	2300/4.31	
3800	1436/0.91	1554/1.25	1665/1.61	1770/1.98	1875/2.37	1975/2.78	2069/3.21	2158/3.66	2248/4.10		
4000	1499/1.02	1611/1.38	1716/1.75	1822/2.14	1922/2.55	2016/2.96	2109/3.42	2197/3.85	2286/4.30		
4200	1561/1.14	1669/1.51	1772/1.91	1871/2.31	1966/2.72	2061/3.15	2153/3.63	2240/4.08			
4400	1626/1.28	1730/1.66	1828/2.07	1923/2.48	2014/2.92	2108/3.37	2194/3.83	2281/4.32			

A10E Fan ECER45C, Cabinet 1, All Voltages (Max 4.83 HP, 2300 RPM)
 Below: A10E Fan BHP ECER45C-1, Cabinet 1, All Voltages (Max 4.83 HP, 2300 RPM)





PRESSURE DROP TABLE (cont'd)

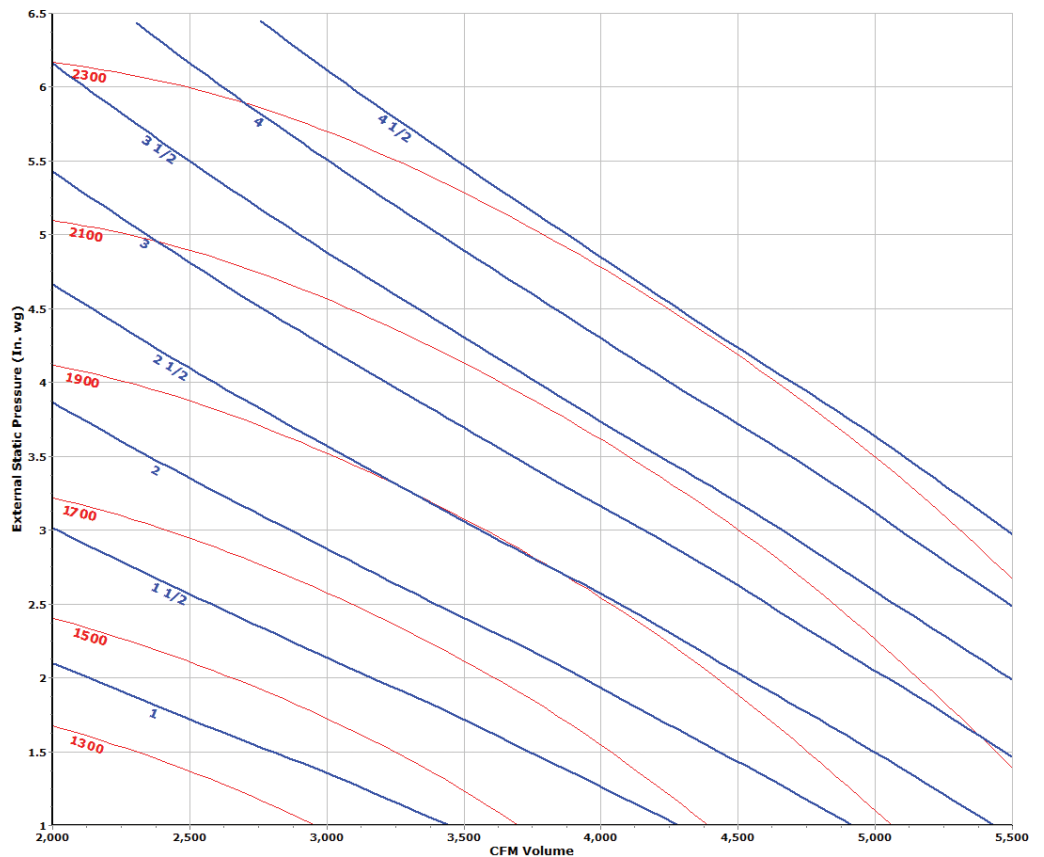
Supply Fan

Applies to Cabinet 2: Model YDMA 180

Option A10E

ACFM	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50
2000	895/0.26	1082/0.46	1243/0.70	1389/0.95	1521/1.21	1643/1.48	1761/1.78	1868/2.08	1978/2.37	2079/2.70	2178/3.02
2200	946/0.30	1124/0.52	1281/0.76	1420/1.03	1551/1.30	1666/1.59	1783/1.90	1892/2.21	1994/2.54	2087/2.88	2188/3.19
2400	999/0.34	1165/0.58	1318/0.84	1453/1.11	1577/1.40	1698/1.70	1802/2.02	1912/2.34	2007/2.67	2103/3.04	2197/3.38
2600	1056/0.40	1211/0.64	1355/0.91	1490/1.20	1611/1.50	1727/1.83	1833/2.17	1937/2.49	2036/2.85	2126/3.21	2215/3.56
2800	1113/0.45	1260/0.71	1396/0.99	1524/1.30	1646/1.61	1758/1.94	1860/2.30	1959/2.65	2061/3.02	2147/3.38	2240/3.76
3000	1169/0.52	1308/0.79	1441/1.09	1564/1.41	1683/1.74	1792/2.08	1890/2.43	1993/2.81	2083/3.20	2173/3.56	2262/3.99
3200	1229/0.59	1363/0.88	1487/1.18	1609/1.52	1722/1.86	1823/2.22	1924/2.59	2023/2.98	2118/3.37	2205/3.77	2291/4.20
3400	1287/0.67	1415/0.97	1533/1.30	1651/1.63	1757/1.99	1862/2.37	1961/2.75	2058/3.14	2150/3.57	2234/3.97	
3600	1349/0.76	1472/1.08	1585/1.41	1694/1.76	1800/2.13	1903/2.53	2001/2.92	2090/3.32	2179/3.75	2268/4.16	
3800	1410/0.86	1527/1.19	1637/1.53	1744/1.89	1845/2.29	1942/2.69	2038/3.11	2125/3.52	2213/3.96	2300/4.38	
4000	1472/0.97	1583/1.30	1688/1.68	1791/2.04	1892/2.43	1984/2.86	2079/3.29	2165/3.71	2251/4.17		
4200	1536/1.09	1641/1.44	1744/1.81	1840/2.21	1937/2.60	2028/3.03	2117/3.47	2208/3.93	2286/4.39		
4400	1597/1.21	1701/1.58	1799/1.97	1892/2.38	1984/2.79	2076/3.21	2159/3.67	2249/4.14			
4600	1663/1.35	1760/1.73	1856/2.13	1946/2.55	2035/2.98	2121/3.42	2204/3.90	2288/4.38			
4800	1725/1.50	1821/1.90	1912/2.32	1998/2.75	2083/3.19	2170/3.65	2253/4.12				
5000	1790/1.66	1881/2.07	1970/2.49	2054/2.96	2140/3.41	2217/3.87	2300/4.36				
5200	1854/1.83	1941/2.26	2027/2.70	2112/3.16	2189/3.64	2267/4.12					
5400	1918/2.02	2003/2.46	2087/2.92	2165/3.39	2243/3.87						

A10E Fan ECER45C, Cabinet 2, All Voltages (Max 4.83 HP, 2300 RPM)
 Below: A10E Fan BHP ECER45C-2, Cabinet 2, All Voltages (Max 4.83 HP, 2300 RPM)



Applies to Model YDMA

YDMA SCFM	YDMA Cabinet Size	Outside Air Hood with Prefilters	4" Filters		Energy Recovery Section (same for Supply & Exhaust)				Main Evaporator Coll (Cooling Size)						Reheat Pump Coils						Horiz Disch Plenum Curb (CJ48, CJ55)				
			Pleated Merv 8	Pleated Merv 13	EW30	EW36	EW46	EW58	Dampers	060, 090		120, 150		180, 210, 240		300, 360		060, 090, 120, 150		180, 210, 240		300, 360		Supply	Return
										Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	RPLE	RPHE		
750		0.01	0.01	0.05	0.39					0.25	0.23							0.10					0.00	0.01	
1,000		0.01	0.02	0.07	0.56					0.41	0.38							0.16					0.00	0.02	
1,250		0.01	0.04	0.10	0.74					0.60	0.56	0.17	0.14					0.24	0.05				0.00	0.03	
1,500		0.01	0.06	0.13	0.91	0.53				0.83	0.77	0.24	0.20					0.32	0.07				0.01	0.04	
1,750		0.02	0.07	0.16	1.09	0.61						0.32	0.27						0.09				0.01	0.05	
2,000		0.02	0.10	0.20		0.69						0.40	0.35						0.12				0.01	0.07	
2,250	1	0.02	0.12	0.24		0.77						0.49	0.42						0.14				0.01	0.08	
2,500		0.03	0.14	0.29		0.86						0.59	0.51						0.17				0.02	0.10	
2,750		0.03	0.17	0.33		0.94						0.69	0.60						0.20				0.02	0.12	
3,000		0.04	0.20	0.39		1.02						0.80	0.70						0.24				0.03	0.15	
3,250		0.05	0.23	0.44		1.11						0.92	0.81						0.27				0.03	0.17	
3,500		0.05	0.26	0.50		1.19						1.05	0.92						0.31				0.03	0.20	
2,000		0.01	0.04	0.10								0.19	0.15						0.06	0.06			0.01	0.07	
2,250		0.01	0.05	0.11			0.53					0.24	0.19						0.07	0.07			0.01	0.08	
2,500		0.01	0.06	0.13			0.58					0.29	0.23						0.08	0.08			0.02	0.10	
2,750		0.02	0.07	0.15			0.64					0.34	0.28						0.10	0.10			0.02	0.12	
3,000		0.02	0.08	0.17			0.69					0.40	0.33						0.11	0.11			0.03	0.15	
3,250		0.02	0.09	0.20			0.75					0.46	0.38						0.13	0.13			0.03	0.17	
3,500		0.02	0.10	0.22			0.80					0.52	0.43						0.15	0.15			0.03	0.20	
3,750		0.03	0.12	0.24			0.86					0.58	0.48						0.16	0.16			0.04	0.23	
4,000		0.03	0.13	0.27			0.92					0.65	0.54						0.18	0.18			0.05	0.26	
4,250		0.03	0.15	0.30			0.97					0.72	0.60						0.20	0.20			0.05	0.29	
4,500		0.04	0.16	0.32			1.03					0.80	0.66						0.22	0.22			0.06	0.33	
4,750		0.04	0.18	0.36			1.09					0.88	0.73						0.25	0.25			0.07	0.36	
5,000		0.05	0.20	0.39			1.15					0.96	0.80						0.27	0.27			0.07	0.40	
5,250		0.05	0.22	0.42			1.21					1.04	0.87						0.29	0.29			0.08	0.44	
5,500		0.05	0.24	0.45			1.27					1.12	0.94						0.32	0.32			0.09	0.49	
3,400		0.01	0.03	0.09								0.21	0.15						0.06	0.06			0.03	0.17	
3,900		0.02	0.04	0.11				0.54				0.26	0.20						0.07	0.07			0.04	0.22	
4,400		0.02	0.05	0.13				0.60				0.33	0.25						0.09	0.09			0.06	0.28	
4,900		0.02	0.06	0.15				0.67				0.39	0.30						0.11	0.11			0.07	0.35	
5,400		0.03	0.08	0.17				0.73				0.46	0.36						0.12	0.12			0.08	0.42	
5,900		0.03	0.09	0.20				0.80				0.54	0.42						0.14	0.14			0.10	0.51	
6,400		0.04	0.11	0.22				0.86				0.61	0.49						0.16	0.16			0.12	0.59	
6,900		0.04	0.12	0.25				0.93				0.70	0.56						0.19	0.19			0.14	0.69	
7,400		0.05	0.14	0.28				0.99				0.79	0.63						0.21	0.21			0.16	0.79	
7,900		0.05	0.16	0.31				1.06				0.88	0.70						0.24	0.24			0.18	0.91	
8,400		0.06	0.17	0.34								0.97	0.78						0.26	0.26			0.21	1.02	
8,900		0.07	0.19	0.37								1.08	0.87						0.29	0.29			0.23	1.15	

Applies to ERV

Add to overall system pressure drop

ER Module SCFM	Cabinet Size	Energy Recovery Module PD (inches WC) (same for Supply & Exhaust)				
		EW30	EW36	EW46	EW52	EW58
800	1	0.43				
1,000		0.56				
1,200		0.70				
1,400		0.84	0.53			
1,600		0.98	0.61			
1,800			0.68			
2,000			0.76			
2,200			0.84			
2,400			0.93			
2,600			1.01			
800		2	0.42			
1,000	0.55					
1,200	0.68					
1,400	0.81		0.50			
1,600	0.94		0.57			
1,800			0.64			
2,000			0.71			
2,200			0.77	0.52		
2,400			0.84	0.56		
2,600			0.91	0.60		
2,800			0.98	0.65		
3,000				0.69		
3,200				0.74		
3,400				0.78		
3,600				0.83		
3,800				0.87		
4,000				0.92		
4,200			0.96			
4,400			1.01			
1,400	3	0.50				
1,800		0.63				
2,200		0.76	0.52			
2,600		0.89	0.60			
3,000		1.02	0.69	0.50		
3,400			0.78	0.56		
3,800			0.87	0.62	0.53	
4,200			0.96	0.68	0.58	
4,600			1.06	0.74	0.63	
5,000				0.80	0.68	
5,400				0.86	0.73	
5,800				0.92	0.78	
6,200				0.98	0.84	
6,600				1.04	0.89	
7,000				0.94		
7,400				0.99		



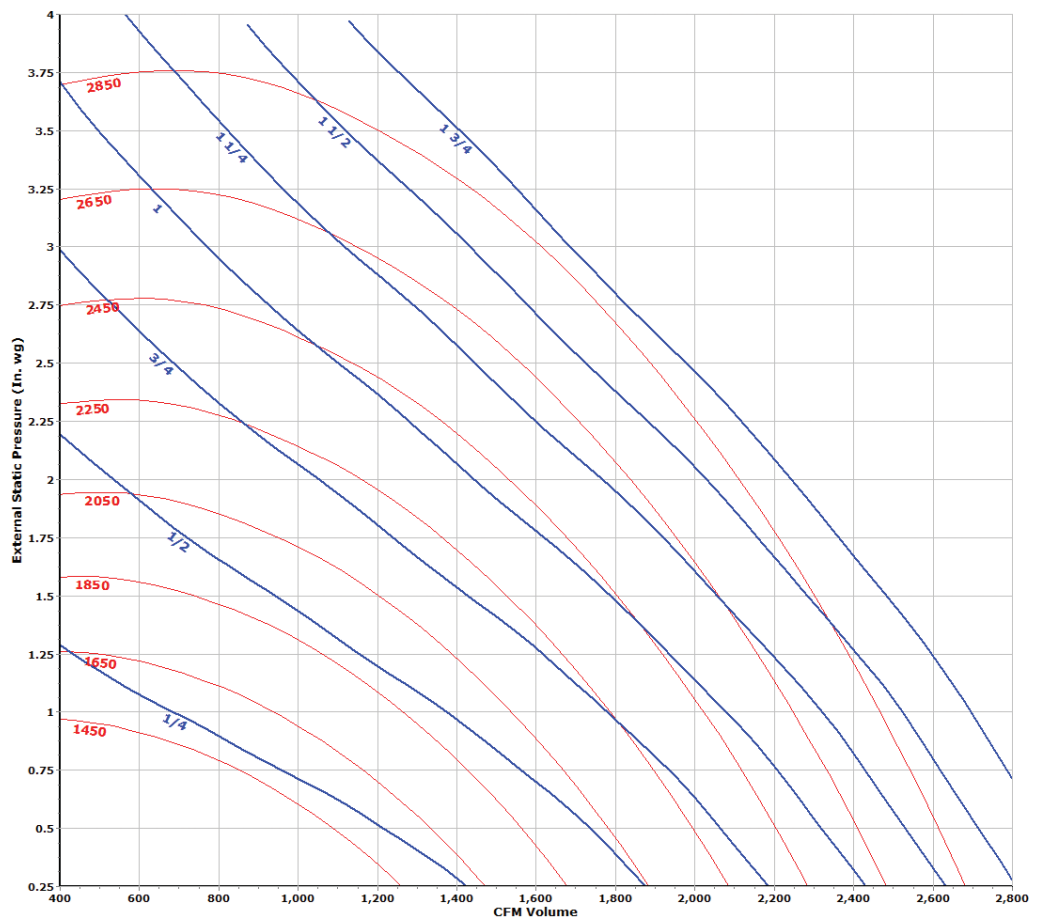
PRESSURE DROP TABLE (cont'd)

Power Exhaust

Applies to Cabinet 1A: All Models with Option PE4

230/1

ACFM	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75
500	838/0.04	1086/0.09	1295/0.14	1481/0.20	1652/0.27	1781/0.33	1932/0.41	2073/0.48							
700	973/0.06	1182/0.12	1364/0.18	1535/0.25	1698/0.33	1834/0.40	1970/0.48	2100/0.56	2217/0.66	2313/0.74	2418/0.85	2533/0.92	2616/1.03	2752/1.12	
900	1127/0.10	1307/0.16	1476/0.23	1629/0.31	1769/0.39	1900/0.48	2032/0.57	2138/0.66	2255/0.76	2359/0.88	2472/0.96	2565/1.08	2665/1.19	2773/1.32	2850/1.41
1100	1299/0.14	1458/0.21	1597/0.29	1742/0.38	1872/0.47	1990/0.56	2108/0.66	2219/0.76	2322/0.87	2435/0.99	2533/1.09	2613/1.21	2726/1.35	2818/1.47	
1300	1482/0.20	1620/0.28	1744/0.36	1864/0.46	1989/0.57	2102/0.68	2212/0.79	2316/0.89	2410/1.01	2512/1.12	2600/1.25	2695/1.37	2796/1.51		
1500	1668/0.28	1791/0.37	1900/0.46	2012/0.56	2124/0.68	2221/0.78	2327/0.92	2426/1.04	2515/1.16	2611/1.28	2693/1.42	2780/1.55			
1700	1863/0.39	1968/0.48	2073/0.58	2178/0.69	2267/0.80	2363/0.92	2453/1.05	2550/1.18	2637/1.33	2730/1.46	2809/1.60				
1900	2063/0.52	2155/0.61	2245/0.72	2342/0.84	2434/0.97	2519/1.09	2610/1.23	2691/1.35	2777/1.51	2850/1.65					
2100	2258/0.67	2347/0.77	2430/0.89	2507/1.01	2588/1.15	2675/1.29	2752/1.43	2833/1.56							
2300	2462/0.85	2533/0.97	2609/1.09	2689/1.23	2760/1.36	2835/1.51									
2500	2664/1.07	2727/1.20	2808/1.34												





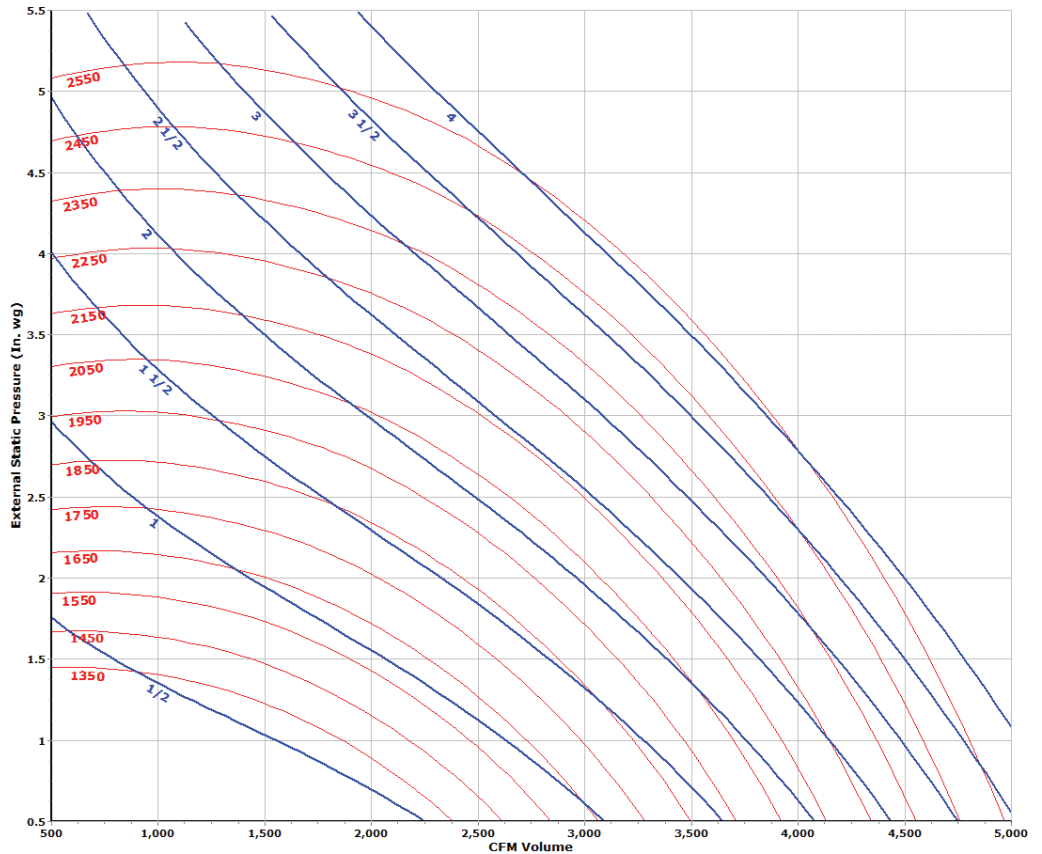
PRESSURE DROP TABLE (cont'd)

Power Exhaust

Applies to Cabinets 1 & 2: All Models with Option PE4

208-230/3

ACFM	0.25	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00
500	578/0.04	794/0.10									
750	626/0.06	820/0.13	1129/0.29	1372/0.48							
1000	695/0.08	870/0.16	1156/0.35	1392/0.56	1588/0.79	1766/1.05	1934/1.33				
1250	781/0.11	932/0.20	1194/0.41	1421/0.65	1609/0.90	1789/1.18	1954/1.49	2099/1.81	2247/2.14	2372/2.43	2488/2.79
1500	878/0.16	1012/0.25	1252/0.48	1461/0.74	1641/1.03	1816/1.34	1968/1.64	2118/2.00	2258/2.35	2381/2.68	2519/3.07
1750	982/0.21	1097/0.32	1315/0.57	1510/0.85	1688/1.15	1845/1.49	2000/1.83	2144/2.19	2281/2.56	2404/2.92	2523/3.35
2000	1089/0.29	1191/0.40	1390/0.66	1572/0.96	1740/1.30	1893/1.64	2035/2.00	2176/2.38	2312/2.78	2436/3.22	
2250	1203/0.38	1291/0.50	1474/0.78	1642/1.09	1804/1.44	1949/1.80	2091/2.19	2223/2.60	2348/3.04	2461/3.48	
2500	1320/0.49	1399/0.62	1562/0.91	1720/1.25	1865/1.62	2012/2.00	2138/2.42	2272/2.84	2389/3.27	2506/3.76	
2750	1437/0.62	1506/0.76	1657/1.07	1801/1.42	1945/1.80	2074/2.22	2204/2.66	2323/3.08	2444/3.56		
3000	1555/0.78	1621/0.93	1756/1.26	1892/1.63	2023/2.03	2151/2.45	2271/2.91	2386/3.38	2503/3.83		
3250	1676/0.97	1733/1.13	1855/1.47	1982/1.86	2108/2.27	2229/2.72	2339/3.17	2451/3.66			
3500	1796/1.18	1847/1.34	1964/1.71	2079/2.12	2194/2.55	2307/3.01	2416/3.49	2527/4.00			
3750	1915/1.43	1964/1.60	2070/1.98	2176/2.40	2287/2.85	2394/3.32	2504/3.83				
4000	2037/1.71	2084/1.89	2179/2.29	2283/2.73	2382/3.21	2484/3.69					
4250	2159/2.03	2203/2.21	2291/2.64	2385/3.09	2481/3.57						
4500	2281/2.38	2321/2.58	2406/3.03	2498/3.49							
4750	2401/2.78	2444/2.99	2520/3.45								
5000	2522/3.22										





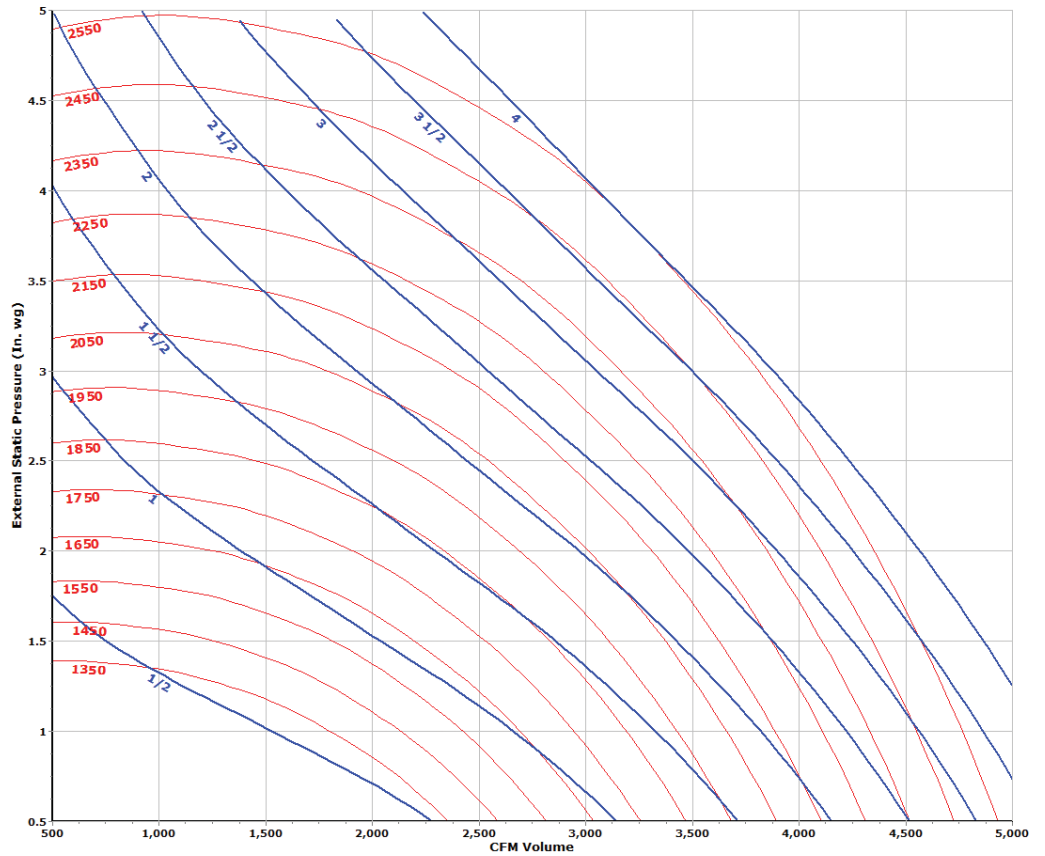
PRESSURE DROP TABLE (cont'd)

Power Exhaust

Applies to Cabinets 1 & 2: All Models with Option PE4

460/3

ACFM	0.25	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50
500	588/0.04	813/0.10	1140/0.24							
750	634/0.06	838/0.13	1155/0.30	1397/0.50	1619/0.71	1789/0.94				
1000	702/0.08	881/0.16	1176/0.36	1422/0.57	1625/0.81	1813/1.08	1971/1.35	2136/1.63	2279/1.95	2414/2.22
1250	788/0.11	946/0.20	1217/0.42	1445/0.67	1640/0.93	1828/1.22	2000/1.53	2152/1.83	2287/2.16	2417/2.52
1500	886/0.15	1022/0.25	1267/0.49	1482/0.76	1677/1.06	1849/1.36	2007/1.69	2163/2.04	2309/2.40	2438/2.75
1750	990/0.21	1107/0.31	1335/0.57	1535/0.86	1720/1.17	1884/1.50	2046/1.85	2183/2.22	2326/2.60	2454/3.03
2000	1098/0.28	1202/0.39	1404/0.66	1591/0.98	1762/1.31	1929/1.66	2076/2.04	2223/2.43	2352/2.85	2480/3.26
2250	1213/0.36	1302/0.48	1488/0.77	1660/1.11	1825/1.47	1974/1.85	2120/2.23	2256/2.65	2384/3.10	2515/3.56
2500	1326/0.47	1411/0.60	1577/0.90	1738/1.25	1892/1.63	2036/2.04	2175/2.45	2302/2.88	2434/3.33	
2750	1444/0.60	1518/0.73	1672/1.06	1818/1.41	1965/1.81	2105/2.23	2231/2.68	2362/3.15	2477/3.61	
3000	1563/0.74	1630/0.89	1771/1.22	1910/1.61	2043/2.02	2174/2.46	2296/2.93	2424/3.41	2534/3.92	
3250	1685/0.92	1747/1.08	1870/1.43	2000/1.83	2128/2.25	2251/2.70	2372/3.19	2488/3.72		
3500	1805/1.13	1862/1.29	1981/1.66	2097/2.06	2214/2.51	2330/2.99	2449/3.50			
3750	1929/1.37	1979/1.53	2087/1.92	2195/2.34	2308/2.80	2417/3.29	2529/3.80			
4000	2053/1.64	2095/1.81	2197/2.20	2302/2.66	2404/3.13	2507/3.63				
4250	2176/1.94	2215/2.12	2309/2.54	2405/2.99	2502/3.48					
4500	2298/2.27	2339/2.46	2425/2.89	2512/3.36						
4750	2419/2.66	2456/2.86	2540/3.29							
5000	2540/3.08									





