



NAH Series

HYDRONIC AIR HANDLER
2 TO 5 TONS

Submittal Data
English Language
IP/Metric Units
SD1028HG1 05/17

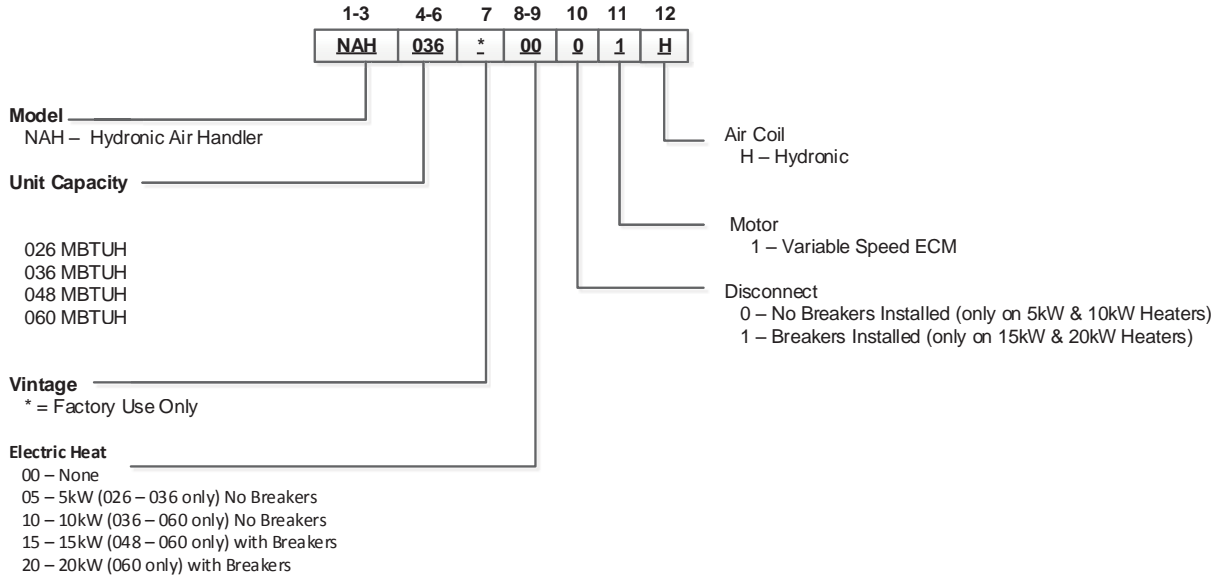
Contractor: _____ P.O.: _____

Engineer: _____

Project Name: _____ Unit Tag: _____

NAH Series

Model Nomenclature



Note: Kit NAHBC must be ordered to field convert NAH048-060 to bottom flow air discharge if air handler is to be used for cooling.

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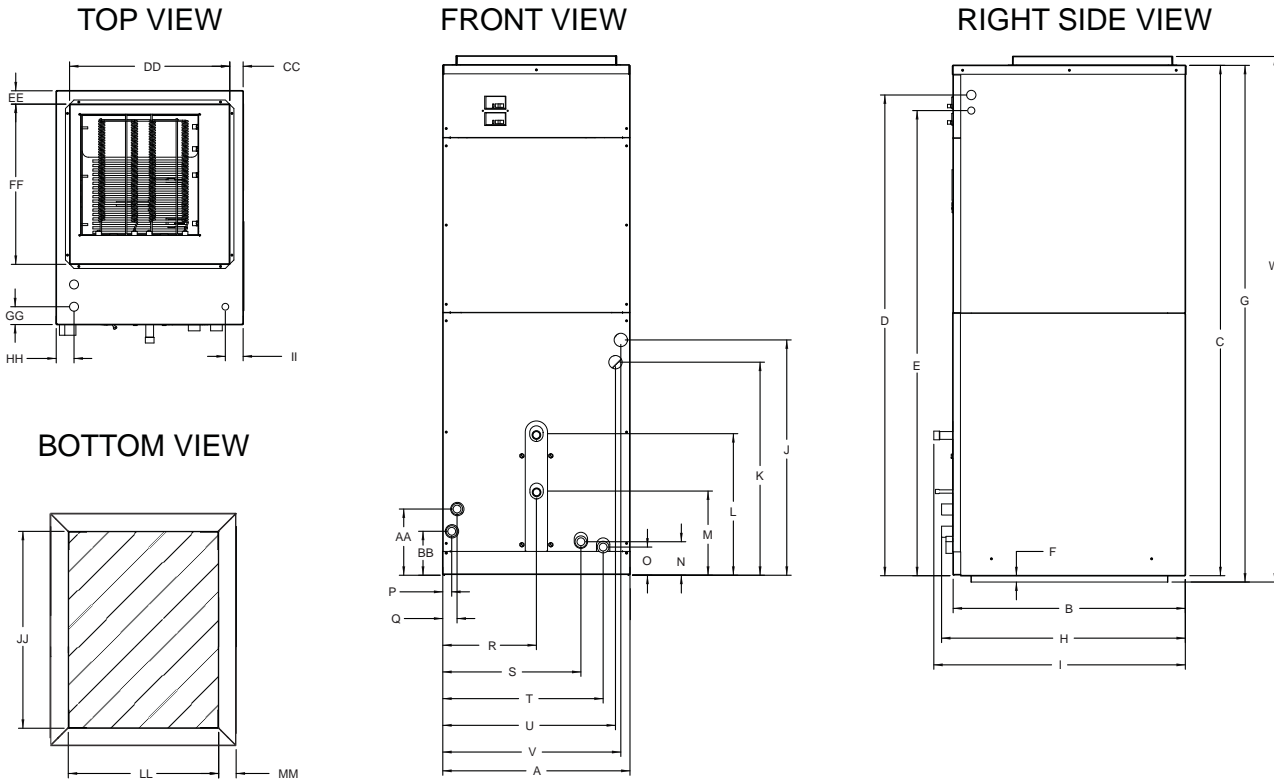
Engineer: _____

