



**RN/RQ Series**  
**Packaged Rooftop Units, Heat Pumps**  
**& Outdoor Air Handling Units**  
**Engineering Catalog**





## Table of Contents

AAON® RN/RQ Series Features and Options Introduction .....	8
RQ Series Feature String Nomenclature .....	9
RN Series Feature String Nomenclature .....	16
Unit Size .....	27
Voltage .....	28
Discharge/Return Configuration and Interior Protection .....	28
Model Option A1 - Refrigerant Style .....	30
Model Option A2 - Unit Configuration .....	32
Model Option A3 - Coil Coating .....	34
Model Option A3 - Coil Coating Continued .....	35
Model Option A4 - Cooling/Heat Pump Staging .....	35
Model Option B1 - Heating Type .....	39
Model Option B2 - Heating Designation .....	42
Model Option B3 - Heating Staging .....	43
Return/Outside Air Section .....	44
Return/Exhaust Air Blower Configuration .....	52
Return/Exhaust Air Blower .....	53
Return/Exhaust Air Blower Motor .....	54
Outside Air Control .....	55
Heat Options .....	58
Maintenance Options .....	59
Supply Blower Configuration .....	60
Supply Blower .....	61
Supply Blower Motor .....	62
Pre Filter Type .....	63
Unit Filter Type .....	63
Filter Options .....	64
Refrigeration Control .....	65
Refrigeration Options .....	67
Refrigeration Accessories .....	72
Power Options .....	73
Safety Options .....	74
Controls .....	75
Special Controls .....	76
Preheat Configuration .....	80
Preheat Sizing .....	81
Glycol Percentage .....	83
Interior Cabinet Options .....	83
Exterior Cabinet Options .....	83
Customer Code .....	85
Code Options .....	85
Crating .....	86
Water-Cooled Condenser .....	86



Control Vendors.....	88
Type .....	89
General Data .....	91
Unit Information .....	91
Curb Information .....	114
Filter Information.....	116
Component Static Pressure Drops .....	124
AAONAIR <sup>®</sup> Factory Installed Energy Recovery Wheel Application Capacities.....	138
Control Options.....	141
Control Vendors.....	149
Electrical Service Sizing Data .....	155

R71120 · Rev. D · 160309

## Index of Tables and Figures

### Tables:

Table 1 - Unit Sizes.....	27
Table 2 - Electric and Gas Heating Capacities .....	42
Table 3 - Low cfm Energy Recovery Wheel Information .....	50
Table 4 - High cfm and Single Wheel Energy Recovery Wheel Information .....	51
Table 5 - Auxiliary Electric Heating Capacities .....	58
Table 6 - Moisture Content in the Refrigerant.....	73
Table 7 - RQ Series (2-6 tons) DX Cooling Information .....	91
Table 8 - RQ Series (2-6 tons) Heating and Hydronic Cooling Information.....	92
Table 9 - RQ Series (2-6 tons) Preheat and Fan Information .....	93
Table 10 - RN Series A Cabinet (6-8 and 10 tons) DX Cooling Information .....	94
Table 11 - RN Series A Cabinet (6-8 and 10 tons) Heating and Hydronic Cooling Information	95
Table 12 - RN Series A Cabinet (6-8 and 10 tons) Preheat and Fan Information .....	96
Table 13 - RN Series B Cabinet (9 and 11-15 tons) DX Cooling Information .....	97
Table 14 - RN Series B Cabinet (9 and 11-15 tons) Heating and Hydronic Cooling Information	98
Table 15 - RN Series B Cabinet (9 and 11-15 tons) Preheat and Fan Information .....	99
Table 16 - RN Series C Cabinet (16-25 and 30 tons) DX Cooling Information .....	100
Table 17 - RN Series C Cabinet (16-25 and 30 tons) Heating and Hydronic Cooling Information .....	101
Table 18 - RN Series C Cabinet (16-25 and 30 tons) Preheat and Fan Information .....	102
Table 19 - RN Series D Cabinet (26, 31-50, 60 and 70 tons) DX Cooling Information .....	103
Table 20 - RN Series D Cabinet (26, 31-50, 60 and 70 tons) Heating and Hydronic Cooling Information .....	104
Table 21 - RN Series D Cabinet (26, 31-50, 60 and 70 tons) Preheat and Fan Information .....	105
Table 22 - RN Series E Cabinet (55, 65, 75, and 90 tons) Compressor Information .....	106
Table 23 - RN Series E Cabinet (55, 65, 75, and 90 tons) DX Cooling Information .....	107
Table 24 - RN Series E Cabinet (55, 65, 75, and 90 tons) Heating and Hydronic Cooling Information .....	108
Table 25 - RN Series E Cabinet (55, 65, 75, and 90 tons) Preheat and Fan Information .....	109
Table 26 - RN Series E Cabinet (105-140 tons) Compressor Information.....	110
Table 27 - RN Series E Cabinet (105-140 tons) DX Cooling Information .....	111
Table 28 - RN Series E Cabinet (105-140 tons) Heating and Hydronic Cooling Information...	112
Table 29 - RN Series E Cabinet (105-140 tons) Preheat and Fan Information .....	113
Table 30 - RQ Series 2-6 ton Pre Filters.....	116
Table 31 - RN Series 6-8 and 10 ton Pre Filters .....	116
Table 32 - RN Series 9 and 11-15 ton Pre Filters .....	116
Table 33 - RN Series 16-25 and 30 ton Pre Filters .....	117
Table 34 - RN Series 26, 31, and 40 ton Pre Filters .....	117
Table 35 - RN Series 50, 60, and 70 ton Pre Filters .....	117
Table 36 - RN Series 55, 65, and 75 ton Pre Filters .....	117
Table 37 - RN Series 90-140 ton Pre Filters.....	118
Table 38 - RQ Series 2-6 ton Unit Filters .....	118
Table 39 - RN Series 6-8 and 10 ton Unit Filters .....	118
Table 40 - RN Series 9 and 11 ton Unit Filters.....	119



Table 41 - RN Series 13 and 15 ton Unit Filters..... 119

Table 42 - RN Series 16-25 and 30 ton Unit Filters ..... 119

Table 43 - RN Series 26, 31, and 40 ton Unit Filters..... 120

Table 44 - RN Series 50, 60, and 70 ton Unit Filters..... 120

Table 45 - RN Series 55, 65, and 75 ton Unit Filters..... 121

Table 46 - RN Series 90-140 ton Unit Filters ..... 121

Table 47 - RQ Series 2-6 ton Energy Recovery Wheel Filters..... 121

Table 48 - 6-8 and 10 ton Energy Recovery Wheel Filters ..... 121

Table 49 - 9 and 11-15 ton Energy Recovery Wheel Filters ..... 122

Table 50 - 16-25 and 30 ton Energy Recovery Wheel Filters ..... 122

Table 51 - 26, 31-50, 60, and 70 ton Energy Recovery Wheel Filters ..... 123

Table 52 - RN Series 55, 65, and 75-140 ton Energy Recovery Wheel Filters ..... 123

Table 53 - RN Series 26, 31-50, 60, and 70 ton Preheat Filters ..... 123

Table 54 - RQ Series 2-6 ton Evaporator Coil Static Pressure Drops ..... 124

Table 55 - RQ Series 2-6 ton Electric Heating Static Pressure Drops..... 124

Table 56 - RQ Series 2-6 ton Economizer and Gas Heating Static Pressure Drops..... 125

Table 57 - RQ Series 2-6 ton Filter Static Pressure Drops ..... 125

Table 58 - RN Series 6-8 and 10 ton Evaporator Coil Static Pressure Drops ..... 126

Table 59 - RN Series 6-8 and 10 ton Electric Heating Static Pressure Drops ..... 126

Table 60 - RN Series 6-8 and 10 ton Economizer, Refrigerant Reheat Coil and Gas Heating Static Pressure Drops ..... 127

Table 61 - RN Series 6-8 and 10 ton Filter Static Pressure Drops ..... 127

Table 62 - RN Series 9 and 11-15 ton Evaporator Coil Static Pressure Drops ..... 128

Table 63 - RN Series 9 and 11-15 ton Electric Heating Static Pressure Drops ..... 128

Table 64 - RN Series 9 and 11-15 ton Economizer, Refrigerant Reheat Coil, and Gas Heating Static Pressure Drops ..... 129

Table 65 - RN Series 9 and 11-15 ton Filter Static Pressure Drops ..... 129

Table 66 - RN Series 16-25 and 30 ton Evaporator Coil Static Pressure Drops ..... 130

Table 67 - RN Series 16-25 and 30 ton Electric Heating Static Pressure Drops ..... 130

Table 68 - RN Series 16-25 and 30 ton Economizer, Refrigerant Reheat Coil and Gas Heating Static Pressure Drops ..... 131

Table 69 - RN Series 16-25 and 30 ton Filter Static Pressure Drops ..... 131

Table 70 - RN Series 26, 31-50, 60, and 70 ton Evaporator Coil Static Pressure Drops ..... 132