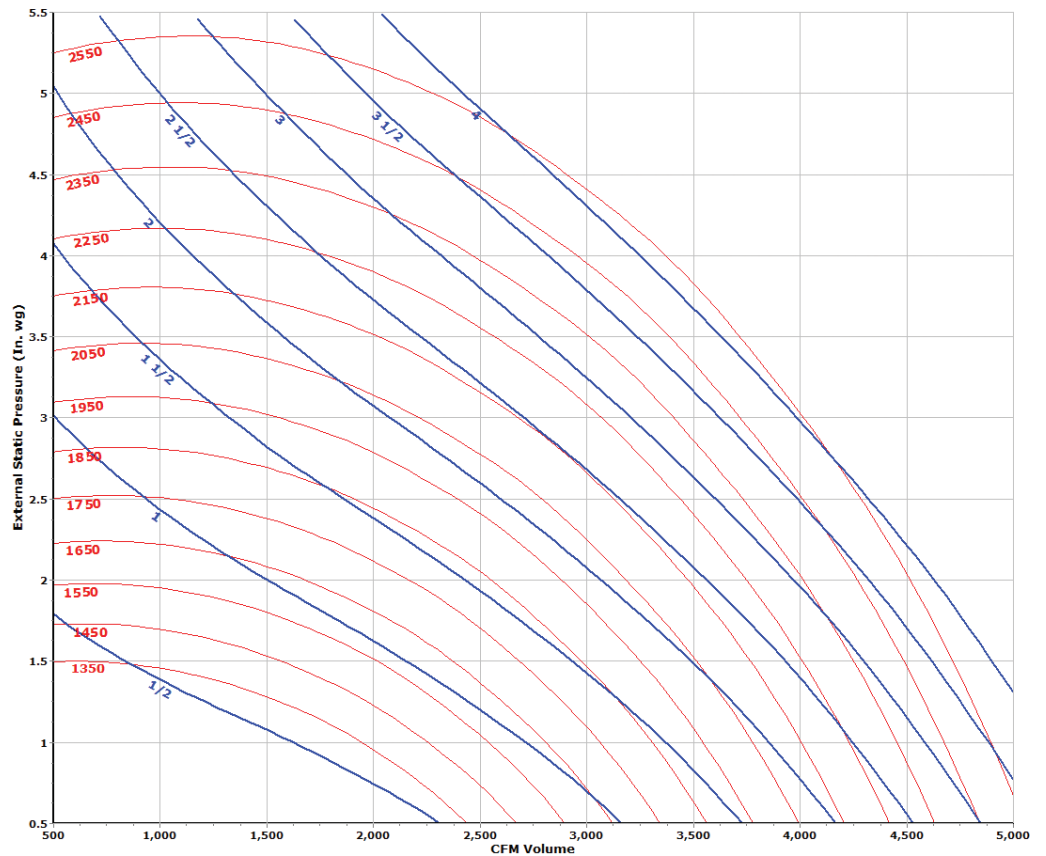
PRESSURE DROP TABLE (cont'd)

Power Exhaust

Applies to Cabinet 3: All Models with Option PE4

208-230/3

ACFM	0.25	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00
500	568/0.04	782/0.10									
750	613/0.06	807/0.12	1105/0.28	1348/0.47	1553/0.68						
1000	683/0.08	855/0.15	1136/0.34	1365/0.55	1563/0.78	1736/1.03	1898/1.27	2050/1.57			
1250	767/0.11	916/0.19	1178/0.39	1397/0.63	1589/0.89	1753/1.16	1910/1.44	2065/1.74	2208/2.05	2329/2.38	2464/2.72
1500	861/0.15	992/0.24	1226/0.46	1433/0.72	1615/0.99	1784/1.30	1943/1.61	2089/1.94	2209/2.27	2345/2.63	2458/3.01
1750	964/0.20	1077/0.30	1291/0.54	1484/0.81	1657/1.11	1817/1.43	1967/1.76	2106/2.12	2238/2.48	2372/2.87	2488/3.24
2000	1072/0.27	1171/0.38	1367/0.63	1543/0.92	1711/1.24	1867/1.58	2005/1.92	2142/2.31	2273/2.70	2393/3.12	2511/3.53
2250	1185/0.36	1270/0.47	1446/0.74	1613/1.04	1769/1.38	1916/1.75	2054/2.12	2181/2.51	2312/2.92	2422/3.34	2543/3.79
2500	1299/0.46	1373/0.58	1534/0.87	1686/1.20	1831/1.54	1973/1.92	2103/2.32	2232/2.74	2356/3.16	2470/3.62	
2750	1415/0.59	1482/0.72	1624/1.02	1773/1.36	1905/1.72	2036/2.11	2162/2.52	2285/2.95	2403/3.41	2510/3.87	
3000	1528/0.74	1592/0.88	1722/1.19	1857/1.54	1984/1.93	2107/2.34	2230/2.77	2340/3.21	2453/3.67		
3250	1647/0.91	1707/1.06	1824/1.39	1947/1.76	2069/2.16	2185/2.58	2298/3.03	2407/3.49	2516/4.00		
3500	1765/1.12	1819/1.28	1927/1.62	2043/2.01	2154/2.43	2270/2.86	2376/3.34	2483/3.82			
3750	1887/1.35	1934/1.52	2037/1.87	2140/2.28	2247/2.70	2350/3.16	2456/3.64				
4000	2002/1.62	2053/1.79	2145/2.17	2245/2.58	2341/3.02	2439/3.52	2538/4.00				
4250	2122/1.92	2165/2.11	2255/2.50	2346/2.92	2439/3.39	2531/3.88					
4500	2242/2.25	2286/2.44	2369/2.86	2451/3.30	2539/3.77						
4750	2361/2.63	2401/2.83	2481/3.25								
5000	2485/3.05	2522/3.26									





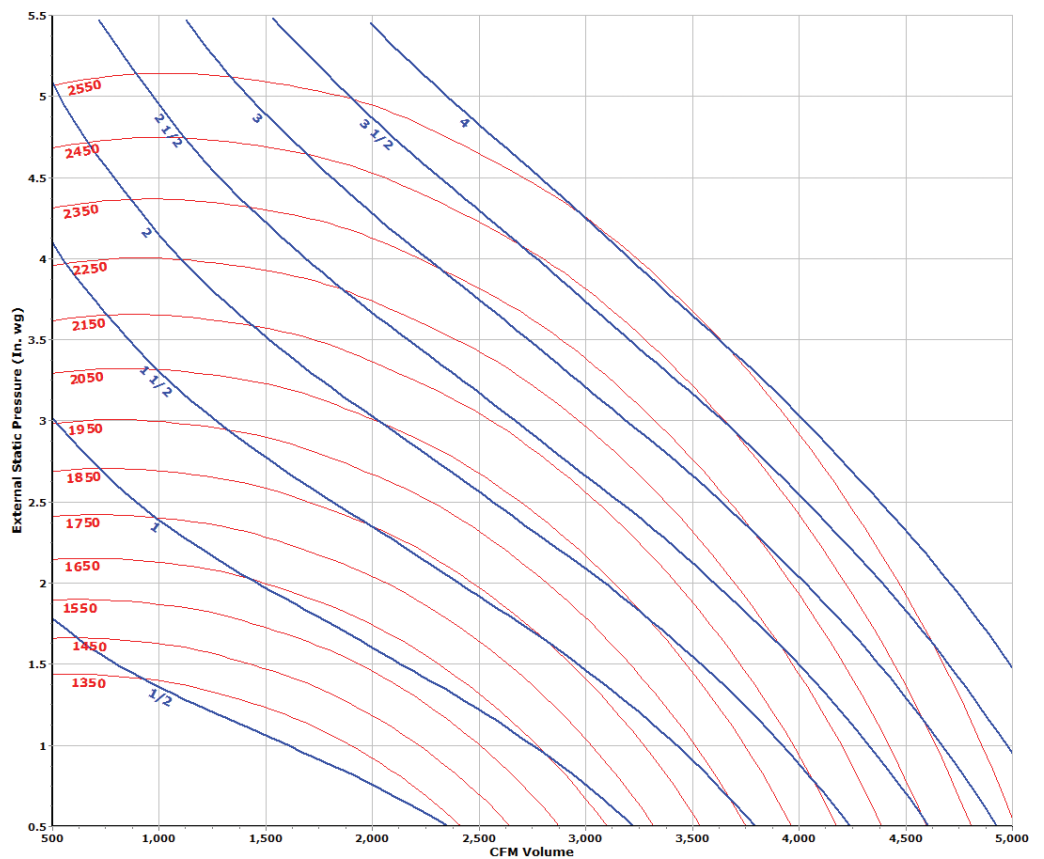
PRESSURE DROP TABLE (cont'd)

Power Exhaust

Applies to Cabinet 3: All Models with Option PE4

460/3

ACFM	0.25	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00
500	578/0.04	800/0.10	1115/0.24								
750	623/0.06	825/0.13	1129/0.29	1372/0.48	1585/0.69	1769/0.91					
1000	690/0.08	866/0.16	1156/0.35	1392/0.55	1600/0.80	1782/1.06	1952/1.32	2092/1.59	2230/1.90	2386/2.16	2503/2.48
1250	774/0.11	929/0.19	1194/0.40	1421/0.64	1619/0.90	1789/1.18	1954/1.47	2116/1.79	2247/2.11	2372/2.46	2512/2.76
1500	868/0.14	1002/0.24	1246/0.47	1461/0.73	1650/1.01	1816/1.31	1981/1.64	2118/1.97	2258/2.32	2400/2.69	2519/3.03
1750	971/0.19	1087/0.30	1305/0.54	1503/0.82	1688/1.13	1855/1.46	2000/1.80	2144/2.15	2281/2.52	2404/2.92	2541/3.30
2000	1081/0.26	1181/0.37	1381/0.63	1560/0.93	1732/1.25	1893/1.60	2045/1.96	2188/2.37	2312/2.77	2436/3.16	
2250	1191/0.34	1280/0.46	1459/0.74	1631/1.06	1789/1.39	1941/1.77	2082/2.15	2223/2.55	2348/2.98	2474/3.41	
2500	1306/0.44	1384/0.56	1548/0.86	1703/1.19	1858/1.55	1996/1.93	2129/2.34	2262/2.78	2389/3.21	2506/3.68	
2750	1422/0.56	1494/0.69	1638/0.99	1784/1.34	1925/1.73	2059/2.15	2187/2.57	2313/3.02	2434/3.45		
3000	1540/0.71	1604/0.84	1736/1.15	1874/1.52	2003/1.91	2129/2.35	2254/2.79	2377/3.27	2493/3.75		
3250	1660/0.87	1715/1.01	1839/1.35	1964/1.73	2088/2.13	2206/2.59	2322/3.04	2442/3.54			
3500	1778/1.07	1833/1.22	1943/1.56	2061/1.96	2174/2.37	2285/2.84	2400/3.32	2510/3.83			
3750	1896/1.29	1949/1.45	2048/1.80	2158/2.21	2267/2.66	2372/3.11	2480/3.61				
4000	2017/1.55	2063/1.71	2162/2.09	2257/2.49	2362/2.94	2462/3.43					
4250	2138/1.84	2181/2.00	2273/2.39	2366/2.81	2460/3.28						
4500	2258/2.17	2298/2.33	2381/2.73	2471/3.18							
4750	2384/2.53	2419/2.71	2494/3.11								
5000	2503/2.92	2540/3.12									





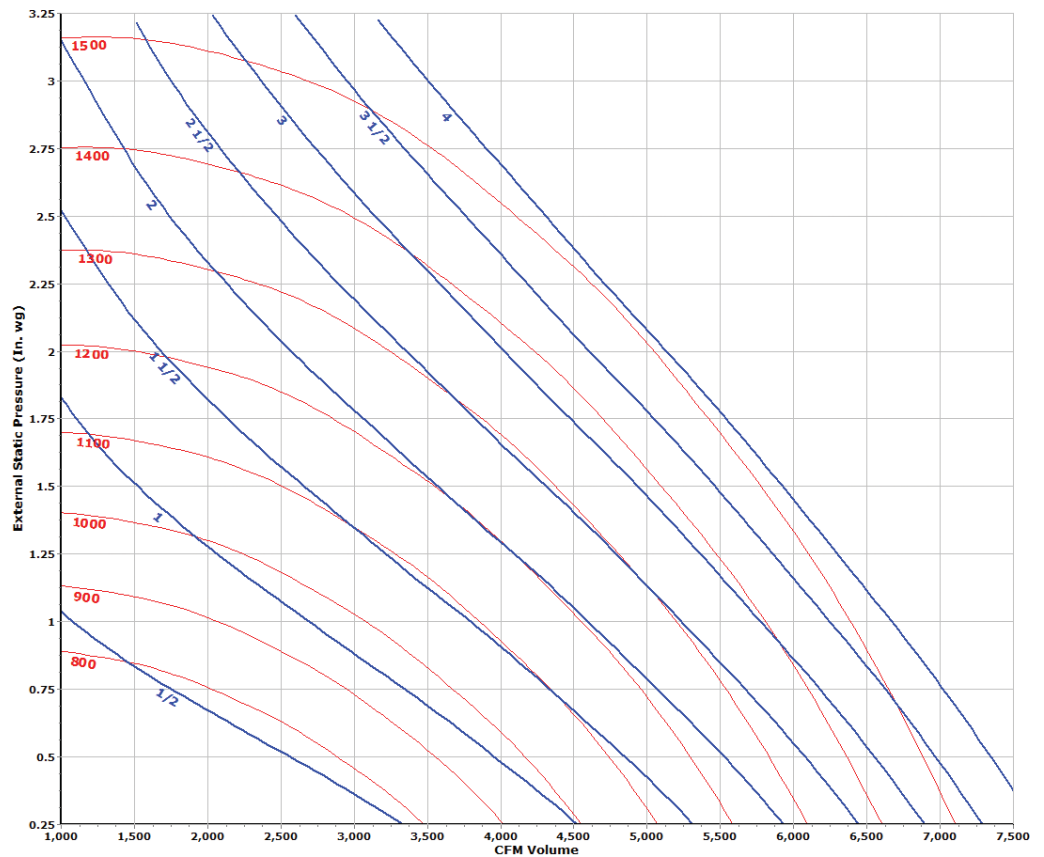
PRESSURE DROP TABLE (cont'd)

Power Exhaust

Applies to Cabinets 1 & 2: All Models with Option PE5

208-230/3

ACFM	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00
1000	446/0.09	609/0.21	735/0.34	844/0.47	943/0.62	1033/0.77	1109/0.94					
1500	494/0.14	638/0.28	756/0.44	860/0.61	956/0.80	1045/0.99	1124/1.19	1198/1.38	1266/1.59	1331/1.82	1393/2.05	1461/2.29
2000	559/0.20	687/0.37	797/0.56	892/0.76	983/0.97	1066/1.19	1142/1.43	1217/1.67	1282/1.92	1347/2.16	1410/2.41	1471/2.70
2500	634/0.29	746/0.48	847/0.70	937/0.92	1020/1.17	1098/1.41	1171/1.68	1239/1.96	1303/2.22	1369/2.51	1427/2.79	1491/3.10
3000	715/0.40	816/0.62	906/0.86	988/1.12	1068/1.38	1142/1.66	1211/1.95	1276/2.25	1337/2.56	1400/2.88	1456/3.21	
3500	804/0.55	889/0.80	974/1.06	1049/1.35	1122/1.65	1193/1.95	1261/2.27	1324/2.60	1381/2.92	1437/3.27	1494/3.61	
4000	895/0.75	971/1.02	1048/1.30	1118/1.61	1185/1.93	1249/2.27	1314/2.63	1375/2.97	1432/3.33	1485/3.69		
4500	989/0.99	1056/1.28	1125/1.60	1192/1.93	1255/2.26	1316/2.63	1373/3.02	1428/3.39	1483/3.79			
5000	1085/1.28	1145/1.59	1207/1.94	1268/2.30	1327/2.66	1385/3.05	1438/3.45	1492/3.85				
5500	1182/1.64	1238/1.98	1291/2.34	1346/2.74	1404/3.13	1456/3.53						
6000	1281/2.06	1330/2.41	1381/2.81	1431/3.22	1481/3.65							
6500	1378/2.55	1425/2.93	1471/3.34									
7000	1478/3.12											





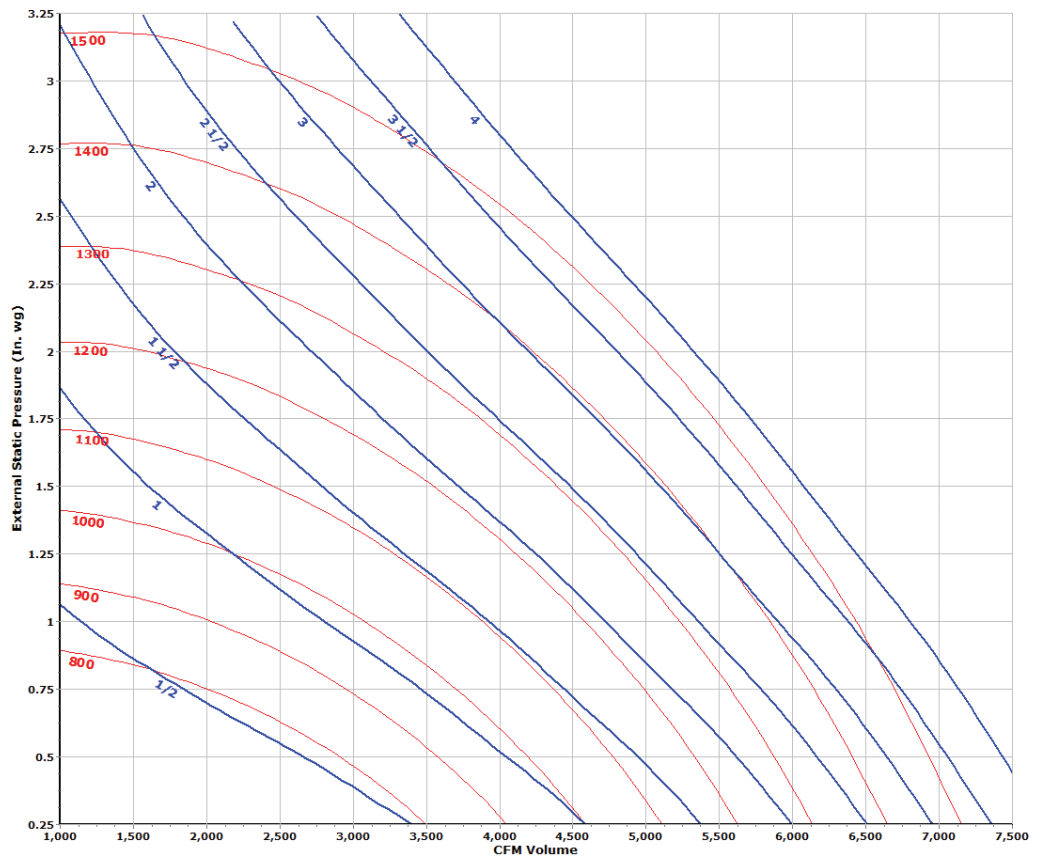
PRESSURE DROP TABLE (cont'd)

Power Exhaust

Applies to Cabinets 1 & 2: All Models with Option PE5

460/3

ACFM	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00
1000	447/0.09	609/0.20	735/0.32	844/0.46	936/0.61	1024/0.76	1109/0.92					
1500	496/0.13	640/0.27	759/0.42	865/0.59	956/0.77	1039/0.95	1124/1.14	1190/1.34	1266/1.54	1331/1.76	1393/1.98	1449/2.21
2000	558/0.19	687/0.36	797/0.54	895/0.72	983/0.93	1066/1.15	1142/1.38	1217/1.61	1282/1.84	1347/2.10	1410/2.34	1471/2.58
2500	631/0.28	746/0.46	847/0.67	940/0.89	1023/1.12	1102/1.36	1176/1.62	1244/1.88	1309/2.13	1375/2.40	1434/2.69	1491/2.99
3000	713/0.39	812/0.59	904/0.82	991/1.07	1068/1.33	1142/1.60	1215/1.87	1280/2.15	1342/2.44	1405/2.77	1462/3.05	
3500	800/0.53	888/0.76	970/1.01	1049/1.28	1122/1.57	1193/1.86	1261/2.18	1324/2.49	1385/2.80	1442/3.13	1499/3.48	
4000	890/0.72	967/0.98	1043/1.25	1116/1.53	1185/1.85	1249/2.16	1314/2.50	1375/2.84	1432/3.18	1490/3.55		
4500	983/0.95	1050/1.23	1120/1.53	1186/1.84	1249/2.17	1313/2.50	1373/2.86	1428/3.23	1487/3.61			
5000	1079/1.24	1138/1.53	1202/1.86	1263/2.20	1321/2.54	1379/2.91	1435/3.28	1492/3.68				
5500	1174/1.59	1229/1.90	1286/2.25	1341/2.62	1398/3.00	1450/3.37						
6000	1272/2.01	1323/2.34	1374/2.69	1425/3.09	1478/3.50							
6500	1370/2.48	1418/2.84	1463/3.21									
7000	1468/3.05											





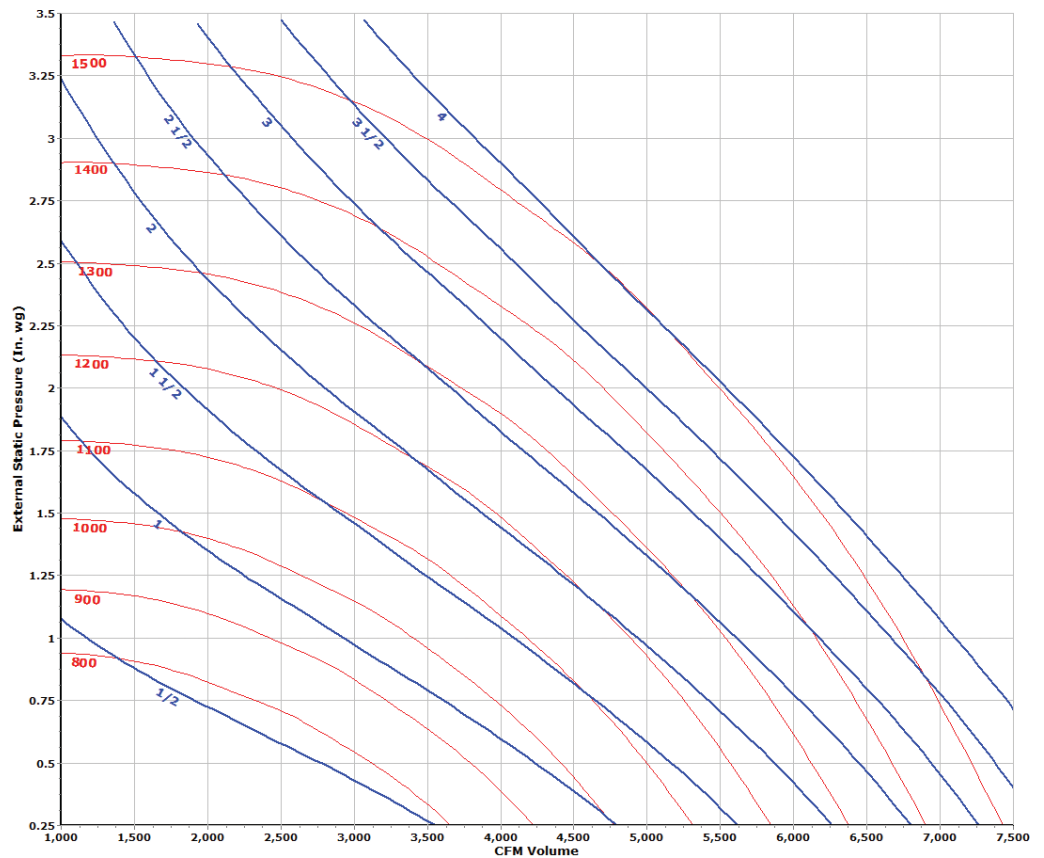
PRESSURE DROP TABLE (cont'd)

Power Exhaust

Applies to Cabinet 3: All Models with Option PE5

208-230/3

ACFM	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25
1000	431/0.09	588/0.20	713/0.32	821/0.45	915/0.60	1007/0.74	1079/0.90						
1500	476/0.13	618/0.26	734/0.41	836/0.57	927/0.75	1010/0.94	1090/1.12	1167/1.32	1231/1.52	1302/1.73	1362/1.95	1426/2.17	1473/2.42
2000	538/0.18	661/0.34	769/0.52	863/0.71	952/0.91	1029/1.13	1105/1.35	1175/1.57	1242/1.80	1310/2.05	1370/2.31	1427/2.55	1489/2.82
2500	608/0.25	717/0.44	815/0.64	906/0.85	986/1.08	1063/1.33	1131/1.57	1199/1.82	1265/2.09	1326/2.38	1388/2.63	1441/2.92	1499/3.22
3000	687/0.35	782/0.56	871/0.78	952/1.02	1031/1.27	1104/1.53	1172/1.81	1236/2.09	1294/2.40	1352/2.69	1411/2.99	1468/3.31	
3500	772/0.48	855/0.71	935/0.96	1012/1.22	1079/1.50	1150/1.78	1217/2.08	1276/2.40	1337/2.71	1394/3.05	1447/3.38	1499/3.71	
4000	860/0.65	932/0.90	1004/1.17	1076/1.45	1140/1.76	1202/2.06	1262/2.39	1322/2.72	1382/3.06	1436/3.41	1490/3.75		
4500	949/0.85	1015/1.12	1080/1.41	1144/1.72	1205/2.05	1264/2.38	1320/2.73	1373/3.10	1428/3.46	1483/3.82			
5000	1041/1.11	1101/1.40	1158/1.71	1217/2.03	1273/2.38	1330/2.74	1385/3.11	1435/3.49	1484/3.90				
5500	1134/1.42	1187/1.72	1240/2.05	1294/2.40	1346/2.76	1398/3.15	1450/3.55	1499/3.94					
6000	1228/1.78	1276/2.11	1325/2.46	1374/2.84	1422/3.22	1472/3.63							
6500	1322/2.21	1368/2.55	1413/2.92	1457/3.32									
7000	1416/2.70	1460/3.06											





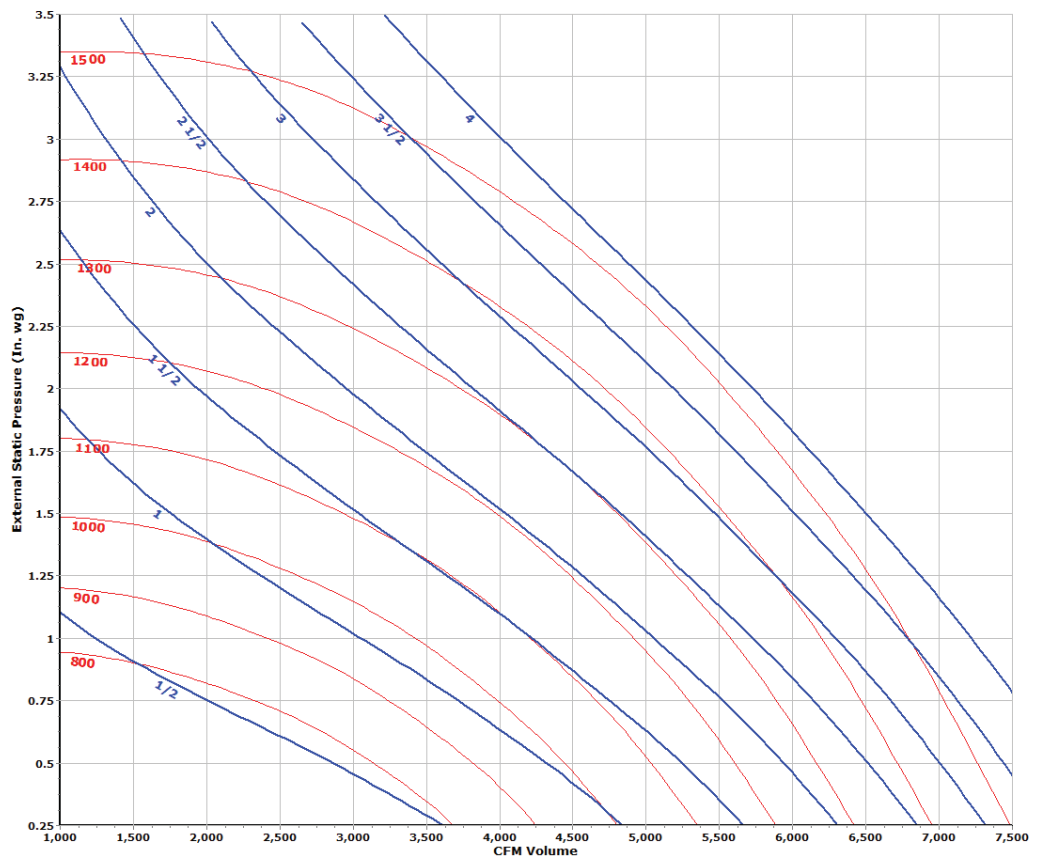
PRESSURE DROP TABLE (cont'd)

Power Exhaust

Applies to Cabinet 3: All Models with Option PE5

460/3

ACFM	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25
1000	433/0.08	588/0.19	713/0.31	821/0.44	915/0.58	998/0.73	1079/0.89	1152/1.04	1222/1.21	1293/1.70	1362/1.92	1415/2.13	1473/2.33
1500	476/0.12	618/0.25	734/0.40	836/0.56	927/0.73	1010/0.91	1090/1.09	1160/1.28	1231/1.49	1293/1.70	1362/1.92	1415/2.13	1473/2.33
2000	535/0.17	661/0.33	771/0.50	866/0.68	952/0.88	1034/1.08	1110/1.30	1175/1.51	1242/1.75	1310/1.99	1370/2.22	1427/2.48	1480/2.74
2500	606/0.25	716/0.42	815/0.61	906/0.82	989/1.04	1067/1.27	1136/1.51	1204/1.75	1270/2.02	1332/2.27	1388/2.54	1448/2.82	1499/3.10
3000	683/0.34	781/0.53	869/0.75	952/0.98	1031/1.23	1104/1.47	1172/1.75	1236/2.02	1299/2.29	1357/2.59	1416/2.88	1468/3.18	
3500	768/0.47	852/0.68	933/0.91	1007/1.16	1079/1.43	1150/1.71	1217/1.99	1280/2.30	1337/2.60	1394/2.92	1452/3.24		
4000	854/0.63	928/0.86	1002/1.12	1071/1.39	1137/1.67	1202/1.97	1262/2.28	1322/2.61	1382/2.93	1436/3.28	1490/3.61		
4500	944/0.83	1009/1.08	1075/1.36	1139/1.65	1202/1.95	1261/2.28	1316/2.61	1373/2.96	1428/3.29	1483/3.66			
5000	1034/1.08	1092/1.35	1151/1.64	1212/1.96	1271/2.29	1324/2.62	1379/2.98	1431/3.34	1484/3.70				
5500	1128/1.39	1180/1.67	1233/1.98	1286/2.32	1341/2.66	1395/3.01	1444/3.39	1493/3.78					
6000	1220/1.74	1269/2.04	1318/2.37	1366/2.73	1417/3.09	1466/3.48							
6500	1313/2.16	1358/2.48	1405/2.82	1449/3.20	1494/3.59								
7000	1407/2.65	1450/2.98	1491/3.34										