Project Name: _____ Unit Tag: _____

NAH Series

Dimensional Data - Hydronic Air Handler

Top Flow/Horizontal Unit Configuration



Topflow/ Horizontal Configuration	Overall Cabinet												Water Connections							
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	
	Width	Depth	Height	3/4" cond Power Supply	1/2" cond Low Voltage	Return Air Duct Flange						Water Out	Water In							
026-060	in. cm.	21.0 53.4	26.1 66.3	57.3 145.6	54.0 137.2	52.3 132.7	0.7 1.8	58.1 147.4	27.4 69.6	28.3 71.8	26.8 68.1	24.3 61.7	15.9 40.4	9.5 24.0	4.0 10.2	3.1 7.9	0.8 2.0	1.5 3.9	10.5 26.7	15.5 39.4

S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	II	JJ	KK	LL	MM
15.5	18.0	19.5	20.1	59.5	15.1	53.1	51.3	7.8	4.9	1.5	18.0	1.5	18.0	2.0	2.0	2.0	22.1	2.0	16.9	1.96
39.4	45.8	49.5	51.0	151.1	38.4	134.9	130.2	19.8	12.5	3.8	45.7	3.8	45.7	5.1	5.1	5.1	56.2	5.0	42.9	5.0

Condensate is stainless steel 3/4" O.D.
Discharge flange is field installed and extends 1" (25.4 mm) from cabinet

Rev: 8/15/14

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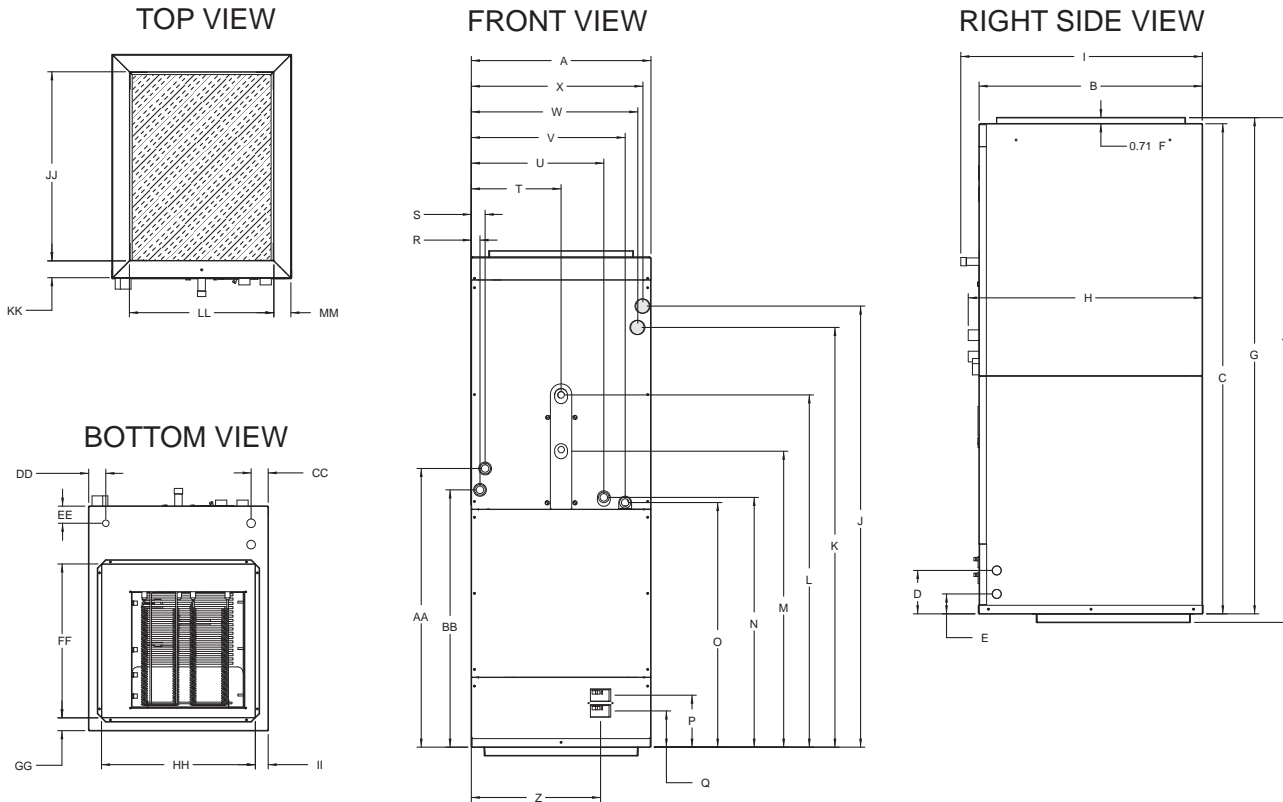
Engineer: _____

