HVAC

PROJECT SUBMITTALS

For

Ainsworth Elementary School HVAC Equipment

MKE & Associates, Inc.

X	No Exception Taken		Rejected
	Make Revisions Noted		Submit Specified Item
	Revise and Resubmit		Returned Without Action

Review is only conformance with the general design concept of the project. Any action shown is subject to the requirements of the plans and specifications. Contractor is responsible for verification of all dimensions and quantities; fabrications and construction techniques; coordinating his work with other trades; and the satisfactory performance of his work in strict accordance with the contract documents. The review is undertaken solely to satisfy engineers obligation to owner and does not relieve contractor from him obligation fully to perform all contract requirements, nor shall such review give rise to any right of action of suit in favor of contractor or third person against engineer or owner.

BY: Allen Crisanaz, P.E. DATE: 09-14-2018

By

Absolute Comfort
HEATING & COOLING, INC.

HVAC

PROJECT SUBMITTALS

FOR

AINSWORTH ELEMENTARY SCHOOL HVAC EQUIPMENT

INDEX

By

Absolute Comfort
HEATING & COOLING, INC.

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HEATING & COOLING, INC.

Ainsworth Elementary School HVAC Equipment

Project Submittals

Section One

Trane Split System Air Conditioning Units

15886 Park Place Ct. Oregon City, Oregon 97045 Office (503) 513-4795 Fax (503) 513-0797
OREGON CCB# 132407 WASHINGTON # AABSOCH005RN

Tag Data - **Split System Air Conditioning Units (Small) (Qty: 1)**

Item	Tag(s)	Qty	Description	Model Number
A1	IHP-1/OHP-1	1	1.5 - 5 Ton Unitary Split Systems	----------4TWR5048H1-TAM4A0C48S41E

Product Data - Split System Air Conditioning Units (Small)

Item: A1 Qty: 1 Tag(s): IHP-1/OHP-1

4TWR5 Heat Pump Outdoor Unit
- 4 Ton - Nominal Cooling Capacity
- 200 - 230 Volt 1 Phase 60 Hertz
- Multi-poise 4-way
- Better, Retail replacement Mid EFF

4 Ton air handler
- 3.5 ton to 4.0 ton airflow
- 208-230/1/60
- Black Epoxy Coil
- 7.21/9.60 kW Electric Htr w/Ckt Brk for 208/240V 1 Phase 60 Hz (Fld)

Mechanical Specifications - Split System Air Conditioning Units (Small)
Item: A1 Qty: 1 Tag(s): IHP-1/OHP-1

TAM4
Air-Tite IITM Cabinet
Double Wall Foamed and Formed Cabinet System
Water Proof Cabinet Design
R-4.2 Insulating Value
Composite Foamed Cabinet Doors
Sweat Eliminating Cabinet Design
Loose Fiber Eliminating Cabinet Design
Smooth Cleanable Cabinet Design
2% or Less air leakage
Precision Durable Door Seals
Quarter Turn Phillips Head Door Fasteners
5/16" Allen Wrench "Quick Latch" Modular Cabinet
Multi-Position UP/Down Flow Horizontal Left /Right
Side Return Option
Braze in Refrigerant Connection
Primary/Secondary Condensate Connections
Conduit Connection with Easy Removal Plugs
Alert Port to view Codes without door removal
Vortica Blower with Integrated Slide Deck for Easy Removal
Polarized Plug connections on Blower
Control Protection Pocket
Aluminum Coil with Integrated Slide Deck for Easy Removal
Polarized Plug connections on Coil EEV
Slide in Electric Heaters
Polarized Plug connections for Electric Heater
Labeled Panels and connections
1 1/4" to 1" and 1 3/4" to 1/2" Conduit connection on Left, Right and Top
Molded in 1"Standard Filter rail
Electronic Expansion Valve (EEV) With Low
Dual Refrigerant Compatible as Shipped
Low Voltage Terminal Connection Point
8 Alert Codes
Enhanced Coil Fin Patented
Blow Through Design
PSC 3 Speed Motor
Maximum Width of 24 1/2"
Compact 20 13/16"depth with doors removed
Integrated Horizontal Drain pans
Single Color
Fused 24V Power
Safety Door Switch
1 Year Warranty
10 Year Warranty Registered
Warranty Mirrors Outdoor
Optional extended warranty available

General - 4TWR5
The 4TWR5 is fully charged from the factory for up to 15 feet of piping. This unit is designed to operate at outdoor ambient temperatures as high as 115 F. Cooling capacities are matched with a wide selection of air handlers and furnace coils that are AHRI certified. The unit is certified to UL 1995. Exterior is designed for outdoor application.

Casing - 4TWR5
Unit casing is constructed of heavy gauge, G90 galvanized steel and painted with a weather-resistant powder painton all louvers, panels, prepaint on all other panels. Corrosion and weather-proof CMBP-G30 DuraTuff base.

Refrigerant Controls - 4TWR5
Refrigeration system controls include condenser fan and compressor contac-tor. High and low pressure controls are

inherent to the compressor. A factory installed liquid line drier is standard.

Compressor - 4TWR5
The Climatuff compressor features internal over temperature and pressure protection and total dipped hermetic motor. Other features include: centrifugal oil pump and low vibration and noise.

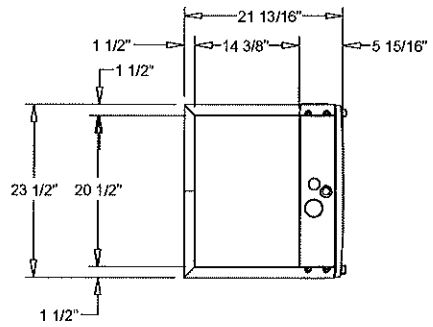
Condenser Coil - 4TWR5
The outdoor coil provides low airflow resistance and efficient heat transfer. The coil is protected on all four sides by louvered panels.

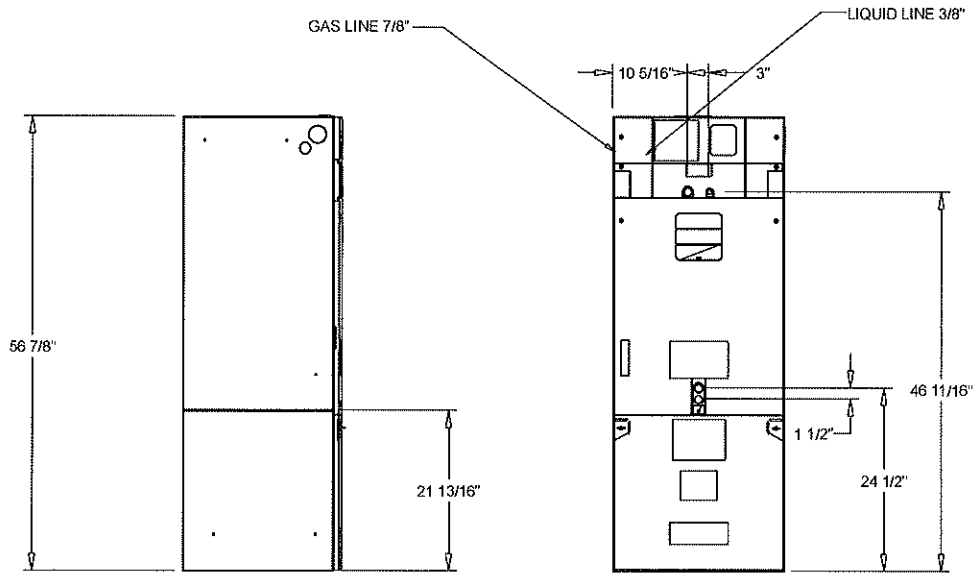
Low Ambient Cooling - 4TWR5
As manufactured, this unit has a cool-ing capability to 55 F. The addition of an evaporator defrost control with TXV permits low ambient cooling to 20 F.

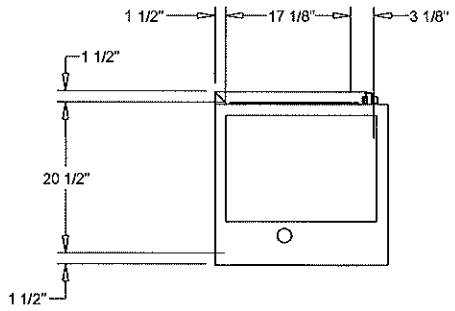
Heater Section - 1 Phase Vertical Air Handler
A compartment is provided in the blower section for field installation of supplementary heater. Polarized plugs are provided for making electrical connections to the air handler control box from the supplementary heater.

Unit Dimensions - Split System Air Conditioning Units (Small)
Item: A1 Qty: 1 Tag(s): IHP-1/OHP-1

NOTES:
1. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION







AIRHANDLER - TAM4A0A48
DRAWING

Unit Dimensions - Split System Air Conditioning Units (Small)
Item: A1 Qty: 1 Tag(s): IHP-1/OHP-1

ELECTRICAL / GENERAL DATA

GENERAL (1)(2)(4)	
Model:	TAM4A0C48S41SA
Unit Primary Voltage:	208
Unit Secondary Voltage:	230
Unit Hertz:	60
Unit Phase:	1

STANDARD (5)	
230 Volt / 208 Volt	
Minimum Circuit Ampacity:	14.0/14.0
Maximum Overload Protection:	15.0/15.0

ELECTRIC HEAT	
240 Volt / 208 Volt	
Capacity Circuit #1:	9.60/7.20
Capacity Circuit #2:	N/A
Capacity Circuit #3:	N/A
# of Circuit:	1
Phase:	1
Heater Amps Per Circuit Circuit #1:	40.0/34.60
Heater Amps Per Circuit Circuit #2:	N/A
Heater Amps Per Circuit Circuit #3:	N/A
Minimum Circuit Ampacity Circuit #1:	54.0/47.0
Minimum Circuit Ampacity Circuit #2:	N/A
Minimum Circuit Ampacity Circuit #3:	N/A
Maximum Overload Protection Circuit #1:	60.0/50.0
Maximum Overload Protection Circuit #2:	N/A
Maximum Overload Protection Circuit #3:	N/A

INDOOR MOTOR (1)	
Number:	1
Horsepower:	0.50
Motor Speed (RPM):	1075
Phase:	1
Full Load Amps:	3.1
Locked Rotor Amps:	5.5