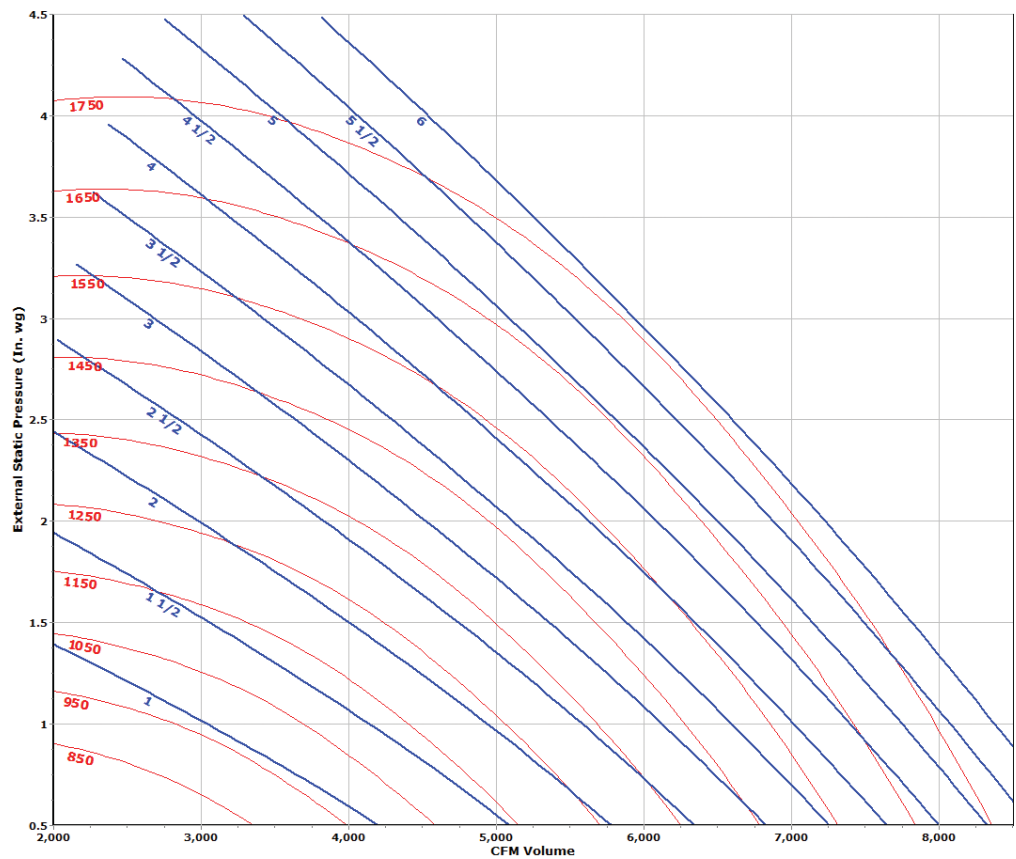


PRESSURE DROP TABLE (cont'd)

Power Exhaust

Applies to Cabinets 1 & 2: All Models with Option PE6

ACFM	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00
2000	546/0.18	671/0.33	784/0.49	886/0.68	979/0.88	1065/1.09	1148/1.31	1223/1.54	1296/1.79	1366/2.04						
2500	619/0.25	728/0.42	827/0.61	921/0.82	1009/1.03	1090/1.27	1167/1.51	1237/1.76	1306/2.03	1373/2.31	1440/2.59	1502/2.86	1556/3.17	1613/3.49	1675/3.82	1724/4.13
3000	701/0.36	795/0.55	884/0.76	968/0.98	1047/1.22	1123/1.47	1197/1.73	1265/2.00	1329/2.29	1395/2.59	1453/2.88	1516/3.20	1573/3.50	1628/3.84	1680/4.18	1736/4.52
3500	787/0.50	870/0.71	950/0.94	1025/1.19	1096/1.44	1167/1.71	1234/1.99	1300/2.29	1361/2.59	1424/2.90	1480/3.22	1536/3.56	1591/3.88	1644/4.21	1701/4.58	1750/4.95
4000	876/0.67	951/0.90	1024/1.15	1092/1.42	1157/1.70	1220/2.00	1281/2.29	1343/2.60	1404/2.93	1458/3.26	1514/3.60	1569/3.95	1623/4.30	1677/4.66	1723/5.03	
4500	969/0.89	1034/1.15	1099/1.42	1162/1.70	1223/2.00	1283/2.31	1340/2.65	1394/2.98	1452/3.31	1504/3.66	1556/4.02	1607/4.40	1658/4.76	1707/5.17		
5000	1062/1.16	1122/1.44	1180/1.73	1239/2.03	1296/2.36	1351/2.69	1403/3.04	1455/3.40	1505/3.75	1556/4.13	1606/4.51	1655/4.90	1703/5.28	1750/5.69		
5500	1158/1.48	1213/1.78	1266/2.10	1318/2.42	1373/2.77	1423/3.13	1472/3.48	1522/3.87	1568/4.24	1614/4.65	1663/5.05	1707/5.43				
6000	1254/1.85	1302/2.18	1353/2.53	1402/2.87	1451/3.24	1500/3.61	1547/4.00	1591/4.39	1637/4.80	1680/5.20	1725/5.63					
6500	1350/2.30	1396/2.65	1442/3.01	1487/3.39	1532/3.78	1577/4.18	1622/4.57	1667/4.99	1707/5.42	1750/5.86						
7000	1448/2.82	1489/3.18	1531/3.57	1573/3.98	1617/4.37	1658/4.80	1701/5.22	1741/5.66								
7500	1544/3.41	1584/3.80	1623/4.21	1664/4.64	1702/5.06	1741/5.49										
8000	1642/4.07	1679/4.49	1718/4.94													
8500	1742/4.84															



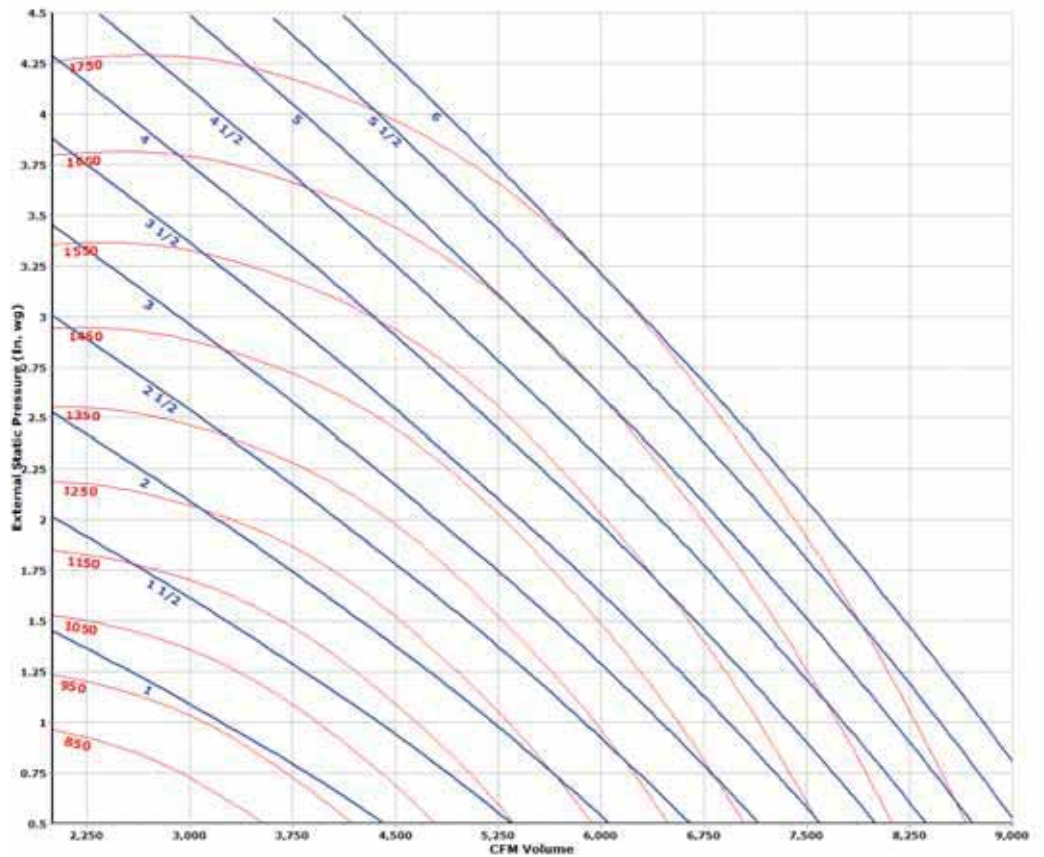


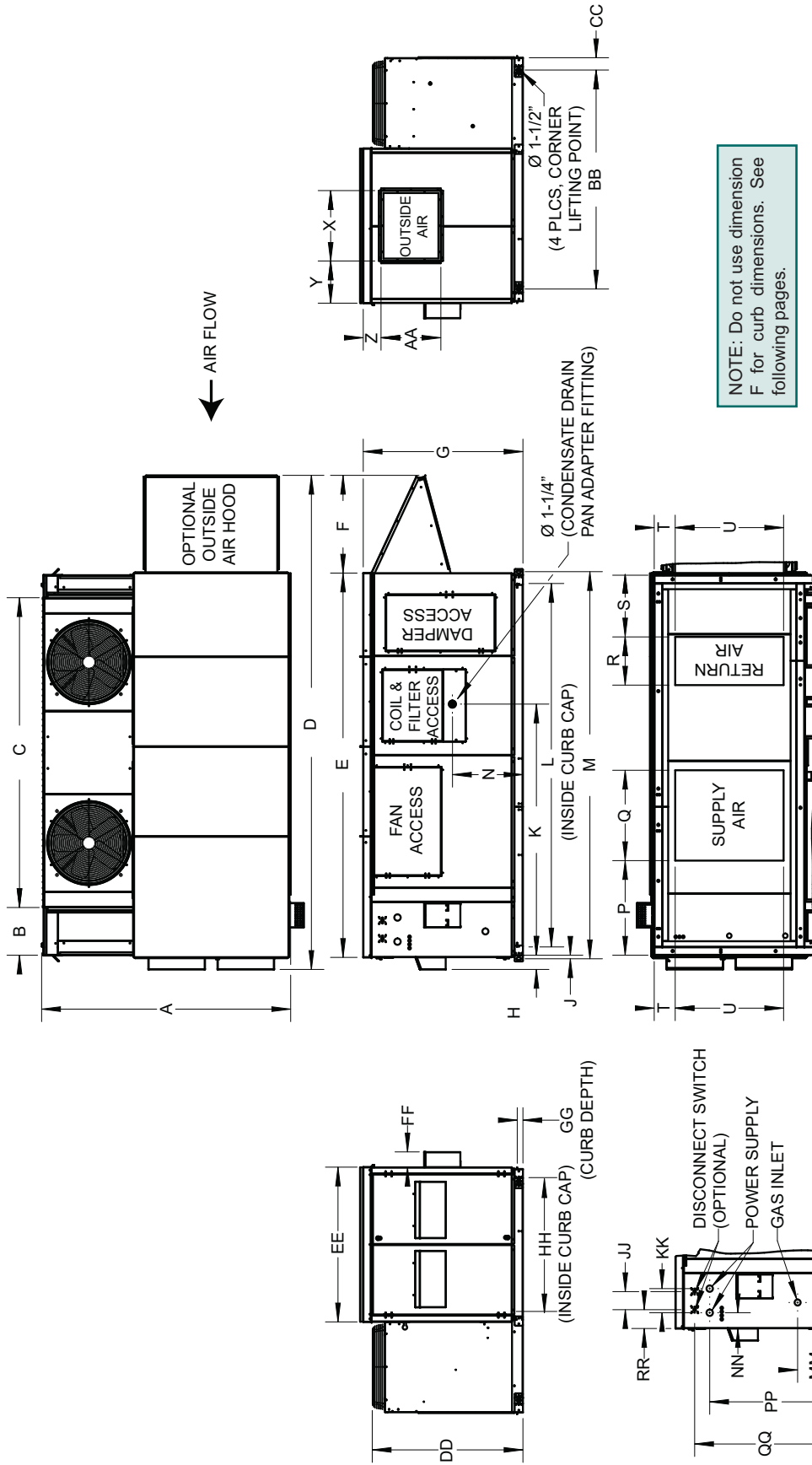
PRESSURE DROP TABLE (cont'd)

Power Exhaust

Applies to Cabinet 3: All Models with Option PE6

ACFM	0.25	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25
2000	529/0.16	651/0.30	763/0.47	864/0.64	956/0.83	1041/1.04	1120/1.25	1191/1.48	1267/1.71	1341/2.20	1400/2.47	1464/2.75	1522/3.04	1577/3.35			
2500	600/0.23	706/0.39	803/0.57	895/0.76	980/0.98	1061/1.19	1136/1.43	1207/1.67	1273/1.94	1341/2.20	1400/2.47	1464/2.75	1522/3.04	1577/3.35			
3000	677/0.32	772/0.50	857/0.70	938/0.92	1017/1.14	1091/1.38	1160/1.63	1228/1.90	1296/2.17	1359/2.45	1419/2.74	1474/3.04	1533/3.35	1585/3.66	1641/3.98	1694/4.30	1743/4.65
3500	761/0.45	843/0.64	921/0.86	994/1.10	1063/1.35	1132/1.60	1198/1.87	1263/2.15	1324/2.43	1384/2.74	1441/3.03	1498/3.35	1551/3.67	1601/4.01	1655/4.36	1707/4.70	1750/5.04
4000	848/0.60	920/0.82	991/1.06	1059/1.31	1122/1.57	1184/1.86	1244/2.14	1302/2.44	1363/2.74	1418/3.07	1474/3.39	1526/3.73	1577/4.06	1628/4.40	1677/4.77	1728/5.15	
4500	938/0.79	1002/1.03	1064/1.29	1127/1.56	1186/1.84	1245/2.14	1299/2.45	1355/2.77	1406/3.10	1458/3.43	1511/3.78	1563/4.13	1611/4.49	1658/4.86	1707/5.24		
5000	1028/1.03	1085/1.29	1142/1.57	1201/1.85	1257/2.16	1308/2.48	1362/2.80	1411/3.14	1461/3.49	1509/3.84	1559/4.20	1606/4.59	1651/4.96	1699/5.35	1746/5.73		
5500	1121/1.31	1172/1.59	1224/1.89	1277/2.20	1328/2.52	1380/2.86	1429/3.20	1475/3.57	1522/3.93	1568/4.31	1611/4.70	1656/5.08	1700/5.47	1742/5.89			
6000	1212/1.65	1261/1.95	1308/2.27	1355/2.60	1405/2.93	1451/3.29	1497/3.66	1544/4.02	1588/4.41	1631/4.82	1673/5.23	1714/5.63					
6500	1306/2.04	1350/2.36	1394/2.70	1438/3.05	1482/3.42	1527/3.78	1572/4.16	1613/4.57	1655/4.97	1698/5.39	1737/5.80						
7000	1400/2.49	1441/2.83	1483/3.20	1522/3.57	1563/3.95	1604/4.34	1647/4.74	1687/5.15	1725/5.58								
7500	1494/3.01	1533/3.37	1572/3.76	1608/4.15	1648/4.55	1685/4.97	1724/5.40										
8000	1589/3.60	1626/3.99	1662/4.38	1697/4.81	1731/5.23												
8500	1683/4.28	1717/4.68															





NOTE: Do not use dimension F for curb dimensions. See following pages.

Gas Heat Section Option	LL	MM	Diameter (NPT)
H50, H75, H100, H102, H125, H150, H175, H202	10-15/16" (278mm)	13-11/16" (348mm)	1/2"
H200, H402, G150, G302	7-11/16" (195mm)	14" (356mm)	1/2"
H300, H400, G225, G300, G372			3/4"

	A	B	C	D	E	F	G	H	J	K	L	M
Inches	82 11/16	15 13/16	102 7/8	164 1/16	127 5/8	32 7/16	53	4 3/4	1 3/16	83 3/8	120 11/16	128 1/2
(mm)	(2,101)	(402)	(2,612)	(4,167)	(3,241)	(824)	(1,347)	(120)	(30)	(2,118)	(3,065)	(3,264)

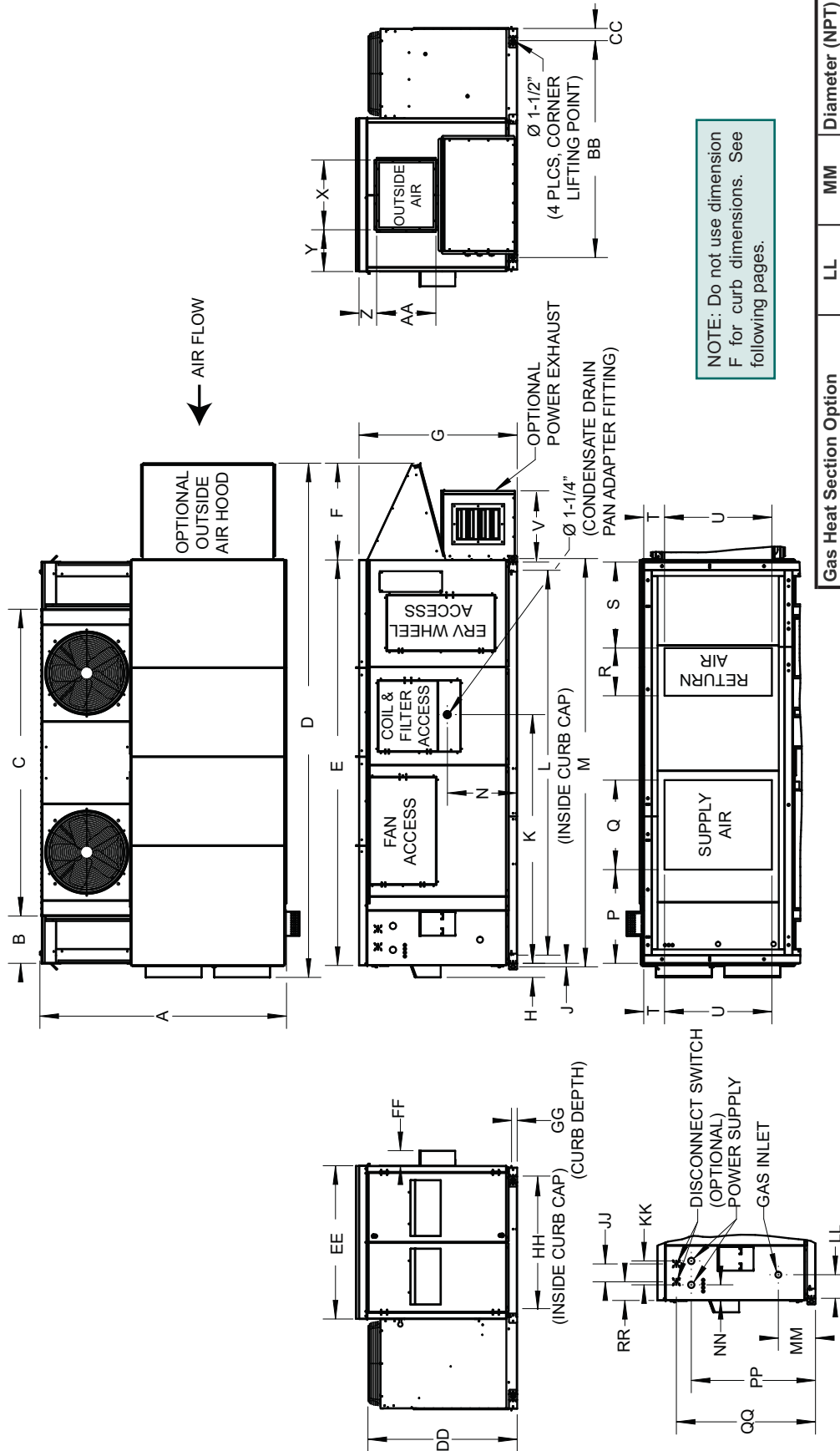
	N	P	Q	R	S	T	U	X	Y	Z	AA	BB
Inches	23 3/8	31 7/16	30	16	20 1/2	7	36	23 3/8	14	5 15/16	19 7/8	72 11/16
(mm)	(594)	(798)	(762)	(406)	(520)	(177)	(914)	(594)	(356)	(150)	(505)	(1,847)

	CC	DD	EE	FF	GG	HH	JJ	KK	NN	PP	QQ	RR
Inches	4 1/16	50 1/16	51 3/8	5 1/8	1 7/8	44 7/16	6	8	5 1/4	41 11/16	46 11/16	6 1/4
(mm)	(104)	(1,271)	(1,305)	(130)	(48)	(1,129)	(152)	(203)	(133)	(1,058)	(1,185)	(158)

Cabinet 1

Models YDMA060, YDMA090, and YDHA060

With ERV



NOTE: Do not use dimension F for curb dimensions. See following pages.

Gas Heat Section Option	LL	MM	Diameter (NPT)
H50, H75, H100, H102, H125, H150, H175, H202	10-15/16" (278mm)	13-11/16" (348mm)	1/2"
H200, H402, G150, G302	7-11/16" (195mm)	14" (356mm)	1/2"
H300, H400, G225, G300, G372			3/4"

	A	B	C	D	E	F	G	H	J	K	L	M	N
Inches	82 11/16	15 13/16	102 7/8	172 3/8	135 15/16	32 7/16	53	4 3/4	1 3/16	83 3/8	129	136 7/8	23 3/8
(mm)	(2,101)	(402)	(2,612)	(4,378)	(3,453)	(824)	(1,347)	(120)	(30)	(2,118)	(3,277)	(3,476)	(594)

	P	Q	R	S	T	U	V	X	Y	Z	AA	BB
Inches	31 1/16	30	16	28 13/16	7	36	23 7/8	23 3/8	14	5 15/16	19 7/8	72 11/16
(mm)	(798)	(762)	(406)	(732)	(177)	(914)	(607)	(594)	(356)	(150)	(505)	(1,847)

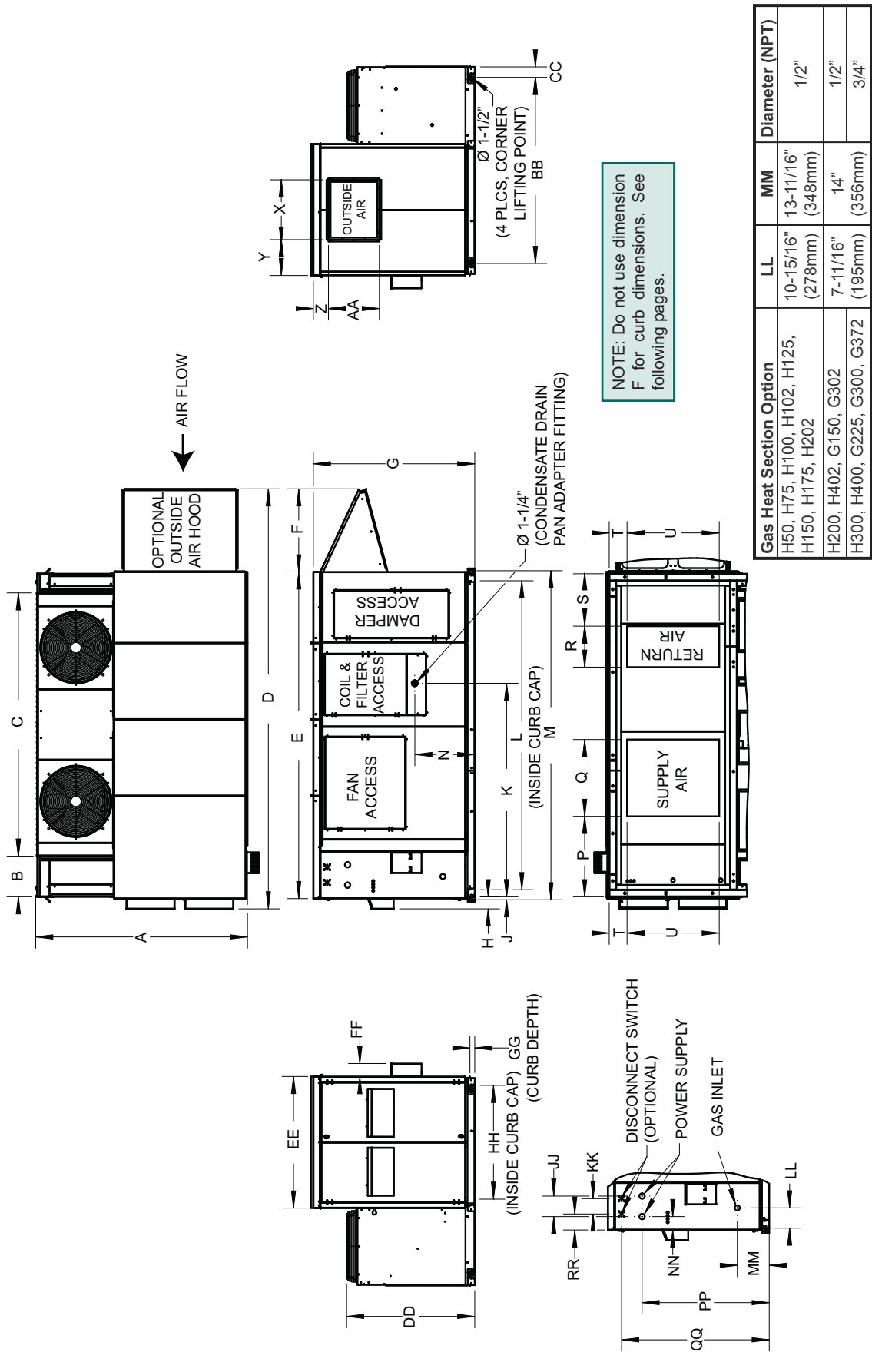
	CC	DD	EE	FF	GG	HH	JJ	KK	NN	PP	QQ	RR
Inches	4 1/16	50 1/16	51 3/8	5 1/8	1 7/8	44 7/16	6	8	5 1/4	41 11/16	46 11/16	6 1/4
(mm)	(104)	(1,271)	(1,305)	(130)	(48)	(1,129)	(152)	(203)	(133)	(1,058)	(1,185)	(158)



DIMENSIONS (cont'd)

Cabinet 1B

Models YDMA120, YDMA150, YDHA090, YDHA120, and YDHA150

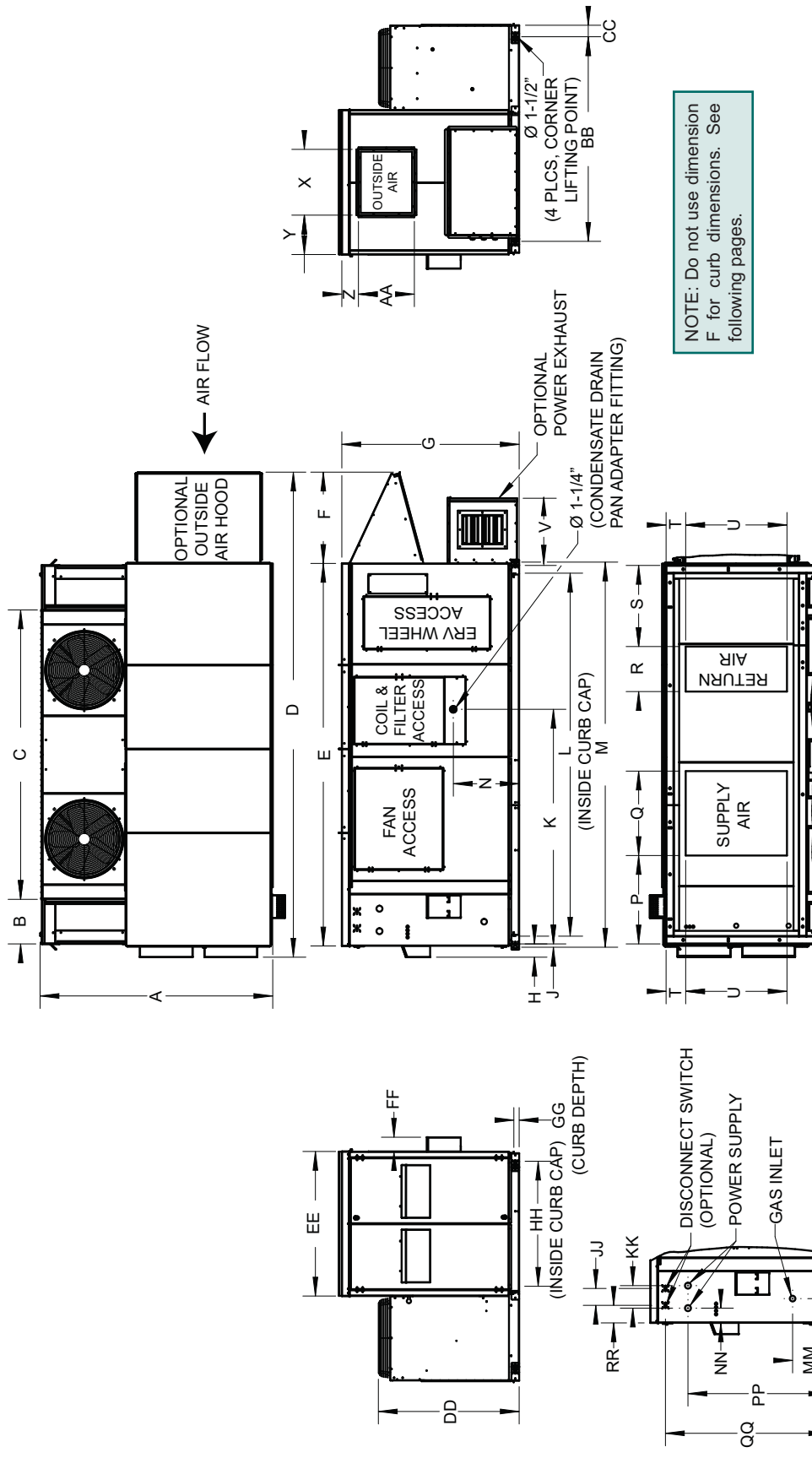


Gas Heat Section Option	LL	MM	Diameter (NPT)
H50, H75, H100, H102, H125, H150, H175, H202	10-15/16" (278mm)	13-11/16" (348mm)	1/2"
H200, H402, G150, G302	7-11/16" (195mm)	14" (356mm)	1/2"
H300, H400, G225, G300, G372			3/4"

	A	B	C	D	E	F	G	H	J	K	L	M
Inches	82 11/16	15 13/16	102 7/8	164 1/16	127 5/8	32 7/16	63	4 3/4	1 3/16	83 3/8	120 11/16	128 1/2
(mm)	(2,101)	(402)	(2,612)	(4,167)	(3,241)	(824)	(1,601)	(120)	(30)	(2,118)	(3,065)	(3,264)

	N	P	Q	R	S	T	U	X	Y	Z	AA	BB
Inches	23 3/8	31 7/16	30	16	20 1/2	7	36	23 3/8	14	5 15/16	19 7/8	72 11/16
(mm)	(594)	(798)	(762)	(406)	(520)	(177)	(914)	(594)	(356)	(150)	(505)	(1,847)

	CC	DD	EE	FF	GG	HH	JJ	KK	NN	PP	QQ	RR
Inches	4 1/16	50 1/16	51 3/8	5 1/8	1 7/8	44 7/16	6	8	5 1/4	49 11/16	57 11/16	6 1/4
(mm)	(104)	(1,271)	(1,305)	(130)	(48)	(1,129)	(152)	(203)	(133)	(1,261)	(1,465)	(158)