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NAH Series

Dimensional Data - Hydronic Air Handler

Bottom Flow Unit Configuration



Bottomflow Configuration	Overall Cabinet												Water Connections						
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
	Width	Depth	Height	3/4" cond Low Voltage	1" cond Power Supply	Return Air Duct Flange						Water Out	Water In						
026-060	in. cm.	21.0 53.4	26.1 66.3	57.3 145.6	5.1 12.9	3.3 8.5	0.7 1.8	58.1 147.4	27.4 69.6	28.3 71.8	51.9 131.8	49.4 125.5	41.2 104.7	34.6 87.9	29.2 74.2	28.6 72.7	6.1 15.4	4.2 10.8	0.9 2.4

S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	II	JJ	KK	LL	MM	
1.5	10.5	15.5	18.0	19.5	20.1	59.1	15.1	32.9	30.4	1" cond Power Supply	1/2" cond Low Voltage	2.0	2.0	18.0	1.5	18.0	1.5	22.1	2.0	16.9	1.96
3.9	26.7	39.4	45.8	49.5	51.0	150.0	38.4	83.6	77.2	5.1	5.1	5.1	45.7	3.8	45.7	3.8	56.2	5.0	42.9	5.0	

Condensate is stainless steel 3/4" O.D.
Discharge flange is field installed and extends 1" (25.4 mm) from cabinet

Rev: 8/15/14

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Physical Data

Air Handler Model Number (Hydronic)		NAH026	NAH036	NAH048	NAH060
Hydronic Coil	Air Coil Total Face Area, ft ² [m ²]	6.94 [0.64]			
	Tube outside diameter - in. [mm]	3/8 [9.52]			
	Number of rows	3			
	Fins per inch	13			
	Water In connection - in. [mm] sweat	7/8 [22.22]			
	Water Out connection - in. [mm] sweat	7/8 [22.22]			
Nominal cooling capacity - tons [kW]		2.1 [7.59]	3 [10.55]	4 [14.06]	5 [17.58]
Condensate drain connection - (O.D) in. [mm]		3/4 [19.05]			
Blower Wheel Size (Dia x W), in. [mm]		11 x 10 [279 x 254]			
Blower motor type/speeds		Variable Speed ECM			
Blower motor output - hp [W]		1/2 [373]		1 [746]	
Filter Standard - 1" [51mm] MERV3 disposable, in. [mm]		20 x 24 [508 x 635]			
Electrical characteristics (60hz)		208/230 - 1ph			
Shipping weight - lbs. [kg]		220 [99.79]			
Operating weight - lbs. [kg]		200 [90.71]			

NOTE: Water connection dimensions are O.D.

8/15/2014

Pressure Drop

Water Pressure Drop - Hydronic Coil

Flow gpm	Pressure Drop (PSI)						
	40°F	50°F	60°F	100°F	110°F	120°F	130°F
3.0	0.5	0.5	0.5	0.4	0.4	0.4	0.4
4.5	0.9	0.9	0.9	0.8	0.8	0.8	0.8
6.0	1.4	1.4	1.4	1.2	1.2	1.2	1.2
9.0	2.8	2.6	2.5	2.4	2.4	2.4	2.3
12.0	4.6	4.4	4.2	4.0	4.0	4.0	3.9
15.0	7.0	6.8	6.6	6.0	6.0	5.9	5.8