REFRIGERANT	
Type:	R-410A
REF. Line Connections	
Coupling or Conn. Size - Gas:	7/8"
Coupling or Conn. Size - Liq.:	3/8"
	R-410A
	7/8"
	3/8"

FILTERS (3)	
Type:	Throwaway
Furnished:	No
Number:	1
Recommended:	22"x20"x1"

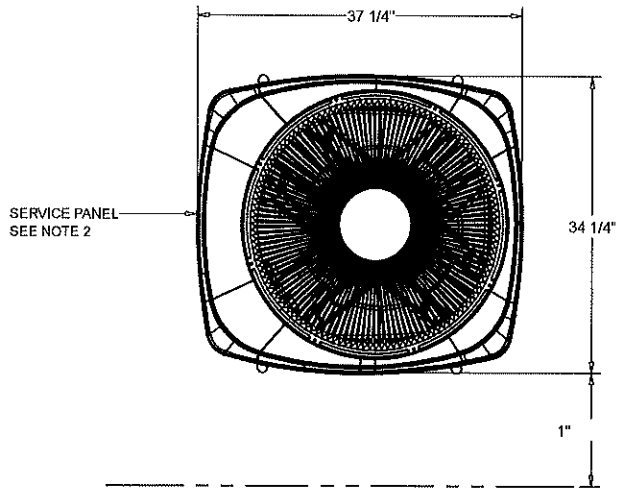
Weights	
Shipping:	
Net:	

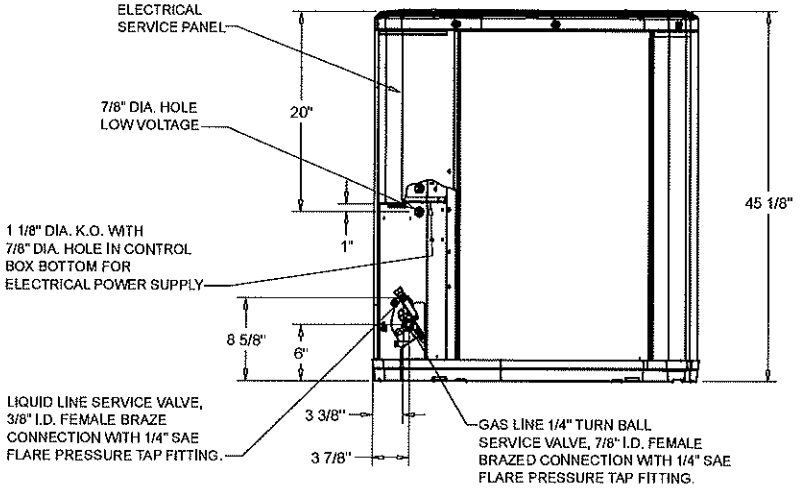
NOTES:

1. These air handlers are a.r.i. certified with various split system air conditioners and heat pumps (ari standard 210/240). refer tothesplit system outdoor unit product data guides for performance data.
2. 3/4" male plastic pipe (ref.: astm 1785-76)
3. Minimum filter size for horizontal applications will be based on airflow selection and will be calculated as follows:
   low velocity filter: face area (sq. ft.) = cfm / 300
   high velocity filter: face area (sq. ft.) = cfm / 500
4. For customer ease of filter maintenance, it is recommended that a properly sized, remote filter and grille be installed for horizontal applications. airflow should not exceed the face value of the filter being used
5. Standard mca and mop without electric heat.

Unit Dimensions - Split System Air Conditioning Units (Small)
Item: A1 Qty: 1 Tag(s): IHP-1/OHP-1

NOTES
1. TOP DISCHARGE AREA SHOULD BE UNRESTRICTED FOR AT LEAST 60" ABOVE UNIT. UNIT SHOULD BE PLACED SO ROOF RUN-OFF WATER DOES NOT POUR DIRECTLY ON UNIT, AND SHOULD BE AT LEAST 12" FROM WALL AND ALL SURROUNDING SHRUBBERY ON TWO SIDES. OTHER TWO SIDES UNRESTRICTED.
2. ELECTRICAL AND REFRIGERANT COMPONENT CLEARANCES PER PREVAILING CODES.
3. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION





4TWR5048

OUTLINE DRAWING

Unit Dimensions - Split System Air Conditioning Units (Small)
Item: A1 Qty: 1 Tag(s): IHP-1/OHP-1

ELECTRICAL / GENERAL DATA

GENERAL	
Model:	4TWR5048
Unit Primary Voltage:	208
Unit Secondary Voltage	230
Unit Hertz:	60
Unit Phase:	1

POWER CONN.	
Minimum Circuit Ampacity:	24.0
Maximum Circuit Breaker:	40.0
Minimum Protection Rating:	40.0

COMPRESSOR	
Number:	1
Phase:	1
Rated Load Amps:	18.5
Locked Rotor Amps:	124.0

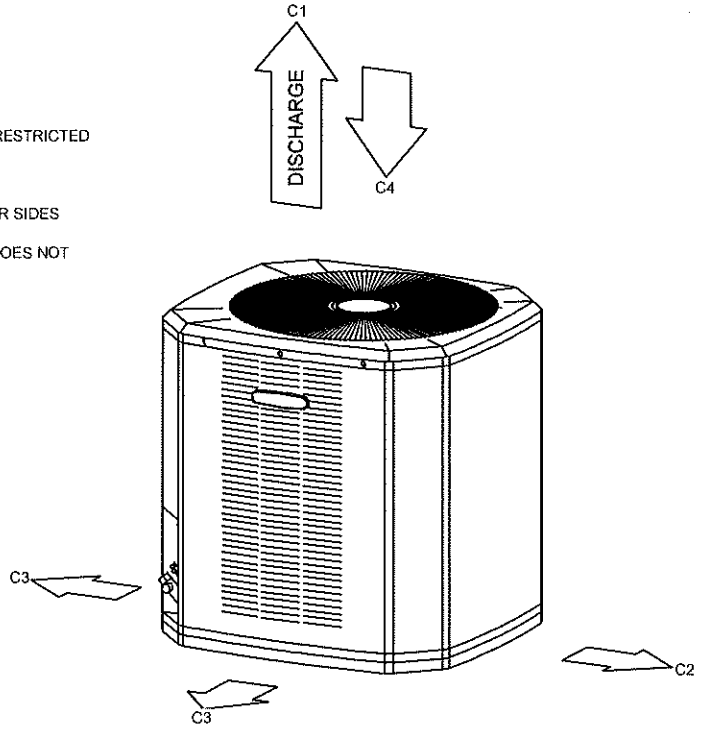
OUTDOOR MOTOR	
Number:	1
Horsepower:	0.20
Motor Speed (RPM):	850
Phase:	1
Full Load Amps:	0.93
Locked Rotor Amps:	-

REFRIGERANT	
Type:	R-410
Charge:	110.6 lb
Line Size O.D. Gas:	7/8"
Line Size O.D. LIQ:	3/8"

NOTES:
1. Certified in accordance with the Unitary Air-Conditioner equipment certification program which is based on AHRI Standard 210/240.
2. Calculated in accordance with N.E.C. Use only HACR circuit breakers or fuses.
3. Standard line lengths - 60'. Standard lift - 60' Suction and Liquid line. For Greater lengths and lifts refer to refrigerant piping software Pub# 32-3312-0
4. * = 15, 20, 25, 30, 40 and 50 foot lineset available.

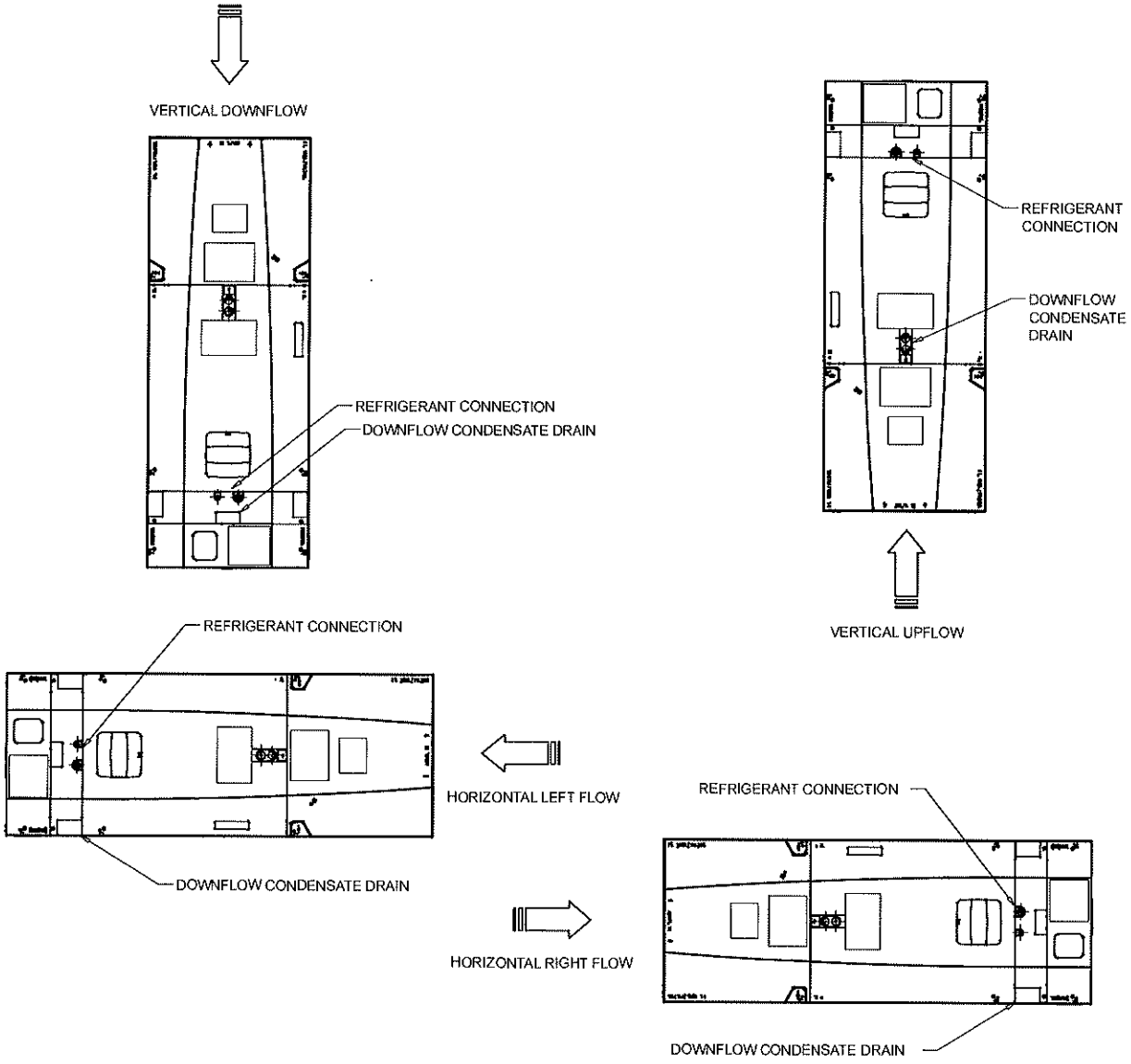
WEIGHT	
SHIPPING:	300.0 lb
NET:	250.0 lb