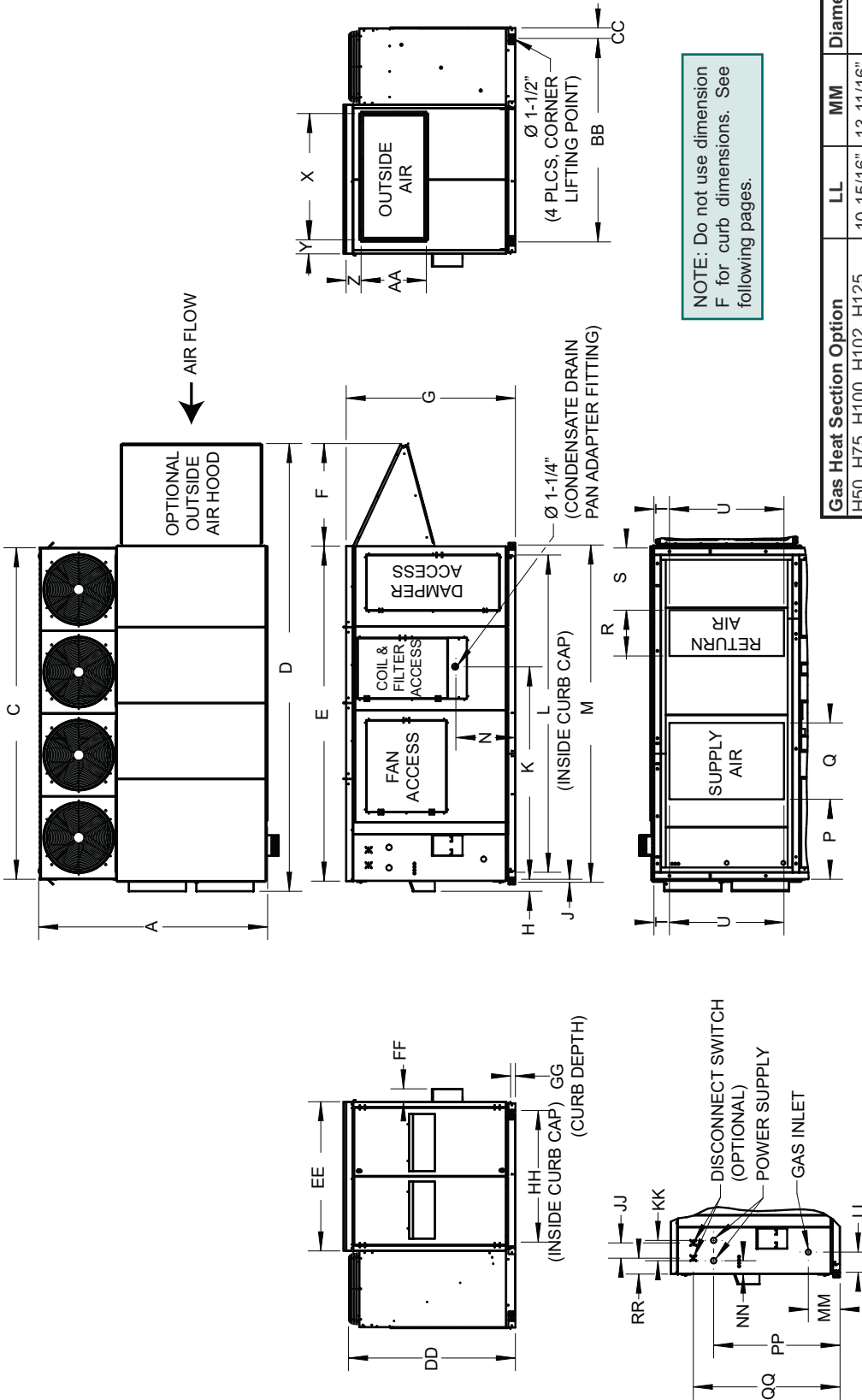
Gas Heat Section Option	LL	MM	Diameter (NPT)
H50, H75, H100, H102, H125, H150, H175, H202	10-15/16" (278mm)	13-11/16" (348mm)	1/2"
H200, H402, G150, G302	7-11/16" (195mm)	14" (356mm)	1/2"
H300, H400, G225, G300, G372			3/4"

	A	B	C	D	E	F	G	H	J	K	L	M	N
Inches	82 11/16	15 13/16	102 7/8	172 3/8	135 15/16	32 7/16	63	4 3/4	1 3/16	83 3/8	129	136 7/8	23 3/8
(mm)	(2,101)	(402)	(2,612)	(4,378)	(3,453)	(824)	(1,601)	(120)	(30)	(2,118)	(3,277)	(3,476)	(594)

	P	Q	R	S	T	U	V	X	Y	Z	AA	BB
Inches	31 7/16	30	16	28 13/16	7	36	23 7/8	23 3/8	14	5 15/16	19 7/8	72 11/16
(mm)	(798)	(762)	(406)	(732)	(177)	(914)	(607)	(594)	(356)	(150)	(505)	(1,847)

	CC	DD	EE	FF	GG	HH	JJ	KK	NN	PP	QQ	RR
Inches	4 1/16	50 1/16	51 3/8	5 1/8	1 7/8	44 7/16	6	8	5 1/4	49 11/16	57 11/16	6 1/4
(mm)	(104)	(1,271)	(1,305)	(130)	(48)	(1,129)	(152)	(203)	(133)	(1,261)	(1,465)	(158)

DIMENSIONS (cont'd)
Cabinet 2
Models YDHA180, 210, 240
YDMA180, 210, 240



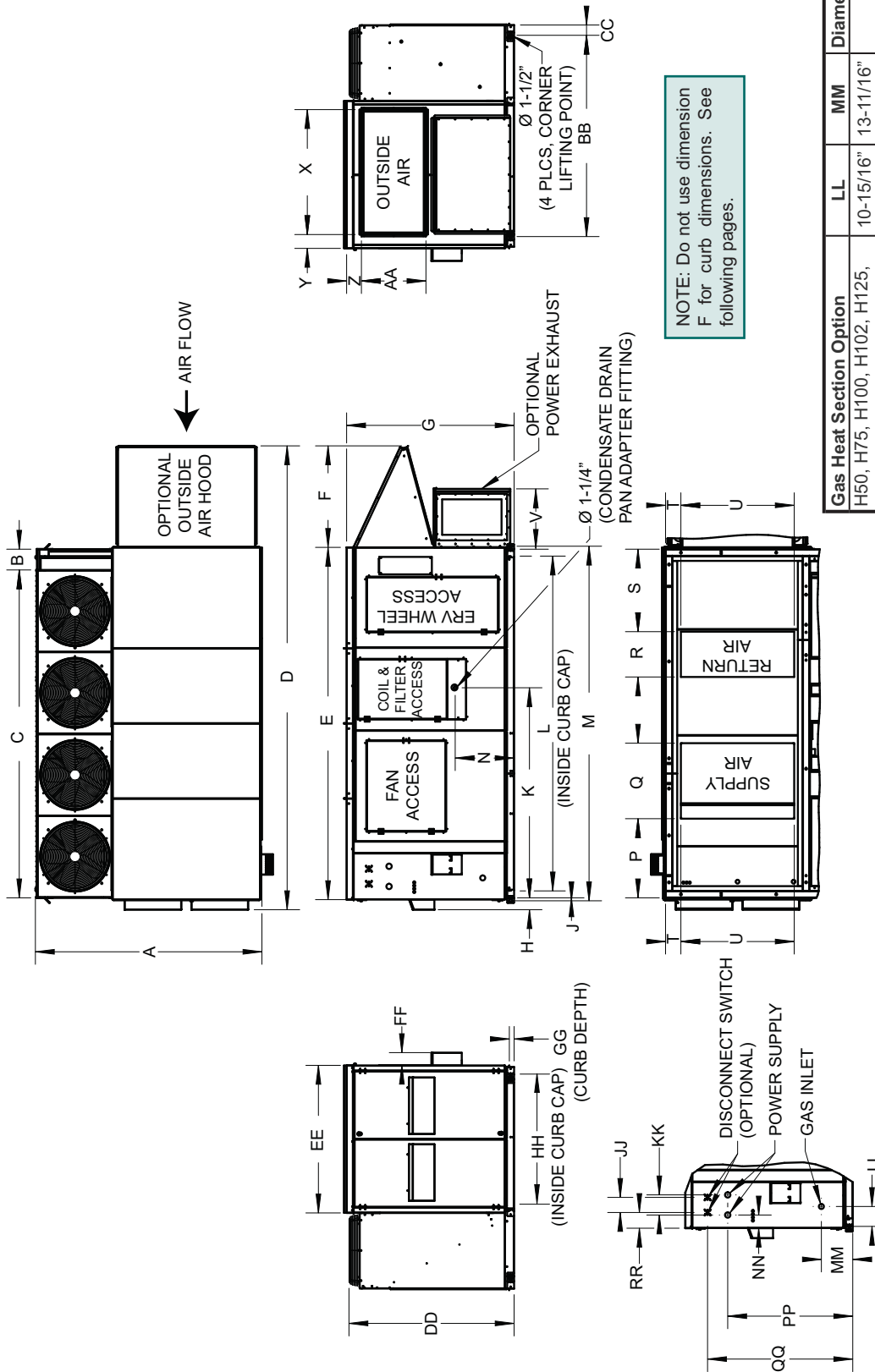
Gas Heat Section Option	LL	MM	Diameter (NPT)
H50, H75, H100, H102, H125, H150, H175, H202	10-15/16" (278mm)	13-11/16" (348mm)	1/2"
H200, H402, G150, G302	7-11/16" (195mm)	14" (356mm)	1/2"
H300, H400, G225, G300, G372			3/4"

	A	C	D	E	F	G	H	J	K	L	M	N
Inches	89 15/16	130 1/4	175 15/16	131 5/8	40 5/16	66 1/2	4 3/4	1 3/16	83 4/8	124 11/16	132 1/2	23 3/8
(mm)	(2,285)	(3,308)	(4,468)	(3,343)	(1,024)	(1,689)	(120)	(30)	(2,120)	(3,167)	(3,366)	(594)

	P	Q	R	S	T	U	X	Y	Z	AA	BB	CC
Inches	31 7/16	30	18	24 7/16	6 1/16	45	49 5/8	5 1/2	5 7/8	25 5/8	79 15/16	4 1/16
(mm)	(799)	(762)	(457)	(621)	(155)	(1,143)	(1,260)	(140)	(149)	(651)	(2,031)	(104)

	DD	EE	FF	GG	HH	JJ	KK	NN	PP	QQ	RR
Inches	65 9/16	58 5/8	5 1/8	1 7/8	51 11/16	6	8	5 1/4	49 11/16	57 11/16	6 1/4
(mm)	(1,665)	(1,489)	(130)	(48)	(1,313)	(152)	(203)	(133)	(1,261)	(1,465)	(158)

DIMENSIONS (cont'd)
Cabinet 2 with ERV
Models YDHA180, 210, 240
YDMA180, 210, 240



Gas Heat Section Option	LL	MM	Diameter (NPT)
H50, H75, H100, H102, H125, H150, H175, H202	10-15/16" (278mm)	13-11/16" (348mm)	1/2"
H200, H402, G150, G302	7-11/16" (195mm)	14" (356mm)	1/2"
H300, H400, G225, G300, G372			3/4"

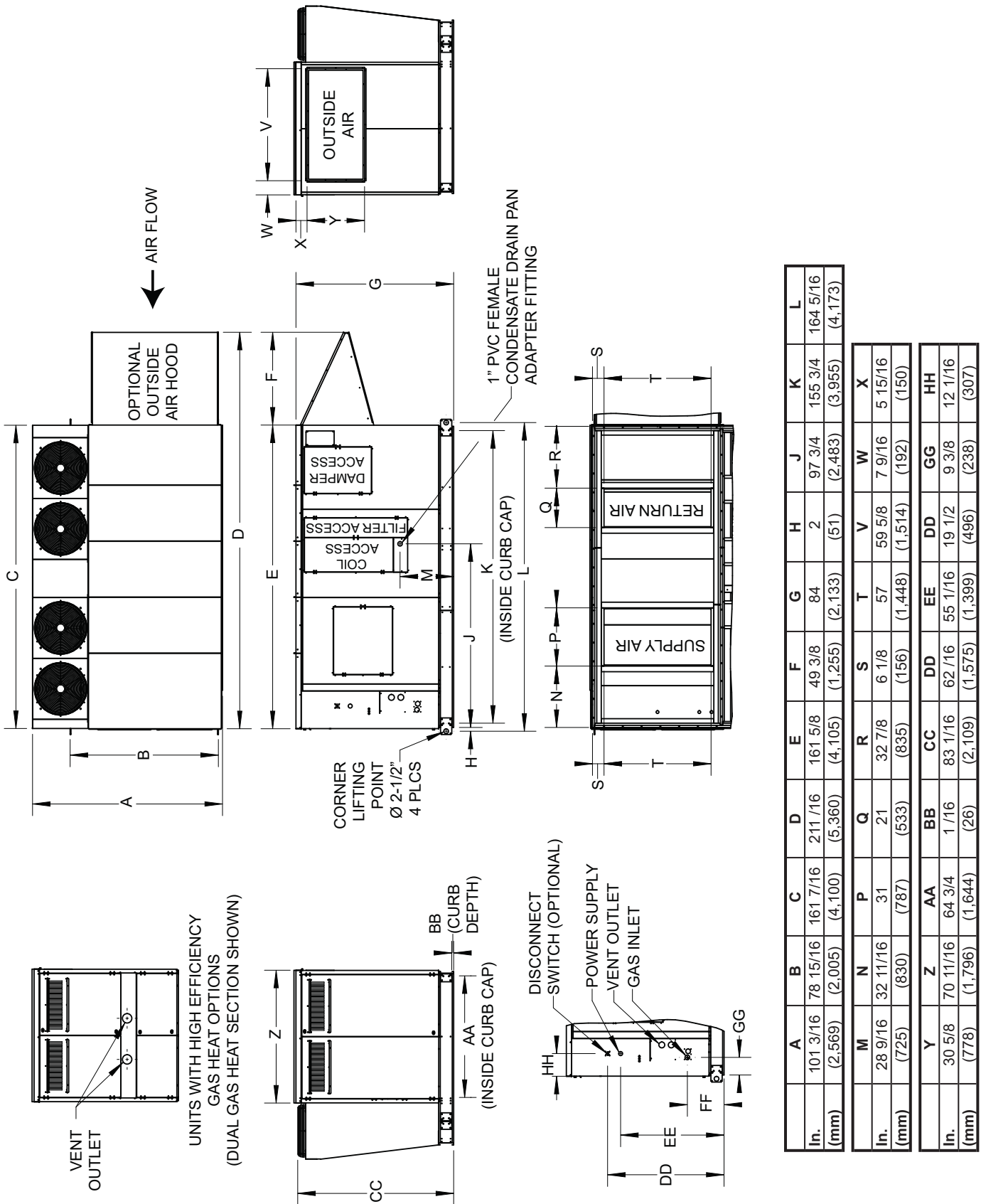
	A	B	C	D	E	F	G	H	J	K	L	M	N
Inches	89 15/16	8 1/4	130 1/4	184 1/4	139 15/16	40 5/16	66 1/2	4 3/4	1 3/16	83 4/8	133	140 7/8	23 3/8
(mm)	(2,285)	(210)	(3,308)	(4,680)	(3,554)	(1,024)	(1,689)	(120)	(30)	(2,120)	(3,378)	(3,578)	(594)

	P	Q	R	S	T	U	V	X	Y	Z	AA	BB
Inches	31 7/16	30	18	32 3/4	6 1/16	45	24	49 5/8	5 1/2	5 7/8	25 5/8	79 15/16
(mm)	(799)	(762)	(457)	(832)	(155)	(1,143)	(609)	(1,260)	(140)	(149)	(651)	(2,031)

	CC	DD	EE	FF	GG	HH	JJ	KK	NN	PP	QQ	RR
Inches	4 1/16	65 9/16	58 5/8	5 1/8	1 7/8	51 11/16	6	8	5 1/4	49 11/16	57 11/16	6 1/4
(mm)	(104)	(1,665)	(1,489)	(130)	(48)	(1,313)	(152)	(203)	(133)	(1,261)	(1,465)	(158)

DIMENSIONS (cont'd)

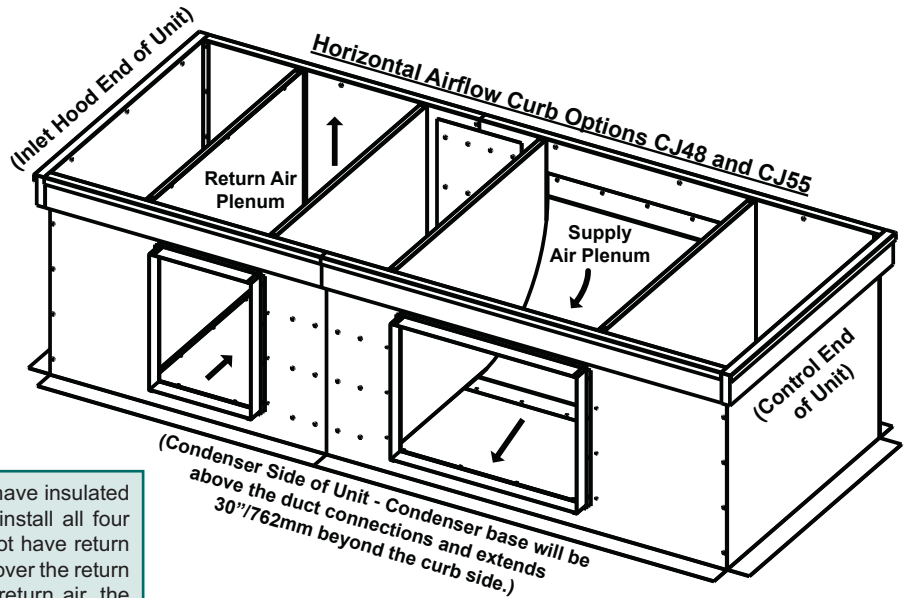
Cabinet 3 with or without ERV Models YDHA300, 360 YDMA300, 360



	A	B	C	D	E	F	G	H	J	K	L
In.	101 3/16	78 15/16	161 7/16	211 1/16	161 5/8	49 3/8	84	2	97 3/4	155 3/4	164 5/16
(mm)	(2,569)	(2,005)	(4,100)	(5,360)	(4,105)	(1,255)	(2,133)	(51)	(2,483)	(3,955)	(4,173)
	M	N	P	Q	R	S	T	V	W	X	
In.	28 9/16	32 11/16	31	21	32 7/8	6 1/8	57	59 5/8	7 9/16	5 15/16	
(mm)	(725)	(830)	(787)	(533)	(835)	(156)	(1,448)	(1,514)	(192)	(150)	
	Y	Z	AA	BB	CC	DD	EE	DD	GG	HH	
In.	30 5/8	70 11/16	64 3/4	1 1/16	83 1/16	62 1/16	55 1/16	19 1/2	9 3/8	12 1/16	
(mm)	(778)	(1,796)	(1,644)	(26)	(2,109)	(1,575)	(1,399)	(496)	(238)	(307)	

ROOF CURBS Horizontal Airflow Curb

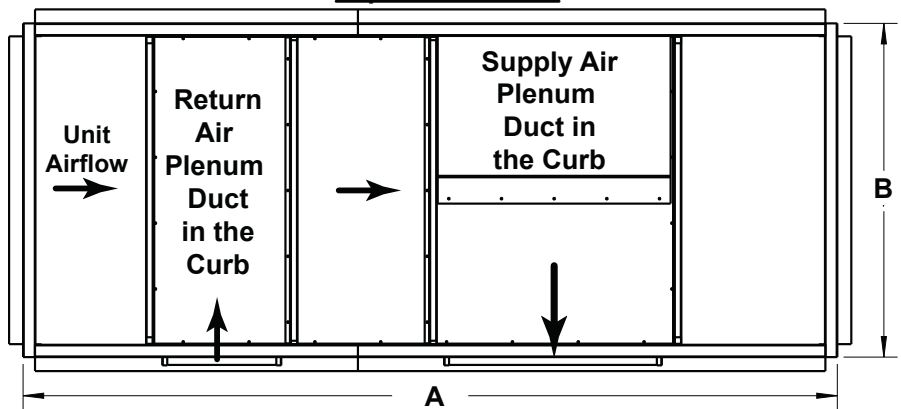
A full perimeter curb with integral horizontal supply air and optional return air ductwork and duct connections is also available. The horizontal airflow curb is designed for either roof or slab installation.



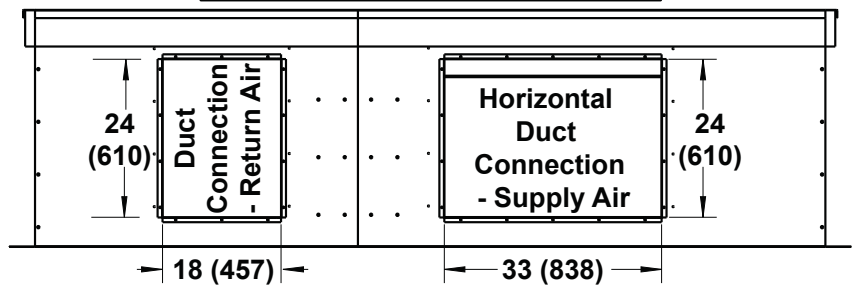
NOTE: Plenum ducts in the curb have insulated bottom and side panels. Always install all four side panels. If the system does not have return air, attach a field-fabricated cover over the return air opening in the curb. Without return air, the bottom of the unit is solid.

Note: Condenser section extends beyond curb.

Top View of Curb



Duct Connection Side View of Curb



Dimensions - inches (mm)

Option	Description	Cabinet Size*	A		B	
			(Outside of Curb Rails)			
CJ48	Horizontal Discharge Curb for YDHA or YDMA without an energy recovery wheel	1	119-11/16 (3040)	43-7/16 (1103)		
		2	123-11/16 (3141)	50-11/16 (1287)		
		3	154-11/16 (3,929)	63-11/16 (1,618)		
CJ55	Horizontal Discharge Curb for YDHA or YDMA with an energy recovery wheel	1	128 (3251)	43-7/16 (1103)		
		2	132 (3353)	50-11/16 (1287)		
		3	154-11/16 (3,929)	63-11/16 (1,618)		

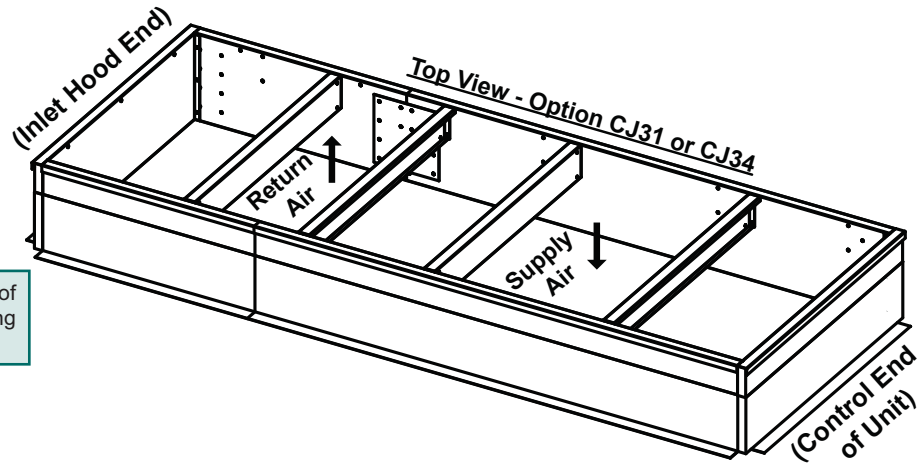
Weights of Horizontal Airflow Roof Curb

Roof Curb	Cabinet 1		Cabinet 2		Cabinet 3	
	lbs	(kg)	lbs	(kg)	lbs	(kg)
Option CJ48	237	(252)	599	(272)	730	(331)
Option CJ55	570	(259)	615	(279)	730	(331)

ROOF CURBS (cont'd) Vertical (Downflow) Roof Curb

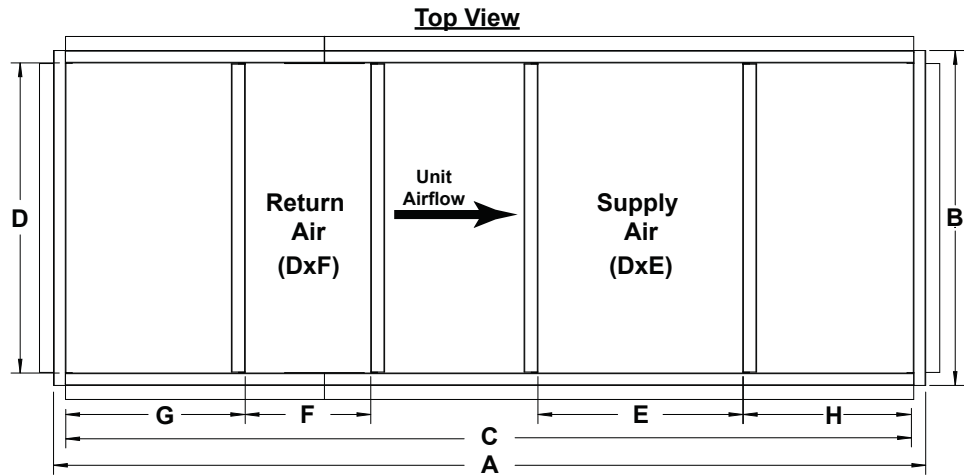
The downflow roof curb designed for this system is a 16" high insulated curb. The curb includes integral duct connections for supply air and optional return air as illustrated.

NOTE: Ductwork comes to the top of the curb.



NOTE: Insulation is on the outside of curb section. Field supplied flashing required.

Note: Condenser section extends beyond curb.



Dimensions - inches (mm)

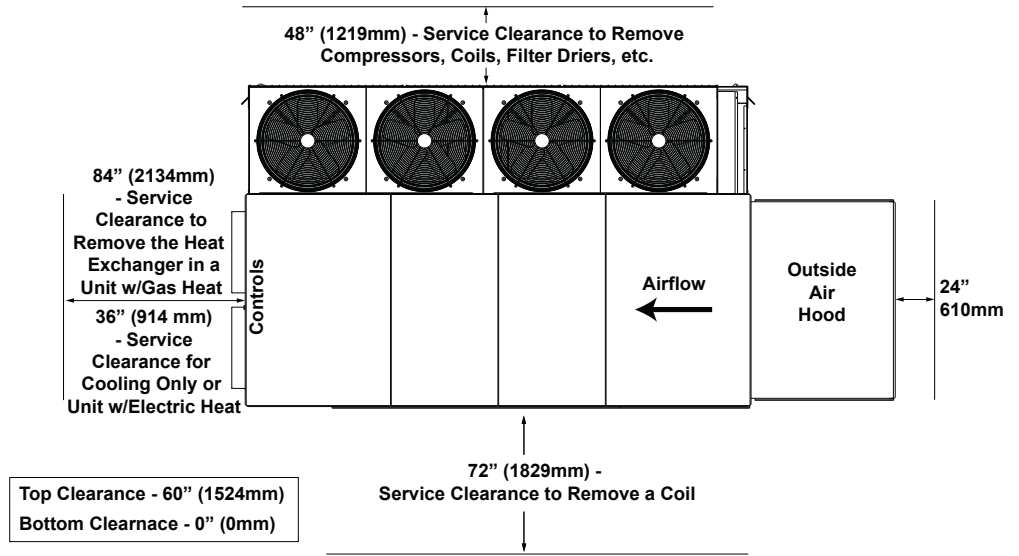
Option	Description	Cabinet Size	A		B		C		D		E	F	G	H
			(Outside of Curb Rails)	(Area Inside the Curb*)	(Outside of Curb Rails)	(Area Inside the Curb*)	(Outside of Curb Rails)	(Area Inside the Curb*)						
CJ31	Full Perimeter, Down Discharge Curb for YDHA or YDMA <u>without</u> an energy recovery wheel	1	119-11/16 (3,040)	43-7/16 (1,103)	115-15/16 (2,945)	39-11/16 (1,008)	31 (787)	17 (432)	25-3/4 (654)	14-29/32 (379)				
		2	123-11/16 (3,141)	50-11/16 (1,287)	119-15/16 (3,046)	46-15/16 (1,192)	31 (787)	19 (483)	25-13/16 (656)	18- 13/16(478)				
		3	154-11/16 (3,929)	63-11/16 (1,618)	150-15/16 (3,834)	59-15/16 (1,522)	31 (787)	21 (533)	28-7/32 (717)	28 (711)				
CJ34	Full Perimeter, Down Discharge Curb for YDHA or YDMA <u>with</u> an energy recovery wheel	1	128 (3251)	43-7/16 (1,103)	124-1/4 (3,156)	39-11/16 (1,008)	31 (787)	17 (432)	25-3/4 (654)	23-1/4 (591)				
		2	132 (3353)	50-11/16 (1,287)	128-1/4 (3,257)	46-15/16 (1,192)	31 (787)	19 (483)	25-13/16 (656)	27-1/8 (689)				
		3	154-11/16 (3,929)	63-11/16 (1,618)	150-15/16 (3,834)	59-15/16 (1,522)	31 (787)	21 (533)	28-7/32 (717)	28 (711)				

Weights of Downflow Roof

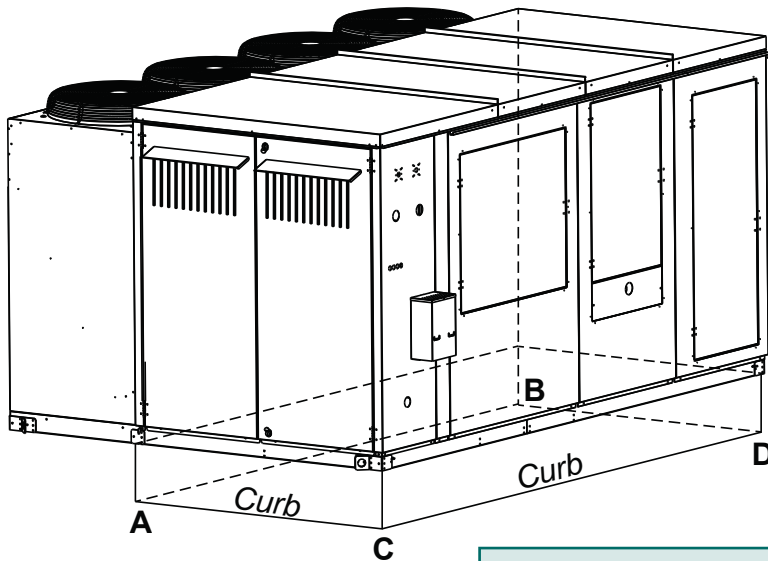
Roof Curb	Cabinet 1		Cabinet 2		Cabinet 3	
	lbs	kg	lbs	kg	lbs	kg
Option CJ31	237	(108)	257	(117)	324	(145)
Option CJ34	248	(112)	268	(122)	324	(145)



CLEARANCE DIMENSIONS inches (mm)



CORNER WEIGHTS



Note: Condenser section extends beyond curb. Curb corners are located at letters A-D in drawing.