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NAH Series

Blower Performance

Blower Performance Variable Speed ECM

Model	Max ESP (wg)	Blower Motor (hp)	HP CFM Setting		Normal Mode Htg & Clg			Dehumidification Mode Clg				Aux CFM Setting		Aux Emerg Mode
			S1	S2	Stg 2	Stg 1	Blower	S9	Stg 2	Stg 1	Blower	S5	S6	
026	0.50	1/2	On	On	1050	800	525	Off	850	700	525	On	On	1150
	0.50	1/2	Off	On	925	725	475	Off	760	620	475	Off	On	950
	0.50	1/2	On	Off	800	625	425	Off	670	540	425	On	Off	925
	0.50	1/2	Off	Off	740	575	400					Off	Off	825
036	0.50	1/2	On	On	1300	1025	760	Off	1105	871	760	On	On	1300
	0.50	1/2	Off	On	1225	950	685	Off	1041	808	685	Off	On	1250
	0.50	1/2	On	Off	1150	850	620	Off	940	690	620	On	Off	1225
	0.50	1/2	Off	Off	1075	800	550					Off	Off	1200
048	0.75	1	On	On	1700	1300	975	Off	1400	1080	975	On	On	1700
	0.75	1	Off	On	1625	1240	875	Off	1350	1025	875	Off	On	1550
	0.75	1	On	Off	1450	1100	750	Off	1200	900	750	On	Off	1525
	0.75	1	Off	Off	1300	1000	675					Off	Off	1400
060	0.75	1	On	On	1850	1750	1175	Off	1540	1450	1175	On	On	1850
	0.75	1	Off	On	1760	1625	1050	Off	1460	1350	1050	Off	On	1760
	0.75	1	On	Off	1720	1575	1015	Off	1425	1300	1015	On	Off	1725
	0.75	1	Off	Off	1680	1525	975		1428			Off	Off	1700

05/09/2017

Factory CFM settings are in boldface

CFM is controlled within 5% up to maximum ESP

Maximum ESP includes allowance for wet coil and standard filter

DIP switch 9 must be 'OFF' to select dehumidification mode

	DIPS	Switch Description
Air Handler DIP Switches	1	Used to set normal CFM
	2	
	3	Not used
	4	
	5	Used to set aux./emergency heat CFM
	6	
	7	Not used
	8	
	9	Used to set dehumidification CFM
	10	Not used

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Electrical Data

Model	Electric Heat Capacity		Supply Circuit	Aux. Heat Minimum CFM	Rated Voltage	Voltage Min/Max	Blower Motor FLA	Heater Ampacity		Total Unit FLA		Minimum Circuit Ampacity		Maximum Fuse/HACR		
	KW	BTUH						208v	240v	208v	240v	208v	240v	208v	240v	
	240v	240v						208v	240v	208v	240v	208v	240v	208v	240v	
026	0	0	-		208-230/60/1	197/253	4.0	-	-	4.0	4.0	5.0	5.0	10	10	
	4.8	16,382	single	740				4.0	17.3	20.0	21.3	24.0	26.6	30.0	30	30
036	0	0	-				4.0	-	-	4.0	4.0	5.0	5.0	10	10	
	4.8	16,382	single	740				4.0	17.3	20.0	21.3	24.0	26.6	30.0	30	30
	9.6	32,765	single	900				4.0	34.7	40.0	38.7	44.0	48.4	55.0	50	60
048	0	0	-				7.0	-	-	7.0	7.0	8.8	8.8	15	15	
	9.6	32,765	single	900				7.0	34.7	40.0	41.7	47.0	52.1	58.8	60	60
	14.4	49,147	single	1,275				7.0	52.0	60.0	59.0	67.0	73.8	83.8	80	90
	14.4	49,147	L1/L2					7.0	34.7	40.0	41.7	47.0	52.1	58.8	60	60
			L3/L4					-	17.3	20.0	17.3	20.0	21.6	25.0	25	25
	7.0	-	-					7.0	7.0	8.8	8.8	15	15			
060	0	0	-				7.0	-	-	7.0	7.0	8.8	8.8	15	15	
	9.6	32,765	single	900				7.0	34.7	40.0	41.7	47.0	52.1	58.8	60	60
	14.4	49,147	single	1,275				7.0	52.0	60.0	59.0	67.0	73.8	83.8	80	90
	14.4	49,147	L1/L2					7.0	34.7	40.0	41.7	47.0	52.1	58.8	60	60
			L3/L4					-	17.3	20.0	17.3	20.0	21.6	25.0	25	25
	7.0	-	-					7.0	7.0	8.8	8.8	15	15			
	19.2	65,530	single	1,700				7.0	69.3	80.0	76.3	87.0	95.4	108.8	100	110
19.2	65,530	L1/L2	7.0				34.7	40.0	41.7	47.0	52.1	58.8	60	60		
		L3/L4	-				34.7	40.0	34.7	40.0	43.4	50.0	50	50		

5/08/2017

Rated Voltage of 208/230/60/1
HACR circuit breaker in USA only

Low Voltage Point to Point Wiring

To Air Handler	From Thermostat
C	C
R	R
G	G
O	O
Y1	Y1
Y2	Y2
W2	W
	L

Air Handler transformer must be 75VA.