NOTES:
C1. TOP DISCHARGE SHOULD BE UNRESTRICTED FOR AT LEAST 60" ABOVE UNIT
C2. PLACE UNIT FROM WALL
C3. PLACE SHRUBBERY AT LEAST 12" FROM UNIT ON TWO SIDES, OTHER SIDES UNRESTRICTED
C4. PLACE UNIT SO ROOF RUN-OFF DOES NOT FALL DIRECTLY ON UNIT



WEIGHT AND CLEARANCE

Weight, Clearance & Rigging Diagram - Split System Air Conditioning Units (Small)
Item: A1 Qty: 1 Tag(s): IHP-1/OHP-1



NOTES
1. NO INTERNAL MODIFICATIONS REQUIRED FOR ANY POSITION.
2. BADGE ROTATION WILL BRAND IN CORRECT POSITION.

MINIMUM UNIT CLEARANCE TABLE		
	TO COMBUSTIBLE MATERIALS (REQUIRED)	SERVICE CLEARANCE (RECOMMENDED)
SIDE	0	2"
FRONT	0	21"
BACK	0	0
INLET DUCT	0	0
OUTLET DUCT	0	0

CLEARANCE NOTES:
* 1" FOR THE FIRST 3 FT. OF OUTLET DUCT
WHEN ELECTRIC HEATERS ARE INSTALED EXCEPT
MODELS BAYHTR1405, 1408, AND 1410 ARE APPROVED FOR
0" PLEMUM AND DUCT CLEARANCE IN THE UPFLOW
CONFIGURATION ONLY ON TWE-P MODELS.

Field Installed Options - Part/Order Number Summary
This is a report to help you locate field installed options that arrive at the jobsite. This report provides part or order numbers for each field installed option, and references it to a specific product tag. It is NOT intended as a bill of material for the job.

Product Family - Split System Air Conditioning Units (Small)

Item	Tag(s)	Qty	Description	Model Number
A1	IHP-1/OHP-1	1	1.5 - 5 Ton Unitary Split Systems	----------4TWR5048H1-TAM4A0C48S41E----------0000-----0000000000000000--00-0--0

Field Installed Option Description	Part/Ordering Number
7.21/9.60 kW Electric Htr w/Ckt Brk for 208/240V 1 Phase 60 Hz	BAYEAAC10BK1BA

Absolute Comfort
HEATING & COOLING, INC.

Ainsworth Elementary School HVAC Equipment

Project Submittals

Section Two

Reznor Rooftop Units

15886 Park Place Ct. Oregon City, Oregon 97045 Office (503) 513-4795 Fax (503) 513-0797
OREGON CCB# 132407 WASHINGTON # AABSOCH005RN

Tag Data - RTU (Qty: 1)

Item	Tag(s)	Qty
B1	RTU-1	1

Product Data - RTU

Item: B1 Qty: 1 Tag(s): RTU-1

Gas Fired Packaged Heating & Ventilating Unit Schedule

Line No.	Qty	Unit Tags	Reznor Model-Size	Type	MBH Output	EAT °F	LAT °F	Fuel Type	CFM	Mtr HP	Fan RPM	Ext. SP "WC	Total SP "WC	Voltage & Phase	Unit Notes
1	1		RDH-250	Outdoor					3500	2	906	0.5	0.827	208/3/60	

Unit Notes:
1)
2)
3)
4)
5)

Date: 9/11/2018

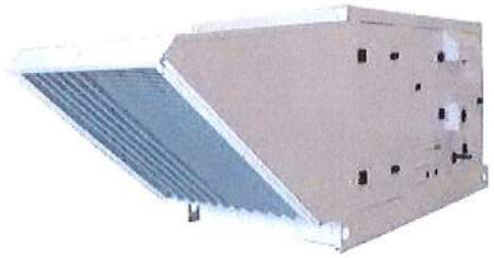
Job Name:	**Ainsworth ES**
Location:	,
Unit Tag:	

RDH-250	***outdoor gas fired HVAC unit, power vented, electronic ignition, curb cap, double wall cab, 24v controls***
AA1	*Natural Gas*
AB1	*0 to 2000 ft Elevation*
AC1	*Aluminized Steel Heat Exchanger*
AG3	*2 Stage Gas Valve(s) with Ductstat(s)*
AJ1	*Left hand controls (facing discharge)*
AK5	*208/3/60 voltage*
AL8	*2 HP ODP Motor*
AM11	*950 rpm, 3500 CFM,0.50" ESP,0.83" TSP*
AN2	*Motor Contactor, 24v coil*
AQ5	*Downturn Plenum*
AS2	*100% O/A rain baffled intake hood*
AW7	*Filter Rack w/2" Throwaway Filters*
AY3	*Double Wall Insulated Cabinet*
BA6	*Flush mtd nonfused lockable disconnect*
CJ8C	*16" Curb Base Unit + 2 Sections*
CS2	*Furnace Cond Drain (req'd w/cool coil)*
DR2	*Adjustable V-Belt Drive Blower*
GD4	*100% O/A in Back, 100% R/A in Bottom*
GE16	*Modul O/A & R/A dmprs w/DDC Interface*
MXB1	*Mix Box, O/A or R/A Plenum, add GD Opt*
PC4	*Rubber-in-shear Vibration Isolation*
SA1	*Photoelectric Smoke Detector, Ship Sep*
SH2	*Prepare Unit for LTL Shipment Only*

REZNOR®

Outdoor Packaged, Power Vented Indirect Fired Gas Makeup Air Heating / Cooling

Model RDH



ANSI Z83.8 - CSA 2.6

Description:

Model RDH is the new rooftop, power-vented addition to the Reznor® line of Pre-Engineered Ventilation Air-Handlers (PREEVA™). Model RDH is available in 11 sizes from 75MBH to 400MBH. Each size is designed for a minimum 81% thermal efficiency and is available for use with either natural gas or propane.

Model RDH rooftop, power-vented heaters are approved for commercial/industrial installations in the United States and Canada by the ETL Testing Agency.

Standard features include the Reznor® TCORE2® heat exchanger and single burner combustion system, a multi-try direct spark ignition with 100% lockout, pressure switch to verify venter flow, resiliently isolated venter motor, a high temperature limit control, and a centrifugal belt-driven blower capable of up to 3" w.c. of total external static pressure. Both the forward curved blower and the blower motor are factory installed on vibration isolation mounts. All published airflow data and sound data are supported by AMCA tested and rated airflow performance curves. The energy usage of the system has been designed to meet the current ASHRAE Standard 90.1 (maximum 1.2 bhp per 1000 cfm).

Operation is controlled through an integrated circuit board. The circuit board monitors heater operation and has LED diagnostic indicator lights to identify abnormalities in heating control functions.

Design features Modular style construction with available factory-assembled, modular sections — for draw-through cooling coil cabinet module with either chilled water or DX coil; a draw-through Evaporative Cooling module; an inlet air mixing box module with a variety of configurations and damper options and Intake/Discharge Plenum modules. A complete heating and cooling advanced digital control package is available in addition to common industry standard analog heating only and makeup air controls.

Features:

- ETL certification
- Minimum 81% thermal efficiency
- Maximum 100°F temperature rise
- Double wall cabinet with insulation
- Circuit breaker protected transformer for 24-volt controls
- Integrated circuit board with diagnostic indicator lights
- Multi-try direct ignition with 100% lockout
- High temperature limit control
- Vibration/noise isolated venter motor and blower motor
- L50 ball bearings with bearing life of 150,000 hours
- Reverse airflow limit switch
- Airflow pressure switch to verify circulating blower operation on makeup air options
- Easily convertible single gas orifice system
- Socketed, high quality switching relays to facilitate service
- All service connections from a single side
- Through-the-cabinet or through-the-base electrical
- Three hinged service doors with heavy duty hardware
- Pre-coat white gloss finish, Corrossion resistant G90 substrate
- 4-pt lift eyes on unit base
- Slab or roof mounting
- Heavy gauge steel base

Included Options

AA1: Unit equipped for natural gas

Natural gas is a naturally occurring gas mixture consisting primarily of methane and includes varying volumes of alkanes, carbon dioxide, nitrogen, and hydrogen sulfide.

1 Therm = 100,000 BTU = 29.3 kWh

AB1: Burner orifices for elevations 0-2000 Feet

AC1: Heat exchanger is manufactured from die-formed halves of aluminized steel.

AG3: Gas controls designed for makeup air heating application. Each furnace is provided with a 24 volt, two stage combination gas valve which provides for low fire or high fire operation controlled by a two-stage unit mounted ductstat. Ductstat is mounted so as to monitor outlet air. The first stage (low fire) is energized when discharge air temperature drops to a setpoint. if low fire cannot satisfy the ductstat setting, high fire is energized. Setpoint is field adjustable within a range from 60 to 110 degrees (F) in increments of at least 2 1/2 degrees Fahrenheit. This ductstat is connected to a factory installed sensor via a factory installed supplied capillary tube. The valve includes a servo regulator which controls both high and low stages, maintaining constant gas input under wide variations in gas supply pressure. This valve also includes the safety pilot valve, and the manual shutoff valve. Manufacturer furnishes a field-installed DPST wall switch for On-Off Control of unit.

AJ1: Left side control location (facing airstream) (standard)

AJ1

AK5: 208 Volt, Three Phase, 60 cycle supply voltage.

AL8: 2 HP 1800 RPM open style blower motor

AM11: Fan/drive at 901-950 RPM

AN2: Motor Contactor

AQ5: Downturn plenum Supply Air cabinet with bottom discharge and no discharge dampers.