Table 71 - RN Series 26, 31-50, 60, and 70 ton Electric Heating Static Pressure Drops ..... 132

Table 72 - 26, 31-50, 60, and 70 ton Refrigerant Reheat Coil and Gas Heating Static Pressure Drops..... 133

Table 73 - 26, 31-50, 60, and 70 ton Filter Static Pressure Drops..... 133

Table 74 - RN Series 55, 65, and 75-140 ton Evaporator Coil Static Pressure Drops ..... 134

Table 75 - RN Series 55, 65, and 75-140 ton Electric Heating Static Pressure Drops ..... 135

Table 76 - 55, 65, and 75-140 ton Refrigerant Reheat Coil and Gas Heating Static Pressure Drops ..... 136

Table 77 - 55, 65, and 75-140 ton Filter Static Pressure Drops..... 137

Table 78 - RQ Series and RN Series A, B, and C Cabinet AAON AIRE Unit Capacities Examples ..... 139

Table 79 - RN Series D and E Cabinets AAON AIRE Unit Capacities Examples ..... 140

**Figures:**

Figure 1 - Factory Wired Convenience Outlet..... 59

Figure 2 - Magnehelic Gauge ..... 65

Figure 3 - Hot Gas Bypass Piping Schematic ..... 71

Figure 4 - Example Low Voltage Terminal Block ..... 80

Figure 5 - Condenser Coil Guard Option..... 84

Figure 6 - Example Solid Bottom Curb ..... 114

Figure 7 - Example Adjustable Pitch Solid Bottom Curb ..... 114

Figure 8 - Example Knock Down Curb (Shown with Duct Support Rail Kit)..... 114

Figure 9 - Acoustical Solid Bottom Curb with Horizontal Discharge Openings ..... 115

Figure 10 - Example Unit and Curb with Horizontal Return and Supply Openings ..... 116

Figure 11 - Example RN Series AAONNAIRE Unit Air Flow..... 138

Figure 12 - WattMaster VCM-X Controller ..... 149

Figure 13 - VCM-X Controller Operator Interfaces ..... 149

Figure 14 - WattMaster VCB-X Controller ..... 150

Figure 15 - VCB-X Controller Operator Interfaces ..... 150

Figure 16- WattMaster VCC-X Controller ..... 151

Figure 17- VCC-X Controller Operator Interfaces..... 151

Figure 18 - AAON JENEsys Controller ..... 152

Figure 19 - LCD Interface, MCS Magnum Controller, and Touchscreen Interface..... 153

Figure 20 - Remote Mounted AAON Mini Controller ..... 154



# AAON<sup>®</sup> RN/RQ Series Features and Options Introduction

## Energy Efficiency

- Direct Drive Backward Curved Plenum Supply Fans
- Variable Capacity and Variable Speed R-410A Scroll Compressors
- Airside Economizers
- Factory Installed AAONAIRES<sup>®</sup> Energy Recovery Wheels
- Double Wall Rigid Polyurethane Foam Panel Construction, R-13 Insulation
- Modulating Natural Gas Heaters
- Modulating/SCR Electric Heaters
- Premium Efficiency Motors
- Variable Speed Supply/Return/Exhaust Fans
- Water-Cooled Condensers
- Air-Source, Water-Source and Geothermal Heat Pumps

## Indoor Air Quality

- 100% Outside Air
- Constant Volume Outside Air Control
- Economizer CO<sub>2</sub> Override
- High Efficiency Filtration
- Double Wall Rigid Polyurethane Foam Panel Construction, R-13 Insulation
- Interior Corrosion Protection

## Humidity Control

- High Capacity Cooling Coils
- Variable Capacity Compressors
- Factory Installed AAONAIRES Total Energy Recovery Wheels
- Mixed/Return Air Bypass
- Modulating Hot Gas Reheat

## Safety

- Burglar Bars
- Freeze Stats
- Hot Water/Steam Preheat Coils
- Electric Preheat
- Phase and Brown Out Protection
- Supply/Return Smoke Detectors
- Supply/Return Firestats

## Installation and Maintenance

- Clogged Filter Switch
- Color Coded Wiring Diagram
- Compressors in Isolated Compartment
- Compressor Isolation Valves
- Convenience Outlet
- Direct Drive Supply Fans
- Hinged Access Doors with Lockable Handles
- Magnehelic Gauge
- Service Lights
- Sight Glass

## System Integration

- Chilled Water Cooling Coils
- Controls by Others
- Electric/Natural Gas/LP Heating
- Hot Water/Steam Heating Coil
- Non-Compressorized DX Coils
- Water-Cooled Condensers

## Environmentally Friendly

- Airside Economizers
- Factory Installed AAONAIRES Energy Recovery Wheels
- Mixed/Return Air Bypass
- R-410A Refrigerant

## Extended Life

- 5 Year Compressor Warranty
- 15 Year Aluminized Steel Heat Exchanger Warranty
- 25 Year Stainless Steel Heat Exchanger Warranty
- Condenser Coil Guards
- Interior Corrosion Protection
- Polymer E-Coated Coils - 5 Year Warranty
- Stainless Steel Coil Casing
- Stainless Steel Drain Pans



## RQ Series Feature String Nomenclature

Model Options

Unit Feature Options

GEN	SIZE	VLT	CONFIG	A1	A2	A3	A4	B1	B2	B3	1A	1B	1C	1D	2	3	4	5A	5B	5C	6A	6B	6C	7	8	9	10	11	12	13	14A	14B	15	16	17	18	19	20	21	22	23															
R	Q	-	0	0	5	-	3	-	V	-	B	B	0	1	-	3	3	4	:	A	0	0	0	-	D	0	B	-	P	J	C	-	0	B	A	-	0	D	0	0	0	0	L	-	0	0	-	0	0	B	0	0	0	0	0	B

### BASE MODEL

#### SERIES AND GENERATION

RQ

#### UNIT SIZE

002 = 2 ton Capacity

003 = 3 ton Capacity

004 = 4 ton Capacity

005 = 5 ton Capacity

006 = 6 ton Capacity

#### VOLTAGE

1 = 230V/1Φ/60Hz

2 = 230V/3Φ/60Hz

3 = 460V/3Φ/60Hz

4 = 575V/3Φ/60Hz

6 = 380V/3Φ/50Hz

8 = 208V/3Φ/60Hz

9 = 208V/1Φ/60Hz

#### DISCHARGE/RETURN CONFIGURATION AND INTERIOR CORROSION PROTECTION

V = Vertical Discharge and Return

H = Horizontal Discharge and Return

J = Option H + Interior Corrosion Protection

W = Option V + Interior Corrosion Protection

K = Vertical Discharge and Horizontal Return

L = Option K + Interior Corrosion Protection

M = Horizontal Discharge and Vertical Return

N = Option M + Interior Corrosion Protection

### Model Option A: COOLING/HEAT PUMP

#### A1: REFRIGERANT STYLE

0 = Air Handling Unit

B = R-410A - Non-Compressorized DX Air Handling Unit

C = R-410A - Standard Efficiency

E = R-410A Variable Capacity Scroll Compressor - High Efficiency

F = R-410A Variable Capacity Scroll Compressor - Standard Efficiency

G = R-410A Two-Step Compressor - High Efficiency

H = R-410A Two-Step Compressor - Standard Efficiency

#### A2: UNIT CONFIGURATION

0 = No Cooling

A = Air-Cooled Cond. + Std Evap. Coil

B = Air-Cooled Cond. + 6 Row Evap. Coil

J = Water-Cooled Cond. + Std Evap. Coil

K = Water-Cooled Cond. + 6 Row Evap. Coil

U = Chilled Water Coil - 4 Row

W = Chilled Water Coil - 6 Row

2 = Non-Compressorized + Std Evap. Coil

4 = Non-Compressorized + 6 Row Evap. Coil

6 = Air-Source Heat Pump

7 = Water-Source/Geothermal Heat Pump

#### A3: COIL COATING

0 = Standard

1 = Polymer E-Coated Evap. and Cond. Coils

8 = Polymer E-Coated Cond. Coil

9 = Polymer E-Coated Cooling Coil

A = Stainless Steel Evap. Coil Casing + Polymer E-Coated Cond. Coil

D = Stainless Steel Cooling Coil Casing

#### A4: COOLING/HEAT PUMP STAGING

0 = No Cooling

1 = 1 Stage

2 = 2 Stage

9 = Modulating - Lead VCC

B = 1 Stage + 1 Stage Auxiliary Heat

C = 2 Stage + 1 Stage Auxiliary Heat

E = Modulating - Lead VCC + 1 Stage Aux. Heat

H = Single Serpentine 8 fpi

J = Half Serpentine 8 fpi

K = Single Serpentine 10 fpi

L = Half Serpentine 10 fpi

M = Single Serpentine 12 fpi

N = Half Serpentine 12 fpi

P = 1 Stage + 2 Stage Auxiliary Heat

Q = 2 Stage + 2 Stage Auxiliary Heat

S = Modulating - Lead VCC + 2 Stage Aux. Heat

U = 1 Stage + 4 Stage Auxiliary Heat

V = 2 Stage + 4 Stage Auxiliary Heat

Y = Modulating - Lead VCC + 4 Stage Aux. Heat



## RQ Series Feature String Nomenclature

Model Options

Unit Feature Options

GEN	SIZE	VLT	CONFIG	A1	A2	A3	A4	B1	B2	B3	1A	1B	1C	1D	2	3	4	5A	5B	5C	6A	6B	6C	7	8	9	10	11	12	13	14A	14B	15	16	17	18	19	20	21	22	23
RQ	-005	-3	-V	-BB	01	-3	3	4	:	A	0	0	0	-D	0	B	-P	J	C	-0	B	A	-0	D	0	0	0	0	L	-0	0	-0	0	B	0	0	0	0	0	0	B