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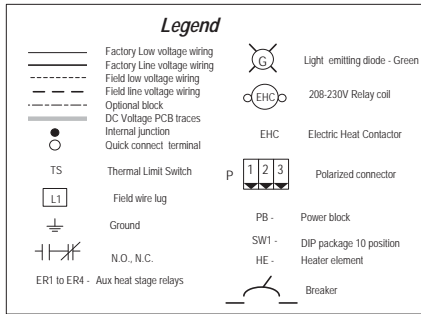
Project Name: _____ Unit Tag: _____

NAH Series

Wiring Schematics

Air Handler Wiring Schematic - 208-230/60/1

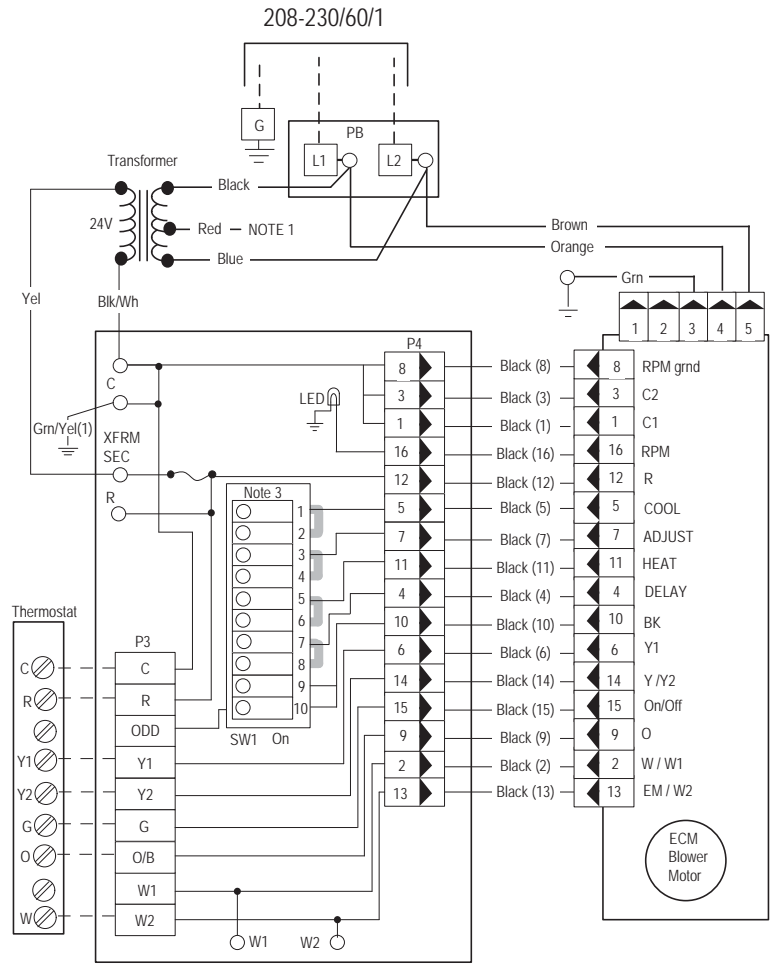
97P787-02



- Notes:**
- 1 - To operate in 208V mode replace the blue transformer wire connected to PB-L2 with red transformer wire.
 - 2 - Jumper wires are Factory Installed, and are needed for electric heat operation.
 - 3 - Dip switches are used to select the air flow.
 - 4 - Use manufacturer's part number 19P592-01 (jumper bar assembly) when single source power is required.
 - 5 - Low voltage wiring CLASS 2.

Dual Power Supply Connections

If two separate circuits are used to supply power to the auxiliary heat kit, the Installer will need to verify that each leg of the auxiliary heat circuit breakers are wired from the power supply correctly in order for the electric heat kit to operate properly. This can be done by measuring the supply side voltage of the auxiliary heat circuit breakers. Put a voltmeter on the L2 side of Circuit Breaker One and on the L2 side of Circuit Breaker Two. The voltmeter should read approximately 0 volts. If the meter reads high voltage, the auxiliary heat breakers need to be rewired so that breakers in the auxiliary heat kit match the wiring of the Disconnect Panel breakers. Meaning, L1 and L2 from one breaker in the disconnect panel must connect to L1 and L2 at one of the auxiliary heat circuit breakers and L1 and L2 from the other breaker in the disconnect panel must connect to L1 and L2 of the other auxiliary heat circuit breaker, making sure that the L1 and L2 from each disconnect breaker matches the L1 and L2 at each of the auxiliary heat breakers.