AS2: 100% outside air screened inlet hood with moisture eliminator louvers

AW7: Filter rack with 2" disposable filters

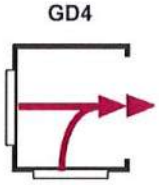
AY3: Double wall cabinet construction, solid liner with insulation

BA6: The unit is supplied with a factory installed disconnect. The line voltage connections to the unit are made through a flush-mounted, NEMA 4X switch with lock-out feature. The disconnect is rated for the unit MCA/MOP as shown on the schedule.

CJ8C: 16" roof curb for Base Unit and Two Sections

CS2: Furnace Section shall have a factory-installed Condensate Drain. Required for units with cooling coils installed.

DR2: Adjustable V-Belt Drive Blower



GD4: 100% Outside Air Opening in Back, 100% Return Air Opening in Bottom

GE16: Outside air and return air inlets with dampers and a modulating damper motor with an interface to accept 0-10 volt or 4-20mA signal from a field-supplied DDC system. Provides a mixture of return and outside air as controlled by the building's automated environmental control system.

MXB1: The mixing box module is factory installed upstream of the blower cabinet and allows for a variety of outside air and return air configurations with and without dampers. Dampers are available with a selection of actuators and controllers.

The mixing box is available in single wall construction with or without insulation or double wall construction with either standard insulation (R value 3.8) or high density insulation (R value 4.4).

PC4: Rubber vibration isolation limiting motor and blower vibration transmission.

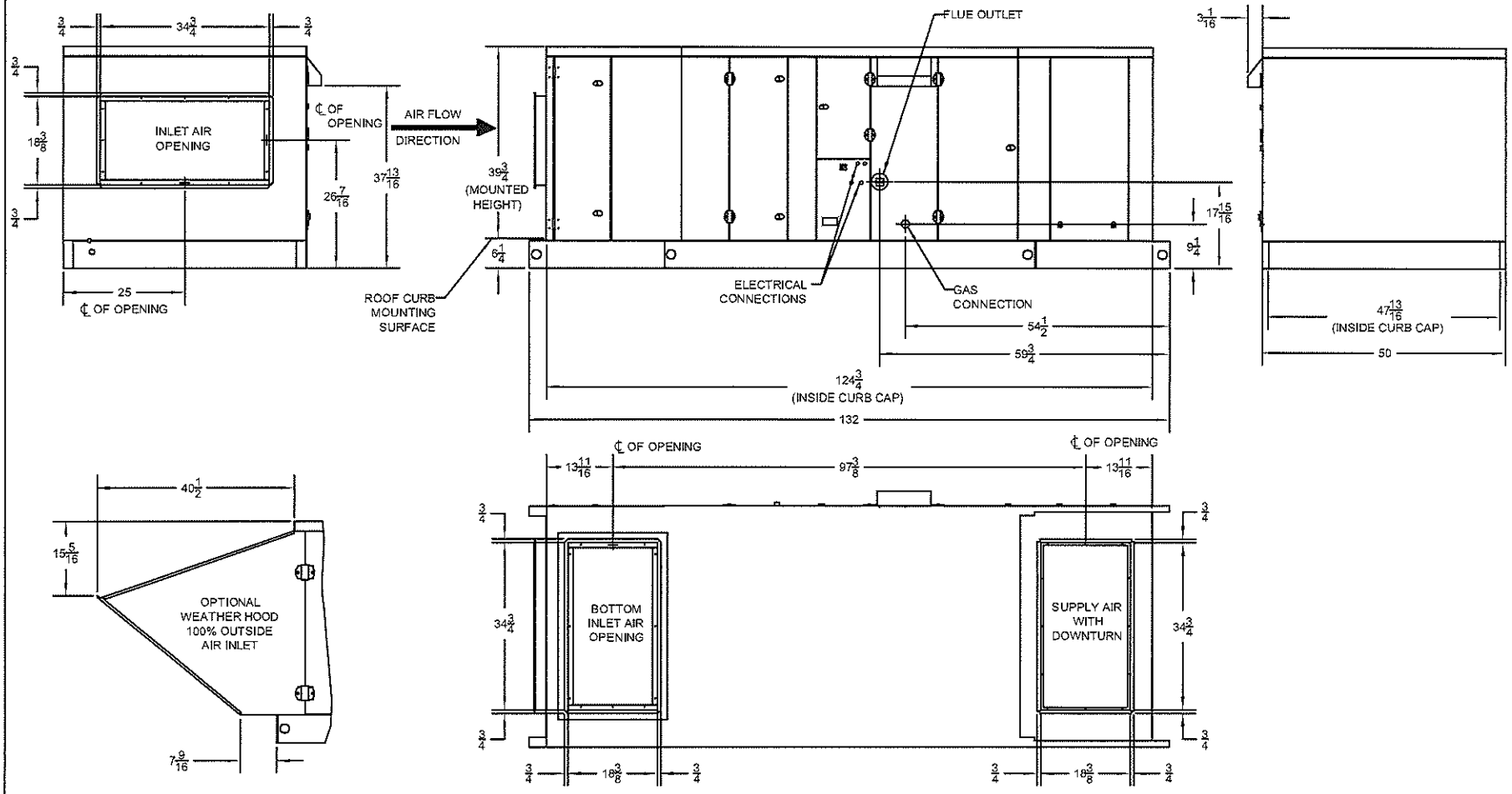
SA1: Photoelectric Smoke Detector

SH2: Ship Via LTL (crate unit)

MODEL(S)

- RDH 250
- RDH 300

RDH_D_DT_MX



NOTES:

1) UNITS ARE SHOWN WITH LEFT HAND CONTROLS (AJ1).
2) UNITS WITH OPTION AJ2 HAVE GAS AND ELECTRICAL CONNECTIONS/SERVICING ON THE OPPOSITE SIDE.
3) COIL CONNECTIONS ON THE LEFT HAND SIDE (AU5L OR AU6L).
4) UNITS WITH OPTION AU5R OR AU6R HAVE COIL CONNECTIONS ON THE OPPOSITE SIDE.

ALL DIMENSIONS ARE IN INCHES

REZNOR®

DIMENSIONS (cont'd)

Models PDH, PEH, PXH, SDH, and SHH - ±1.8" (±3mm)

Dimensions apply to all models listed above unless otherwise noted.

Model and Size				H		U		Y	
SHH	PDH or SDH	PEH	PXH	in.	(mm)	in.	(mm)	in.	(mm)
--	75, 100	10A, 20A, 40A	000A	34 1/2	(876)	35 3/4	(908)	32 5/8	(829)
--	125, 150	15B, 30B, 60B	000B	34 1/2	(876)	45 3/4	(1,162)	42 5/8	(1,083)
130, 180	175, 200, 225	N/A	000C	43 3/4	(1,111)	35 3/4	(908)	32 5/8	(829)
260	250, 300	30D, 60D, 90D, 120D	000D	43 3/4	(1,111)	52	(1,321)	48 7/8	(1,241)
350	350, 400A	40E, 80E, 120E	000E	43 3/4	(1,111)	60	(1,524)	56 7/8	(1,445)

Model and Size	V		W1		W2		Z		Z1		Z2	
SHH	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)
130, 180	79 21/32	(2,023)	107 1/2	(2,731)	132 1/2	(3,366)	82 5/16	(2,091)	113 5/8	(2,886)	110 5/8	(2,810)
260	79 21/32	(2,023)	107 1/2	(2,731)	132 1/2	(3,366)	82 5/16	(2,091)	113 5/8	(2,886)	110 5/8	(2,810)
350	79 21/32	(2,023)	107 1/2	(2,731)	132 1/2	(3,366)	82 5/16	(2,091)	113 5/8	(2,886)	110 5/8	(2,810)

Model and Size	Z3		Z4		Z5		Z6		Z7		Z8	
SHH	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)
130, 180	135 3/16	(3,434)	144 15/16	(3,681)	141 3/16	(3,586)	166 1/4	(4,223)	110 5/8	(2,810)	197 13/16	(5,024)
260	135 3/16	(3,434)	144 15/16	(3,681)	141 3/16	(3,586)	166 1/4	(4,223)	110 5/8	(2,810)	197 13/16	(5,024)
350	135 3/16	(3,434)	144 15/16	(3,681)	141 3/16	(3,586)	166 1/4	(4,223)	110 5/8	(2,810)	197 13/16	(5,024)

Model and Size			V		W1		W2		Z		Z1		Z2	
PDH or SDH	PEH	PXH	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)
75, 100	10A, 20A, 40A	000A	53 31/32	(1,371)	81 25/32	(2,077)	106 25/32	(2,712)	56 5/8	(1,438)	87 11/16	(2,227)	84 7/16	(2,145)
125, 150	15B, 30B, 60B	000B	53 31/32	(1,371)	81 25/32	(2,077)	106 25/32	(2,712)	56 5/8	(1,438)	87 11/16	(2,227)	84 7/16	(2,145)
175, 200, 225	N/A	000C	69 21/32	(1,769)	97 1/2	(2,477)	122 1/2	(3,112)	72 5/16	(1,837)	103 5/8	(2,632)	100 1/8	(2,543)
250, 300	30D, 60D, 90D, 120D	000D	69 21/32	(1,769)	97 1/2	(2,477)	122 1/2	(3,112)	72 5/16	(1,837)	103 5/8	(2,632)	100 1/8	(2,543)
350, 400A	40E, 80E, 120E	000E	69 21/32	(1,769)	97 1/2	(2,477)	122 1/2	(3,112)	72 5/16	(1,837)	103 5/8	(2,632)	100 1/8	(2,543)

Model and Size			Z3		Z4		Z5		Z6		Z7		Z8	
PDH or SDH	PEH	PXH	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)
75, 100	10A, 20A, 40A	000A	109 1/2	(2,781)	118 3/4	(3,016)	115 15/32	(2,933)	140 7/8	(3,578)	146 1/2	(3,721)	171 9/16	(4,358)
125, 150	15B, 30B, 60B	000B	109 1/2	(2,781)	118 3/4	(3,016)	115 15/32	(2,933)	140 7/8	(3,578)	146 1/2	(3,721)	171 9/16	(4,358)
175, 200, 225	N/A	000C	125 3/16	(3,180)	134 7/16	(3,415)	131 3/16	(3,332)	156 1/4	(3,969)	162 1/4	(4,121)	187 5/16	(4,758)
250, 300	30D, 60D, 90D, 120D	000D	125 3/16	(3,180)	134 7/16	(3,415)	131 3/16	(3,332)	156 1/4	(3,969)	162 1/4	(4,121)	187 5/16	(4,758)
350, 400A	40E, 80E, 120E	000E	125 3/16	(3,180)	134 7/16	(3,415)	131 3/16	(3,332)	156 1/4	(3,969)	162 1/4	(4,121)	187 5/16	(4,758)