Weights - lb. (kg)

Model	Size	Total Weight	Corner Weights			
			A	B	C	D
YDMA, YHDA	60	1,977	664	794	248	271
YDMA, YHDA	90	2,024	684	838	243	259
YDMA, YHDA	120	2,399	821	929	314	335
YDMA, YHDA	150	2,429	860	974	290	305
YDMA, YHDA	180	2,776	1,013	1,066	347	350
YDMA, YHDA	210	3,019	1,139	1,172	365	343
YDMA, YHDA	240	3,022	1,140	1,174	365	343
YDMA, YHDA	300	4,282	1,601	1,577	510	594
YDMA, YHDA	360	4,284	1,604	1,573	511	596

Model	Size	Total Weight	Corner Weights			
			A	B	C	D
YDMA, YHDA	60	(897)	(301)	(360)	(112)	(123)
YDMA, YHDA	90	(918)	(310)	(380)	(110)	(117)
YDMA, YHDA	120	(1,088)	(372)	(421)	(142)	(152)
YDMA, YHDA	150	(1,102)	(390)	(442)	(132)	(138)
YDMA, YHDA	180	(1,259)	(459)	(484)	(157)	(159)
YDMA, YHDA	210	(1,369)	(517)	(532)	(166)	(156)
YDMA, YHDA	240	(1,371)	(517)	(533)	(166)	(156)
YDMA, YHDA	300	(1,942)	(726)	(715)	(231)	(269)
YDMA, YHDA	360	(1,943)	(728)	(714)	(232)	(270)

Weights shown are for base model units only. Weights (and corner weights will change as heating section, exhaust fan, energy recovery, etc. For unit weights and corner weights for specific units, please use the Reznor ToolBox software program or contact your Reznor Agent.

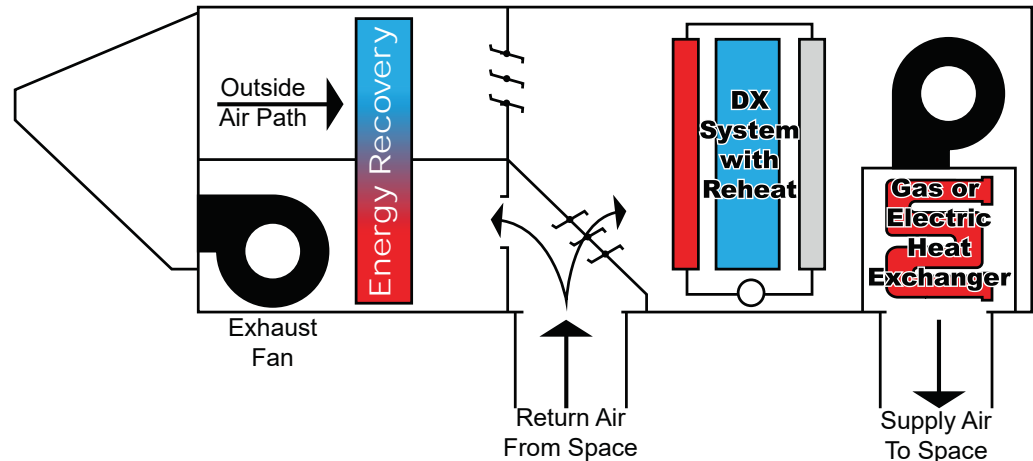
CONTROL SEQUENCES**OPTION D21: MAKE-UP AIR**

The make-up air control system operates the supply fan, exhaust fan, intake dampers energy recovery, DX cooling and gas/electric heat to maintain a set of discharge air temperature control setpoints.

The unit discharge air temperatures fall within the following (3) categories

1. Unit supplies Neutral air temperature that does not affect space conditions
2. Unit supplies Cold air temperature to provide space cooling
3. Unit supplies Hot air temperature to provide space heating

The sequence is broken into (6) states of operation, (2) modes of operation per state and individual component function based upon the state and mode.

**STATES OF OPERATION****1. OFF**

The unit supply fan and all associated mechanical equipment is OFF in this state. There are no associated sequences of operation in this state. The unit will only switch to the OFF state when the state is manually selected through the user interface device (thTune), unit display or building automation network communication point. Upon initial power, Unit OFF is the default state.

2. ALARM

The alarm state can only occur from a sequence "failure." The unit will switch to this state from the heating, cooling or auto state. The unit will stop all mechanical operation until the "failure" condition(s) are resolved. The output will be OFF. Upon resolving the failure the unit will return to heating, cooling or auto state. Alarms can also be cleared by resting power to the unit. See alarm sequence for details.

3. HEAT

From the thTune, controller display or BMS, this mode can be selected. The unit's supply fan will run and mechanical heating, dampers and energy recovery equipment will operated to maintain heating sequences of operation.

The unit will not automatically switch to other states except Unit Alarm.

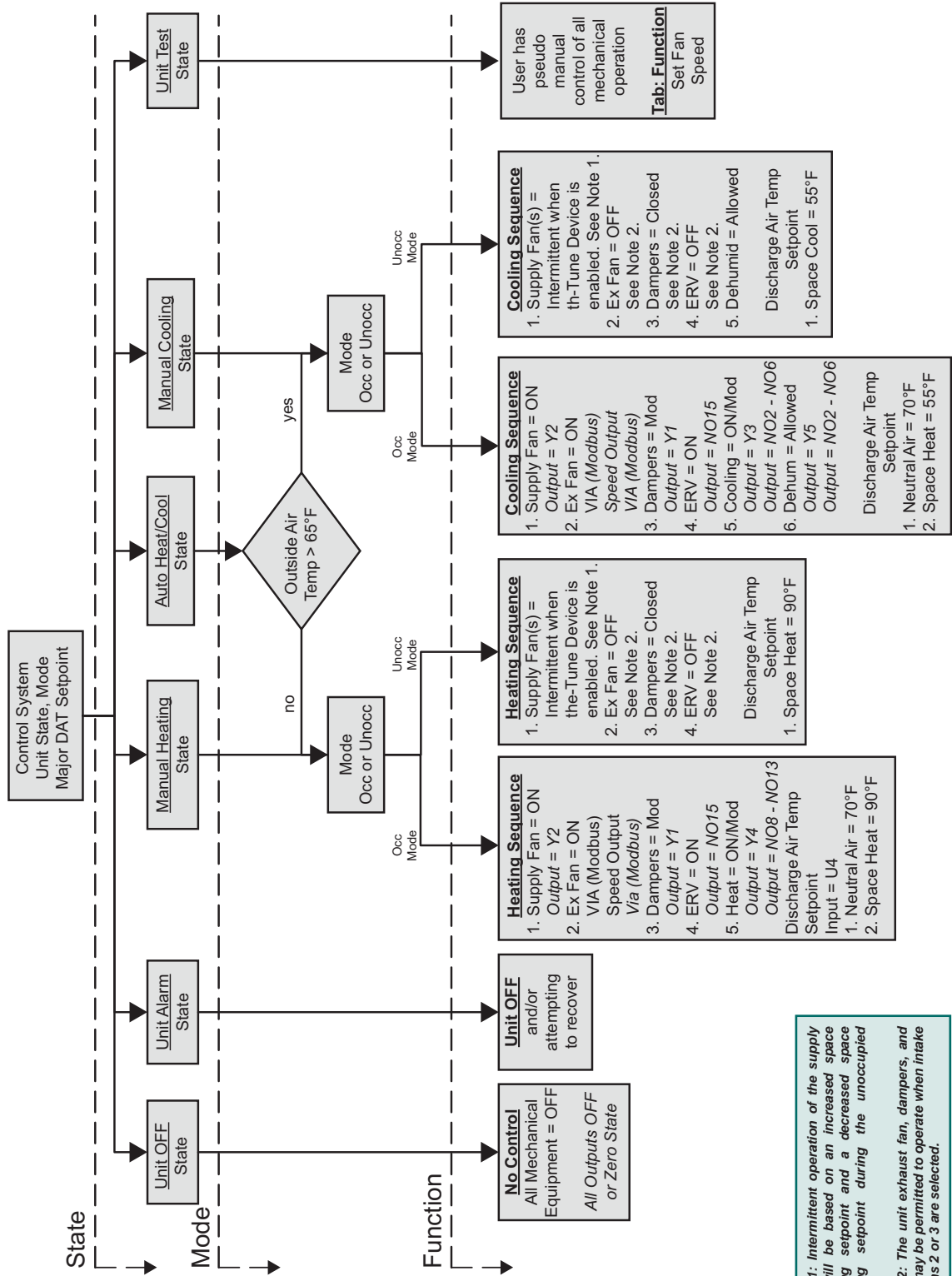
4. AUTO

From the thTune, controller display or BMS auto state can be selected. Upon initial selection of the auto state, the unit will be in a auto-heating state whenever the outdoor air temperature is below (65°F), otherwise the unit will be in the auto-cooling state. The unit will change to auto cooling/auto-heating state whenever the temperature crosses the change-over setpoint for more than (15 mins) minutes or is more/less than (5°F) beyond the setpoint.

The unit mechanical function is exactly the same in either cooling or heating state, other than the sequence's ability to change states. *The unit switches between heating and cooling based upon outside air temperature. Space temperature does not dictate heating or cooling mode.

5. COOL

From the thTune, controller display, or BMS , this mode can be selected. The unit supply fan will run and mechanical cooling, dampers and energy recovery equipment will operated to maintain the cooling sequence of operation. The unit will not automatically switch to other states except Unit alarm.



**STATES OF OPERATION
(cont'd)****6. TEST**

The unit can be manually placed in a test mode for (2 hrs) hours time period from the unit mounted display only. In the test state, all sequences of operation stop. The user can manually select all outputs to be ON/OFF or 0-100% modulated outputs.

OCCUPIED & UNOCCUPIED

When the unit is called to operate in the auto, heating or cooling state(s), the unit will function in one of (2) modes: occupied or unoccupied. The unit will run in occupied or unoccupied mode based upon commands:

1. Internal Time Clock Schedule Selects Occupied or Unoccupied Mode.
2. Physical input point (ID4) (Contact closed = Occupied)
3. Building Automation network variable. (Lon & BacNet)

**SUPPLY FAN CONTROL:
OCCUPIED MODE**

When the unit is called to be in occupied mode, the outside air damper will modulate 100% open. If the unit has only 100% outside air damper, the damper actuator is electrically interlocked to the fan start/stop such that the supply fan can not start until the damper is 80% open.

The supply fan will operate in one of the following (3) conditions in the occupied mode:

The rate is control by unit state, mode & the selection of (1) of (3) sequences of operation. (See fan option for sequence details.)

1. Summer/Winter Constant Volume
2. Building Static Pressure
3. Duct Static Pressure

**SUPPLY FAN CONTROL:
UNOCCUPIED MODE**

The supply fan is normally OFF in the unoccupied mode. The supply fan will turn ON intermittently whenever there is a call for space heating or cooling. Whenever there is a call for space heating or cooling the supply fan switches to the occupied mode speed control.

EXHAUST FAN CONTROL

The exhaust fan provides a volume of air expelled to outdoors. The rate is control by unit state, mode & the selection of (1) of (2) sequences of operation (see option for more details).

1. Constant Volume
2. Building Static Pressure

INTAKE DAMPER CONTROL

The intake dampers operate based upon state, mode and (1) of (4) user selected sequences. The (4) sequences are (see option detail for more info)

1. External Input for positioning
2. Two Position
3. Four Position
4. Building static pressure

When the unit is called to be in occupied mode, the outside air damper will modulate. If the unit has only 100% outside air damper, the damper actuator is electrically interlocked to the fan start/stop such that the supply fan can not start until the damper is 80% open. AR8, AR2L, and ARL – ERV are electrically interlocked with the supply fan.

**TEMPERATURE & HUMIDITY
CONTROL**

The unit is inherently a discharge air temperature control system. The unit will operate to maintain one of the following discharge air setpoints depending on the state and mode. All setpoints are user adjustable from the unit display and the wall mounted user interface.

**DEHUMIDIFICATION
COMMANDS**

The following conditions can lockout the dehumidification signal.

1. The unit is following the neutral air discharge air temperature setpoints
2. The outdoor air temperature is Low the reheat lockout setpoint, (58°F)
3. The outdoor air temperature is below the reheat high lockout setpoint. (100°F)

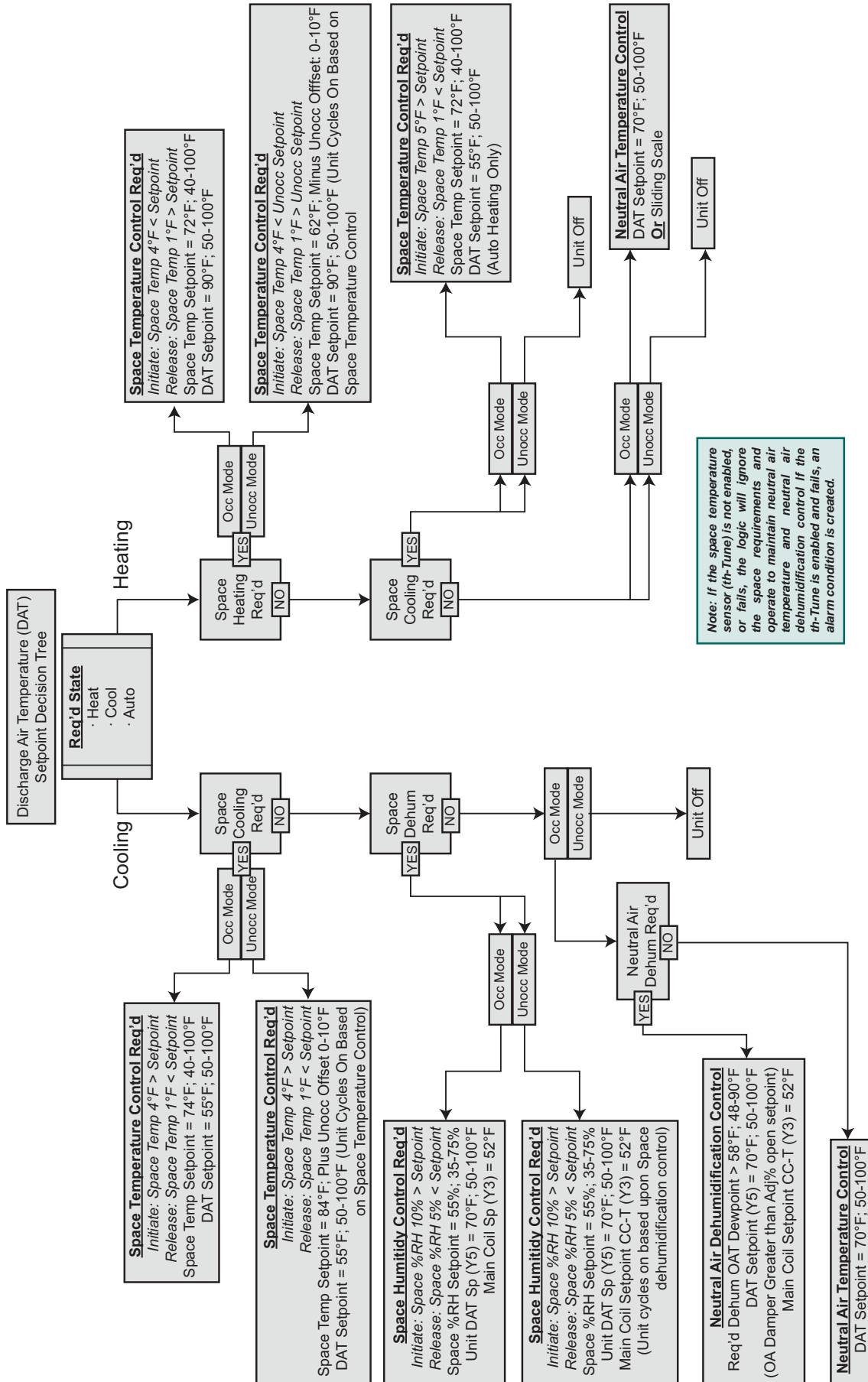
The reheat pump will be ON and modulating to maintain the neutral air cooling temperature setpoint. If the outside air temperature is above the mechanical cooling lock out, the mechanical cooling will stage to maintain the cooling coil leaving air temperature setpoint (52°F)

ENERGY RECOVERY

The energy recovery will operate whenever the supply fan is ON in any mode.

ERV_Wheel , NO15 = ON
Exhaust Fan, NO14 = ON

The energy recovery preheat N016 will operate whenever the ERV supply air temperature is less than 33°F and the outdoor air temperature is below 32°F. Otherwise the electric heat is OFF.



CONTROL SEQUENCES (cont'd)

Modes of Operation

HISTORY LOGS & TRENDS

All binary output and input shall be log based upon a change of state. All analog inputs and outputs shall be log based upon a 5 minute intervals. The unit state and active setpoint shall be log based upon change of state. The history log will "roll" over when the data fills the available log space. Clear History Function

1. Binary Inputs – Change of State
2. Binary Outputs – Change of State
3. Analog Inputs – 5 minute intervals
4. Analog Outputs – 5 minute intervals
5. User setpoint (upon change of state).

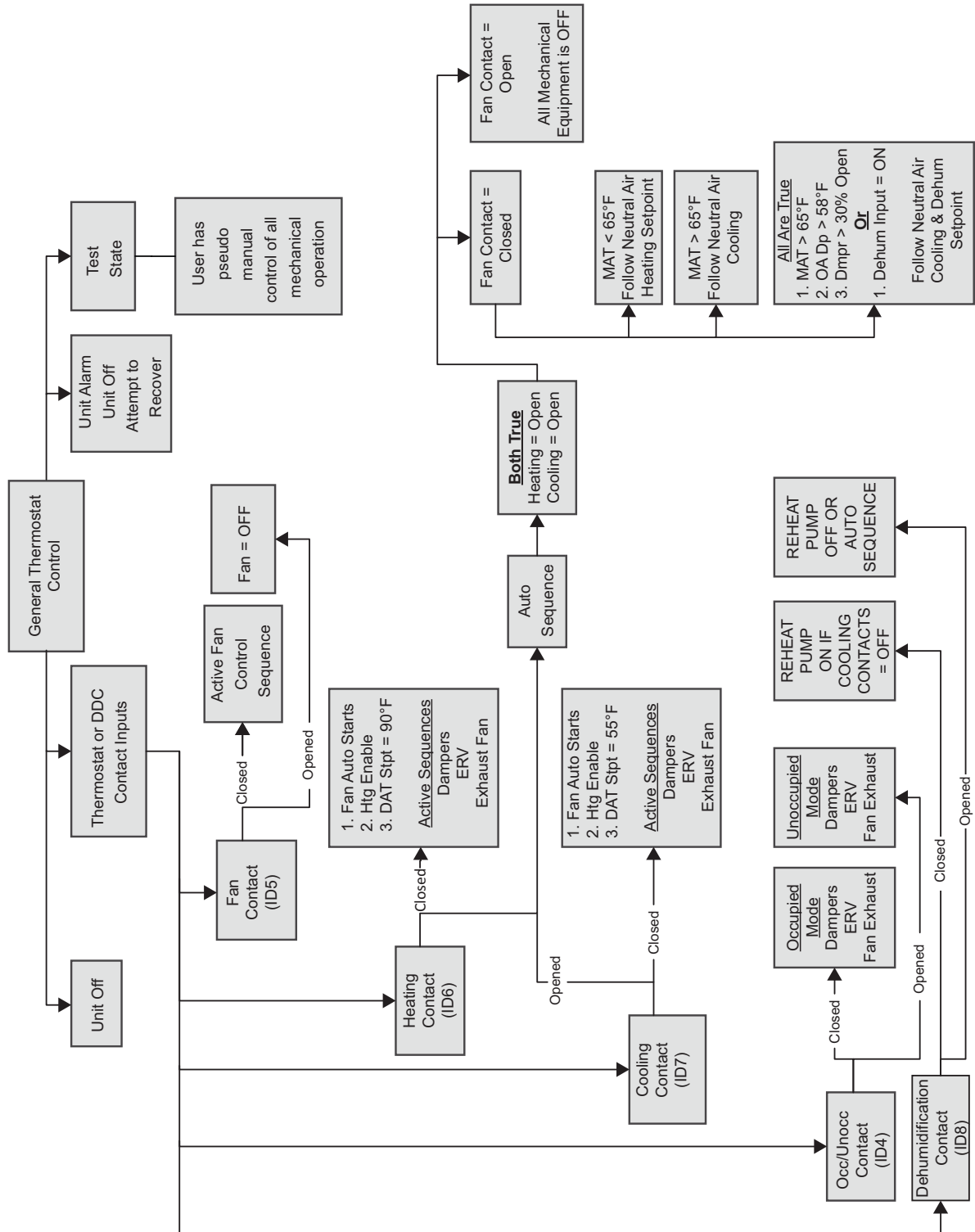
BUILDING AUTOMATION COMMUNICATION

For a complete list of controller hardware input/output points and communication BacNet and Lon input point id names see controls manual. This manual can be supplied by your Reznor Agent.



CONTROLS

Option D19: Thermostat Control



CONTROLS (cont'd)

Option D19 Thermostat Control (cont'd)

General Sequence: The unit operates in the following states of operation:

1. OFF

The unit supply fan and all associated mechanical equipment is OFF in this state. There are no associated sequences of operation in this state. The unit will only switch to the OFF state when the state is manually selected through the user interface device, unit display or building automation network communication point. Upon initial power, Unit OFF is the default state.

2. ALARM

The alarm state can only occur from a sequence "failure." The unit will switch to this state from the heating, cooling or auto state. The unit will stop all mechanical operation until the "failure" condition(s) are resolved. Upon resolving the failure the unit will return to heating, cooling or auto state. Alarms can also be cleared by resetting power to the unit. See alarm sequence for details.

3. FAN CONTACTS (ID5)

The unit supply fan will be on whenever the supply fan contacts are closed. Otherwise, the fan will be OFF. The fan will automatically start whenever the heat or cooling contacts are closed, otherwise the fan will be OFF. The fan will follow its sequence of operation. The auto sequence can be activated from the Fan control when the mechanical cooling and heating contacts are open.

4. HEATING CONTACTS (ID6)

Whenever the contacts are closed, the supply fan will start and the heating sequence will be enabled. Mechanical heat will operated to maintain the following heating discharge air temperature setpoint. (90°F) The unit will not automatically switch to other states except Unit Alarm. When the contacts are open, the heat and supply fan will turn OFF or operate in auto-sequence.

5. UNIT COOLING (ID7)

Whenever the cooling contacts are closed, the supply fan will start. The mechanical cooling will operate to maintain the unit discharge air temperature setpoint. (55°F) The unit will not automatically switch to other states except Unit alarm. When the contacts are open, the cool and supply fan will turn OFF or operate in auto-sequence.

6. Occupied & Unoccupied Contacts

When the occupied contacts are closed the unit will be considered in the occupied mode. The Dampers, Exhaust Fan and ERV will follow the occupied mode sequence. When the contacts are open, the Dampers, Exhaust Fan and ERV will operate in the unoccupied mode sequence. There are no other time clock or schedule functions associated with the unit. (See the damper control section for specific details.)

7. Dehumidification Contacts

When the contacts are closed and the cooling contacts are open, the unit reheat system will be active.

8. Auto Sequence

When the Fan contacts are closed and the mechanical cooling and heating contacts are open the unit will operate in the auto sequence.

The unit will operate to maintain the following discharge air temperature setpoints.

Unit Discharge Setpoints						
#	State	OAT Allowed	Discharge Air Control	Variable	Default Setpoint	Range
1	Auto Sequence Cool	MAT > 65F	Neutral Air Temperature	DA_NAClg_SP	70°F	50 -120°F
2	Auto Sequence Heat	MAT < 65F	Neutral Air Temperature	DA_NAhtg_SP	70°F	50 -120°F

If both heating and cooling contacts are enabled, the unit will not turn on either mechanical system unit the condition is removed.

9. TEST

The test mode is accessed via the service menu (from the unit mounted display only) and can only be entered when the unit is in the off state. Once the test mode is enabled, it remains active for a 2 hour time period adjustable from (0-4) hours. When the timer expires or test mode is disabled, the unit will return to the off state. In the test mode, each unit output can be commanded ON/OFF by the user.



CONTROLS (cont'd)

Option D19 Thermostat Control (cont'd)

SUPPLY FAN CONTROL: OCCUPIED MODE

Upon a call for the supply fan, the supply fan will start (point NO1 = On, If the unit has only a 100% outside air damper, the damper actuator is electrically interlocked to the fan start/stop such that the supply fan cannot start until the damper is 80% open.

Note: When the Supply fan is to be shutdown in any mode, any active heating or cooling operations will be shutdown and the supply fan will stop after an adjustable delay (30s).

When the supply fan contacts are open or the cooling/heating contacts are open, the supply fan is OFF. No other functions can automatically turn the fan ON except Alarm auto-restart or test mode commands.

The supply fan will operate in one of the following (3) conditions.

1. Summer/Winter Constant Volume (Default)

The variable frequency drive is commanded ON from NO1. The unit ramps up over 30 seconds to a user set supply fan speed setting. There are two fan speed states, one for heating and cooling states.

2. High - Low Fan Speed Control

The variable frequency drive is commanded ON from NO1. The unit ramps up over 30 seconds to a user set supply fan speed setting. There are two fan speed states, one for active heating/Cooling and fan only. When the fan is ON and the heating or cooling contacts are closed, the unit will operate to high fan speed. When the Fan is ON and the cooling or heating contacts are open, the supply fan will operate to low fan speed.

3. Duct Static Pressure Control (0.0" - 2.5" w.c.)

The variable frequency drive is commanded ON from NO1. After the fan reaches 30% fan speed, the fan modulates using a PID loop to maintain the duct static pressure setpoint, +0.5"w.c. default .

EXHAUST FAN CONTROL:

Occupied Mode

When the unit is called to be in occupied mode, the exhaust fan will run.

1. Constant Volume (Default)
2. Building Static Pressure Control (-0.5" thru 0.5" w.c.)

UNOCCUPIED MODE

The exhaust fan is normally OFF in the unoccupied mode. The exhaust fan will be permitted to operate in the unoccupied mode if intake damper control options 100% OA.

* The software does not limit or correct the mechanical options interaction except as stated.

The intake damper operate based upon state, mode and (1) of (5) user selected sequences. The dampers are normally open and operational in the occupied mode and close to outside air in the unoccupied mode depending on the user selection. The (5) sequences are

1. 100% OA
2. External Input for positioning
3. Two Position
4. Four Position
5. Economizer

(see selected damper sequences for detail)

TEMPERATURE & HUMIDITY CONTROL

The unit is inherently a discharge air temperature control system. The unit will operate to maintain one of the following discharge air setpoints depending on the state and mode. All setpoints are user adjustable from the unit display and the wall mounted user interface.

HEATING SETPOINT SELECTION

In the heating mode, the unit will always start in neutral air temperature control setpoint. The unit will automatically switch between the (2) setpoints based on the following:

Unit Discharge Setpoints					
#	State	Discharge Air Control	Variable	Default Setpoint	Range
1	Auto Sequence Heat	Neutral Air Temperature	DA_NAhtg_SP	70°F	50 -120°F
2	Heating Contacts	Space Heating	DA_SpcHtg_SP	90°F	50 -120°F

CONTROLS (cont'd)

Option D19 Thermostat Control (cont'd)

COOLING SETPOINT SELECTION

In the cooling mode, the unit will always initially start in neutral air temperature control setpoint. The unit will switch between the setpoints based on the following:

Unit Discharge Setpoints					
#	State	Discharge Air Control	Variable	Default Setpoint	Range
1	Auto Sequence Cool	Neutral Air Temperature	DA_NAClg_SP	70°F	50 - 90°F
2	Cooling Contacts	Space Cooling	DA_SpcClg_SP	55°F	50 - 90°F

If the dehumidifier switch is closed or the unit is in dehumidifying mode and the unit is occupied the DX will stage to maintain a cooling coil leaving air temperature (U5) to a DX_DeHum_Coil_SP of 52°F.

- The unit will return to auto sequence if the dehumidification mode indexes OFF.
- The unit will return to the cooling sequence if the cooling contacts are closed.

DEHUMIDIFICATION

There is a call for dehumidification if one of the following is true.

1. The dehumidification contact is closed.
2. The outdoor air dewpoint is above the dew point setpoint. (58°F, dewpt_sp) and the mixed air dampers are more than 30% open and the unit is in auto sequence cooling or heating.
The reheat pump will operate to maintain the neutral air cooling temperature cooling temperature setpoint when the following are all true
3. The outdoor air temperature is above the reheat lockout setpoint, (58°F, reheat_lockout)
4. The outdoor air temperature is below the reheat high lockout setpoint. (110°F, reheat_high_lockout)

The reheat pump will be ON and modulating to maintain the neutral air cooling temperature setpoint. If the outside air temperature is above the mechanical cooling lock out, the mechanical cooling will stage to maintain the cooling coil leaving air temperature setpoint (52°F)

ENERGY RECOVERY

The energy recovery will operate whenever the exhaust fan is ON in any mode.

Exhaust Fan Status ID11= ON

ERV_Wheel, NO15 = ON

In the event of an exhaust fan failure the ERV will not be permitted to operate.

The energy recovery preheat N016 will operate whenever the ERV supply air temperature is less than 33°F (with a two degree differential) and the outdoor air temperature is below 32°F (with a two degree differential). Otherwise the electric heat is OFF.

SAFETIES & ALARMS

All safeties (except fire) have an adjustable delay to prevent nuisance alarms. All alarms are time stamp logged. Power cycling should not clear the alarm history. If a critical alarm occurs, the unit will not restart until the alarm is cleared via the display, BMS or power cycled.

HISTORY LOGS & TRENDS

All binary output and input shall be log based upon a change of state. All analog inputs and outputs shall be log based upon a 5 minute intervals. The unit state and active setpoint shall be log based upon change of state. The history log will "roll" over when the data fills the available log space. Clear History Function

1. Binary Inputs – Change of State
2. Binary Outputs – Change of State
3. Analog Inputs – 5 minute intervals
4. Analog Outputs – 5 minute intervals
5. User setpoint (upon change of state).

BUILDING AUTOMATION COMMUNICATION

For a complete list of controller hardware input/output points and communication BacNet and Lon input point id names see controls manual. This manual can be supplied by your Reznor Agent.