Air Handler No Electric Heat

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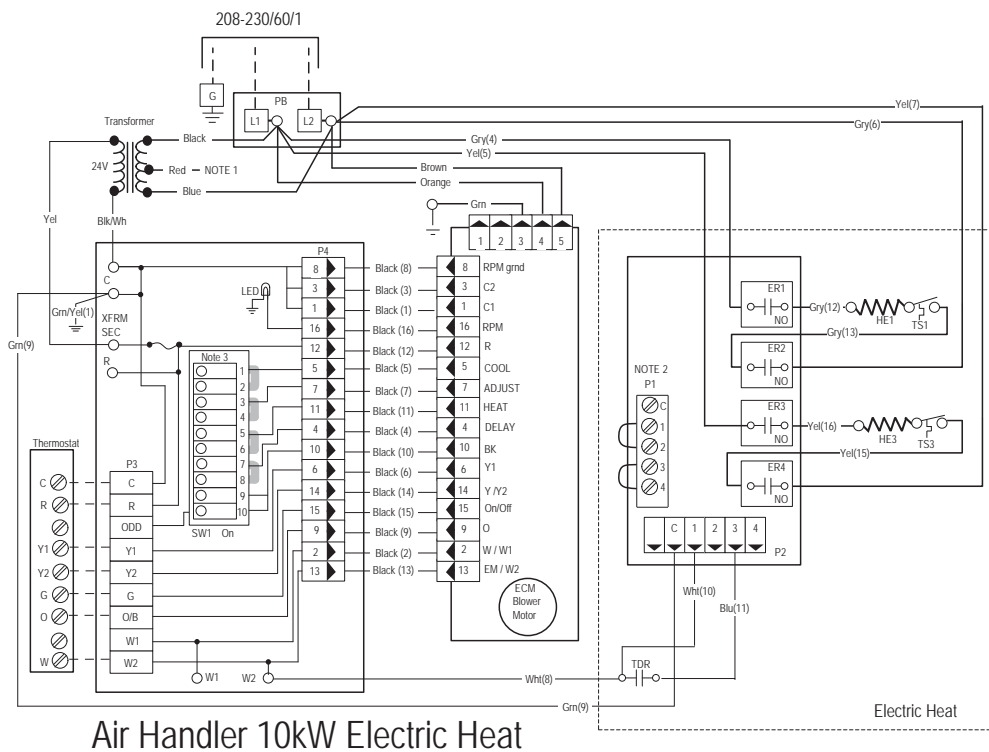
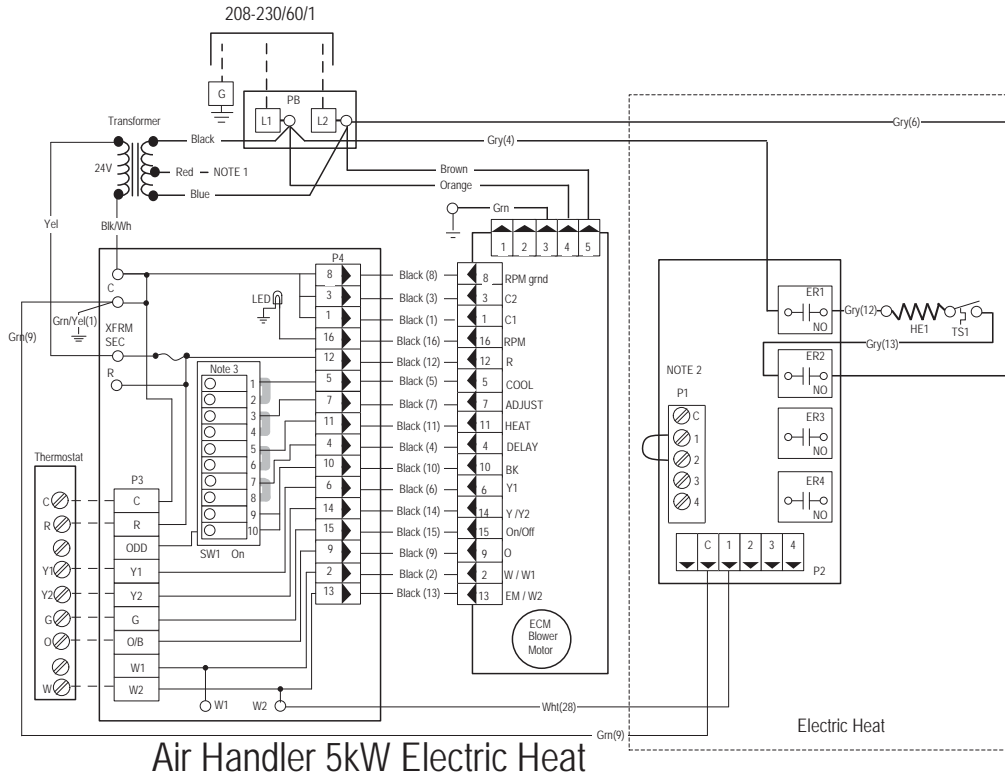
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NAH Series

Wiring Schematics cont.