### Model Option B: HEATING

#### B1: HEATING TYPE

- 0 = No Heating
- 1 = Electric Heat
- 2 = Natural Gas Aluminized
- 3 = Natural Gas Stainless Steel
- 4 = High Altitude Natural Gas Aluminized
- 5 = High Altitude Natural Gas Stainless Steel
- 6 = LP Gas Aluminized
- 7 = LP Gas Stainless Steel
- 8 = High Altitude LP Gas Aluminized
- 9 = High Altitude LP Gas Stainless Steel
- C = Steam Distributing Standard
- D = Steam Distributing Polymer E-Coated
- E = Hot Water Standard
- F = Hot Water Polymer E-Coated

#### B2: HEATING DESIGNATION

- 0 = No Heating
- 1 = Heat 1
- 2 = Heat 2
- 3 = Heat 3
- 4 = Heat 4
- 5 = Heat 5
- 7 = Heat 7
- H = 1 Row Coil
- J = 2 Row Coil

#### B3: HEATING STAGING

- 0 = No Heating
- 1 = 1 Stage
- 2 = 2 Stage
- 3 = 3 Stage
- 4 = 4 Stage
- 9 = Modulating Gas/SCR Electric
- A = SCR Electric, 0-10V External Control
- H = Single Serpentine 8 fpi
- J = Half Serpentine 8 fpi
- M = Single Serpentine 12 fpi
- N = Half Serpentine 12 fpi

### Feature 1: RETURN/OUTSIDE AIR

#### 1A: RETURN/OUTSIDE AIR SECTION

- 0 = Manually Adjustable OA Opening + RA Opening
- A = Economizer
- B = Econ + Power Exhaust
- F = Low cfm Total Energy Recovery Wheel
- G = Low cfm Total ERW + Bypass Damper
- H = Low cfm Sensible ERW
- J = Low cfm Sensible ERW + Bypass Damper
- K = 100% Outside Air - No Return Air Opening
- L = Motorized Outside Air Damper + RA Opening
- M = Motorized Outside Air Damper - No RA Opening
- N = Empty ERW Option Box- No Power Exhaust
- P = Empty ERW Option Box + Power Exhaust
- 5 = 100% Return Air

#### 1B: RETURN/EXHAUST AIR BLOWER

##### CONFIGURATION

- 0 = Standard - None
- A = 1 Blower + Standard Eff. Motor
- C = 1 Blower + Premium Eff. Motor
- E = 1 Blower + Premium Eff. Motor + 1 VFD
- H = 1 Blower + High Efficiency EC Motor
- J = 1 Blower + Single Phase Motor + Speed Control

#### 1C: RETURN/EXHAUST AIR BLOWER

- 0 = Standard - None
- B = 15" Backward Curved Plenum
- J = 15" Backward Curved Plenum - 70% Width
- N = 16" Axial Flow

#### 1D: RETURN/EXHAUST AIR BLOWER

##### MOTOR

- 0 = Standard - None
- A = 0.25 hp - 850 rpm
- B = 0.5 hp - 1075 rpm
- C = 1 hp - 1750 rpm
- D = 2 hp - 1760 rpm
- W = 0.75 hp - 1760 rpm
- Z = 0.167 hp - 825 rpm





## RQ Series Feature String Nomenclature

Model Options

Unit Feature Options

GEN	SIZE	VLT	CONFIG	A1	A2	A3	A4	B1	B2	B3	1A	1B	1C	1D	2	3	4	5A	5B	5C	6A	6B	6C	7	8	9	10	11	12	13	14A	14B	15	16	17	18	19	20	21	22	23															
R	Q	-	0	0	5	-	3	-	V	-	B	B	0	1	-	3	3	4	:	A	0	0	0	-	D	0	B	-	P	J	C	-	0	B	A	-	O	D	0	0	0	0	L	-	0	0	-	0	0	B	0	0	0	0	0	B

### 6B: UNIT FILTER

0 = 2" Pleated - 30% Eff. - MERV 8  
 B = 4" Pleated - 30% Eff. - MERV 8  
 C = 2" Permanent Filter + Replaceable Media  
 F = 4" Pleated - 65% Eff. - MERV 11  
 G = 4" Pleated - 85% Eff. - MERV 13  
 H = 4" Pleated - 95% Eff. - MERV 14

### 6C: FILTER OPTIONS

0 = Standard  
 A = Clogged Filter Switch  
 B = Magnehelic Gauge  
 C = Options A + B

### Feature 7: REFRIGERATION CONTROL

0 = Standard  
 A = 5 Min. Time Delay Relay - Comp. Off  
 C = Fan Cycling  
 D = Adjustable Lockouts - Each Circuit  
 E = Freeze Stats - Each Circuit  
 G = Options A + C  
 H = Options A + D  
 J = Options A + E  
 N = Options C + D  
 P = Options C + E  
 Q = Options D + E  
 U = Options A + C + D  
 V = Options A + C + E  
 W = Options A + D + E  
 2 = Options C + D + E  
 6 = Options A + C + D + E

### Feature 8: REFRIGERATION OPTIONS

0 = Standard  
 C = Hot Gas Reheat  
 D = Modulating Hot Gas Reheat  
 E = 0°F Low Ambient Lead Stage  
 M = Polymer E-Coated Hot Gas Reheat  
 N = Polymer E-Coated Modulating Hot Gas Reheat

### Feature 9: REFRIGERATION ACCESSORIES

0 = Standard  
 A = Sight Glass  
 B = Compressor Isolation Valves  
 C = Options A + B  
 D = ECM Condenser Fan - Multiple Speed  
 E = ECM Condenser Fan - Head Pressure Control  
 G = Options A + D  
 H = Options B + D  
 J = Options A + B + D  
 K = Options A + E  
 L = Options B + E  
 M = Options A + B + E

### Feature 10: POWER OPTIONS

0 = Standard Power Block  
 A = 100 Amp Power Switch  
 B = 150 Amp Power Switch  
 F = 60 Amp Power Switch

### Feature 11: SAFETY OPTIONS

0 = Standard  
 A = Return and Supply Air Firestat  
 B = Return Air Smoke Detector  
 C = Supply Air Smoke Detector  
 D = Options B + C  
 E = Options A + B  
 F = Options A + C  
 G = Options A + B + C  
 H = Remote Safety Shutoff Terminals  
 J = Options A + H  
 K = Options B + H  
 L = Options C + H  
 M = Options D + H  
 N = Options A + B + H  
 P = Options A + C + H  
 Q = Options A + D + H

## RQ Series Feature String Nomenclature

Model Options : Unit Feature Options

GEN	SIZE	VLT	CONFIG	A1	A2	A3	A4	B1	B2	B3	1A	1B	1C	1D	2	3	4	5A	5B	5C	6A	6B	6C	7	8	9	10	11	12	13	14A	14B	15	16	17	18	19	20	21	22	23															
R	Q	-	0	0	5	-	3	-	V	-	B	B	0	1	-	3	3	4	:	A	0	0	0	-	D	0	B	-	P	J	C	-	0	B	A	-	0	D	0	0	0	0	<b>L</b>	-	0	0	-	0	0	B	0	0	0	0	0	B

### Feature 12: CONTROLS

0 = Standard  
 A = Low Limit Controls  
 B = Phase and Brown Out Protection  
 C = Energy Recovery Wheel Defrost  
 D = Energy Recovery Wheel Rotation Detection  
 E = Compressor Power Factor Correction  
 F = Options A + B  
 G = Options A + C  
 H = Options A + D  
 J = Options A + E  
 K = Options B + C  
 L = Options B + D  
 M = Options B + E  
 N = Options C + D  
 P = Options C + E  
 Q = Options D + E  
 R = Options A + B + C  
 S = Options A + B + D  
 T = Options A + B + E  
 U = Options A + C + D  
 V = Options A + C + E  
 W = Options A + D + E  
 Y = Options B + C + D  
 Z = Options B + C + E  
 1 = Options B + D + E  
 2 = Options C + D + E  
 3 = Options A + B + C + D  
 4 = Options A + B + C + E  
 5 = Options A + B + D + E  
 6 = Options A + C + D + E  
 7 = Options B + C + D + E  
 8 = Options A + B + C + D + E