General Specification

Furnish and install Model YDMA-Size package DX system for the treatment of up to 100% constant outside air per plans and specifications. Unit(s) shall be completely factory assembled, tested, internally wired, fully charged with Refrigerant R410A, and shipped in one piece. Unit(s) shall consist of insulated weather-tight casing with optional field installed outdoor intake hood, modulated capacity scroll compressors, air-cooled condenser coils, condenser fans, evaporator coils, direct drive supply fan, factory installed VFD, and unit controls. Packaged Cooling and Heating Units shall carry an ETL listing. Manufacturer must have at least 20 years experience in manufacturing makeup air equipment.

Refrigerant System

Compressor systems shall be designed to provide 10 - 100% capacity control for treatment of up to 100% outside air with up to 80 degree dewpoint entering the unit. Hermetic compressors shall include a scroll design with internal pressure relief and motor temperature winding protection. Units shall be equipped with reversal rotation protection. Refrigeration protection shall include low and high pressure switches, refrigerant circuit frost protection, liquid line filters/dryers and service gage ports. Refrigeration control shall include thermal expansion valves, external equalizers and distributors for each compressor. Hot gas bypass options shall be available on all refrigerant stages in addition to multiple steps of capacity modulation to supplement discharge air control. The refrigerant system shall have an adjustable 5 minute minimum ON and minimum OFF timer circuit protection. The refrigerant circuit shall have an anti-cycle time in addition to the minimum ON/OFF timer that prevents the compressors from cycle on the minimum timer circuit. The unit shall have optional low ambient kit. The condensate drain pan shall be corrosion proof material. The drain outlet shall be double sloped drain pan with a minimum 1/8" per foot slope. The sloped drain pan shall be of a removable design. The drain pan shall collect potential condensate from all evaporator/condenser coils and distributor area in the air stream to prevent blow-off condensate reaching unprotected bottom unit surfaces.

Reheat Systems

Model shall include a dedicated modulating compressor and refrigeration circuit using full condenser reheat or total heat of rejection in the supply airstream. The circuit shall be capable of delivering a nominal 13°F- 17°F temperature rise from the main evaporator temperature without the need for modulating the capacity for all entering outside air conditions. The compressor shall modulate to maintain other than neutral air conditions per customer adjusted setpoint. All methods of reheat shall comply with ASHRAE 90.1 requirements. Dual compressor systems shall be designed to provide 4-8 stage capacity increment using integrated DDC control. The refrigerant circuits shall include thermal expansion valves with external equalizers. Service gage ports and refrigerant line filter dryers are factory installed as standard. Precooling coils shall be two row depth with 6 fin per inch to minimize air pressure drop. The reheat coil position shall include a minimum separation of 6" from the cooling coil to eliminate re-evaporation of cooling coil condensate.

Evaporator & Condenser Coils

The refrigerant system shall include a horizontal discharge air cooled condenser. The copper tube-aluminum plate fin evaporator coil to be 4 rows with 15 fins per inch to meet SHR values of 0.60. All multi-circuit evaporator coils are of the interlaced and split face configuration to reduce the risk of coil freezing at part load. All evaporator coils shall be protected from frosting by a low temperature cutout. All Coils shall be leak tested at the factory to ensure pressure integrity. [Coils shall have ElectroFin™ coating for protection from corrosion]. The condenser coils shall be aluminum micro-channel type condensing coil [A coil guard will be included for protecting the condensing section.] Units will ship completely charged for immediate operation upon installation and check-out of the unit.

Gas Heat (Natural Gas or Propane)

Heating shall be provided by a gas-fired heating section designed to provide a 5:1 or 10:1 power vented modulation with a minimum [80%], [90%] thermal efficiency throughout the modulated range. The system shall modulate the gas and combustion air to maintain temperature setpoint and thermal efficiency. The heat exchanger shall be capable of 100 degree temperature rise for 100% outside air treatment. The heating system shall be factory installed and design certified to ANSI Standard Z83.8/CSA 2.6. The heat exchanger shall be tubular design constructed of 409 stainless steel. The gas burner shall be direct spark, multi-try, with a flame sensing circuit monitored by an electronic flame supervision system with 100% lockout via an integrated circuit board that incorporates LED diagnostics. Diagnostic codes shall include [failed ignition] [primary limit failure] [value failure] [air sensor] [gas sensor] [flame sensor]. Certifications: The gas heat sections shall be approved to ANSI Z83.8/CSA 2.6. The packaged unit shall be certified to UL-1995 – UL Standards for Safety Heating & Cooling Equipment Second Edition: CAN/CSA C22.2 NO. 236-95. Safety Features: All heat sections for said unit shall feature factory installed:

- Automatic discharge air limit control
- Air proving pressure switch
- Color coded wiring and matching terminal blocks
- Circuit breaker protected transformers

Electric Heat

Manufacturer to provide factory installed electric resistance heat for unit. Unit shall include field-replaceable heat sections. All heat sections are to be sub-fused. Heat sections shall feature SCR control with 0-100% capacity modulation.

Cabinet

Outer casing is fabricated from G90 galvanized steel substrate with 60 gloss painted finish coat. Structural members shall be 18 gauge with double-wall foamed construction panel for all exterior surfaces. The unit shall have an overall R13 insulation value. The cabinet design shall prevent condensation forming on the outside of the unit casing in operation. Fully-gasketed, hinged doors of double-wall foam construction shall provide access to filters, dampers, evaporator coils section, supply fan section, energy recovery wheel and exhaust fan. Provide hinged single wall construction doors for the heater section and control section. The unit shall have lockable door access. The unit control panel section shall be laid out to provide separation of high and low voltage components per UL standards. High voltage wiring shall be touch safe utilizing power distribution rails, race ways and wiring harnesses. The control panels shall be hinged for easy access to the unit controls. For ease of service, all electrical components will be clearly identified with 1/2" diameter self adhesive labels

SAMPLE SPECIFICATIONS (cont'd)

to match the unit specific wiring diagram. The low voltage and unit controller access electrical panel shall be physically isolated from the high voltage section. The open door to the control section will reveal the wiring diagrams, DDC programming instructions and all manuals and literature protected and permanently attached to the cover. All control transformers will incorporate integral, resettable circuit breaker protection. An optional weatherproof convenience outlet will be accessible from the outside of the unit without the removal of any doors or access panels.

Air Side

The outdoor condenser fan shall be direct drive, statically and dynamically balanced, draw through in the vertical position. The condenser fan motor(s) shall be permanently lubricated and have built-in thermal overload protection. [Optional high efficiency ECM motors shall be provided with speed control directly connected to the unit control system.]

The fan sled shall be direct drive with an ABB variable frequency drive allowing peak fan efficiency and system RPM. The fan system shall utilize Zie Ziehl-Abegg patented rotating diffusor which reduces noise and helps increase overall system efficiency. The fan sled shall have slide out design for easy inspection and replacement. The fan sled shall also allow inspection of the gas or electric heat exchangers. The fan sled shall have rubber dampers to isolate and minimize vibration. The 7 blade, welded construction impeller shall be dynamically balanced at the factory with hub; admissible vibration level less than 2,8 mm/s (0.11 in/s) in conformity with ANSI/AMCA 204. The fan sled shall include Inlet cone with measuring device for airflow measurement. The packaged unit shall allow fan inlet differential pressure readings inside the control panel to measure supply fan CFM with an accuracy of +/-5%. The unit controller shall allow fan speed settings for occupied and unoccupied modes. The unit controller shall allow fan speed settings for heating and cooling modes. The fan system shall be made of galvanized steel. The impeller shall have RAL 5002 coating, directional arrows marketing. The fan sled shall allow up to 176°F (80°C) for the impeller and the motor shall allow ambient temperatures -4°F to 104°F (-20°C to 40°C). The impeller and motor shall be designed for continuous operation.

The ABB frequency drive shall be factory installed with line reactor, ECM Filter and all necessary wiring per UL standard. The drive shall have built in menu drive display with test, start-up, maintenance and diagnostic assistant. The drive shall be factory programmed for 30 second soft start. The drive shall have the following protection and alarms: single phase, overvoltage trip limit, under voltage trip limit, over temperature, microprocessor fault, motor stall protection, motor over temperature. The unit shall meet the schedule performance. The unit control system shall have test and balance function to allow permanent setting of the airflow(s) as shown in the mechanical schedule.

Controls

The unit control panel section shall be laid out to provide separation of high and low voltage components per UL Standards. The primary control panel shall be hinged for easy access. Controls shall be factory configured for the design application with both the required hardware, operating parameters, and typical default control setpoints. The controller is factory mounted on the unit and is pre-wired to the unit controls. The controller shall have visual (LED) status of power, running, and errors. LED indicators for transmit/receive for networks and for each of the 12 outputs. The controller shall have unit mounted display with two line 40 alpha/numeric character per line display providing full access to all commission variables, setpoints, alarms and diagnostic functions. The controller shall have BACnet (ARC156, MS/TP, and PTP) network communication available without the need for further programming or external devices. The control system shall have the capability to communicate using LonWorks protocol. [Customer wall-mounted controls shall be available for providing [remote temperature adjustment] [on/off -auto control] [damper adjustment]. Each unit shall be equipped with an air-proving switch to ensure proper blower operation prior to enabling cooling and heating functions. Cooling controls shall include minimum "on/off" compressor time delays and anti-cycling program to prevent unnecessary wear of compressor. Commissioning control variables shall include outdoor setpoints for heating and cooling sequencing based on outdoor [drybulb] [dewpoint], discharge or space temperature setpoints and low limit discharge air settings for freeze protection. The alarm functionality shall include low temperature, compressor failure, sensor failure, smoke alarm, power failure, heating failure and supply fan failure. The failures shall protect the unit and displays a code at the unit's display and the optional wall mounted display. The unit will have test and diagnostics routines for services and start-up.

The control system shall be able to provide D21 neutral air and space temperature control per the sequence of operation shown.

Outdoor Air Section

Units shall be available with fully integrated factory installed [100% motorized outdoor air damper] [100% motorized outdoor damper and return damper]. The motorized damper shall be spring return for closure during unit shutdown or power interruption. The outsider air dampers shall be controlled, [to maintain building static pressure setpoint] [by a manual High/Low wall selector], [occupied and unoccupied positions]. Outdoor air inlet hood shall include 1" permanent filters. Units designed for 100% outside air intake only shall include an integrated transition section (without return air opening) designed specifically for 100% outside air introduction to allow uniform coil velocity and filter loading.

Filters

Filters shall mount integral within unit casing and be accessible through hinged access panel. Filters shall be [2" permanent aluminum - MERV8 rating] [2" disposable pleated - MERV8 rating] [4" permanent aluminum] [4" disposable pleated - MERV8] [4" disposable pleated MERV13]. [energy recovery wheel shall have MERV8 filters for the return air and outside air intake sections of the wheel.]

Full Perimeter Curbs

The curbs available from the manufacturer shall be designed to meet the National Roofing Contractors Association August 1985 guidelines for roof mounted installations. The roof curbs shall be 12 gauge zinc coated steel with a 2" x 6" nailer. Factory curb shall be required for systems requiring [vertical] [horizontal] discharge or return air connection. The curb is to be shipped knocked down with assembly instructions. The curb shall incorporated energy recovery options.

SAMPLE SPECIFICATIONS**Model YDHA****General Specification**

Furnish and install Model YDHA-Size package DX system for the treatment of up to 50% constant outside air per plans and specifications. Unit(s) shall be completely factory assembled, tested, internally wired, fully charged with Refrigerant R410A, and shipped in one piece. Unit(s) shall consist of insulated weather-tight casing with optional field installed outdoor intake hood, modulated capacity scroll compressors, air-cooled condenser coils, condenser fans, evaporator coils, direct drive supply fan, factory installed VFD, and unit controls. Packaged Cooling and Heating Units shall carry an ETL listing. Manufacturer must have at least 20 years experience in manufacturing makeup air equipment.

Refrigerant System

Compressor systems shall be designed to provide 10 - 100% capacity control for treatment of up to 50% outside air with up to 65 degree dewpoint entering the unit. Hermetic compressors shall include a scroll design with internal pressure relief and motor temperature winding protection. Units shall be equipped with reversal rotation protection. Refrigeration protection shall include low and high pressure switches, refrigerant circuit frost protection, liquid line filters/dryers and service gage ports. Refrigeration control shall include thermal expansion valves, external equalizers and distributors for each compressor. Hot gas bypass options shall be available on all refrigerant stages in addition to multiple steps of capacity modulation to supplement discharge air control. The refrigerant system shall have an adjustable 5 minute minimum ON and minimum OFF timer circuit protection. The refrigerant circuit shall have an anti-cycle time in addition to the minimum ON/OFF timer that prevents the compressors from cycle on the minimum timer circuit. The unit shall have optional low ambient kit. The condensate drain pan shall be corrosion proof material. The drain outlet shall be double sloped drain pan with a minimum 1/8" per foot slope. The sloped drain pan shall be of a removable design. The drain pan shall collect potential condensate from all evaporator/condenser coils and distributor area in the air stream to prevent blow-off condensate reaching unprotected bottom unit surfaces.

Reheat Systems

Model shall include a dedicated modulating compressor and refrigeration circuit using full condenser reheat or total heat of rejection in the supply airstream. The circuit shall be capable of delivering a nominal 13°F- 17°F temperature rise from the main evaporator temperature without the need for modulating the capacity for all entering outside air conditions. The compressor shall modulate to maintain other than neutral air conditions per customer adjusted setpoint. All methods of reheat shall comply with ASHRAE 90.1 requirements. Dual compressor systems shall be designed to provide 4-8 stage capacity increment using integrated DDC control. The refrigerant circuits shall include thermal expansion valves with external equalizers. Service gage ports and refrigerant line filter dryers are factory installed as standard. Precooling coils shall be two row depth with 6 fin per inch to minimize air pressure drop. The reheat coil position shall include a minimum separation of 6" from the cooling coil to eliminate re-evaporation of cooling coil condensate.

Evaporator & Condenser Coils

The refrigerant system shall include a horizontal discharge air cooled condenser. The copper tube-aluminum plate fin evaporator coil to be 4 rows with 15 fins per inch to meet SHR values of 0.60. All multi-circuit evaporator coils are of the interlaced and split face configuration to reduce the risk of coil freezing at part load. All evaporator coils shall be protected from frosting by a low temperature cutout. All Coils shall be leak tested at the factory to ensure pressure integrity. [Coils shall have ElectroFin™ coating for protection from corrosion]. The condenser coils shall be aluminum micro-channel type condensing coil [A coil guard will be included for protecting the condensing section.] Units will ship completely charged for immediate operation upon installation and check-out of the unit.

Gas Heat (Natural Gas or Propane)

Heating shall be provided by a gas-fired heating section designed to provide a 5:1 or 10:1 power vented modulation with a minimum [80%], [90%] thermal efficiency throughout the modulated range. The system shall modulate the gas and combustion air to maintain temperature setpoint and thermal efficiency. The heat exchanger shall be capable of 100 degree temperature rise for 100% outside air treatment. The heating system shall be factory installed and design certified to ANSI Standard Z83.8/CSA 2.6. The heat exchanger shall be tubular design constructed of 409 stainless steel. The gas burner shall be direct spark, multi-try, with a flame sensing circuit monitored by an electronic flame supervision system with 100% lockout via an integrated circuit board that incorporates LED diagnostics. Diagnostic codes shall include [failed ignition] [primary limit failure] [value failure] [air sensor] [gas sensor] [flame sensor]. Certifications: The gas heat sections shall be approved to ANSI Z83.8/CSA 2.6. The packaged unit shall be certified to UL-1995 – UL Standards for Safety Heating & Cooling Equipment Second Edition: CAN/CSA C22.2 NO. 236-95. Safety Features: All heat sections for said unit shall feature factory installed:

- Automatic discharge air limit control
- Air proving pressure switch
- Color coded wiring and matching terminal blocks
- Circuit breaker protected transformers

Electric Heat

Manufacturer to provide factory installed electric resistance heat for unit. Unit shall include field-replaceable heat sections. All heat sections are to be sub-fused. Heat sections shall feature SCR control with 0-100% capacity modulation.

Cabinet

Outer casing is fabricated from G90 galvanized steel substrate with 60 gloss painted finish coat. Structural members shall be 18 gauge with double-wall foamed construction panel for all exterior surfaces. The unit shall have an overall R13 insulation value. The cabinet design shall prevent condensation forming on the outside of the unit casing in operation. Fully-gasketed, hinged doors of double-wall foam construction shall provide access to filters, dampers, evaporator coils section, supply fan section, energy recovery wheel and exhaust fan. Provide hinged single wall construction doors for the heater section and control section. The unit shall have lockable door access. The unit control panel section shall be laid out to provide separation of high and low voltage components per UL standards. High voltage wiring shall be touch safe utilizing power distribution rails, race ways and wiring harnesses. The control panels shall be hinged for easy access to the unit controls. For ease of service, all electrical components will be clearly identified with 1/2" diameter self adhesive labels

to match the unit specific wiring diagram. The low voltage and unit controller access electrical panel shall be physically isolated from the high voltage section. The open door to the control section will reveal the wiring diagrams, DDC programming instructions and all manuals and literature protected and permanently attached to the cover. All control transformers will incorporate integral, resettable circuit breaker protection. An optional weatherproof convenience outlet will be accessible from the outside of the unit without the removal of any doors or access panels.

Air Side

The outdoor condenser fan shall be direct drive, statically and dynamically balanced, draw through in the vertical position. The condenser fan motor(s) shall be permanently lubricated and have built-in thermal overload protection. [Optional high efficiency ECM motors shall be provided with speed control directly connected to the unit control system.]

The fan sled shall be direct drive with an ABB variable frequency drive allowing peak fan efficiency and system RPM. The fan system shall utilize Zie Ziehl-Abegg patented rotating diffusor which reduces noise and helps increase overall system efficiency. The fan sled shall have slide out design for easy inspection and replacement. The fan sled shall also allow inspection of the gas or electric heat exchangers. The fan sled shall have rubber dampers to isolate and minimize vibration. The 7 blade, welded construction impeller shall be dynamically balanced at the factory with hub; admissible vibration level less than 2,8 mm/s (0.11 in/s) in conformity with ANSI/AMCA 204. The fan sled shall include Inlet cone with measuring device for airflow measurement. The packaged unit shall allow fan inlet differential pressure readings inside the control panel to measure supply fan CFM with an accuracy of +/-5%. The unit controller shall allow fan speed settings for occupied and unoccupied modes. The unit controller shall allow fan speed settings for heating and cooling modes. The fan system shall be made of galvanized steel. The impeller shall have RAL 5002 coating, directional arrows marketing. The fan sled shall allow up to 176°F (80°C) for the impeller and the motor shall allow ambient temperatures -4°F to 104°F (-20°C to 40°C). The impeller and motor shall be designed for continuous operation.

The ABB frequency drive shall be factory installed with line reactor, ECM Filter and all necessary wiring per UL standard. The drive shall have built in menu drive display with test, start-up, maintenance and diagnostic assistant. The drive shall be factory programmed for 30 second soft start. The drive shall have the following protection and alarms: single phase, overvoltage trip limit, under voltage trip limit, over temperature, microprocessor fault, motor stall protection, motor over temperature. The unit shall meet the schedule performance. The unit control system shall have test and balance function to allow permanent setting of the airflow(s) as shown in the mechanical schedule.

Controls

The unit control panel section shall be laid out to provide separation of high and low voltage components per UL Standards. The primary control panel shall be hinged for easy access. Controls shall be factory configured for the design application with both the required hardware, operating parameters, and typical default control setpoints. The controller is factory mounted on the unit and is pre-wired to the unit controls. The controller shall have visual (LED) status of power, running, and errors. LED indicators for transmit/receive for networks and for each of the 12 outputs. The controller shall have unit mounted display with two line 40 alpha/numeric character per line display providing full access to all commission variables, setpoints, alarms and diagnostic functions. The controller shall have BACnet (ARC156, MS/TP, and PTP) network communication available without the need for further programming or external devices. The control system shall have the capability to communicate using LonWorks protocol. [Customer wall-mounted controls shall be available for providing [remote temperature adjustment] [on/off - auto control] [damper adjustment]. Each unit shall be equipped with an air-proving switch to ensure proper blower operation prior to enabling cooling and heating functions. Cooling controls shall include minimum "on/off" compressor time delays and anti-cycling program to prevent unnecessary wear of compressor. Commissioning control variables shall include outdoor setpoints for heating and cooling sequencing based on outdoor [drybulb] [dewpoint], discharge or space temperature setpoints and low limit discharge air settings for freeze protection. The alarm functionality shall include low temperature, compressor failure, sensor failure, smoke alarm, power failure, heating failure and supply fan failure. The failures shall protect the unit and displays a code at the unit's display and the optional wall mounted display. The unit will have test and diagnostics routines for services and start-up.

The control system shall be able to provide [D21 neutral air and space temperature control] [D19 thermostat control] per the sequence of operation shown.

Outdoor Air Section

Units shall be available with fully integrated factory installed [100% return with 30% motorized outdoor air damper] [100% motorized outdoor damper and return damper]. The motorized damper shall be spring return for closure during unit shutdown or power interruption. The outsider air dampers shall be controlled, [to maintain building static pressure setpoint] [by a manual High/Low wall selector], [occupied and unoccupied positions]. Outdoor air inlet hood shall include 1" permanent filters. Units designed for 100% outside air intake only shall include an integrated transition section (without return air opening) designed specifically for 100% outside air introduction to allow uniform coil velocity and filter loading.

Filters shall mount integral within unit casing and be accessible through hinged access panel. Filters shall be [2" permanent aluminum - MERV8 rating] [2" disposable pleated - MERV8 rating] [4" permanent aluminum] [4" disposable pleated - MERV8] [4" disposable pleated MERV13]. [energy recovery wheel shall have MERV8 filters for the return air and outside air intake sections of the wheel.]

The curbs available from the manufacturer shall be designed to meet the National Roofing Contractors Association August 1985 guidelines for roof mounted installations. The roof curbs shall be 12 gauge zinc coated steel with a 2" x 6" nailer. Factory curb shall be required for systems requiring [vertical] [horizontal] discharge or return air connection. The curb is to be shipped knocked down with assembly instructions. The curb shall incorporate energy recovery options.

PRODUCT LIMITED WARRANTY

Nortek Global HVAC, LLC (manufacturer) warrants to the original owner-user that this product will be free from defects in material or workmanship. This warranty is limited to twelve (12) months from the date of original installation, whether or not actual use begins on that date, or eighteen (18) months from date of shipment by manufacturer, whichever occurs first.

Optional Extended Warranty

Extended warranties on components of Models YDHA, & YDMA may be **purchased**. Warranties include:

- **Compressors** - Extended four (4) year non-prorated warranty available on compressors.
- **Heat Exchanger** - Extended four (4) or nine (9) year non-prorated warranties available on gas heat exchanger(s).
- **Heat Exchanger** - Extended four (4) year non-prorated warranty available on electric heating element
- **Parts** - Extended one (1) year non-prorated warranty on all electrical and/or mechanical parts

LIMITATIONS AND EXCLUSIONS

The manufacturer obligations under this warranty and the sole remedy for its breach are limited to repair, at its manufacturing facility, of any part or parts of its products which prove to be defective; or, in its sole discretion, replacement of such products. All returns of defective parts or products must include the product model number and serial number, and must be made through an authorized distributor or arranged through Customer Service. Authorized returns must be shipped prepaid. Repaired or replacement parts will be shipped F.O.B. shipping point.

1. The warranty provided herein does not cover charges for labor or other costs incurred in the troubleshooting, repair, removal, installation, service or handling of parts or complete products.
2. All claims under the warranty provided herein must be made within ninety (90) days from the date of discovery of the defect. Failure to notify manufacturer of a warranted defect within ninety (90) days of its discovery voids manufacturer obligations hereunder.
3. The warranty provided herein shall be void and of no effect in the event that (a) the product has been operated outside its designed output capacity (heating, cooling, airflow); (b) the product has been subjected to misuse, neglect, accident, improper or inadequate maintenance, corrosive environments, environments containing airborne contaminants (silicone, aluminum oxide, etc.), or excessive thermal shock; (c) unauthorized modifications are made to the product; (d) the product is not installed or operated in compliance with the manufacturer's printed instructions; (e) the product is not installed and operated in compliance with applicable building, mechanical, plumbing and electrical codes; or (f) the serial number of the product has been altered, defaced or removed.
4. The warranty provided herein is for repair or replacement only. Manufacturer shall not be liable for any loss, cost, damage, or expense of any kind arising out of a breach of the warranty. Further, manufacturer shall not be liable for any incidental, consequential, exemplary, special, or punitive damages, nor for any loss of revenue, profit or use, arising out of a breach of this warranty or in connection with the sale, maintenance, use, operation or repair of any product. In no event will manufacturer be liable for any amount greater than the purchase price of a defective product. The disclaimers of liability included in this paragraph 4 shall remain in effect and shall continue to be enforceable in the event that any remedy herein shall fail of its essential purpose.
5. THIS WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY FOR LISTED PRODUCTS, AND IS IN LIEU OF ALL OTHER EXPRESS AND IMPLIED WARRANTIES. MANUFACTURER SPECIFICALLY DISCLAIMS ALL OTHER EXPRESS AND IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. No person or entity is authorized to bind manufacturer to any other warranty, obligation or liability for any product. Installation, operation or use of the product for which this warranty is issued shall constitute acceptance of the terms hereof.

**For more information on Reznor HVAC Equipment,
contact your local Reznor Representative by calling
800-695-1901.**

**Or, find us on the internet at
ReznorHVAC.com**

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114F-0819 (Replaces C-RTU-0416)

REZNOR®

REZNOR® CAPACITY & PERFORMANCE TABLES (cont'd)

DX Unit Performance

Model YDHA

Entering air conditions 80°F/67°F @ 95° ambient

CFM	Size	60	90	120	150	180	210	240	300	360
800	LAT [#]	47.9/47.9								
	Capacity	44.5/29								
900	LAT	49.8/49.8								
	Capacity	45.9/30.4								
1000	LAT	51.3/51.3								
	Capacity	47.2/31.7								
1100	LAT	52.9/52.6								
	Capacity	48.3/32.9								
1200	LAT	54.3/53.6								
	Capacity	49.3/34								
1300	LAT	55.5/54.5	47.2/47.2							
	Capacity	50.1/35	74.3/48.7							
1400	LAT	56.7/55.4	48.6/48.6							
	Capacity	50.8/36	75.4/50.1							
1500	LAT	57.7/56.1	49.8/49.8	45.7/45.7						
	Capacity	51.4/36.8	76.5/51.5	91/58.5						
1600	LAT	58.7/56.8	50.8/50.8	47/47						
	Capacity	51.8/37.5	77.5/52.8	92.5/59.9						
1800	LAT		52.5/52.5	49/49						
	Capacity		79.4/55.4	95.2/62.7						
2000	LAT		53.8/53.8	50.7/50.7	46/46					
	Capacity		81.1/57.7	97.6/65.3	120.4/76.1					
2200	LAT		55.3/54.9	52.1/52	47.7/47.7					
	Capacity		82.6/59.9	99.8/67.7	123.5/78.9					
2400	LAT			53.5/53.1	49.2/49.1	45.3/45.3				
	Capacity			101.7/70	126.2/81.4	148.1/94.6				
2600	LAT			54.9/54.1	50.8/50.4	46.9/46.9				
	Capacity			103.4/72	128.5/83.8	151/97.5				
2800	LAT			56/55	52.1/51.5	48.2/48.2	44.7/44.7			
	Capacity			104.8/73.9	130.5/85.9	153.8/100.3	176.8/111.3			
3000	LAT			57.1/55.7	53.4/52.5	49.3/49.3	46/46	43.3/43.3		
	Capacity			106/75.6	132.2/87.9	156.4/103	180.3/114.3	198.7/123.4		
3200	LAT			58.1/56.4	54.6/53.4	50.3/50.3	47.2/47.2	44.6/44.6		
	Capacity			106.9/77.1	133.5/89.7	158.9/105.6	183.5/117.2	202.7/126.4		
3400	LAT			59.1/57	55.6/54.2	51.2/51.2	48.2/48.2	45.7/45.7		
	Capacity			107.6/78.4	134.4/91.3	161.2/108.1	186.6/119.9	206.3/129.4		
3600	LAT					52.2/52	49.1/49.1	46.8/46.8		
	Capacity					163.3/110.5	189.4/122.5	209.6/132.2		
3800	LAT					53.1/52.7	50.1/50	47.8/47.7		
	Capacity					165.2/112.7	191.9/125	212.7/134.9		
4000	LAT					54/53.4	51.1/50.8	48.8/48.6		
	Capacity					167/114.8	194.3/127.4	215.5/137.4		
4200	LAT					54.8/54	52/51.5	49.8/49.4		
	Capacity					168.5/116.8	196.4/129.7	218.1/139.8		
4400	LAT					55.5/54.5	52.8/52.1	50.7/50.2		
	Capacity					170/118.7	198.3/131.8	220.3/142.1		
4500	LAT					55.9/54.8	53.2/52.4	51.1/50.5		
	Capacity					170.6/119.6	199.1/132.8	221.3/143.2		
5000	LAT					57.6/56	55.1/53.8	53.1/52.1		
	Capacity					173.2/123.6	202.5/137.4	225.4/148.2		
5200	LAT								49.3/49.3	
	Capacity								271.6/181.5	
5400	LAT								49.9/49.9	
	Capacity								274/184.2	
5600	LAT								50.4/50.4	
	Capacity								276.4/186.9	
5800	LAT								51/51	
	Capacity								278.6/189.4	
6000	LAT								51.4/51.4	
	Capacity								280.8/191.9	

[#] LAT = Coil leaving air drybulb/wetbulb temperature(s); Total capacity (MBH)/Sensible capacity.

REZNOR® CAPACITY & PERFORMANCE TABLES (cont'd)

DX Unit Performance

Model YDHA

Entering air conditions 80°F/67°F @ 95° ambient (cont'd)

CFM	Size	60	90	120	150	180	210	240	300	360
6200	LAT								51.9/51.9	
	Capacity								282.8/194.3	
6400	LAT								52.3/52.3	
	Capacity								284.8/196.6	
6600	LAT								52.7/52.7	49.4/49.4
	Capacity								286.6/198.8	343.1/224.9
6800	LAT								53.2/53.1	49.9/49.9
	Capacity								288.3/201	345.4/227.3
7000	LAT								53.7/53.5	50.3/50.3
	Capacity								290/203.1	347.5/229.7
7200	LAT								54.1/53.8	50.8/50.8
	Capacity								291.5/205.1	349.5/231.9
7400	LAT								54.6/54.2	51.3/51.2
	Capacity								292.9/207.1	351.4/234.1
7600	LAT								55/54.5	51.8/51.6
	Capacity								294.2/208.9	353.1/236.3
7800	LAT								55.5/54.8	52.3/52
	Capacity								295.4/210.7	354.7/238.3
8000	LAT								55.9/55.1	52.7/52.3
	Capacity								296.5/212.5	356.1/240.3
8200	LAT								56.3/55.4	53.2/52.7
	Capacity								297.5/214.1	357.4/242.2
8400	LAT								56.7/55.6	53.6/53
	Capacity								298.5/215.7	358.6/244
8600	LAT								57.1/55.9	54.1/53.3
	Capacity								299.2/217.2	359.6/245.7
8800	LAT								57.5/56.2	54.5/53.7
	Capacity								299.9/218.6	360.5/247.4
9000	LAT								57.8/56.4	54.9/54
	Capacity								300.5/220	361.2/249
9200	LAT									55.3/54.3
	Capacity									361.8/250.5
9400	LAT									55.7/54.6
	Capacity									362.3/251.9
9600	LAT									56.1/54.8
	Capacity									362.6/253.3
9800	LAT									56.4/55.1
	Capacity									362.8/254.6

* LAT = Coil leaving air drybulb/wetbulb temperature(s); Total capacity (MBH)/Sensible capacity.