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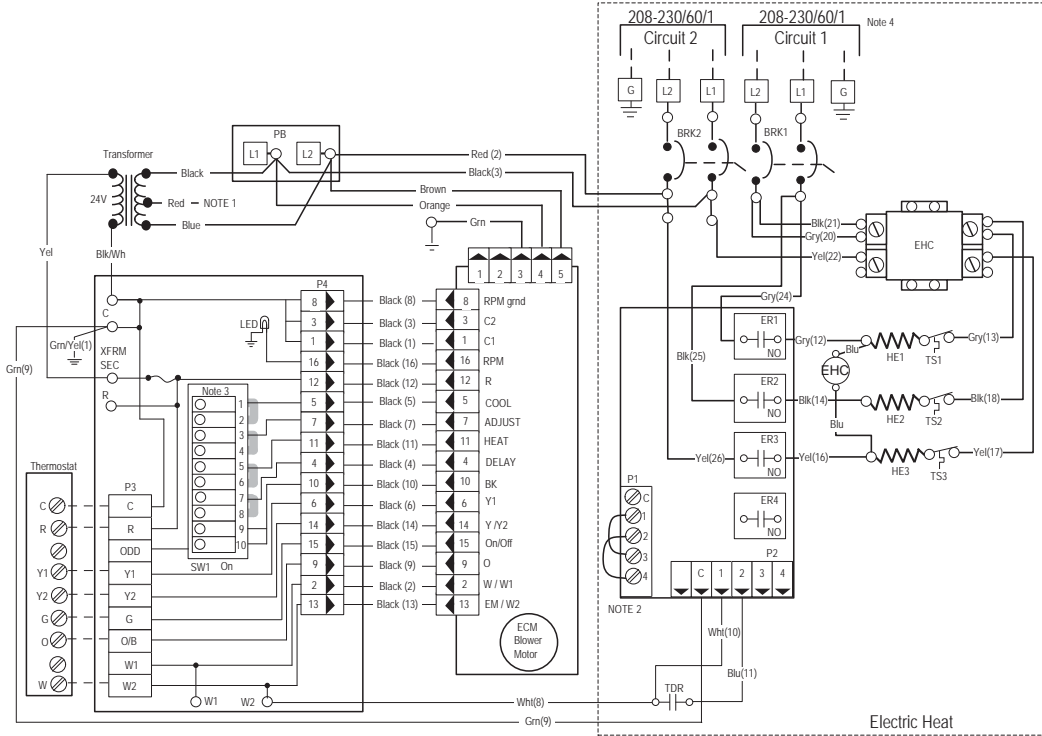
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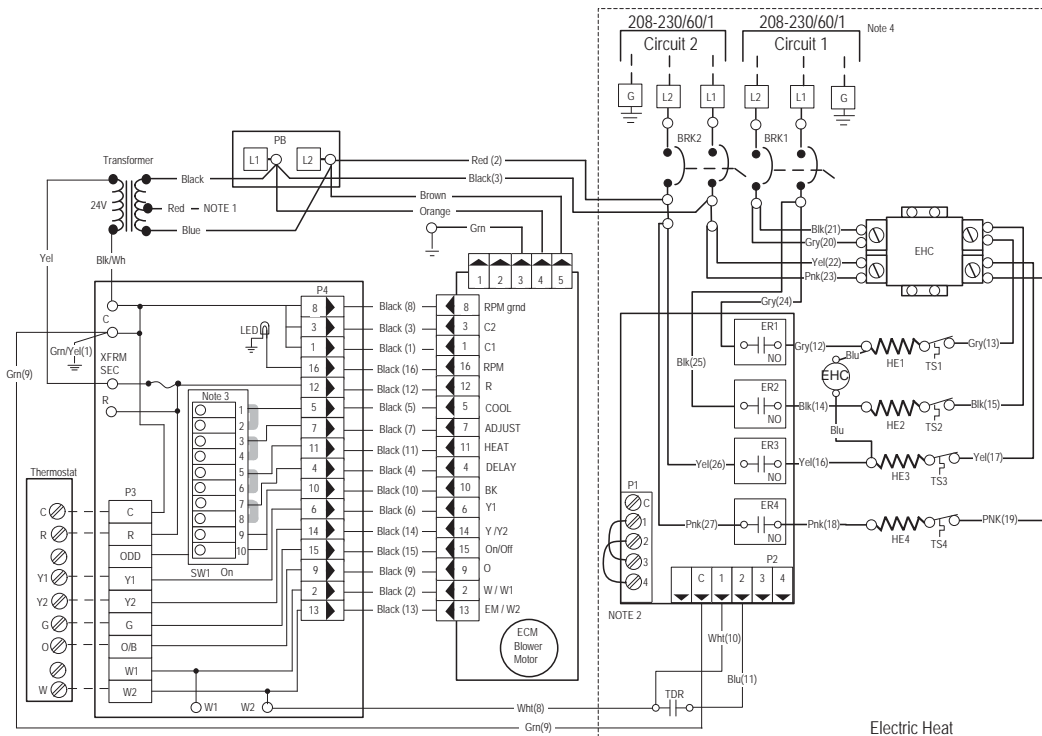
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Wiring Schematics cont.