### Feature 13: SPECIAL CONTROLS

0 = Terminal Block  
 D = VAV Unit Controller - VAV Cool + CV Heat  
 E = Constant Volume Unit Controller - CV Cool + CV Heat  
 F = Makeup Air Unit Controller - CV Cool + CV Heat  
 J = Factory Installed DDC Controls Furnished by Others  
 K = Factory Installed DDC Controls Furnished by Others with Isolation Relays  
 L = Terminal Block for Thermostat Control with Isolation Relays  
 W = Terminal Block for Variable Capacity Compressor Thermostat  
 Y = VAV Single Zone Heat Pump Unit Controller - VAV Cool + VAV Heat  
 Z = Constant Volume Heat Pump Unit Controller - CV Cool + CV Heat  
 1 = Makeup Air Heat Pump Unit Controller - CV Cool + CV Heat  
 2 = VAV Single Zone Unit Controller VAV Cool + CV Heat  
 3 = VAV Single Zone Unit Controller VAV Cool + VAV Heat  
 4 = Field Installed DDC Controls by Others  
 5 = Field Installed DDC Controls Furnished by Others with Isolation Relays  
 6 = Factory Installed DDC Controls Furnished by Others with Isolation Relays (SPA)

### Feature 14: PREHEAT

#### 14A: PREHEAT CONFIGURATION

0 = Standard - None  
 A = Steam Distributing Preheat Coil - 1 Row  
 C = Hot Water Preheat Coil - 1 Row  
 E = Modulating Electric Preheat



## RQ Series Feature String Nomenclature

Model Options													:	Unit Feature Options																												
GEN	SIZE	VLT	CONFIG	A1	A2	A3	A4	B1	B2	B3	1A	1B	1C	1D	2	3	4	5A	5B	5C	6A	6B	6C	7	8	9	10	11	12	13	14A	14B	15	16	17	18	19	20	21	22	23	
RQ	- 005	- 3	- V	- BB	01	- 3	3	4	:	A	000	- D	0	B	- P	J	C	- 0	BA	- 0	D	0000	L	- 00	- 00	B	0000	0	B	0000	0	B										

### **14B: PREHEAT SIZING**

- 0 = Standard – None
- A = Single Serpentine 8 fpi
- B = Half Serpentine 8 fpi
- E = Single Serpentine 12 fpi
- F = Half Serpentine 12 fpi
- G = 10 kW (7.5 kW @ 208V)
- H = 15 kW (11.3 kW @ 208V)
- J = 20 kW (15 kW @ 208V)

### **Feature 15: Glycol Percentage**

- 0 = Standard
- A = 20% Propylene Glycol
- B = 40% Propylene Glycol
- C = Field Adjustable for Glycol Percentage

### **Feature 16: INTERIOR CABINET OPTIONS**

- 0 = Standard
- B = Service Lights

### **Feature 17: EXTERIOR CABINET OPTIONS**

- 0 = Standard
- A = Base Insulation
- B = Burglar Bars
- D = Options A + B

### **Feature 18: CUSTOMER CODE**

- 0 = Standard

### **Feature 19: CODE OPTIONS**

- 0 = Standard - ETL U.S.A. Listing
- A = M.E.A.
- B = Chicago - Cool + Gas
- C = Chicago - Cool + Electric Heat
- D = Chicago - Cool Only
- E = Chicago - Gas Only
- F = Chicago - Electric Heat Only
- G = Chicago - No Cool + No Heat
- H = ETL U.S.A. + Canada Listing
- K = California OSHPD Certification
- L = Shake Table Cert. (ASCE 7-05/ICC-ES AC 156)
- M = Seismic Construction (Non-Certified)
- N = California OSHPD Certification + Chicago
- P = Shake Table Cert. (ASCE 7-05/ICC-ES AC 156) + Chicago
- Q = Seismic Construction (Non-Certified) + Chicago

### **Feature 20: CRATING**

- 0 = Standard
- A = Export Crating
- B = Export Crating - No Condenser Section

## RQ Series Feature String Nomenclature

Model Options : Unit Feature Options

GEN	SIZE	VLT	CONFIG	A1	A2	A3	A4	B1	B2	B3	1A	1B	1C	1D	2	3	4	5A	5B	5C	6A	6B	6C	7	8	9	10	11	12	13	14A	14B	15	16	17	18	19	20	21	22	23																
R	Q	-	0	0	5	-	3	-	V	-	B	B	0	1	-	3	3	4	:	A	0	0	0	-	D	0	B	-	P	J	C	-	0	B	A	-	0	D	0	0	0	0	L	-	0	0	-	0	0	B	0	0	0	0	0	0	B

### Feature 21: WATER-COOLED CONDENSER

0 = Standard - None  
 A = Balancing Valves  
 B = Water Flow Switch  
 C = Motorized Shut-off Valve  
 D = Head Pressure Control  
 E = Options A + B  
 F = Options A + C  
 G = Options A + D  
 H = Options B + C  
 J = Options B + D  
 L = Options A + B + C  
 M = Options A + B + D  
 R = CuNi Coaxial Heat Exchanger  
 S = Options A + R  
 T = Options B + R  
 U = Options C + R  
 V = Options D + R  
 W = Options A + B + R  
 Y = Options A + C + R  
 Z = Options A + D + R  
 1 = Options B + C + R  
 2 = Options B + D + R  
 3 = Options C + D + R  
 4 = Options A + B + C + R  
 5 = Options A + B + D + R

### Feature 22: CONTROL VENDORS

0 = None  
 A = WattMaster Orion VCM-X Controls System  
 B = JENEsys Control System with Web UI  
 C = WattMaster Orion VCM-X Controls System with  
 Specials  
 E = Remote Mounted AAON Mini Controller  
 F = JENEsys Control System with Web UI + Fox  
 G = JENEsys Control System with Web UI + Lon  
 H = JENEsys Control w/Web UI + BACnet MSTP  
 J = JENEsys Control w/Web UI + BACnet IP  
 K = JENEsys Control w/Web UI + Modbus RTU  
 L = JENEsys Control w/Web UI + Modbus TCP  
 T = WattMaster Orion VCB-X Controls System +  
 Integrated BACnet MSTP  
 U = WattMaster Orion VCB-X Controls System +  
 Integrated BACnet MSTP with Specials

### Feature 23: TYPE

B = Standard - AAON Gray Paint  
 U = Special Pricing Authorization + Special Paint  
 X = Special Pricing Authorization + AAON Gray  
 Paint  
 4 = Standard Paint + 5 Year Parts Only Warranty  
 9 = Standard Paint + 10 Year Parts Only Warranty



## RN Series Feature String Nomenclature

Model Options : Unit Feature Options

GEN      SIZE      VLT      CONFIG  
 A1 A2 A3 A4      B1 B2 B3      1A 1B 1C 1D      2 3 4      5A 5B 5C      6A 6B 6C      7 8 9 10 11 12 13      14A 14B      15 16 17 18 19 20 21 22 23

**RN-025-3-0-BB02-384 : A000-DOB-DEH-0BA-0D0000L-00-00B00000B**

### BASE MODEL

#### SERIES AND GENERATION

RN

#### UNIT SIZE

- 006 = 6 ton Capacity
- 007 = 7 ton Capacity
- 008 = 8 ton Capacity
- 009 = 9 ton Capacity
- 010 = 10 ton Capacity
- 011 = 11 ton Capacity
- 013 = 13 ton Capacity
- 015 = 15 ton Capacity
- 016 = 16 ton Capacity
- 018 = 18 ton Capacity
- 020 = 20 ton Capacity
- 025 = 25 ton Capacity
- 026 = 26 ton Capacity
- 030 = 30 ton Capacity
- 031 = 31 ton Capacity
- 040 = 40 ton Capacity
- 050 = 50 ton Capacity
- 055 = 55 ton Capacity
- 060 = 60 ton Capacity
- 065 = 65 ton Capacity
- 070 = 70 ton Capacity
- 075 = 75 ton Capacity
- 090 = 90 ton Capacity
- 105 = 105 ton Capacity
- 120 = 120 ton Capacity
- 130 = 130 ton Capacity
- 140 = 140 ton Capacity

#### VOLTAGE

- 1 = 230V/1Φ/60Hz
- 2 = 230V/3Φ/60Hz
- 3 = 460V/3Φ/60Hz
- 4 = 575V/3Φ/60Hz
- 6 = 380V/3Φ/50Hz
- 8 = 208V/3Φ/60Hz
- 9 = 208V/1Φ/60Hz

### INTERIOR PROTECTION

- 0 = Standard - Vertical Discharge and Return
- A = Interior Corrosion Protection - Vertical Discharge and Return