Model and Size	V		W1		W2		Z9		Z10		Z11	
PXH w/Hyd. Htg.	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)
000A	70 17/32	(1,791)	98 11/32	(2,498)	123 11/32	(3,133)	73 3/16	(1,859)	104 1/4	(2,648)	101	(2,565)
000B	70 17/32	(1,791)	98 11/32	(2,498)	123 11/32	(3,133)	73 3/16	(1,859)	104 1/4	(2,648)	101	(2,565)
000C	86 7/32	(2,190)	114 1/16	(2,897)	139 1/16	(3,532)	88 7/8	(2,257)	120 3/16	(3,053)	116 11/16	(2,964)
000D	86 7/32	(2,190)	114 1/16	(2,897)	139 1/16	(3,532)	88 7/8	(2,257)	120 3/16	(3,053)	116 11/16	(2,964)
000E	86 7/32	(2,190)	114 1/16	(2,897)	139 1/16	(3,532)	88 7/8	(2,257)	120 3/16	(3,053)	116 11/16	(2,964)

Model and Size	Z12		Z13		Z14		Z15		Z16		Z17	
PXH w/Hyd. Htg.	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)
000A	126 1/16	(3,202)	135 5/16	(3,437)	132 1/32	(3,354)	157 7/16	(3,999)	163 1/16	(4,142)	188 1/8	(4,778)
000B	126 1/16	(3,202)	135 5/16	(3,437)	132 1/32	(3,354)	157 7/16	(3,999)	163 1/16	(4,142)	188 1/8	(4,778)
000C	141 3/4	(3,600)	151	(3,835)	147 3/4	(3,753)	172 13/16	(4,389)	178 13/16	(4,542)	203 7/8	(5,178)
000D	141 3/4	(3,600)	151	(3,835)	147 3/4	(3,753)	172 13/16	(4,389)	178 13/16	(4,542)	203 7/8	(5,178)
000E	141 3/4	(3,600)	151	(3,835)	147 3/4	(3,753)	172 13/16	(4,389)	178 13/16	(4,542)	203 7/8	(5,178)

Complete detailed dimension drawings available at www.RezSpec.com.

COMBUSTIBLE AND SERVICE CLEARANCES

COMBUSTIBLE MATERIAL CLEARANCES - All Sizes

Models PDH, PEH, RDH, RHH, REH and SDH	Control Side		Opposite Control Side		Front		Rear		Top		Bottom		Vent Connector at Unit		Vent Pipe	
	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)
	20	(508)	6	(152)	48	(1,219)	18	(457)	6	(152)	0	0	18	(457)	6	(152)
Model SHH	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)
	20	(508)	6	(152)	48	(1,219)	18	(457)	6	(152)	0	0	6	(152)	0	0

RECOMMENDED SERVICE CLEARANCES

PEH, REH Cabinet Size Size	PDH, RDH, SDH Size	PXH, RXH Cabinet Size	RHH, SHH Size	Control Side: Base Unit		Control Side: with Mixing Box		Control Side: with Cooling Coil		Opposite Control Side		Top	
				in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)	in.	(mm)
A	75/100	000A	--	30	(762)	30	(762)	42	(1,067)	6	(152)	18	(457)
B	125/150	000B	--	34	(864)	34	(864)	52	(1,321)	6	(152)	18	(457)
--	175/200/225	000C	130/180	30	(762)	30	(762)	42	(1,067)	6	(152)	24	(610)
D	250/300	000D	260	42	(1,067)	42	(1,067)	58	(1,473)	6	(152)	24	(610)
E	350/400A	000E	350	52	(1,321)	52	(1,321)	66	(1,676)	6	(152)	24	(610)

Proper service clearances MUST be maintained - especially on controls side with cooling coil. Inadequate clearance will prevent slide out drain pan from being removed for proper maintenance to be performed.

REZNOR®

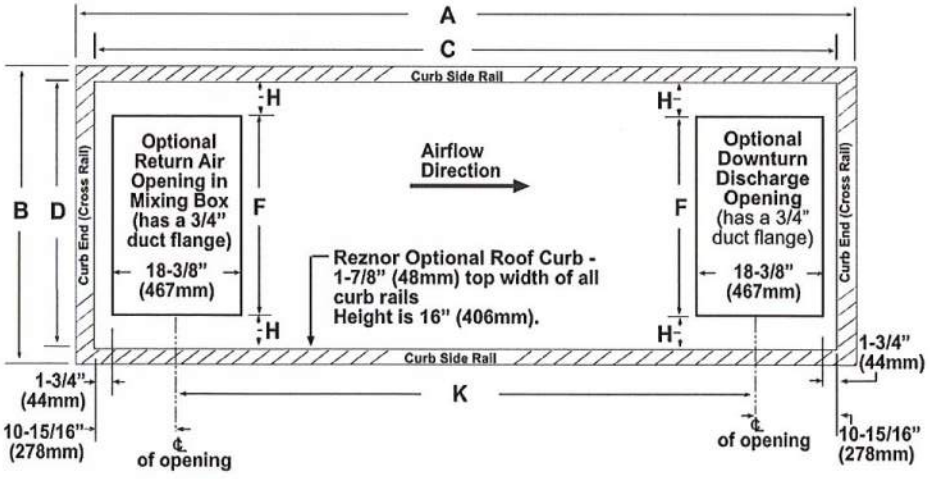
ROOF CURB DIMENSIONS MODEL RDH, REH and RXH

seismic curb by MicroMetal, CDI, or Thybar will be provided with the below dimensions

Curb is 16" (406mm) high

Configuration	Option Code	RDH Size	REH Size	RXH Size	Inches (±1/8) A	B	C	D	mm (±3) A	B	C	D	Weight lbs	kg
Basic Unit ONLY (blower and heat section) with horizontal discharge	CJ8A	75/100	10A/20A/40A	000A	51-13/16	29-13/16	48-1/16	26-1/16	1,316	757	1,221	662	90	41
		125/150	15B/30B/60B	000B	51-13/16	39-13/16	48-1/16	36-1/16	1,316	1,011	1,221	916	101	46
		175/200/225	N/A	000C	67-1/2	29-13/16	63-3/4	26-1/16	1,715	757	1,619	662	107	49
		250/300	30D/60D/90D/120D	000D	67-1/2	46-1/16	63-3/4	42-5/16	1,715	1,170	1,619	1,075	125	57
		350/400A	40E/80E/120E	000E	67-1/2	54-1/16	63-3/4	50-5/16	1,715	1,373	1,619	1,278	134	61
Basic unit PLUS 1 either - Downturn Discharge Plenum (AQ5 or AQ8); OR Mixing Box (MXB1) with horizontal discharge; OR Cooling Coil Cabinet without Reheat (AU5 or AU6) with horizontal discharge	CJ8B	75/100	10A/20A/40A	000A	79-9/16	29-13/16	75-13/16	26-1/16	2,021	757	1,926	662	120	54
		125/150	15B/30B/60B	000B	79-9/16	39-13/16	75-13/16	36-1/16	2,021	1,011	1,926	916	131	59
		175/200/225	N/A	000C	95-1/4	29-13/16	91-1/2	26-1/16	2,419	757	2,324	662	138	63
		250/300	30D/60D/90D/120D	000D	95-1/4	46-1/16	91-1/2	42-5/16	2,419	1,170	2,324	1,075	155	70
		350/400A	40E/80E/120E	000E	95-1/4	54-1/16	91-1/2	50-5/16	2,419	1,373	2,324	1,278	164	74
Basic unit PLUS 2 - Down Discharge (AQ 5 or 8) AND Mixing Box OR Cooling Coil Cabinet without Reheat (AU 5 or 6); OR Mixing Box AND Cooling Coil Cabinet without Reheat (AU 5 or 6) with horizontal discharge	CJ8C	75/100	10A/20A/40A	000A	107-5/16	29-13/16	103-9/16	26-1/16	2726	757	2631	662	151	68
		125/150	15B/30B/60B	000B	107-5/16	39-13/16	103-9/16	36-1/16	2726	1011	2631	916	162	73
		175/200/225	N/A	000C	123	29-13/16	119-1/4	26-1/16	3124	757	3029	662	168	76
		250/300	30D/60D/90D/120D	000D	123	46-1/16	119-1/4	42-5/16	3124	1170	3029	1075	186	84
		350/400A	40E/80E/120E	000E	123	54-1/16	119-1/4	50-5/16	3124	1373	3029	1278	195	88
Basic unit PLUS 3 - Down Discharge Plenum (AQ5 or AQ8) AND Mixing Box (MXB1) AND Cooling Coil Cabinet without Reheat (AU5 or AU6)	CJ8D	75/100	10A/20A/40A	000A	135-1/16	29-13/16	131-5/16	26-1/16	3431	757	3335	662	181	82
		125/150	15B/30B/60B	000B	135-1/16	39-13/16	131-5/16	36-1/16	3431	1011	3335	916	192	87
		175/200/225	N/A	000C	150-3/4	29-13/16	147	26-1/16	3829	757	3734	662	199	90
		250/300	30D/60D/90D/120D	000D	150-3/4	46-1/16	147	42-5/16	3829	1170	3734	1075	216	98
		350/400A	40E/80E/120E	000E	150-3/4	54-1/16	147	50-5/16	3829	1373	3734	1278	225	102
Basic unit PLUS 1 - Cooling Coil Cabinet with Reheat (AU7) with horizontal discharge	CJ8E	75/100	10A/20A/40A	000A	104-9/16	29-13/16	100-13/16	26-1/16	2656	757	2561	662	149	68
		125/150	15B/30B/60B	000B	104-9/16	39-13/16	100-13/16	36-1/16	2656	1011	2561	916	160	73
		175/200/225	N/A	000C	120-1/4	29-13/16	116-1/2	26-1/16	3054	757	2959	662	167	76
		250/300	30D/60D/90D/120D	000D	120-1/4	46-1/16	116-1/2	42-5/16	3054	1170	2959	1075	184	83
		350/400A	40E/80E/120E	000E	120-1/4	54-1/16	116-1/2	50-5/16	3054	1373	2959	1278	193	88
Basic unit PLUS 2 - Cooling Coil Cabinet with Reheat (AU7) AND Down Discharge Plenum (AQ5 or AQ8) OR Mixing Box (MXB1) with horizontal discharge	CJ8F	75/100	10A/20A/40A	000A	132-5/16	29-13/16	128-9/16	26-1/16	3361	757	3266	662	180	82
		125/150	15B/30B/60B	000B	132-5/16	39-13/16	128-9/16	36-1/16	3361	1011	3266	916	191	87
		175/200/225	N/A	000C	148	29-13/16	144-1/4	26-1/16	3759	757	3664	662	197	89
		250/300	30D/60D/90D/120D	000D	148	46-1/16	144-1/4	42-5/16	3759	1170	3664	1075	215	98
		350/400A	40E/80E/120E	000E	148	54-1/16	144-1/4	50-5/16	3759	1373	3664	1278	224	102
Basic unit PLUS 3 - Cooling Coil Cabinet with Reheat (AU7) AND Down Discharge Plenum (AQ5 or AQ8) AND Mixing Box (MXB1)	CJ8G	75/100	10A/20A/40A	000A	160-1/16	29-13/16	156-5/16	26-1/16	4066	757	3970	662	210	95
		125/150	15B/30B/60B	000B	160-1/16	39-13/16	156-5/16	36-1/16	4066	1011	3970	916	221	100
		175/200/225	N/A	000C	175-3/4	29-13/16	172	26-1/16	4464	757	4369	662	228	103
		250/300	30D/60D/90D/120D	000D	175-3/4	46-1/16	172	42-5/16	4464	1170	4369	1075	245	111
		350/400A	40E/80E/120E	000E	175-3/4	54-1/16	172	50-5/16	4464	1373	4369	1278	254	115