REZNOR® CAPACITY & PERFORMANCE TABLES (cont'd)

DX Unit Performance

Model YDHA

Entering air conditions 90°F/72°F @ 95° ambient

CFM	Size	60	90	120	150	180	210	240	300	360
800	LAT ^B	53.2/53.2								
	Capacity	48.7/32.8								
900	LAT	55.3/55.1								
	Capacity	50.2/34.6								
1000	LAT	57.3/56.5								
	Capacity	51.7/36.2								
1100	LAT	59/57.8								
	Capacity	52.9/37.7								
1200	LAT	60.5/58.8								
	Capacity	54.1/39.1								
1300	LAT	61.8/59.7	52.8/52.8							
	Capacity	55.1/40.5	80.5/55.4							
1400	LAT	63.1/60.5	54.1/54.1							
	Capacity	55.9/41.7	81.7/57.1							
1500	LAT	64.2/61.2	55.3/55.3	51.3/51.3						
	Capacity	56.6/42.8	82.8/58.7	98.8/65.7						
1600	LAT	65.2/61.8	56.3/56.3	52.5/52.5						
	Capacity	57.2/43.9	83.9/60.3	100.4/67.5						
1800	LAT		58.2/57.9	54.5/54.5						
	Capacity		86/63.4	103.3/70.8						
2000	LAT		60.1/59.2	56.5/56.1	51.6/51.6					
	Capacity		87.9/66.2	105.9/74	130.2/84.9					
2200	LAT		61.7/60.2	58.3/57.4	53.7/53.3					
	Capacity		89.7/68.9	108.3/77	133.5/88.3					
2400	LAT			59.9/58.5	55.5/54.7	50.9/50.9				
	Capacity			110.5/79.9	136.4/91.5	160.6/106.1				
2600	LAT			61.3/59.4	57.1/55.9	52.4/52.4				
	Capacity			112.4/82.5	139/94.5	163.8/109.7				
2800	LAT			62.5/60.2	58.6/57	53.7/53.7	50.2/50.2			
	Capacity			114/85	141.2/97.3	166.8/113.1	192/124.4			
3000	LAT			63.7/61	59.9/57.9	54.9/54.8	51.5/51.5	48.9/48.9		
	Capacity			115.4/87.2	143.1/99.9	169.6/116.4	195.8/128	215.9/137.2		
3200	LAT			64.7/61.6	61.1/58.8	56.2/55.8	52.8/52.7	50.2/50.2		
	Capacity			116.5/89.3	144.5/102.3	172.3/119.6	199.3/131.5	220/140.9		
3400	LAT			65.7/62.2	62.2/59.6	57.4/56.6	54.1/53.7	51.5/51.3		
	Capacity			117.4/91.3	145.7/104.5	174.8/122.6	202.5/134.9	223.9/144.5		
3600	LAT					58.4/57.4	55.3/54.6	52.8/52.3		
	Capacity					177.1/125.6	205.6/138.1	227.5/148		
3800	LAT					59.4/58.1	56.4/55.4	54/53.3		
	Capacity					179.2/128.4	208.4/141.3	230.8/151.3		
4000	LAT					60.3/58.7	57.4/56.2	55/54.1		
	Capacity					181.2/131.1	211/144.3	233.8/154.5		
4200	LAT					61.2/59.3	58.3/56.9	56/54.9		
	Capacity					183/133.7	213.3/147.2	236.6/157.6		
4400	LAT					62/59.8	59.2/57.5	57/55.6	51.9/51.9	
	Capacity					184.7/136.2	215.4/150	239/160.6	283.1/191.8	
4600	LAT								52.7/52.7	
	Capacity								286.1/195.5	
4800	LAT								53.4/53.4	49.1/49.1
	Capacity								289.1/199	342.5/222.7

^B LAT = Coil leaving air drybulb/wetbulb temperature(s); Total capacity (MBH)/Sensible capacity.

REZNOR® CAPACITY & PERFORMANCE TABLES (cont'd)

DX Unit Performance

Model YDHA

Entering air conditions 90°F/72°F @ 95° ambient

CFM	Size	60	90	120	150	180	210	240	300	360
5000	LAT								54.1/54.1	50/50
	Capacity								292/202.4	346.2/226.5
5200	LAT								54.7/54.7	50.7/50.7
	Capacity								294.8/205.8	349.8/230.2
5400	LAT								55.3/55.3	51.5/51.5
	Capacity								297.4/209.1	353.2/233.8
5600	LAT								55.9/55.9	52.1/52.1
	Capacity								300/212.4	356.5/237.3
5800	LAT								56.4/56.4	52.8/52.8
	Capacity								302.5/215.5	359.7/240.8
6000	LAT								57/56.8	53.4/53.4
	Capacity								304.8/218.6	362.7/244.2
6200	LAT								57.7/57.3	53.9/53.9
	Capacity								307.1/221.6	365.6/247.5
6400	LAT								58.3/57.7	54.6/54.4
	Capacity								309.2/224.6	368.4/250.7
6600	LAT								58.8/58.1	55.2/54.9
	Capacity								311.3/227.4	371/253.9
6800	LAT									55.8/55.4
	Capacity									373.4/257
7000	LAT									56.4/55.8
	Capacity									375.8/260
7200	LAT									57/56.3
	Capacity									378/262.9
7400	LAT									57.5/56.7
	Capacity									380/265.8
7600	LAT									58/57
	Capacity									381.9/268.5
7800	LAT									58.5/57.4
	Capacity									383.7/271.2
8000	LAT									59/57.8
	Capacity									385.4/273.9

^a LAT = Coil leaving air drybulb/wetbulb temperature(s); Total capacity (MBH)/Sensible capacity.



PRESSURE DROP TABLE (cont'd)

Exhaust Fan

Applies to Models

ER28C Cabinet 1 Table

CFM	Total Static Pressure												
	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00
650	1662/0.15	1956/0.24	2210/0.33	2429/0.42	2663/0.53	2870/0.64	3069/0.73	3250/0.86	3400/0.96	3565/1.07			
750	1735/0.18	2008/0.27	2257/0.37	2476/0.48	2684/0.58	2898/0.69	3072/0.82	3228/0.92	3400/1.05	3592/1.20	3750/1.33	3864/1.42	4048/1.59
850	1806/0.20	2064/0.30	2294/0.40	2513/0.52	2726/0.63	2919/0.77	3108/0.87	3284/1.00	3440/1.16	3613/1.27	3753/1.43	3905/1.58	4014/1.68
950	1900/0.23	2139/0.34	2358/0.45	2563/0.57	2761/0.70	2963/0.82	3136/0.94	3296/1.10	3473/1.22	3629/1.36	3756/1.52	3892/1.66	4038/1.82
1050	2006/0.27	2231/0.38	2445/0.50	2644/0.62	2833/0.76	3000/0.88	3188/1.03	3336/1.19	3500/1.34	3643/1.48	3798/1.65	3923/1.79	4057/1.94
1150	2102/0.30	2314/0.42	2523/0.55	2715/0.68	2896/0.82	3055/0.96	3231/1.11	3371/1.26	3523/1.42	3689/1.60	3833/1.76	3949/1.90	4116/2.05
1250	2214/0.34	2415/0.47	2607/0.61	2778/0.74	2951/0.89	3125/1.05	3295/1.18	3427/1.34	3602/1.52	3728/1.70	3864/1.86	4009/2.05	4126/2.20
1350	2330/0.39	2522/0.52	2700/0.66	2869/0.82	3040/0.97	3188/1.12	3350/1.27	3504/1.46	3643/1.61	3793/1.79	3923/1.96	4062/2.14	4173/2.35
1450	2453/0.44	2622/0.58	2801/0.73	2952/0.89	3120/1.05	3265/1.22	3424/1.38	3572/1.55	3707/1.74	3852/1.92	3976/2.09	4108/2.27	4214/2.48
1550	2571/0.50	2745/0.65	2896/0.80	3046/0.96	3213/1.14	3357/1.30	3490/1.49	3634/1.66	3764/1.85	3904/2.04	4023/2.21	4150/2.39	4285/2.60
1650	2697/0.56	2862/0.72	3000/0.88	3152/1.04	3300/1.23	3442/1.40	3573/1.59	3715/1.77	3842/1.96	3979/2.15	4095/2.37	4218/2.56	4349/2.77
1750	2820/0.63	2975/0.80	3115/0.95	3251/1.14	3400/1.32	3542/1.51	3673/1.69	3790/1.90	3914/2.07	4048/2.30	4161/2.48	4281/2.72	4407/2.93
1850	2953/0.70	3099/0.87	3226/1.05	3364/1.22	3494/1.43	3636/1.61	3766/1.82	3883/2.03	4006/2.21	4138/2.45	4250/2.62	4368/2.87	
1950	3084/0.79	3218/0.96	3348/1.14	3471/1.34	3603/1.53	3725/1.72	3855/1.94	3970/2.16	4093/2.38	4196/2.59	4333/2.82		
2050	3212/0.88	3335/1.06	3468/1.25	3593/1.43	3707/1.64	3830/1.86	3960/2.06	4076/2.29	4174/2.51	4302/2.72	4411/2.95		
2150	3338/0.98	3464/1.16	3583/1.37	3711/1.57	3827/1.77	3951/1.97	4061/2.21	4177/2.45	4275/2.68	4377/2.90			
2250	3477/1.08	3592/1.27	3714/1.48	3825/1.69	3943/1.90	4048/2.11	4158/2.36	4274/2.57	4371/2.81				

Applies to Model

ER45 Cabinet 1 Table

CFM	Total Static Pressure											
	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	
1290	1021/0.34	1213/0.52	1377/0.73	1532/0.95	1679/1.18	1802/1.43	1930/1.70					
1400	1039/0.36	1226/0.56	1393/0.77	1538/1.00	1684/1.24	1810/1.51	1928/1.77	2046/2.05				
1600	1078/0.42	1256/0.63	1414/0.86	1559/1.09	1689/1.35	1820/1.63	1936/1.91	2054/2.18	2156/2.50	2269/2.79		
1800	1121/0.48	1291/0.70	1443/0.95	1583/1.20	1710/1.48	1839/1.76	1954/2.06	2060/2.36	2165/2.68	2265/3.00		
2000	1169/0.55	1329/0.78	1473/1.04	1610/1.32	1735/1.59	1854/1.90	1969/2.19	2077/2.52	2184/2.87	2275/3.19	2375/3.55	
2200	1219/0.63	1370/0.88	1509/1.15	1639/1.44	1764/1.74	1883/2.04	1990/2.37	2101/2.70	2200/3.04	2297/3.40	2389/3.76	
2400	1274/0.72	1421/0.98	1551/1.27	1676/1.57	1795/1.87	1908/2.20	2018/2.53	2121/2.89	2224/3.24	2315/3.59		
2600	1335/0.82	1470/1.10	1599/1.39	1715/1.70	1836/2.03	1945/2.38	2041/2.74	2148/3.11	2245/3.46	2341/3.86		
2800	1396/0.93	1524/1.23	1647/1.54	1762/1.87	1873/2.19	1978/2.54	2078/2.91	2180/3.31	2274/3.70	2364/4.07		
3000	1458/1.06	1579/1.37	1696/1.69	1810/2.02	1913/2.38	2014/2.75	2119/3.12	2209/3.50	2298/3.94	2395/4.35		
3200	1520/1.20	1639/1.52	1747/1.86	1859/2.22	1961/2.57	2061/2.94	2156/3.33	2252/3.75	2338/4.16			
3400	1587/1.37	1700/1.69	1804/2.05	1911/2.40	2012/2.80	2104/3.19	2197/3.60	2291/4.00	2375/4.41			
3600	1652/1.54	1763/1.88	1864/2.24	1960/2.63	2060/3.03	2151/3.44	2243/3.82	2327/4.27				



PRESSURE DROP TABLE (cont'd)

Exhaust Fan

Applies to Models

ER45C Cabinet 2 Table

CFM	Total Static Pressure										
	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00
2000	1152/0.53	1310/0.76	1456/1.02	1590/1.28	1719/1.55	1836/1.85	1949/2.16	2065/2.48	2171/2.79	2262/3.14	2360/3.50
2200	1201/0.60	1353/0.84	1493/1.11	1620/1.39	1742/1.70	1858/2.00	1972/2.31	2080/2.63	2177/2.96	2284/3.31	2375/3.71
2400	1253/0.68	1399/0.94	1530/1.22	1658/1.51	1774/1.83	1892/2.15	1991/2.47	2101/2.82	2203/3.16	2291/3.55	2387/3.89
2600	1307/0.77	1449/1.05	1573/1.34	1692/1.66	1810/1.97	1922/2.30	2025/2.65	2120/3.00	2225/3.37	2319/3.77	
2800	1364/0.88	1499/1.16	1622/1.47	1739/1.78	1847/2.13	1956/2.46	2054/2.84	2154/3.20	2245/3.58	2333/3.97	
3000	1425/0.99	1549/1.29	1672/1.61	1781/1.94	1887/2.30	1993/2.67	2088/3.03	2184/3.43	2280/3.81	2365/4.21	
3200	1487/1.12	1604/1.44	1718/1.76	1831/2.11	1930/2.48	2033/2.86	2126/3.24	2219/3.64	2312/4.03	2394/4.48	
3400	1549/1.26	1661/1.59	1770/1.93	1878/2.29	1982/2.68	2071/3.05	2168/3.47	2259/3.88	2341/4.28		
3600	1613/1.44	1723/1.76	1829/2.11	1927/2.49	2030/2.88	2118/3.26	2206/3.69	2295/4.12	2383/4.56		
3800	1679/1.69	1783/1.95	1885/2.32	1978/2.69	2075/3.10	2168/3.53	2256/3.94	2337/4.38			
4000	1747/1.97	1845/2.14	1944/2.52	2038/2.91	2129/3.34	2216/3.79	2303/4.22	2382/4.68			
4200	1814/2.28	1909/2.36	2000/2.76	2094/3.18	2180/3.61	2267/4.05	2354/4.50				
4400	1883/2.63	1972/2.63	2064/3.00	2149/3.42	2235/3.88	2316/4.34					

Applies to Models

ER50C Cabinet 2 Table

CFM	Total Static Pressure												
	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00
2250	1002/0.64	1145/0.92	1275/1.21	1393/1.53	1505/1.86	1613/2.20	1711/2.54	1731/2.89					
2500	1048/0.74	1182/1.03	1305/1.35	1425/1.67	1534/2.02	1634/2.38	1730/2.75	1825/3.14	1908/3.52	1923/3.93			
2750	1098/0.86	1228/1.17	1345/1.50	1455/1.85	1563/2.21	1662/2.60	1752/2.97	1846/3.39	1930/3.81	2015/4.22	2091/4.69	2115/5.11	
3000	1152/0.99	1274/1.32	1386/1.67	1493/2.05	1592/2.42	1690/2.82	1780/3.23	1869/3.66	1954/4.08	2034/4.53	2113/5.00	2190/5.42	2264/5.89
3250	1206/1.14	1321/1.49	1429/1.86	1533/2.25	1629/2.64	1720/3.06	1811/3.50	1901/3.94	1982/4.41	2057/4.86	2138/5.34	2211/5.82	2281/6.29
3500	1264/1.30	1373/1.67	1477/2.06	1577/2.47	1667/2.89	1759/3.32	1842/3.79	1928/4.23	2011/4.71	2090/5.18	2160/5.70	2236/6.19	2303/6.67
3750	1325/1.49	1426/1.88	1524/2.28	1620/2.71	1712/3.16	1799/3.61	1880/4.09	1958/4.55	2038/5.04	2119/5.56	2193/6.05	2266/6.59	2329/7.08
4000	1386/1.70	1481/2.10	1575/2.53	1667/2.97	1754/3.44	1839/3.91	1918/4.38	2000/4.89	2073/5.39	2145/5.92	2222/6.42	2292/6.97	2360/7.53
4250	1448/1.93	1540/2.36	1628/2.79	1717/3.26	1801/3.74	1881/4.24	1963/4.73	2038/5.26	2114/5.78	2185/6.32	2255/6.89	2322/7.40	2388/7.96
4500	1510/2.18	1599/2.64	1685/3.10	1768/3.58	1852/4.07	1927/4.59	2004/5.10	2079/5.65	2148/6.19	2222/6.76	2290/7.34	2356/7.92	2419/8.50
4750	1575/2.47	1661/2.94	1740/3.42	1820/3.90	1900/4.42	1975/4.97	2047/5.51	2121/6.04	2194/6.60	2262/7.18	2328/7.77	2393/8.37	2455/8.96
5000	1639/2.78	1721/3.25	1802/3.76	1876/4.27	1953/4.80	2024/5.35	2096/5.91	2165/6.51	2237/7.09	2304/7.65	2364/8.26	2433/8.87	2494/9.55
5250	1707/3.11	1786/3.61	1862/4.14	1934/4.67	2004/5.21	2075/5.79	2147/6.38	2215/6.97	2283/7.58	2349/8.16	2408/8.79	2471/9.42	
5500	1774/3.49	1849/4.01	1920/4.54	1993/5.11	2060/5.65	2128/6.23	2196/6.86	2263/7.48	2331/8.06	2391/8.72	2455/9.38		

SOUND DATA

SOUND POWER LEVELS FOR P125 SERIES CABINET 1 WITH POWER EXHAUST

Sound power was tested in accordance to ANSI/AHRI standard 370 "Sound Performance rating of large air-cooled outdoor refrigerating and air conditioning equipment"

1/3 Octave band Freq	25Hz	50Hz	63Hz	100Hz	125Hz	200Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
Discharge Level at mid height	78.21	77.83	79.84	75.58	76.09	75.22	76.97	77.25	74.33	71.18	68.15	62.99
Discharge Level at 1m above unit	73.55	73.64	75.30	73.14	71.23	73.43	75.78	72.81	70.60	64.70	60.95	55.04
Ambient Level	63.12	67.89	67.10	59.23	62.81	55.74	57.17	54.10	57.14	55.07	50.68	38.51
DL less ambient at midheight	15.08	9.94	12.74	16.35	13.28	19.47	19.80	23.14	17.19	16.10	17.47	24.48
DL less ambient at 1m above	10.42	5.74	8.20	13.92	8.43	17.69	18.61	18.70	13.46	9.63	10.27	16.53
Ambient correction	1.00	1.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Discharge Level at mid height	77	76	79	75	75	74	76	76	73	70	67	62
Discharge Level at 1m above unit	73	72	74	72	70	72	75	72	70	64	60	54

SOUND POWER LEVELS FOR P125 SERIES CABINET 1 WITH POWER EXHAUST AND SOUND BLANKETS

Sound power was tested in accordance to ANSI/AHRI standard 370 "Sound Performance rating of large air-cooled outdoor refrigerating and air conditioning equipment"

1/3 Octave band Freq	25Hz	50Hz	63Hz	100Hz	125Hz	200Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
Discharge Level at mid height	77.66	77.00	79.81	76.47	75.47	74.14	75.65	77.27	72.96	70.81	65.73	59.70
Discharge Level at 1m above unit	72.28	72.67	74.54	70.82	70.64	72.87	76.01	72.21	70.27	64.39	60.73	53.40
Ambient Level	61.25	64.58	63.46	59.45	57.37	54.05	56.80	51.77	49.84	49.86	47.46	43.62
DL less ambient at midheight	16.41	12.42	16.35	17.02	18.10	20.09	18.85	25.50	23.12	20.95	18.27	16.08
DL less ambient at 1m above	11.03	8.09	11.08	11.37	13.27	18.82	19.21	20.44	20.43	14.53	13.27	9.78
Ambient correction	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Discharge Level at mid height	77	76	79	75	74	73	75	76	72	70	65	59
Discharge Level at 1m above unit	71	72	74	70	70	72	75	71	69	63	60	52

Notes:

Sound data was collected with unit operating at maximum airflow with both compressors at 100% capacity, two condensers fans and power exhaust energized
 All published data was recorded with a Bruel & Kjaer model 2250 analyzer using sound pressure measurements made in a free field over a reflecting plane
 Data was recorded two elevations, mid-height and 1 meter above the test unit in accordance with ANSI/AHRI 370-2011
 Data was recorded at a distance of 1 meter at the mid-point of all for sides of unit and averaged in accordance with ANSI/AHRI 370-2011
 All published data was recorded using the widely used "A" weighting network.
 For sound in air, the tabled power levels will drop by 6 dB at a 2 meter distance, 12 dB at a 4 meter distance and 18 dB at a 8 meter distance from the unit.

SOUND POWER LEVELS FOR P125 SERIES CABINET 2 WITH POWER EXHAUST

Sound power was tested in accordance to ANSI/AHRI standard 370 "Sound Performance rating of large air-cooled outdoor refrigerating and air conditioning equipment"

1/3 Octave band Freq	25Hz	50Hz	63Hz	100Hz	125Hz	200Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
Discharge Level at mid height	76.86	77.84	78.18	75.36	77.23	77.79	78.76	76.83	72.88	69.23	64.85	55.32
Discharge Level at 1m above unit	78.43	79.91	79.17	76.28	79.73	75.93	78.64	72.85	74.89	70.80	66.67	59.97
Ambient Level	72.07	67.81	66.42	61.76	60.16	60.79	58.96	54.52	55.72	54.83	53.57	48.73
DL less ambient at midheight	4.79	10.03	11.76	13.60	17.07	17.00	19.80	22.31	17.16	14.40	11.28	6.59
DL less ambient at 1m above	6.36	12.10	12.75	14.52	19.57	15.14	19.68	18.33	19.17	15.97	13.10	11.24
Ambient correction	1.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Discharge Level at mid height	75	77	77	74	76	77	78	76	72	68	64	54
Discharge Level at 1m above unit	77	79	78	75	79	75	78	72	74	70	66	59

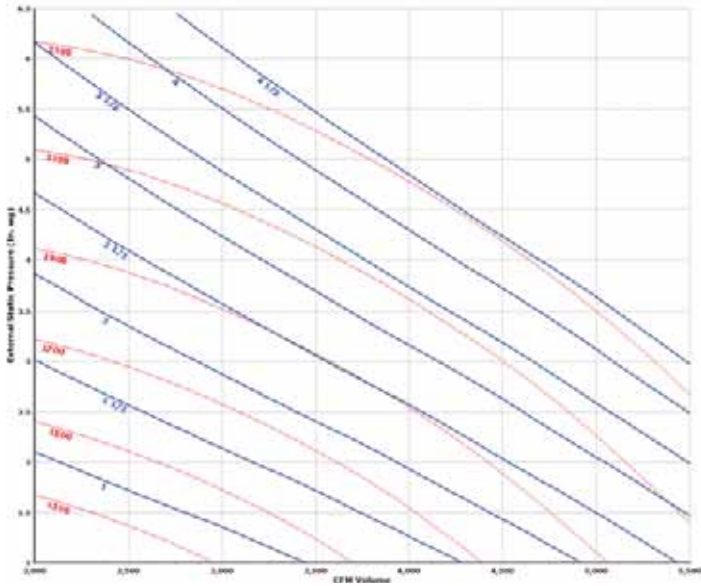
SOUND POWER LEVELS FOR P125 SERIES CABINET 2 WITH POWER EXHAUST AND SOUND BLANKETS

Sound power was tested in accordance to ANSI/AHRI standard 370 "Sound Performance rating of large air-cooled outdoor refrigerating and air conditioning equipment"

1/3 Octave band Freq	25Hz	50Hz	63Hz	100Hz	125Hz	200Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
Discharge Level at mid height	75.65	76.88	76.68	73.82	76.48	74.86	76.70	72.84	71.89	68.02	63.76	55.65
Discharge Level at 1m above unit	78.43	79.91	79.17	76.28	79.73	75.93	78.64	72.85	74.89	70.80	66.67	59.97
Ambient Level	72.07	67.81	66.42	61.76	60.16	60.79	58.96	54.52	55.72	54.83	53.57	48.73
DL less ambient at midheight	3.59	9.07	10.27	12.07	16.32	14.07	17.75	18.33	16.17	13.19	10.19	6.92
DL less ambient at 1m above	6.36	12.10	12.76	14.53	19.57	15.14	19.69	18.33	19.17	15.97	13.10	11.24
Ambient correction	1.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Discharge Level at mid height	74	76	76	73	75	74	76	72	71	67	63	55
Discharge Level at 1m above unit	77	79	78	75	79	75	78	72	74	70	66	59

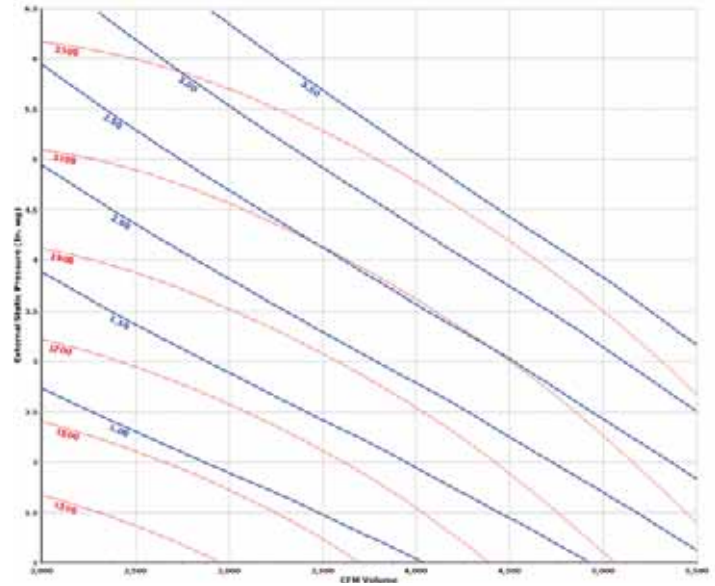
Notes:
 Sound data was collected with unit operating at maximum airflow with both compressors at 100% capacity, four condensers fans and power exhaust energized
 All published data was recorded with a Bruel & Kjaer model 2250 analyzer using sound pressure measurements made in a free field over a reflecting plane
 Data was recorded two elevations, mid-height and 1 meter above the test unit in accordance with ANSI/AHRI 370-2011
 Data was recorded at a distance of 1 meter at the mid-point of all for sides of unit and averaged in accordance with ANSI/AHRI 370-2011
 All published data was recorded using the widely used "A" weighting network.
 For sound in air, the tabled power levels will drop by 6 dB at a 2 meter distance, 12 dB at a 4 meter distance and 18 dB at a 8 meter distance from the unit.