### Model Option A: COOLING/HEAT PUMP

#### A1: REFRIGERANT STYLE

- 0 = Air Handling Unit
- B = R-410A - High Efficiency
- C = R-410A - Standard Efficiency
- E = R-410A Variable Capacity Scroll Compressor - High Efficiency
- F = R-410A Variable Capacity Scroll Compressor - Standard Efficiency
- J = R-410A VFD Compatible Scroll Compressor
- K = R-410A VFD Compatible Scroll Compressor + Microchannel Condenser
- L = R-410A VFD Compatible Tandem Compressors

#### A2: UNIT CONFIGURATION

- 0 = No Cooling
- A = Air-Cooled Cond. + Std Evap. Coil
- B = Air-Cooled Cond. + 6 Row Evap. Coil
- J = Water-Cooled Cond. + Std Evap. Coil
- K = Water-Cooled Cond. + 6 Row Evap. Coil
- P = Air-Cooled Cond. + 6 Row Evap. Coil + Mixed Air Bypass
- Q = Air-Cooled Cond. + 6 Row Evap. Coil + Return Air Bypass
- R = Water-Cooled Cond. + 6 Row Evap. Coil + Return Air Bypass
- T = Water-Cooled Cond. + 6 Row Evap. Coil + Mixed Air Bypass
- U = Chilled Water Coil - 4 Row
- W = Chilled Water Coil - 6 Row
- 2 = Non-Compressorized + Std Evap. Coil
- 4 = Non-Compressorized + 6 Row Evap. Coil
- 6 = Air-Source Heat Pump
- 7 = Water-Source/Geothermal Heat Pump







## RN Series Feature String Nomenclature

Model Options : Unit Feature Options

GEN SIZE VLT CONFIG A1 A2 A3 A4 B1 B2 B3 1A 1B 1C 1D 2 3 4 5A 5B 5C 6A 6B 6C 7 8 9 10 11 12 13 14A 14B 15 16 17 18 19 20 21 22 23

RN-025-3-0-BB02-384:A000-DOB-DEH-0BA-0D0000L-00-00B00000B

### **B2: HEATING DESIGNATION**

- 0 = No Heating
- 1 = Heat 1
- 2 = Heat 2
- 3 = Heat 3
- 4 = Heat 4
- 6 = Heat 6
- 7 = Heat 7
- 8 = Heat 8
- 9 = Heat 9
- A = Heat A
- B = Heat B
- C = Heat C
- D = Heat D
- E = Heat E
- F = Heat F
- G = Heat G
- H = 1 Row Coil
- J = 2 Row Coil
- K = Heat K
- L = Heat L
- M = Heat M
- N = Heat N
- P = Heat P

### **Model Option B: HEATING**

#### **B3: HEATING STAGING**

- 0 = No Heating
- 1 = 1 Stage
- 2 = 2 Stage
- 3 = 3 Stage
- 4 = 4 Stage
- 5 = 5 Stage
- 6 = 6 Stage
- 7 = 7 Stage
- 8 = 8 Stage
- 9 = Modulating Gas/SCR Electric
- A = Modulating/SCR Electric, 0-10V Control Signal
- H = Single Serpentine 8 fpi
- J = Half Serpentine 8 fpi
- K = Single Serpentine 10 fpi
- L = Half Serpentine 10 fpi
- M = Single Serpentine 12 fpi
- N = Half Serpentine 12 fpi

### **Feature 1: RETURN/OUTSIDE AIR**

#### **1A: RETURN/OUTSIDE AIR SECTION**

- 0 = Manually Adjustable OA Opening + RA Opening
- A = Economizer
- B = Econ + Power Exhaust
- C = Econ + Power Return
- D = Econ + PE - Discharge Damper Volume Control
- E = Econ + PE - Discharge Damper Volume Control + 0-10V External Control
- F = Low cfm Total Energy Recovery Wheel
- G = Low cfm Total ERW + Bypass
- H = Low cfm Sensible ERW
- J = Low cfm Sensible ERW + Bypass
- K = 100% Outside Air - No Return Air
- L = Motorized Outside Air Damper + RA Opening
- M = Motorized Outside Air Damper - No Return Air
- N = Empty ERW Option Box - No Power Exhaust
- P = Empty ERW Option Box + Power Exhaust
- Q = 1% Purge Low cfm Total ERW
- R = 1% Purge Low cfm Total ERW + Bypass
- S = 1% Purge Low cfm Sensible ERW
- T = 1% Purge Low cfm Sensible ERW + Bypass
- U = High cfm Total ERW
- V = High cfm Total ERW + Bypass
- W = High cfm Sensible ERW
- Y = High cfm Sensible ERW + Bypass
- Z = 1% Purge High cfm Total ERW
- 1 = 1% Purge High cfm Total ERW + Bypass
- 2 = 1% Purge High cfm Sensible ERW
- 3 = 1% Purge High cfm Sensible ERW + Bypass
- 4 = Single Total Energy Recovery Wheel + Bypass
- 5 = 100% Return Air

## RN Series Feature String Nomenclature

Model Options : Unit Feature Options

GEN	SIZE	VLT	CONFIG																																																		
A1	A2	A3	A4	B1	B2	B3	1A	1B	1C	1D	2	3	4	5A	5B	5C	6A	6B	6C	7	8	9	10	11	12	13	14A	14B	15	16	17	18	19	20	21	22	23																
RN	-0	2	5	-	3	-	0	-	BB	0	2	-	3	8	4	:	A	0	0	0	-	D	0	B	-	DE	H	-	0	B	A	-	0	D	0	0	0	0	L	-	0	0	-	0	0	B	0	0	0	0	0	0	B

### **Feature 1: RETURN/OUTSIDE AIR**

#### **1B: RETURN/EXHAUST AIR BLOWER**

##### **CONFIGURATION**

0 = Standard - None  
 A = 1 Blower + Standard Eff. Motor  
 C = 1 Blower + Premium Eff. Motor  
 D = 2 Blowers + Premium Eff. Motors  
 E = 1 Blower + Premium Eff. + 1 VFD  
 F = 2 Blowers + Premium Eff. + 1 VFD  
 G = 2 Blowers + Premium Eff. + 2 VFDs

#### **1C: RETURN/EXHAUST AIR BLOWER**

0 = Standard - None  
 A = 12"x9" Forward Curved  
 B = 15" Backward Curved Plenum  
 C = 18.5" Backward Curved Plenum  
 D = 22" Backward Curved Plenum  
 F = 27" Backward Curved Plenum  
 G = 22" Direct Drive Axial Flow  
 H = 35.5" Direct Drive Axial Flow  
 J = 15" BC Plenum - 50% Width with Banding  
 K = 18.5" BC Plenum - 70% Width with Banding  
 L = 22" BC Plenum - 70% Width with Banding  
 M = 27" BC Plenum - 70% Width with Banding  
 N = 30" Backward Curved Plenum  
 P = 42" 9 Blade Direct Drive Axial Flow  
 Q = 42" 12 Blade Direct Drive Axial Flow  
 R = 24" Backward Curved Plenum  
 S = 33" Backward Curved Plenum

### **1D: RETURN/EXHAUST AIR BLOWER**

#### **MOTOR**

0 = Standard - None  
 C = 1 hp - 1760 rpm  
 D = 2 hp - 1760 rpm  
 E = 3 hp - 1760 rpm  
 F = 5 hp - 1760 rpm  
 G = 7.5 hp - 1760 rpm  
 H = 10 hp - 1760 rpm  
 L = 15 hp - 1760 rpm  
 M = 20 hp - 1760 rpm  
 N = 1 hp - 1170 rpm  
 P = 2 hp - 1170 rpm  
 Q = 3 hp - 1170 rpm  
 R = 5 hp - 1170 rpm  
 S = 7.5 hp - 1170 rpm  
 T = 10 hp - 1170 rpm  
 U = 15 hp - 1170 rpm  
 V = 20 hp - 1170 rpm  
 W = 25 hp - 1170 rpm  
 Y = 30 hp - 1170 rpm  
 3 = 25 hp - 1760 rpm  
 4 = 30 hp - 1760 rpm  
 5 = 40 hp - 1760 rpm  
 6 = 50 hp - 1760 rpm



## RN Series Feature String Nomenclature

Model Options : Unit Feature Options

GEN SIZE VLT CONFIG A1 A2 A3 A4 B1 B2 B3 1A 1B 1C 1D 2 3 4 5A 5B 5C 6A 6B 6C 7 8 9 10 11 12 13 14A 14B 15 16 17 18 19 20 21 22 23

RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000B

### **Feature 2: OUTSIDE AIR CONTROL**

0 = Standard - None  
 A = 3 Position Actuator - Sensible Limit  
 B = 3 Position Actuator - Enthalpy Limit  
 C = Fully Modulating Actuator - Sensible Limit  
 D = Fully Modulating Actuator - Enthalpy Limit  
 E = DDC Actuator  
 F = Constant Volume Outside Air  
 G = Options A + F  
 H = Options B + F  
 J = Options C + F  
 K = Options D + F  
 L = Options E + F  
 M = 3 Pos. Act. - Sensible Limit + CO<sub>2</sub> Override  
 N = 3 Pos. Act. - Enthalpy Limit + CO<sub>2</sub> Override  
 P = Fully Mod. Act. - Sensible + CO<sub>2</sub> Override  
 Q = Fully Mod. Act. - Enthalpy + CO<sub>2</sub> Override  
 R = DDC Actuator + CO<sub>2</sub> Override  
 S = Dual Minimum Position Potentiometers + Fully Mod. Act. - Sensible Limit  
 T = Dual Minimum Position Potentiometers + Fully Mod. Act. - Enthalpy Limit  
 U = 2 Position Actuator