RDH Size	REH Size	RXH Size	Dimensions (inches ±1/8) F (with mixing box and/or down discharge)	H (with mixing box and/or down discharge)	K (with mixing box and down discharge) no cooling coil module	K with a cooling coil module no reheat	K with a cooling coil module with reheat	Dimensions (mm ±3) F (with mixing box and/or down discharge)	H (with mixing box and/or down discharge)	K (with mixing box and down discharge) no cooling coil module	K with a cooling coil module no reheat	K with a cooling coil module with reheat
75/100	10A/20A/40A	000A	22-7/8	1-9/16	81-5/8	109-3/8	134-3/8	(581)	(40)	(2,073)	(2,778)	(3,413)
125/150	15B/30B/60B	000B	26-1/2	4-3/4	81-5/8	109-3/8	134-3/8	673)	(121)	(2,073)	(2,778)	(3,413)
175/200/ 225	N/A	000C	22-7/8	1-9/16	97-3/8	125-1/8	150-1/8	(581)	(40)	(2,473)	(3,178)	(3,813)
250/300	30D/60D/90D/ 120D	000D	34-3/4	3-3/4	97-3/8	125-1/8	150-1/8	(883)	(96)	(2,473)	(3,178)	(3,813)
350/400A	40E/80E/120E	000E	45-13/16	2-1/4	97-3/8	125-1/8	150-1/8	(1164)	(57)	(2,473)	(3,178)	(3,813)



NOTE: *If there is an evaporative cooling module, the base of the unit under the evaporative cooling module extends beyond the end of the roof curb. An evaporative cooling module does not affect the length of the roof curb.*

REZNOR®

FULL LOAD AMP (FLA) TABLE

HP	Motor Type	Motor F.L.A.	Motor RPM	Voltage	PH
0.25	OPEN	4.6	1750	120	1
0.25	OPEN	2.3	1750	208	1
0.25	OPEN	2.3	1750	240	1
0.25	OPEN	1.1	1750	208	3
0.25	OPEN	1.4	1750	240	3
0.25	OPEN	0.8	1750	480	3
0.25	TEFC	6.5	1750	120	1
0.25	TEFC	2.8	1750	208	1
0.25	TEFC	3.2	1750	240	1
0.25	TEFC	1.1	1750	208	3
0.25	TEFC	1.1	1750	240	3
0.25	TEFC	0.5	1750	480	3
0.33	OPEN	6.0	1750	120	1
0.33	OPEN	3.0	1750	208	1
0.33	OPEN	3.0	1750	240	1
0.33	OPEN	1.4	1750	208	3
0.33	OPEN	1.6	1750	240	3
0.33	OPEN	0.8	1750	480	3
0.33	TEFC	4.6	1750	120	1
0.33	TEFC	2.3	1750	208	1
0.33	TEFC	2.4	1750	240	1
0.33	TEFC	1.2	1750	208	3
0.33	TEFC	1.2	1750	240	3
0.33	TEFC	0.6	1750	480	3
0.50	OPEN	8.8	1750	120	1
0.50	OPEN	5.1	1750	208	1
0.50	OPEN	4.4	1750	240	1
0.50	OPEN	2.5	1750	208	3
0.50	OPEN	3.0	1750	240	3
0.50	OPEN	1.5	1750	480	3
0.50	OPEN	0.9	1750	575	3
0.50	TEFC	7.2	1750	120	1
0.50	TEFC	3.5	1750	208	1
0.50	TEFC	3.6	1750	240	1
0.50	TEFC	2.3	1750	208	3
0.50	TEFC	2.0	1750	240	3
0.50	TEFC	1.0	1750	480	3
0.50	TEFC	0.7	1750	575	3
0.75	OPEN	11.0	1750	120	1
0.75	OPEN	6.3	1750	208	1
0.75	OPEN	5.5	1750	240	1
0.75	OPEN	2.9	1750	208	3
0.75	OPEN	2.6	1750	240	3
0.75	OPEN	1.3	1750	480	3
0.75	OPEN	1.0	1750	575	3
0.75	TEFC	11.0	1750	120	1
0.75	TEFC	5.4	1750	208	1
0.75	TEFC	5.5	1750	240	1
0.75	TEFC	2.0	1750	208	3
0.75	TEFC	2.2	1750	240	3
0.75	TEFC	1.1	1750	480	3
0.75	TEFC	0.8	1750	575	3
1.00	OPEN	13.0	1750	120	1
1.00	OPEN	7.5	1750	208	1
1.00	OPEN	6.5	1750	240	1
1.00	OPEN	4.0	1750	208	3
1.00	OPEN	3.7	1750	240	3
1.00	OPEN	2.0	1750	480	3
1.00	OPEN	1.4	1750	575	3

HP	Motor Type	Motor F.L.A.	Motor RPM	Voltage	PH
1.00	TEFC	12.0	1750	120	1
1.00	TEFC	6.2	1750	208	1
1.00	TEFC	6.0	1750	240	1
1.00	TEFC	3.3	1750	208	3
1.00	TEFC	3.1	1750	240	3
1.00	TEFC	1.6	1750	480	3
1.00	TEFC	1.4	1750	575	3
1.50	OPEN	15.0	1750	120	1
1.50	OPEN	7.8	1750	208	1
1.50	OPEN	7.5	1750	240	1
1.50	OPEN	5.6	1750	208	3
1.50	OPEN	5.0	1750	240	3
1.50	OPEN	2.8	1750	480	3
1.50	OPEN	2.0	1750	575	3
1.50	TEFC	16.4	1750	120	1
1.50	TEFC	9.5	1750	208	1
1.50	TEFC	8.2	1750	240	1
1.50	TEFC	4.8	1750	208	3
1.50	TEFC	4.6	1750	240	3
1.50	TEFC	2.3	1750	480	3
1.50	TEFC	1.6	1750	575	3
2.00	OPEN	24.6	1750	120	1
2.00	OPEN	12.3	1750	208	1
2.00	OPEN	12.3	1750	240	1
2.00	OPEN	7.0	1750	208	3
2.00	OPEN	6.6	1750	240	3
2.00	OPEN	3.5	1750	480	3
2.00	OPEN	2.6	1750	575	3
2.00	TEFC	24.0	1750	120	1
2.00	TEFC	8.3	1750	240	1
2.00	TEFC	6.1	1750	208	3
2.00	TEFC	5.6	1750	240	3
2.00	TEFC	2.8	1750	480	3
2.00	TEFC	2.3	1750	575	3
3.00	OPEN	13.7	3600	208	1
3.00	OPEN	12.4	3600	240	1
3.00	OPEN	9.0	3600	208	3
3.00	OPEN	8.6	3600	240	3
3.00	OPEN	4.3	3600	480	3
3.00	OPEN	3.6	3600	575	1
3.00	TEFC	30.0	3600	120	1
3.00	TEFC	15.0	3600	240	3
3.00	TEFC	7.9	3600	208	3
3.00	TEFC	7.2	3600	240	3
3.00	TEFC	3.6	3600	480	3
3.00	TEFC	2.8	3600	575	3
5.00	OPEN	25.5	3600	208	1
5.00	OPEN	23.0	3600	240	1
5.00	OPEN	13.4	3600	208	3
5.00	OPEN	13.2	3600	240	3
5.00	OPEN	6.6	3600	480	3
5.00	OPEN	5.4	3600	575	3
5.00	TEFC	20.2	3600	240	1
5.00	TEFC	12.6	3600	208	3
5.00	TEFC	11.4	3600	240	3
5.00	TEFC	5.7	3600	480	3
5.00	TEFC	4.7	3600	575	3

REZNOR®

SAMPLE SPECIFICATION
MODEL PDH (cont'd)

EVAPORATIVE COOLING SECTION

(Provide evaporative cooling module as manufactured as Reznor brand for makeup air application. Cabinet shall be constructed of weatherized (aluminized steel) (stainless steel) for outdoor installation. A mesh screen will cover the air intake opening. Unit shall be provided with height adjustable legs. Units shall be equipped with terminal block wiring for use with 115 (208, 230) volt supply voltage. Cabinet bottom shall have overflow and drain connections and a 300 series grade stainless steel water reservoir. Module shall be equipped with pump and float control system including electrical motor with stainless steel arm, thermally protected water pump, float switch and bleed line connections (Aqua Saver water metering system with solenoid valve and timer). Evaporative cooling media supplied to be 12 inches in size and to be made of (rigid cellulose material) (rigid glass fiber material-UL rated). Equipment shall include (1" or 2" pre-filters) and (drain and fill kit) and (water hammer arrestor).)