Air Handler w/ 15kW Electric Heat



Air Handler w/ 20kW Electric Heat

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Engineering Guide Specifications

General

The air handler shall provide vertical upflow, downflow, or horizontal configurations in one package. Units shall be listed by a nationally recognized safety-testing laboratory or agency, such as Underwriter's Laboratory (UL) or Environmental Testing Laboratories (Intertek-ETL). Each unit shall be pallet mounted and shipped using dense cardboard corners/top and stretch wrap for easy shipping damage inspection.

Casing and Cabinet

The cabinet shall be fabricated from heavy-gauge galvanized steel and polyester powder coat paint to withstand 1000 hours of salt spray testing. The interior shall be insulated with 1/2"-thick, multi-density, cleanable aluminum foil coated glass fiber with edges sealed or tucked under flanges to prevent the introduction of glass fibers into the discharge air. One large blower compartment access panel shall be provided and shall be removable with supply and return ductwork in place. The internal components layout shall provide for major service with the unit in-place for restricted access installations. The blower assembly access shall be slide-out serviceable via a 'works-in-a-drawer' design. The cabinet shall be convertible to horizontal or downflow applications by reconfiguring the cabinet using only a nut driver. The unit shall be 'zero clearance' approved on any of its surfaces. The cabinet shall be divided into two cubes to facilitate easy transport up attic ladders when needed. Standard-size MERV 3 1" filters shall be provided with each unit.

Refrigeration Circuit

All units shall provide a fin tube air-to-hydronic heat exchanger of the "A" coil design. The finned tube coil shall be sized for low-face velocity and constructed of lanced aluminum fins bonded to rifled copper tubes in a staggered pattern. The coil shall include an integral corrosion resistant e-coated galvanized steel drain pan.

Blower Motor and Assembly

The blower shall be an oversized direct drive centrifugal type with a dynamically balanced wheel. The housing and wheel shall be designed for quiet low outlet velocity operation and of galvanized or galvalume steel construction. Tight blower housing geometry shall not be permitted. The blower housing shall be removable from the unit without disconnecting the supply air ductwork for servicing of the blower motor through a 'works-in-a-drawer' design. The high efficiency blower motor shall be a variable speed ECM type. The blower motor shall be isolated from the housing by rubber grommets. The motor shall be permanently lubricated ball bearings and have thermal overload protection.

Electrical

A solid state electronic control module shall be provided for the control of the blower and each stage of electric heat. Single or dual circuit line voltage terminal blocks shall be provided for the air handler power supply. Fuse protection shall be provided for the 75 VA control transformer. Units shall have knockouts for entrance of the low and line voltage wiring. The blower motor shall incorporate a harness plug-connection for easy removal. An integral circuit breaker shall be provided on all units employing 15 or 20 kW electric heat. The control shall maintain the blower operation 30 seconds after the cool, heat or electric heat have shut off to improve efficiency.

Piping

Hydronic connections shall be made using sweat copper joints. The condensate connections shall be a 3/4" O.D. tube.

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General Specifications

Hydronic Air Coil

Designed for hydronic applications. Configured as an 'A' coil, smooth copper tubes and enhanced corrugated lanced aluminum fins that provide increased performance. Exclusive FormiShield™ coating for added protection.

Filter Rack

Integral filter rack holds 1 in. or 2 in. filters (field changeable). 1 in. MERV 3 disposable filter included.

Cabinet (Encased Models)

Cabinets are designed for upflow, horizontal, and bottomflow applications. Constructed of heavy gauge environmentally-responsible galvanized steel and finished with corrosion-resistant powder coating which meets ASTM B117 (1,000 hour salt spray). Front access panel for ease of service.

Insulation (Encased Models)

The interior surfaces shall be lined with 1/2" thick multi-density, cleanable aluminum foil coated glass fiber which meets NFPA 90A requirements, air erosion and mold growth limits of UL-181, stringent fungal resistance test per ASTM-C1071 and ASTM G21, and zero level bacteria growth per ASTM G22.

Controls

24 volt 75VA transformer, ECM interface board allows for blower speed selection and thermostat inputs.

Auxiliary/Emergency Heat

Optional factory installed electric heat. 15 kW and 20 kW heaters include circuit breakers.

Drain Pans

Two e-coated galvanized steel drain pans included, one for vertical and one for horizontal applications. The pans come equipped with primary and secondary drain connections.

Hydronic Connections

Water in and water out lines have sweat connections extended outside the cabinet on encased models for ease of connection.

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Engineer: _____

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NAH Series

Revision Guide

Pages:	Description:	Date:	By:
All	Removed Refrigerant Coil Information	09 May 2017	MA
10-13	Updated Wiring Schematics	01 April 2015	MA
2,4-6,11	Drain Pan Update	20 May 2014	DS/MA
6-9,13	Updated Hydronic Data	15 Aug 2014	MA
All	Updated Dimensional Data for New Vertical Condensate Drain	02 May 2014	DS
All	Updated Nomenclature For New ECM Motor	20 Feb 2013	DS
13	Added Revision Guide	20 Feb 2013	DS

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