### **Feature 3: HEAT OPTIONS**

0 = Standard - None  
 E = Discharge Air Override  
 K = Auxiliary Heat K  
 L = Auxiliary Heat L  
 M = Auxiliary Heat M  
 N = Auxiliary Heat N  
 P = Auxiliary Heat P  
 Q = Auxiliary Heat Q  
 R = Auxiliary Heat R  
 S = Auxiliary Heat S  
 T = Auxiliary Heat T  
 U = Auxiliary Heat U  
 V = Auxiliary Heat V  
 W = Auxiliary Heat W

### **Feature 4: MAINTENANCE OPTIONS**

0 = Standard - None  
 A = Field Wired 115V Outlet  
 B = Factory Wired 115V Outlet  
 C = Blower Aux. Contact  
 D = Remote Start/Stop Terminals  
 E = Options A + C  
 F = Options A + D  
 G = Options B + C  
 H = Options B + D  
 J = Options A + C + D  
 K = Options B + C + D  
 L = Options C + D

## RN Series Feature String Nomenclature

Model Options														:	Unit Feature Options																																			
GEN	SIZE	VLT	CONFIG	A1	A2	A3	A4	B1	B2	B3	1A	1B	1C	1D	2	3	4	5A	5B	5C	6A	6B	6C	7	8	9	10	11	12	13	14A	14B	15	16	17	18	19	20	21	22	23									
RN	0	2	5	-	3	-	0	-	BB	0	2	-	3	8	4	:	A	0	0	-	D	0	B	-	DEH	-	0	B	A	-	0	D	0	0	0	0	L	-	0	0	-	0	0	B	0	0	0	0	0	B

### **Feature 5: SUPPLY AIR OPTIONS**

#### **5A: SUPPLY AIR BLOWER CONFIGURATION**

0 = 1 Blower + Standard Eff. Motor  
 A = 2 Blowers + Standard Eff. Motors  
 B = 1 Blower + Premium Eff. Motor  
 C = 2 Blowers + Premium Eff. Motors  
 D = 1 Blower + Premium Eff. + 1 VFD  
 F = 2 Blowers + Premium Eff. + 1 VFD  
 G = 2 Blowers + Premium Eff. + 2 VFDs

#### **5B: SUPPLY AIR BLOWER**

B = 15" Backward Curved Plenum  
 C = 18.5" Backward Curved Plenum  
 D = 24" Backward Curved Plenum  
 E = 27" Backward Curved Plenum  
 F = 30" BC Plenum - 90% Width + 1750 rpm Max - Aluminum Wheel  
 G = 15" BC Plenum - 70% Width  
 H = 18.5" BC Plenum - 70% Width  
 J = 18.5" Backward Curved Plenum  
 K = 18.5" BC Plenum - 60% Width  
 L = 30" BC Plenum - 1600 rpm Max - Aluminum Wheel  
 M = 13.5" Backward Curved Plenum  
 N = 13.5" BC Plenum - 70% Width  
 P = 24" BC Plenum - 60% Width  
 Q = 27" BC Plenum - 60% Width  
 R = 22" Backward Curved Plenum  
 S = 22" BC Plenum - 70% Width  
 T = 17" Backward Curved Plenum  
 U = 17" BC Plenum - 70% Width  
 V = 33" Backward Curved Plenum  
 W = 36.5" Backward Curved Plenum  
 Y = 42.5" Backward Curved Plenum

### **5C: SUPPLY AIR BLOWER MOTOR**

C = 1 hp - 1760 rpm  
 D = 2 hp - 1760 rpm  
 E = 3 hp - 1760 rpm  
 F = 5 hp - 1760 rpm  
 G = 7.5 hp - 1760 rpm  
 H = 10 hp - 1760 rpm  
 L = 15 hp - 1760 rpm  
 M = 20 hp - 1760 rpm  
 N = 1 hp - 1170 rpm  
 P = 2 hp - 1170 rpm  
 Q = 3 hp - 1170 rpm  
 R = 5 hp - 1170 rpm  
 S = 7.5 hp - 1170 rpm  
 T = 10 hp - 1170 rpm  
 U = 15 hp - 1170 rpm  
 V = 20 hp - 1170 rpm  
 W = 25 hp - 1170 rpm  
 Y = 30 hp - 1170 rpm  
 3 = 25 hp - 1760 rpm  
 4 = 30 hp - 1760 rpm  
 5 = 40 hp - 1760 rpm  
 6 = 50 hp - 1760 rpm

### **Feature 6: FILTERS**

#### **6A: PRE FILTER**

0 = Standard - None  
 A = 2" Pleated - 30% Eff. - MERV 8  
 B = Metal Mesh Outside Air Filter  
 C = Lint Screen Filter  
 D = Exhaust Air ERW Filter  
 F = Options A + D  
 G = Options B + D  
 H = Options A + B + D

#### **6B: UNIT FILTER**

0 = 2" Pleated - 30% Eff. - MERV 8  
 B = 4" Pleated - 30% Eff. - MERV 8  
 C = 2" Permanent Filter + Replaceable Media  
 F = 4" Pleated - 65% Eff. - MERV 11  
 G = 4" Pleated - 85% Eff. - MERV 13  
 H = 4" Pleated - 95% Eff. - MERV 14

## RN Series Feature String Nomenclature

Model Options : Unit Feature Options

GEN	SIZE	VLT	CONFIG	A1	A2	A3	A4	B1	B2	B3	1A	1B	1C	1D	2	3	4	5A	5B	5C	6A	6B	6C	7	8	9	10	11	12	13	14A	14B	15	16	17	18	19	20	21	22	23
RN	- 0 2 5	- 3	- 0	- BB	0 2	- 3	8 4	:	A 0 0 0	- D 0 B	- DEH	- 0 BA	- 0 D 0 0 0 0 L	- 0 0	- 0 0 B 0 0 0 0 0 B																										

### 6C: FILTER OPTIONS

0 = Standard  
 A = Clogged Filter Switch  
 B = Magnehelic Gauge  
 C = Options A + B

### Feature 7: REFRIGERATION CONTROL

0 = Standard  
 A = 5 Min. Time Delay Relay - Comp. Off  
 B = 20 Sec. Time Delay Relay - Comp. Staging  
 C = Fan Cycling  
 D = Adjustable Lockouts - Each Circuit  
 E = Freeze Stats - Each Circuit  
 F = Options A + B  
 G = Options A + C  
 H = Options A + D  
 J = Options A + E  
 K = Options B + C  
 L = Options B + D  
 M = Options B + E  
 N = Options C + D  
 P = Options C + E  
 Q = Options D + E  
 R = Options A + B + C  
 S = Options A + B + D  
 T = Options A + B + E  
 U = Options A + C + D  
 V = Options A + C + E  
 W = Options A + D + E  
 Y = Options B + C + D  
 Z = Options B + C + E  
 1 = Options B + D + E  
 2 = Options C + D + E  
 3 = Options A + B + C + D  
 4 = Options A + B + C + E  
 5 = Options A + B + D + E  
 6 = Options A + C + D + E  
 7 = Options B + C + D + E  
 8 = Options A + B + C + D + E

### Feature 8: REFRIGERATION OPTIONS

0 = Standard  
 A = Hot Gas Bypass Lead Stage  
 or Hot Gas Bypass Lag Stage with Lead Variable  
 Capacity Compressor  
 B = Hot Gas Bypass Lead and Lag Stages  
 C = Hot Gas Reheat  
 D = Modulating Hot Gas Reheat  
 E = 0°F Low Ambient Lead Stage  
 F = Options A + C  
 G = Options B + C  
 H = Options A + D  
 J = Options B + D  
 K = Options A + E  
 L = Options B + E

### Feature 9: REFRIGERATION ACCESSORIES

0 = Standard  
 A = Sight Glass  
 B = Compressor Isolation Valves  
 C = Options A + B  
 D = ECM Condenser Fan - Multiple Speed  
 E = ECM Condenser Fan - Head Pressure Control  
 F = VFD Controlled Condenser Fans - Variable Speed  
 G = Options A + D  
 H = Options B + D  
 J = Options A + B + D  
 K = Options A + E  
 L = Options B + E  
 M = Options A + B + E  
 N = Options A + F  
 P = Options B + F  
 Q = Options C + F