CONTROLS

Unit shall be equipped with factory installed contactors, relays, sensor, switches to perform (analog discharge air control) (DDC make-up air with space temperature reset control. The unit shall control blower, heating, cooling & reheat functions.) (External BMS interface control) (Space thermostat control). The unit shall have labeled terminal blocks and unit mounted ladder logic wiring diagram.

CABINET

Packaged unit may have factory-attached: (mixing box for inlet air with selection of outside and return entering air configurations [top, bottom, rear combinations with or without screens], outside or outside and return air dampers modulating economizer controls or MUA with direct-coupled 24VAC spring return actuators. Construction of mixing box will be (single wall, insulated)(double wall, [insulated] [high density insulated]). The (single wall, insulated) (double wall [insulated] [high density insulated]) blower section shall be supplied with (horizontal supply opening) (screened horizontal supply opening) (horizontal supply air inlet opening with duct flanges) (screened horizontal supply air inlet opening with duct flanges).

The packaged system shall have a pre-coat RAL 1001 white paint finish. Finish shall be a minimum 80 gloss on G30 galvanized steel. Cabinet shall be arranged for [floor mounting] [slab mounting] [ceiling suspension from (4) (6) (8) point base suspension]. Control, burner, and blower service compartment doors shall be hinged. Blower door hardware shall be heavy duty stainless. Control and burner door hardware shall have heavy duty external hardware. (Cabinet shall have through-the-base electrical supply knockout.)

OPTIONAL ACCESSORIES

The following features will be factory installed: (duct flanges); (discharge louvers [horizontal] [horizontal and vertical]); (firestat); (discharge temperature low limit), (high, low, or high and low gas pressure switches); and (relays). The following accessories will be provided: (downturn nozzle [25- 65° with or without vertical louvers] [50-90° with or without vertical louvers]); (gas pressure regulator); and (remote console)

CERTIFICATIONS

The packaged heating and cooling system shall be design-certified to ANSI Z83.8 and CSA 2.6 Standards. The energy usage shall be designed to meet ASHRAE Standard 90.1. Product manufacturer must have minimum of 40 years of experience with commercial/industrial HVAC equipment. Product to be warranted to the original owner/user to be free from defects in material or workmanship. Limited warranty to be for twelve (12) months from date of installation or eighteen (18) months from date of shipment from manufacturer, whichever occurs first.

SAMPLE SPECIFICATION
MODEL RDH
OUTDOOR, HEATING AND MAKEUP AIR UNITS

GENERAL

Provide packaged, Outdoor heating (and cooling) units as Reznor brand equipment.

The units shall be the RDH series, minimum 81% efficiency, with gas furnace, designed for rooftop or outdoor slab installation. The unit shall be specifically design for make-up air and space control applications, meeting all the requirements found in AHSRAE standard 90.1 and 62.2. The base unit shall consist of blower and gas heat section. The unit shall be modular such that DX cooling, DX cooling with reheat, chilled water cooling, evaporative cooling, and mixing box sections can be added to the unit configuration.

POWER

All units shall be equipped for use with (115/1) (208/1) (230/1) (208/3) (230/3) (460/3) (575/3) unit supply voltage. The unit shall have single power connection for 3 phase or 1 phase wiring with factory installed distribution blocks. The unit shall have (unit mounted, non-fusible, NEMA 4X, lockable disconnect switch) (factory supplied, field installed, non-fusible, lockable, NEMA 1) field mounted disconnect switch) (factory supplied, field installed, fusible, lockable, NEMA 1 disconnect switch). The control voltage wiring shall be class 2, 120Vac and/or 24Vac/dc. Unit shall have (over/under voltage or phase loss protection); (factory supplied, field powered convenience outlet ground-fault circuit interrupter).

BLOWER & CONTROLS

The base unit blower shall include an adjustable belt-driven centrifugal fan with (open dripproof) (totally enclosed) motor (motors must meet EISA specifications for efficiency). The motor shall have [rubber][spring] vibration isolated with (contactor) (motor starter) (variable frequency drive). Fan shall have air proving switch inter-locked with gas controls to prevent gas heat operation when the fan is not operational. The blower shall use (solid-belt) (linked belt). The blower assembly shall be factory set to specified CFM at the given static pressure. The blower assembly shall have adjustable sheave for airflow adjustment. (The blower assembly shall be shipped with spare belts). Unit shall have [2" disposable] [2" permanent] [2" pleated] [4" MERV 8] [4" MERV 13 pleated] filters.

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SAMPLE SPECIFICATION
MODEL RDH (cont'd)

GAS HEAT SECTION

The gas furnace shall have a Reznor TCORE² heat exchanger and single burner combustion system. The Heating system shall provide a minimum of 81% thermal efficiency. All units shall be equipped for use with (natural gas) (propane). The TCORE² combustion system heat exchanger shall be of (409 stainless steel) (316 stainless steel) (Aluminized steel). The furnace shall be equipped with all required safety elements including flue high temperature switch, condensate drain, condensate drain blockage shutdown switch and heat exchanger high temperature shutdown. (Unit shall have factory installed shut off valve and union.)Furnace operation shall be controlled through an integrated circuit board. The circuit board shall monitor heater operation and have LED diagnostic indicator lights to identify abnormalities in control functions. The circuit board shall monitor flame failure, failed ignition, airflow and low gas pressure. Unit shall have a (single stage control) (two stage control) (4:1 modulating control) (8:1 modulating control). The unit shall use (digital controller with space temperature reset sequence.) (analog discharge air control) (Thermostat control for space temperature control applications). The unit shall have (Lon) (N2) (bacNet) communications capability.

COOLING SECTION

Unit shall have draw thru cooling coil section that can provide condition of air per the schedule. The coil module shall be configurable to handle DX or chilled water coil. The coil module shall have double wall construction with insulation value of (R-3.8) (R 4.4). Coil cabinet shall have sloped slide out stainless steel drain pan under all coils per ASHRAE std 62.1. The airflow shall be limited to 500 FPM to prevent water blow off from the coil. (Cooling coil cabinet to include UVC lamp for neutralization of VOCs and microorganisms for improved IAQ).

(Unit shall have custom configured DX evaporator coil to maximize thermal efficiency and system performance with the selected condenser unit. The coil shall be (single circuit) (two stage 50%-50% dual interlaced) (3 stage 33%-66% interlaced). The coils shall have (left) (right) hand connections. Coil casing shall have (galvanized) (stainless steel) material construction. The custom coil shall have 3 to 6 rows, 8 – 14 (aluminum) (copper) fins per inch, 200 to 500 FPM air flow, and ½" or 3/8" tube size to meet the given schedule coil performance. (Coil shall have electro-fin polymeric coating for sea coast and other corrosive environment applications.) (Unit shall be supplied with thermal expansion valve for each circuit.) (Unit shall be equipped with unit mounted reheat. Reheat system shall be self contained requiring no external piping connections. The reheat shall provide useful primary cooling of entering air meeting ASHRAE std 90.1 efficiency guidelines. The reheat coil position shall include a minimum separation of 4" from the cooling coil to eliminate re-evaporation of cooling coil condensate. Modulating capacity control not required unless necessary to maintain proper discharge air control.))

(Unit shall have custom configured chilled water evaporate coil to maximize thermal efficiency and system performance with the given GPM and fluid temperatures. The coil shall be designed for (__% ethylene) (__% proplylene) (No) glycol. (The coil shall have turbospiral tubes for fluids with glycol percentages above 20%.) The coils shall have (left) (right) hand connections. Coil casing shall have (galvanized) (stainless steel) material construction. The custom chilled water evaporator coil shall have quarter, half, ¾ or full circuiting to meet the schedule performance. The evaporator coil shall have 4 or 6 rows, 8 – 14 fins per inch, 200 to 500 FPM air flow, and fluid pressure drop less than 18 psi to meet the scheduled performance. Manufacturer shall provide detail coil performance sheet. Tube size shall be 1/2" or 3/8" to meet the given schedule coil performance. (Coil shall have electro-fin polymeric coating for sea coast and other corrosive environment applications).

EVAPORATIVE COOLING SECTION

(Provide evaporative cooling module as manufactured as Reznor brand for makeup air application. Cabinet shall be constructed of weatherized (aluminized steel) (stainless steel) for outdoor installation. A mesh screen will cover the air intake opening. Unit shall be provided with height adjustable legs. Units shall be equipped with terminal block wiring for use with 115 (208, 230) volt supply voltage. Cabinet bottom shall have overflow and drain connections and a 300 series grade stainless steel water reservoir. Module shall be equipped with pump and float control system including electrical motor with stainless steel arm, thermally protected water pump, float switch and bleed line connections (Aqua Saver water metering system with solenoid valve and timer). Evaporative cooling media supplied to be 12 inches in size and to be made of (rigid cellulose material) (rigid glass fiber material-UL rated). Equipment shall include (1" or 2" pre-filters) and (drain and fill kit) and (water hammer arrestor).)

CONTROLS

Unit shall be equipped with factory installed contactors, relays, sensor, switches to perform (analog discharge air control) (DDC make-up air with space temperature reset control. The unit shall control blower, heating, cooling & reheat functions.) (External BMS interface control) (Space thermostat control). The unit shall have labeled terminal blocks and unit mounted ladder logic wiring diagram.

CABINET

Packaged unit may have factory-attached modules:- (mixing box for inlet air with selection of outside and return entering air configurations [top, bottom, rear combinations with or without screens], outside or outside and return air dampers modulating economizer controls with direct-coupled 24VAC spring return actuators. Construction of mixing box will be double wall, [insulated] [high density insulated]). Without a mixing box the (double wall [insulated] [high density insulated]) blower section shall be supplied with (horizontal supply opening) (horizontal supply air inlet opening with duct flanges) (Horizontal supply with downturn plenum) (screened horizontal supply air inlet opening with duct flanges). (The unit shall have outside air hood with permanent filters designed for 100% unit air flow from outside with zero water/snow entrainment. The hood shall meet ASHRAE std 62.1 entrainment intent.)

The packaged system shall have a pre-coat RAL 1001 white paint finish. Finish shall be a minimum 80 gloss on G30 galvanized steel. Cabinet shall be arranged for [slab mounting] [roof mounting with curb]. Control, burner, and blower service compartment doors shall be hinged. Blower door hardware shall be heavy duty stainless. Control and burner door hardware shall have heavy duty external hardware. (Cabinet shall have through-the-base electrical supply knockout.)