ECER45C2-1_BHP

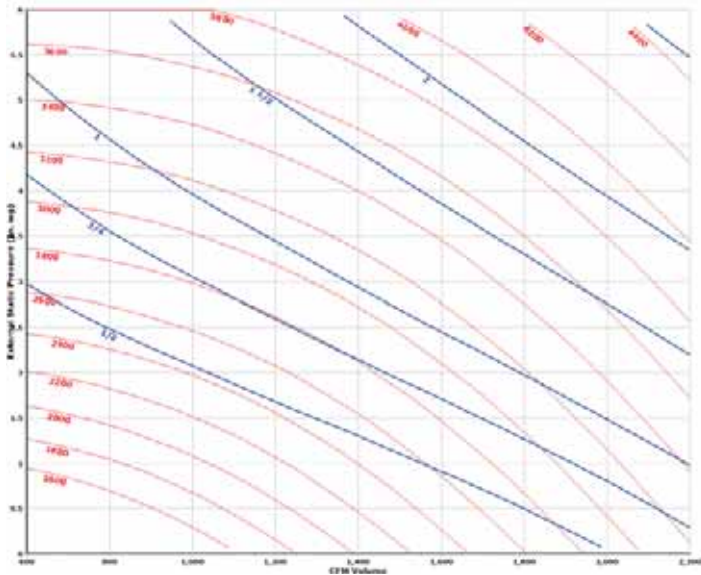


ER28C-1

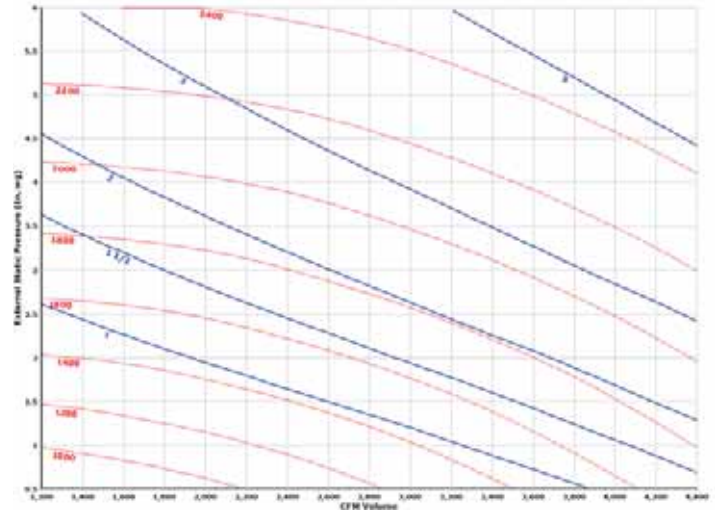
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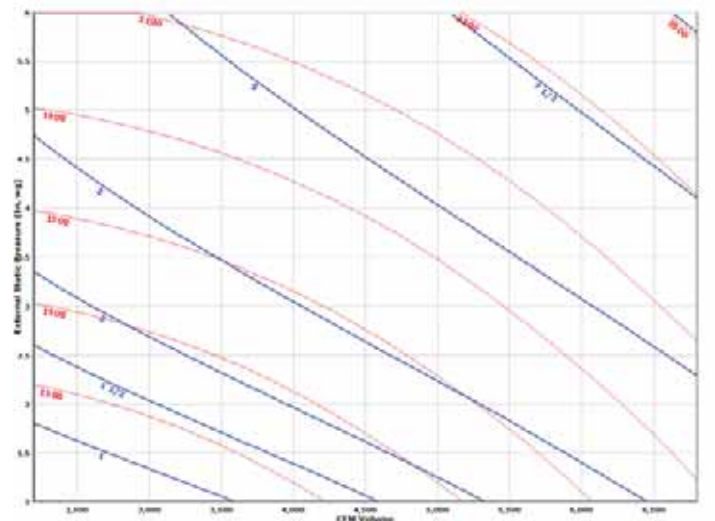
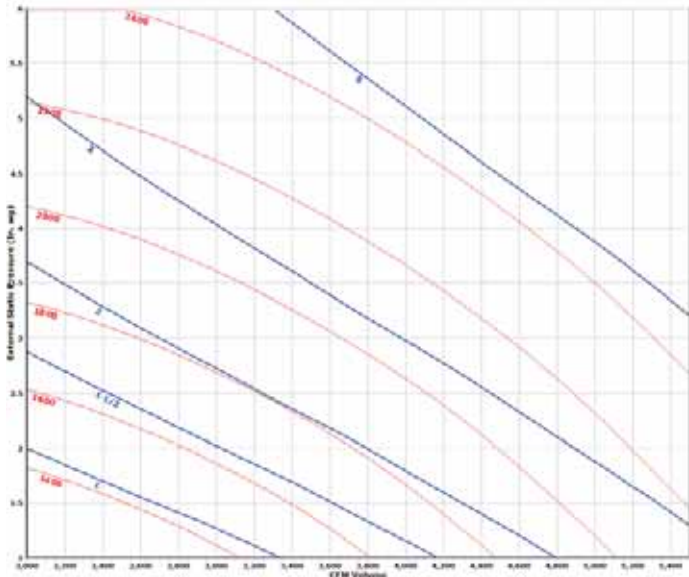
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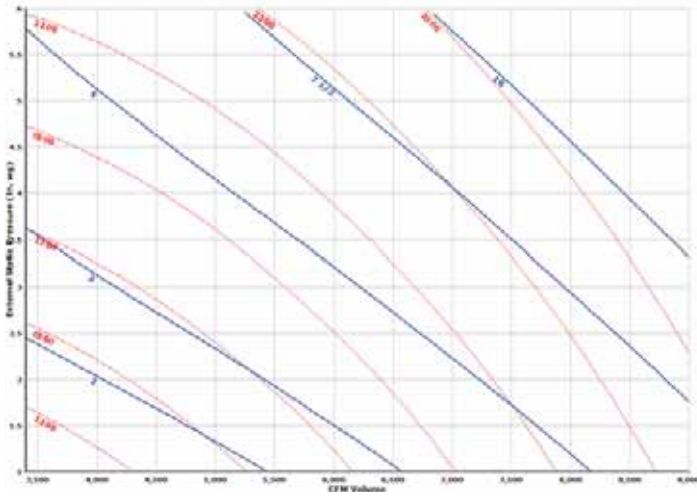
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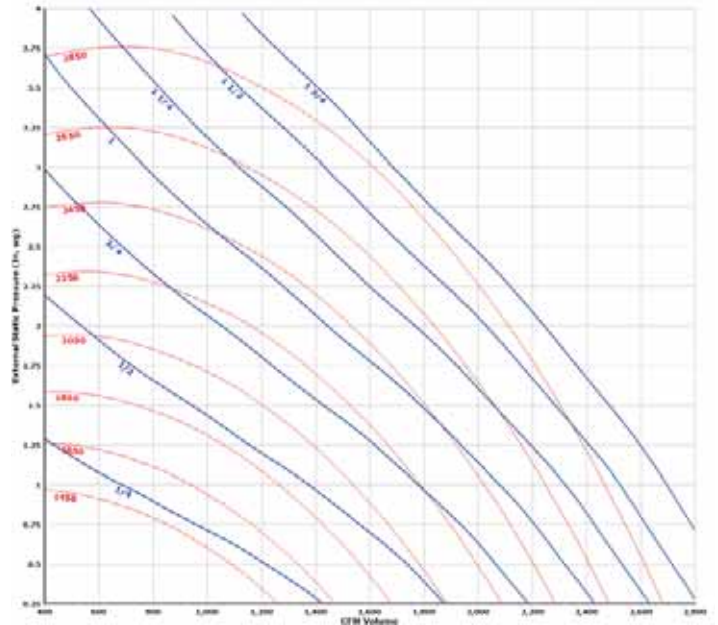
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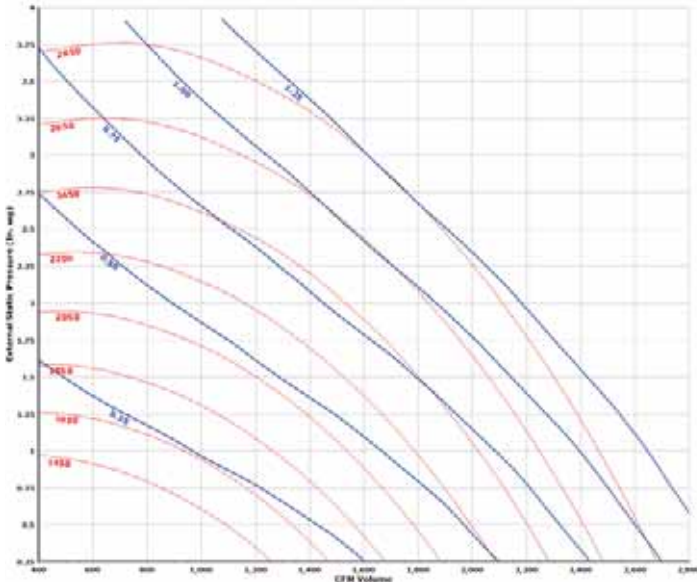
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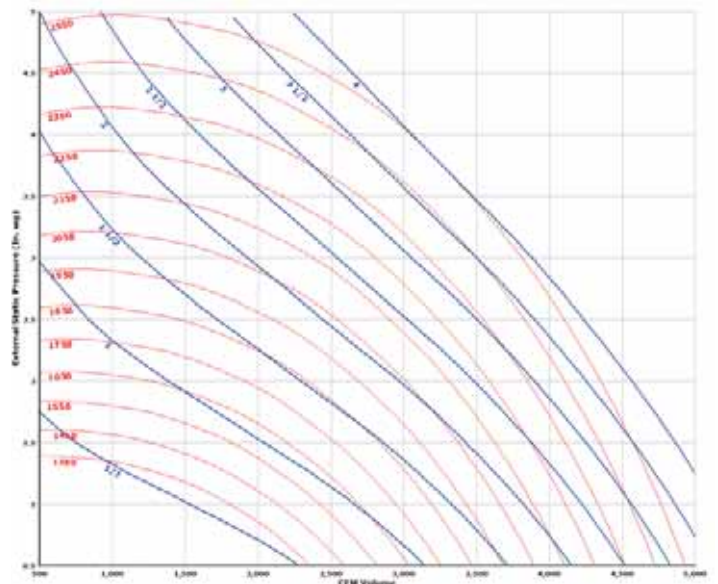
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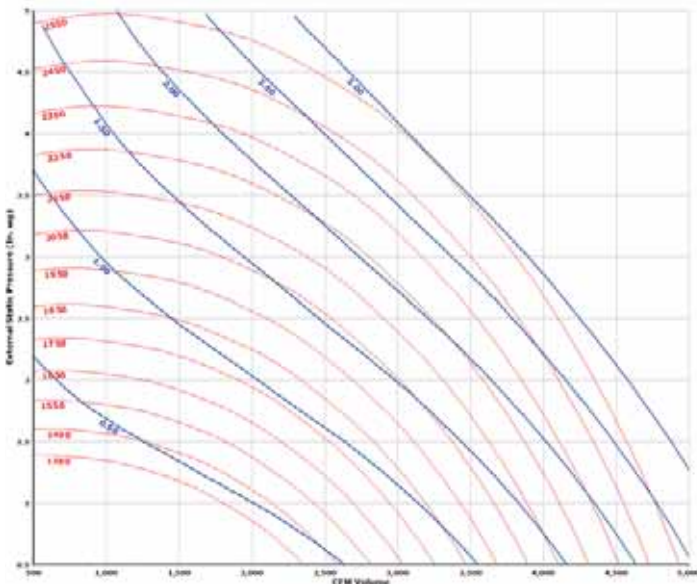
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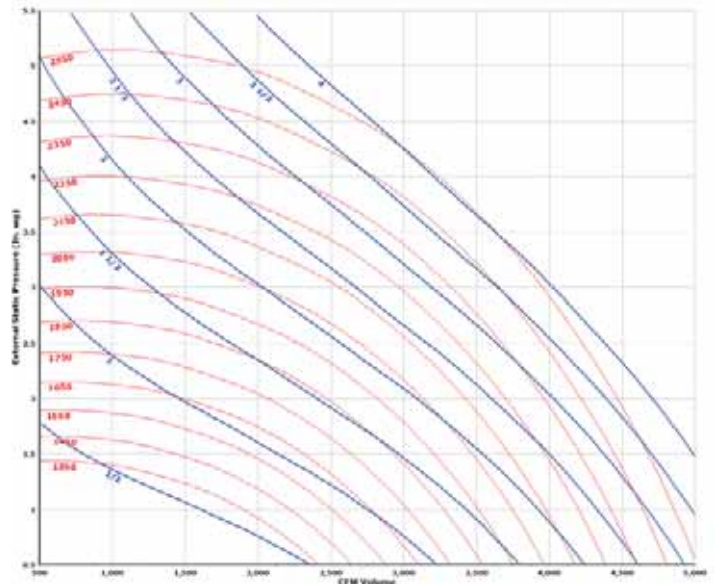
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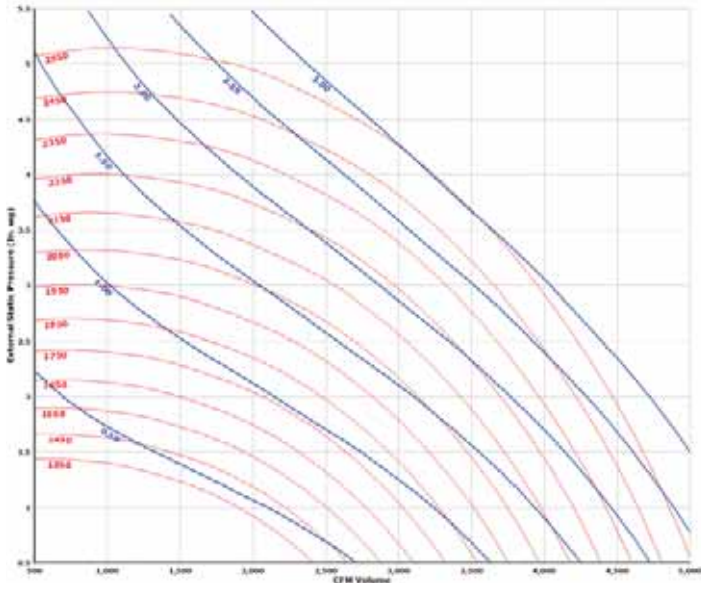
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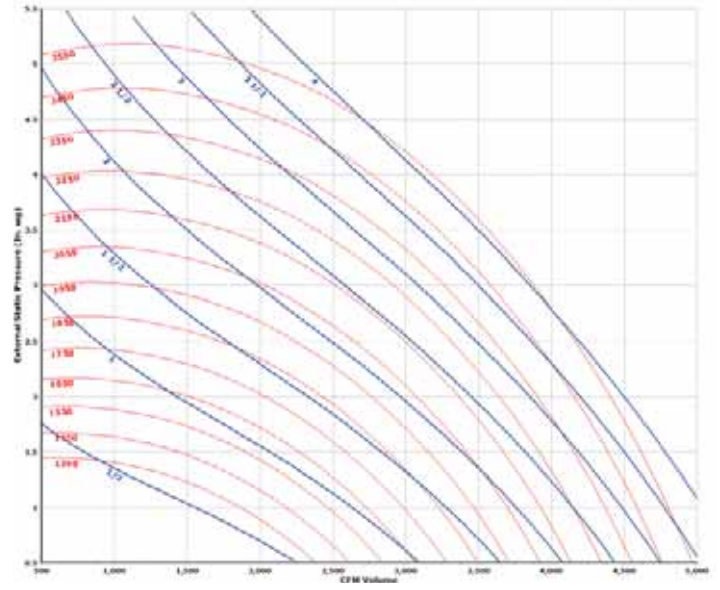
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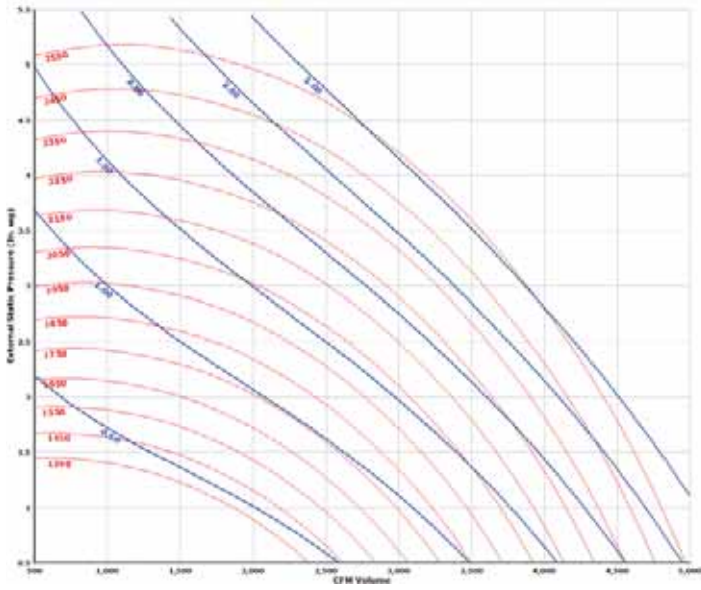
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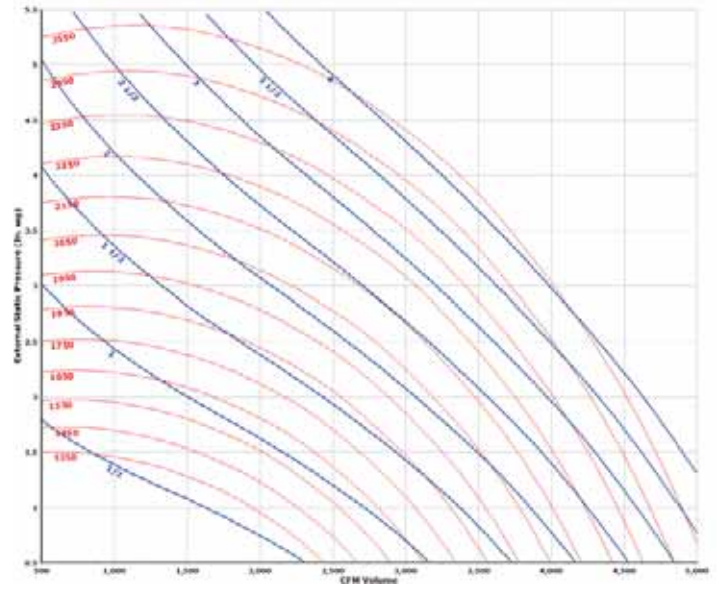
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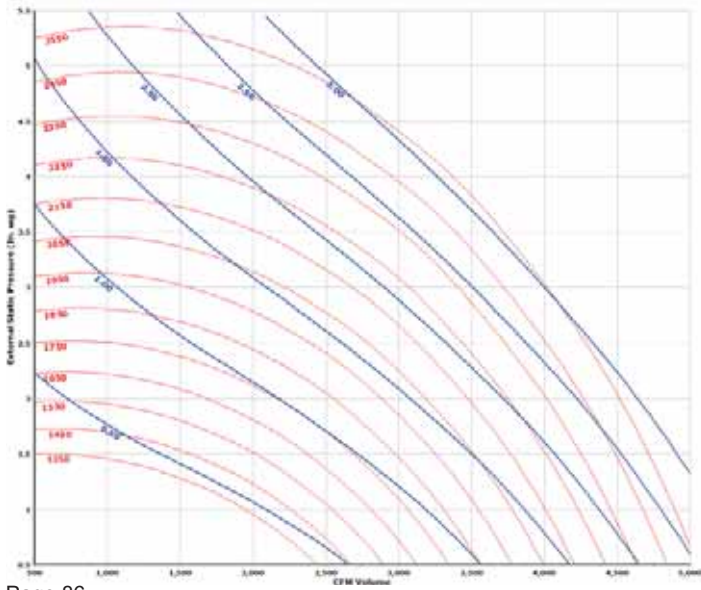
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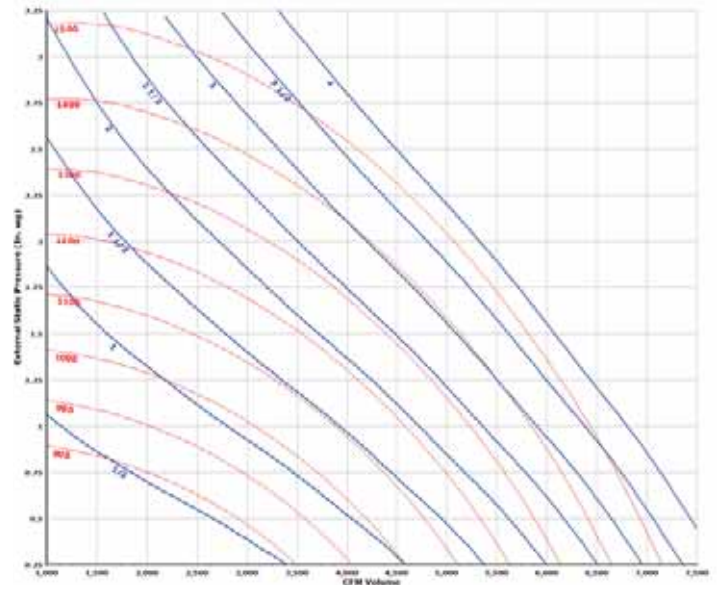
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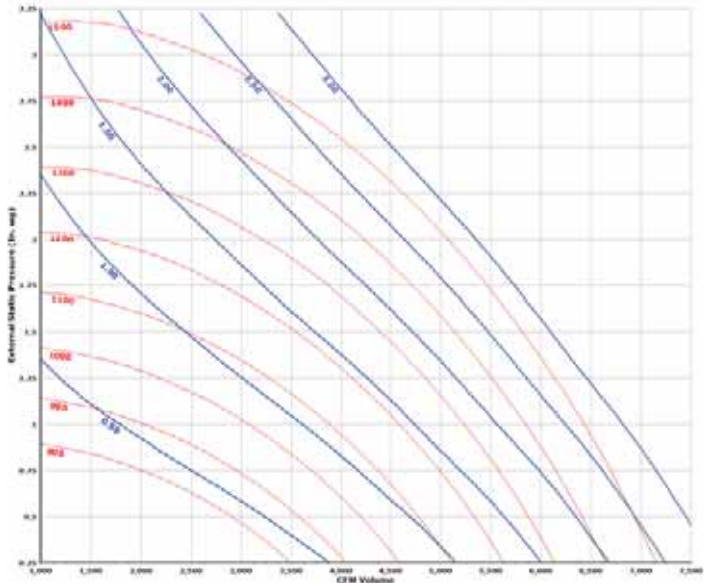
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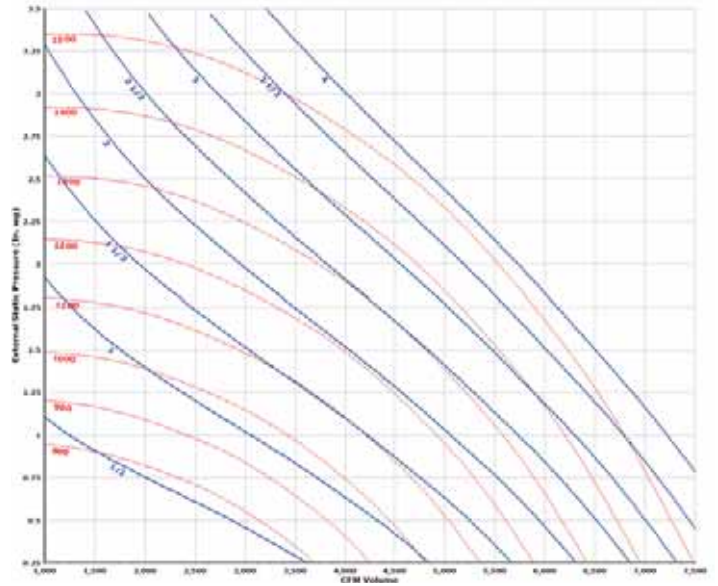
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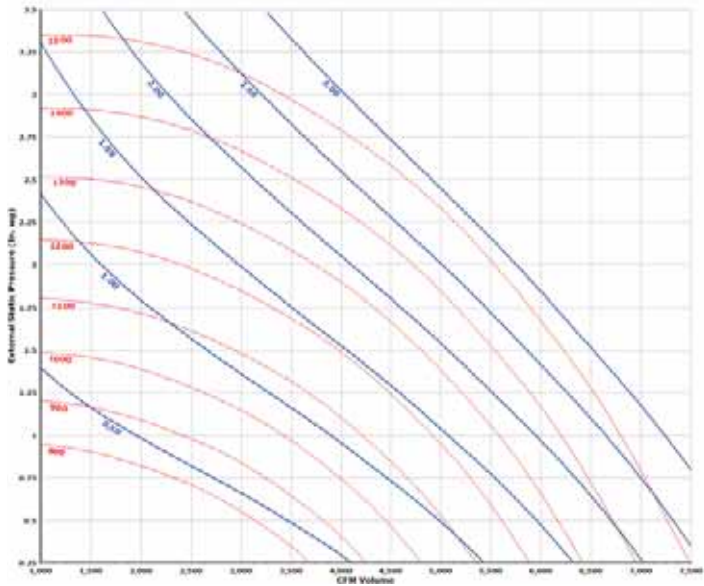
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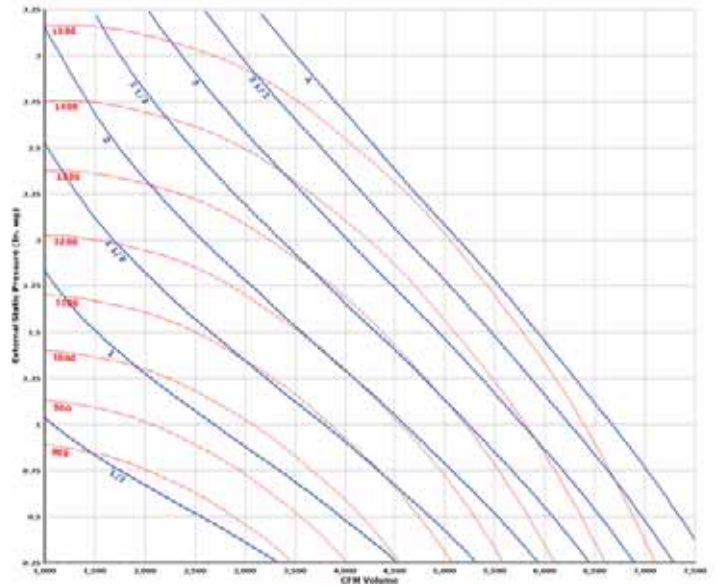
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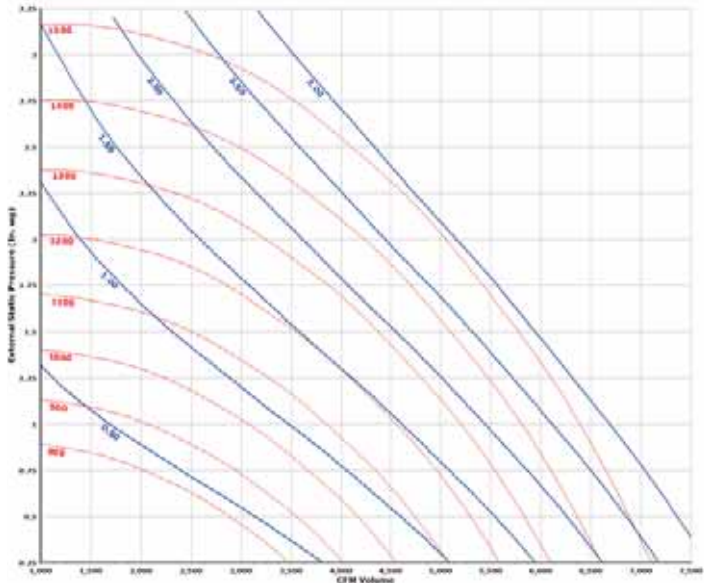
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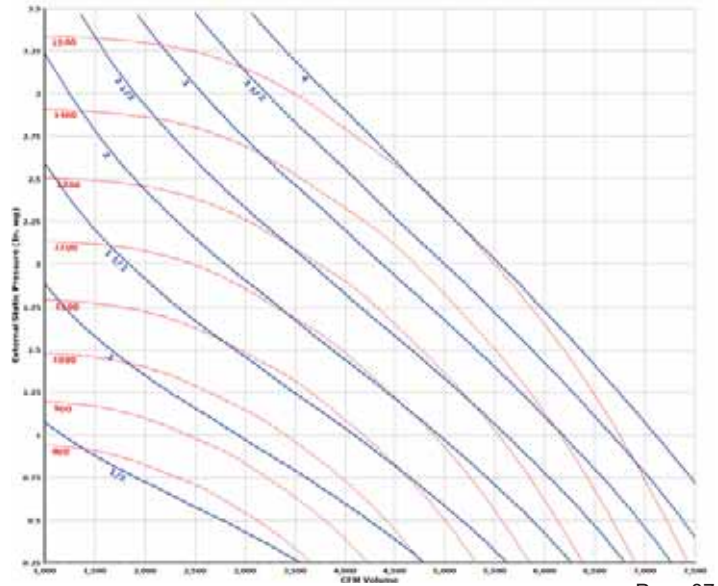
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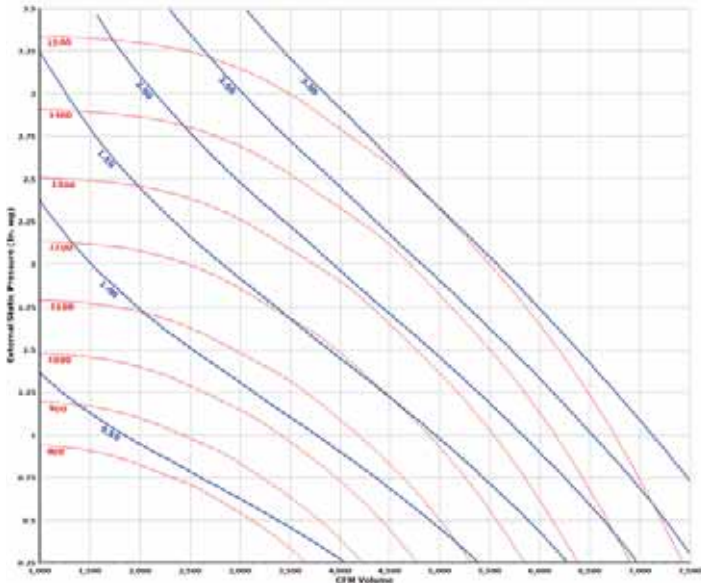
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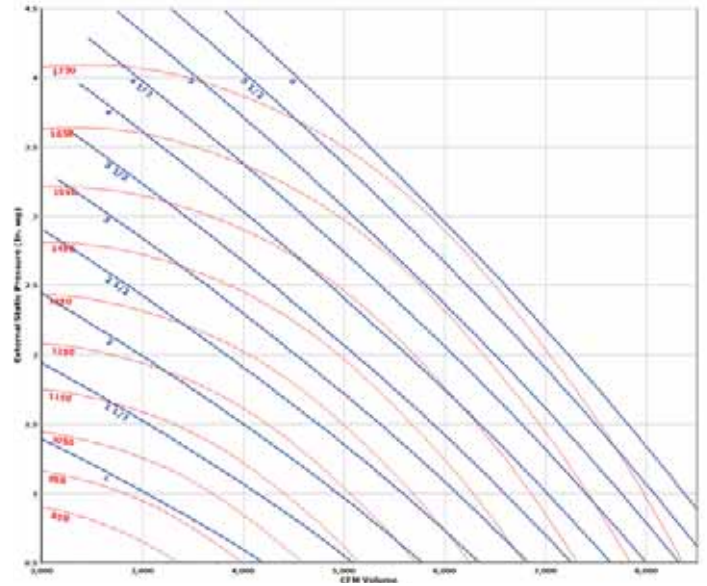
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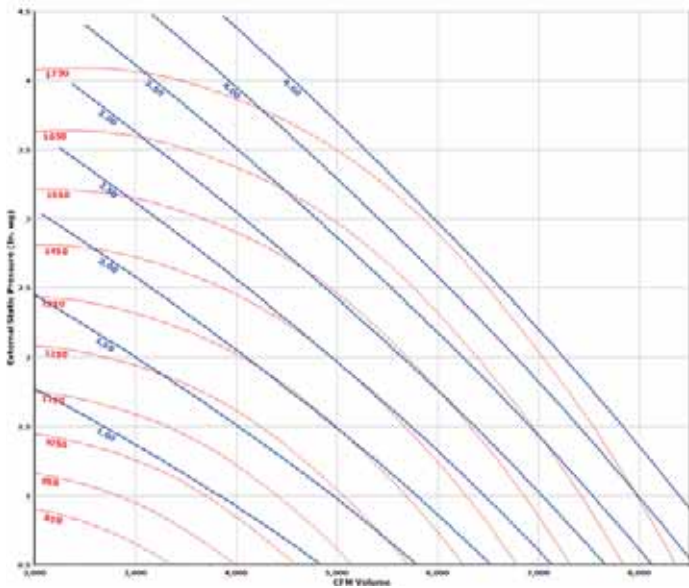
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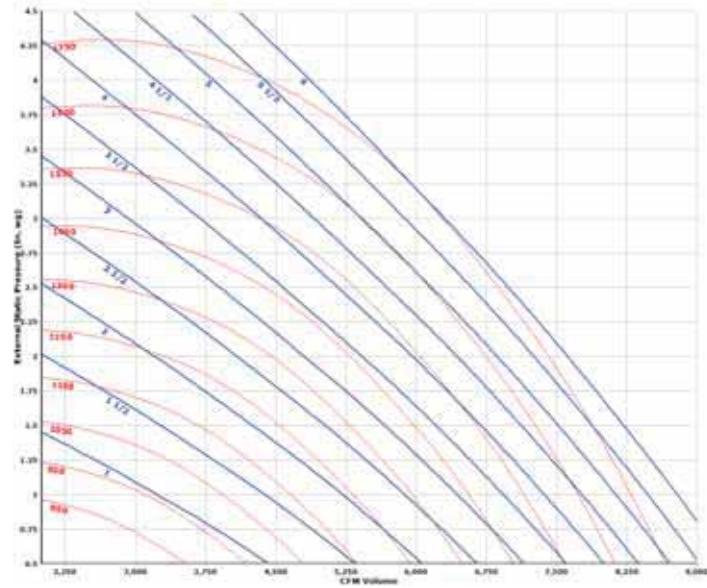
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