### Feature 10: POWER OPTIONS

0 = Standard Power Block  
 A = 100 Amp Power Switch  
 B = 150 Amp Power Switch  
 C = 225 Amp Power Switch  
 D = 400 Amp Power Switch  
 E = 600 Amp Power Switch  
 F = 60 Amp Power Switch  
 5 = 800 Amp Power Switch  
 6 = 1200 Amp Power Switch

## RN Series Feature String Nomenclature

Model Options										:	Unit Feature Options																																							
GEN	SIZE	VLT	CONFIG	A1	A2	A3	A4	B1	B2	B3	1A	1B	1C	1D	2	3	4	5A	5B	5C	6A	6B	6C	7	8	9	10	11	12	13	14A	14B	15	16	17	18	19	20	21	22	23									
RN	0	2	5	3	0	BB	0	2	3	8	4	:	A	0	0	0	-	D	0	B	-	D	E	H	-	0	B	A	-	0	D	0	0	0	0	0	L	-	0	0	-	0	0	B	0	0	0	0	0	B

### Feature 11: SAFETY OPTIONS

0 = Standard  
 A = Return and Supply Air Firestat  
 B = Return Air Smoke Detector  
 C = Supply Air Smoke Detector  
 D = Options B + C  
 E = Options A + B  
 F = Options A + C  
 G = Options A + B + C  
 H = Remote Smoke Detector Terminals  
 J = Options A + H  
 K = Options B + H  
 L = Options C + H  
 M = Options D + H  
 N = Options A + B + H  
 P = Options A + C + H  
 Q = Options A + B + C + H

### Feature 12: CONTROLS

0 = Standard  
 A = Low Limit Controls  
 B = Phase and Brown Out Protection  
 C = Energy Recovery Wheel Defrost  
 D = Energy Recovery Wheel Rotation Detection  
 E = Compressor Power Factor Correction  
 F = Options A + B  
 G = Options A + C  
 H = Options A + D  
 J = Options A + E  
 K = Options B + C  
 L = Options B + D  
 M = Options B + E  
 N = Options C + D  
 P = Options C + E  
 Q = Options D + E  
 R = Options A + B + C  
 S = Options A + B + D  
 T = Options A + B + E  
 U = Options A + C + D  
 V = Options A + C + E  
 W = Options A + D + E  
 Y = Options B + C + D  
 Z = Options B + C + E  
 1 = Options B + D + E  
 2 = Options C + D + E  
 3 = Options A + B + C + D  
 4 = Options A + B + C + E  
 5 = Options A + B + D + E  
 6 = Options A + C + D + E  
 7 = Options B + C + D + E  
 8 = Options A + B + C + D + E



## RN Series Feature String Nomenclature

Model Options : Unit Feature Options

GEN SIZE VLT CONFIG A1 A2 A3 A4 B1 B2 B3 1A 1B 1C 1D 2 3 4 5A 5B 5C 6A 6B 6C 7 8 9 10 11 12 13 14A 14B 15 16 17 18 19 20 21 22 23

RN-025-3-0-BB02-384 : A000-DOB-DEH-0BA-0D0000L-00-00B00000B

### **Feature 13: SPECIAL CONTROLS**

- 0 = Terminal Block for Thermostat Control
- D = VAV Unit Controller - VAV Cool + CV Heat
- E = Constant Volume Unit Controller - CV Cool + CV Heat
- F = Makeup Air Unit Controller - CV Cool + CV Heat
- J = Factory Installed DDC Controls Furnished by Others
- K = Factory Installed DDC Controls Furnished by Others w/ Isolation relays
- L = Terminal Block for Thermostat Control with Isolation Relays
- U = Digital Precise Air Controller, D-PAC
- V = Precise Air Controller, PAC
- Y = VAV Single Zone Heat Pump Unit Controller - VAV Cool + VAV Heat
- Z = Constant Volume Heat Pump Unit Controller - CV Cool + CV Heat
- 1 = Makeup Air Heat Pump Unit Controller - CV Cool + CV Heat
- 2 = VAV Single Zone Unit Controller VAV Cool + CV Heat
- 3 = VAV Single Zone Unit Controller VAV Cool + VAV Heat
- 4 = Field Installed DDC Controls by Others
- 5 = Field Installed DDC Controls Furnished by Others with Isolation Relays
- 6 = Factory Installed DDC Controls Furnished by Others with Isolation Relays (SPA)

### **Feature 14: PREHEAT**

#### **14A: PREHEAT CONFIGURATION**

- 0 = Standard - None
- A = Steam Distributing Preheat Coil - 1 Row
- B = Steam Distributing Preheat Coil - 2 Row
- C = Hot Water Preheat Coil - 1 Row
- D = Hot Water Preheat Coil - 2 Row
- E = Modulating Electric Preheat

### **14B: PREHEAT SIZING**

- 0 = Standard - None
- A = Single Serpentine 8 fpi
- B = Half Serpentine 8 fpi
- C = Single Serpentine 10 fpi
- D = Half Serpentine 10 fpi
- E = Single Serpentine 12 fpi
- F = Half Serpentine 12 fpi
- G = 10 kW (7.5 kW @ 208V)
- H = 15 kW (11.3 kW @ 208V)
- J = 20 kW (15 kW @208V)
- K = 30 kW (22.5 kW @208V)
- L = 40 kW (30 kW @208V)
- M = 50 kW (37.6 kW @208V)
- N = 60 kW (45.1 kW @208V)
- P = 70 kW (52.6 kW @208V)
- Q = 80 kW (60.1 kW @208V)
- R = 90 kW (67.6 kW @208V)
- S = 100 kW (75.1 kW @208V)
- T = 110 kW (82.6 kW @208V)
- U = 120 kW (90.1 kW @208V)

### **Feature 15: Glycol Percentage**

- 0 = Standard
- C = Field Adjustable for Glycol %

### **Feature 16: INTERIOR CABINET OPTIONS**

- 0 = Standard
- B = Service Lights

### **Feature 17: EXTERIOR CABINET OPTIONS**

- 0 = Standard
- A = Base Insulation
- B = Burglar Bars
- C = Condenser Coil Guards
- D = Options A + B
- E = Options A + C
- F = Options B + C
- G = Options A + B + C

### **Feature 18: CUSTOMER CODE**

- 0 = Standard



## RN Series Feature String Nomenclature

Model Options										:	Unit Feature Options																														
GEN	SIZE	VLT	CONFIG	A1	A2	A3	A4	B1	B2	B3	1A	1B	1C	1D	2	3	4	5A	5B	5C	6A	6B	6C	7	8	9	10	11	12	13	14A	14B	15	16	17	18	19	20	21	22	23
RN	025	3	0	BB	02	3	8	4			A	0	0	0	D	0	B	DEH	0	BA	0	D	0	0	0	0	L	0	0	0	0	B	0	0	0	0	0	0	0	0	B

### **Feature 19: CODE OPTIONS**

0 = Standard - ETL U.S.A. Listing  
 B = Chicago - Cool + Gas  
 C = Chicago - Cool + Electric Heat  
 D = Chicago - Cool Only  
 E = Chicago - Gas Only  
 F = Chicago - Electric Heat Only  
 G = Chicago - No Cool + No Heat  
 H = ETL U.S.A. + Canada Listing  
 K = California OSHPD Certification  
 L = Shake Table Cert. (ASCE 7-05/ICC-ES AC 156)  
 M = Seismic Construction (Non-Certified)  
 N = California OSHPD Certification + Chicago  
 P = Shake Table Cert. (ASCE 7-05/ICC-ES AC 156)  
 + Chicago  
 Q = Seismic Construction (Non-Certified) + Chicago

### **Feature 20: CRATING**

0 = Standard  
 A = Export Crating  
 B = Export Crating - No Condenser Section

### **Feature 21: WATER-COOLED CONDENSER**

0 = Standard - None  
 A = Balancing Valves  
 B = Water Flow Switch  
 C = Motorized Shut-off Valve  
 D = Head Pressure Control  
 E = Options A + B  
 F = Options A + C  
 G = Options A + D  
 H = Options B + C  
 J = Options B + D  
 L = Options A + B + C  
 M = Options A + B + D  
 R = SMO 254 Brazed Plate Heat Exchanger  
 S = Options A + R  
 T = Options B + R  
 U = Options C + R  
 V = Options D + R  
 W = Options A + B + R  
 Y = Options A + C + R  
 Z = Options A + D + R  
 1 = Options B + C + R  
 2 = Options B + D + R  
 3 = Options C + D + R  
 4 = Options A + B + C + R  
 5 = Options A + B + D + R



## RN Series Feature String Nomenclature

Model Options											:	Unit Feature Options																																		
GEN	SIZE	VLT	CONFIG	A1	A2	A3	A4	B1	B2	B3	IA	IB	IC	ID	2	3	4	5A	5B	5C	6A	6B	6C	7	8	9	10	11	12	13	14A	14B	15	16	17	18	19	20	21	22	23					
RN	-025	-3	-0	BB	02	-3	84	:	A	000	-D	0B	-DEH	-0BA	-0D	0000	L	-00	-00	0B	000000	<b>B</b>																								