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SAMPLE SPECIFICATION
MODEL RDH (cont'd)

OPTIONAL ACCESSORIES

The following features will be factory installed: (duct flanges) (downturn plenum [with on/off damper]) ; (firestat); (discharge temperature low limit), (high, low, or high and low gas pressure switches); and (relays). The following accessories will be provided: (gas pressure regulator) (remote console) and (roof curb).

CERTIFICATIONS

The packaged heating and cooling system shall be design-certified to ANSI Z83.8 and CSA 2.6 Standards. The energy usage shall be designed to meet ASHRAE Standard 90.1. Product manufacturer must have minimum of 40 years of experience commercial/industrial HVAC equipment. Product to be warranted to the original owner/ user to be free from defects in material or workmanship. Limited warranty to be for twelve (12) months from date of installation or eighteen (18) months from date of shipment from manufacturer, whichever occurs first.

SAMPLE SPECIFICATION
MODEL PEH & PXH
INDOOR, ELECTRIC/HOT WATER HEATING, COOLING, MAKEUP AIR UNITS

GENERAL

Provide packaged, indoor heating (and cooling) units as Reznor brand equipment.

Provide packaged, indoor heating and makeup air, power-vented units as Reznor brand equipment. The units shall be (PEH series with electric heat) (PXH air handling unit) for ceiling suspension or slab or floor mounting. The unit shall be specifically designed for make-up air and space control applications, meeting all the requirements found in AHSRAE standard 90.1 and 62.2. The unit shall be modular such that DX cooling, DX cooling with reheat, chilled water cooling, evaporative cooling, hot water heat, and mixing box sections can be added to the unit configuration.

POWER

All units shall be equipped for use with (115/1) (208/1) (230/1) (208/3) (230/3) (460/3) (575/3) unit supply voltage. The unit shall have single power connection for 3 phase or 1 phase wiring with factory installed distribution blocks. The unit shall have (unit mounted, non-fusible, NEMA 4X, lockable disconnect switch) (factory supplied, field installed, non-fusible, lockable, NEMA 1) field mounted disconnect switch) (factory supplied, field installed, fusible, lockable, NEMA 1 disconnect switch). The control voltage wiring shall be class 2, 120Vac and/or 24Vac/ dc. Unit shall have (over/under voltage or phase loss protection); (factory supplied, field powered convenience outlet ground-fault circuit interrupter).

BLOWER & CONTROLS

The base unit blower shall include an adjustable belt-driven centrifugal fan with (open dripproof) (totally enclosed) motor (motors must meet EISA specifications for efficiency). The motor shall have [rubber][spring] vibration isolated with (contactor) (motor starter) (variable frequency drive). Fan shall have air proving switch inter-locked to prevent heat operation when the fan is not operational. The blower shall use (solid-belt) (linked belt). The blower assembly shall be factory set to specified CFM at the given static pressure. The blower assembly shall have adjustable sheave for airflow adjustment. (The blower assembly shall be shipped with spare belts). Unit shall have [2" disposable] [2" permanent] [2" pleated] [4" MERV 8] [4" MERV 13 pleated] filters.

ELECTRIC HEAT SECTION

(Model PEH only)

(Unit shall include blow through electric resistance heating section using open element with insulated ceramic bushing, fuses, contactors, auto reset high temperature limit switch and other necessary safety devices. Provide capacity sizes and staged/modulating control as shown on the schedule. The furnace shall be equipped with all required safety elements. Unit shall have a (one-stage heat control for recalculating air space temperature control) (2-stage heat control for recalculating air space temperature control) (2-stage heating/3-stage cooling digital controller for MUA applications with space temperature reset) (SCR electronic modulation heating /3-stage cooling digital for MUA applications with space temperature reset).)

HOT WATER HEATING SECTION

(Model PXH only)

(Unit shall have custom configured hot water coil to maximize thermal efficiency and system performance with the given GPM and fluid temperatures. The coil shall be designed for (__% Ethylene) (__% Proplylene) (No) glycol. (The coil shall have turbospiral tubes for fluids with glycol percentages above 20%.) The coils shall have (left) (right) hand connections. Coil casing shall have (galvanized) (stainless steel) material construction. The custom hot water coil shall have quarter, half, ¾ or full circuiting to meet the schedule performance. The coil shall have 1 - 4 rows, 8 – 14 fins per inch, fluid pressure drop less than 18 psi to meet the scheduled performance. Manufacturer shall provide detail coil performance sheet. ½" or 3/8" tube size to meet the given schedule coil performance. (Coil shall have electro-fin polymeric coating for sea coast and other corrosive environment applications.) Hot water control valve shall be provided by temperature controls contractor.)

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PRODUCT LIMITED WARRANTY

Nortek Global HVAC, LLC 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, whichever occurs first.

Optional Extended Warranty

(Limited to the following models and components)

Extended warranties on components may be purchased. Warranties include:

Option XW1 - Extended four (4) year non-prorated warranty on compressors. (Models PDH, PEH, PXH, RDH, REH, RHH, RXH, SDH, & SHH). Extended warranty is conditional upon the submission of a properly completed Proof of Check/Test/Startup Form (Model MASA).

Option XW2 - Extended four (4) year heat exchanger warranty (Models PDH, RDH, RHH, SDH and SHH only). Extended warranty on Model SHH requires selection of optional stainless steel heat exchanger.

Option XW3 - Extended nine (9) year heat exchanger warranty (Models PDH, RDH, RHH, SDH and SHH only). Extended warranty on Model SHH requires selection of optional stainless steel heat exchanger.

LIMITATIONS AND EXCLUSIONS

Nortek Global HVAC, LLC obligations under this warranty and the sole remedy for its breach are limited to repair, at manufacturer's facility, of any part or parts of this product 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's 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, 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 Nortek Global HVAC, LLC to any other warranty, obligation or liability. Installation, operation or use of the product for which this warranty is issued shall constitute acceptance of the terms hereof.

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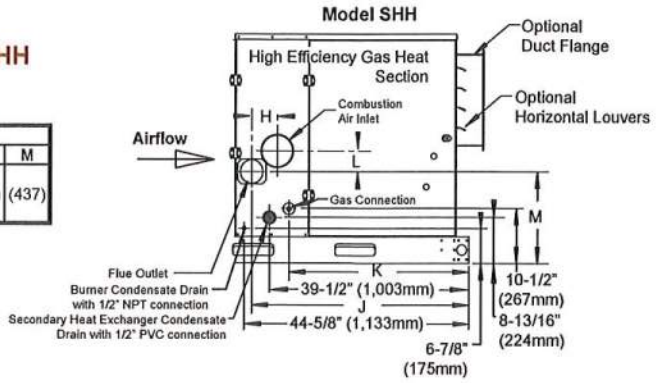
DIMENSIONS

Connection locations.

Applies to indoor units, Models PDH, PEH, PXH, SDH and SHH

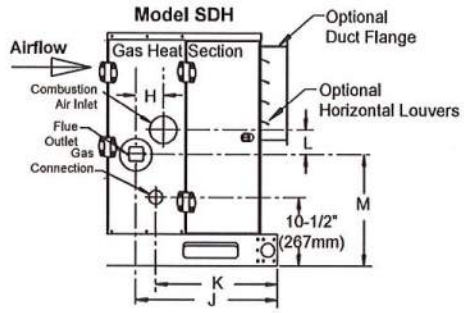
Model SHH - Gas/Propane Heating Section Connection Locations

SHH	Dimensions - inches (±1/8)					Dimensions - mm (±3)				
	H	J	K	L	M	H	J	K	L	M
130, 180 260 350	5	42-15/16"	35-5/8"	4	17-7/16"	(127)	(1,091)	(905)	(102)	(437)



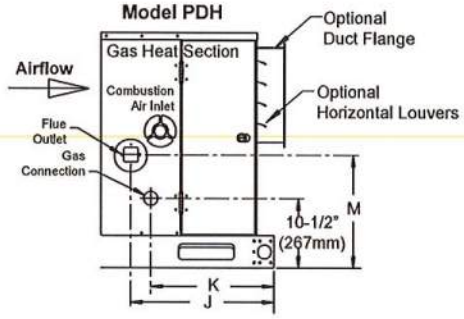
Model SDH - Gas/Propane Heating Section Connection Locations

SDH	Dimensions - inches (±1/8)					Dimensions - mm (±3)				
	H	J	K	L	M	H	J	K	L	M
75, 100 125, 150	4	20-25/32	17-7/8	3-5/8	16-51/64	(102)	(528)	(454)	(92)	(427)
175, 200, 225 250, 300 350, 400A	5	32-1/32"	24-3/4"S	4	17-7/32"	(127)	(814)	(629)	(102)	(437)



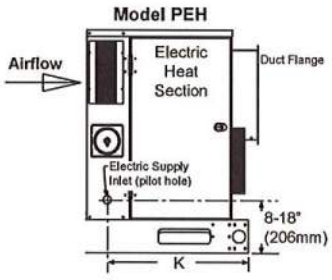
Model PDH - Gas/Propane Heating Section Connection Locations

PDH	Dimensions - inches (±1/8)			Dimensions - mm (±3)		
	J	K	M	J	K	M
75, 100 125, 150	20-25/32	17-7/8	16-51/64	(528)	(454)	(427)
175, 200, 225 250, 300 350, 400A	32-1/32"	24-3/4"	17-7/32"	(814)	(629)	(437)



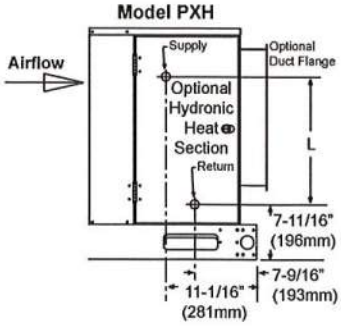
Model PEH - Electric Heating Section Connection Loactions

PEH	Dimensions - inches (±1/8)	Dimensions - mm (±3)
	K	K
10A, 20A, 40A 15B, 30B, 60B	21-11/16	(551)
30D, 60D, 90D, 120D 40E, 80E, 120E	29-3/8	(746)



Model PXH - Optional Hydronic Heating Section Connection Locations

PXH	Dimensions - inches ±1/8	Dimensions - mm (±3)
	L	L
000A 000B	23-1/8"	(587)
000C 000D 000E	33-1/8"	(841)



Connections for evaporative cooling will be found under the Evaporative Cooling Module section later in this catalog. DX cooling, and chilled water cooling connections and locations is found in the Cooling Coil Module section later in this catalog.