### Feature 22: CONTROL VENDORS

- 0 = None
- A = WattMaster Orion VCM-X Controls System
- B = JENEsys Control System with Web UI
- C = WattMaster Orion VCM-X Controls System with Specials
- E = Remote Mounted AAON Mini Controller
- F = JENEsys Control System with Web UI + Fox
- G = JENEsys Control System with Web UI + Lon
- H = JENEsys Control w/ Web UI + BACnet MSTP
- J = JENEsys Control w/ Web UI + BACnet IP
- K = JENEsys Control w/ Web UI + Modbus RTU
- L = JENEsys Control w/ Web UI + Modbus TCP
- T = WattMaster Orion VCB-X Controls System + Integrated BACnet MSTP
- U = WattMaster Orion VCB-X Controls System + Integrated BACnet MSTP with Specials
- V = WattMaster Orion VCC-X Controls System + Integrated BACnet MSTP
- W = WattMaster Orion VCC-X Controls System + Integrated BACnet MSTP with Specials

### Feature 23: TYPE

- B = Standard - AAON Gray Paint
- U = Special Pricing Authorization + Special Paint
- X = Special Pricing Authorization + AAON Gray Paint
- 1 = Standard Paint + 2 Year Parts Only Warranty
- 4 = Standard Paint + 5 Year Parts Only Warranty
- 9 = Standard Paint + 10 Year Parts Only Warranty

# Model Option Unit Size

Example: RN-**025**-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000B

The first number of the model string designates nominal tons of cooling at AHRI conditions for RQ and RN Series units with air-cooled condensers. Actual capacities will vary with conditions. Refer to the AAON ECat software for performance and cooling capacities at design conditions.

Table 1 - Unit Sizes

Model (Nominal tons)	Cabinet	Compressors/Circuits
RQ-002		1/1
RQ-003		
RQ-004		
RQ-005		
RQ-006		
RN-006	A	1/1
RN-007		
RN-008		
RN-010		
RN-009	B	2/2
RN-011		
RN-013		
RN-015		
RN-016		
RN-018	C	2/2
RN-020		
RN-025		
RN-030		
RN-026	D	4/4
RN-031		
RN-040		
RN-050		
RN-060		
RN-070	E	4/2
RN-055		
RN-065		
RN-075		
RN-090		
RN-105		
RN-120		
RN-130		
RN-140		

## Model Option Voltage

Example: RN-025-**3**-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000B

All units have single point power connections with grounding lugs and 24 VAC control circuits.

**1** = 230V/1Φ/60Hz

**2** = 230V/3Φ/60Hz

**3** = 460V/3Φ/60Hz

**4** = 575V/3Φ/60Hz

**6** = 380V/3Φ/50Hz

**8** = 208V/3Φ/60Hz

**9** = 208V/1Φ/60Hz

## Model Option Discharge/Return Configuration and Interior Protection

Example: RN-025-3-**0**-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000B

**0** = *Standard (RN Series Vertical Discharge and Vertical Return)* - Galvanized G90 sheet metal interior. Vertical supply and return air opening locations in the base of the unit. Option is available on RN Series units.

**A** = *Interior Corrosion Protection (RN Series Vertical Discharge and Vertical Return)* - All exposed metal surfaces in the air tunnel except the coils, coil casings, condensate drain pans, damper gears, actuators, return fans, and exhaust fans are spray coated with a two-part polyurethane, heat baked coating. Selection covers coating of the supply fans, filter rack, dampers, economizer, service door interiors, control cabinet, and condenser section interior. Option is intended for use in coastal saltwater conditions under the stress of heat, salt, sand and wind and is applicable to all corrosive environments where a polyurethane coating is acceptable. Coating exceeds 2,500 hours when tested under ASTM B 117-95 requirements. RN Series condensate drain pans are fabricated of 18 gauge 304 stainless steel. See Model Option A3 for cooling coil and cooling coil casing corrosion protection options and Model Option B1 for heating coil corrosion protection options. Vertical supply and return air opening locations in the base of the unit. Option is available on RN Series units.

**V** = *RQ Series Vertical Discharge and Vertical Return* - Vertical supply and return air opening locations in the base of the unit. Option is available on RQ Series units.

**H** = *RQ Series Horizontal Discharge and Horizontal Return* - Horizontal supply and return air opening locations in the left side of the unit. Option is available on the RQ Series units.

## Discharge/Return Configuration and Interior Protection Continued

**J** = *RQ Series Horizontal Discharge and Horizontal Return with Interior Corrosion Protection* - All exposed metal surfaces in the air tunnel except the coils, coil casings, condensate drain pans, damper gears, actuators, return fans, and exhaust fans are spray coated with a two-part polyurethane, heat baked coating. Selection covers coating of the supply fans, filter rack, dampers, economizer, service door interiors, control cabinet, and condenser section interior. Option is intended for use in coastal saltwater conditions under the stress of heat, salt, sand and wind and is applicable to all corrosive environments where a polyurethane coating is acceptable. Coating exceeds 2,500 hours when tested under ASTM B 117-95 requirements. RQ Series condensate drain pans are fabricated of 18 gauge 304 stainless steel. See Model Option A3 for cooling coil and cooling coil casing corrosion protection options and Model Option B1 for heating coil corrosion protection options. Horizontal supply and return air opening locations on the left side of the unit. Option is available on RQ Series units.

**W** = *RQ Series Vertical Discharge and Vertical Return with Interior Corrosion Protection* - All exposed metal surfaces in the air tunnel except the coils, coil casings, condensate drain pans, damper gears, actuators, return fans, and exhaust fans are spray coated with a two-part polyurethane, heat baked coating. Selection covers coating of the supply fans, filter rack, dampers, economizer, service door interiors, control cabinet, and condenser section interior. Option is intended for use in coastal saltwater conditions under the stress of heat, salt, sand, and wind and is applicable to all corrosive environments where a polyurethane coating is acceptable. Coating exceeds 2,500 hours when tested under ASTM B 117-95 requirements. RQ Series condensate drain pans are fabricated of 18 gauge 304 stainless steel. See Model Option A3 for cooling coil and cooling coil casing corrosion protection options and Model Option B1 for heating coil corrosion protection options. Vertical supply and return air opening locations in the base of the unit. Option is available on RQ Series units.

**K** = *RQ Series Vertical Discharge and Horizontal Return* - Vertical supply opening location in the base of the unit and horizontal return air opening location in the left side of the unit. Option is available on RQ Series units.

**L** = *RQ Series Vertical Discharge and Horizontal Return with Interior Corrosion Protection* - All exposed metal surfaces in the air tunnel except the coils, coil casings, condensate drain pans, damper gears, actuators, return fans, and exhaust fans are spray coated with a two-part polyurethane, heat baked coating. Selection covers coating of the supply fans, filter rack, dampers, economizer, service door interiors, control cabinet, and condenser section interior. Option is intended for use in coastal saltwater conditions under the stress of heat, salt, sand and wind and is applicable to all corrosive environments where a polyurethane coating is acceptable. Coating exceeds 2,500 hours when tested under ASTM B 117-95 requirements. RQ Series condensate drain pans are fabricated of 18 gauge 304 stainless steel. See Model Option A3 for cooling coil and cooling coil casing corrosion protection options and Model Option B1 for heating coil corrosion protection options. Vertical supply air opening location in the base of the unit and horizontal return air opening location in the left side of the unit. Option is available on RQ Series units.

## Discharge/Return Configuration and Interior Protection Continued

**M** = *RQ Series Horizontal Discharge and Vertical Return* - Horizontal supply air opening location in the left side of the unit and vertical return air opening location in the base of the unit. Option is available on the RQ Series units.

**N** = *RQ Series Horizontal Discharge and Vertical Return with Interior Corrosion Protection* - All exposed metal surfaces in the air tunnel except the coils, coil casings, condensate drain pans, damper gears, actuators, return fans, and exhaust fans are spray coated with a two-part polyurethane, heat baked coating. Selection covers coating of the supply fans, filter rack, dampers, economizer, service door interiors, control cabinet, and condenser section interior. Option is intended for use in coastal saltwater conditions under the stress of heat, salt, sand and wind and is applicable to all corrosive environments where a polyurethane coating is acceptable. Coating exceeds 2,500 hours when tested under ASTM B 117-95 requirements. RQ Series condensate drain pans are fabricated of 18 gauge 304 stainless steel. See Model Option A3 for cooling coil and cooling coil casing corrosion protection options and Model Option B1 for heating coil corrosion protection options. Horizontal supply air opening location in the left side of the unit and vertical return air opening location in the base of the unit. Option is available on the RQ Series units

## Model Option Model Option A1 - Refrigerant Style

Example: RN-025-3-0-**B**B02-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000B

**0** = *Air Handling Unit* - Chilled water or heating only air handling unit.

**B** = *R-410A - High Efficiency* - DX cooling with R-410A refrigerant. For 16-50, 60, and 70 ton units, this is the standard R-410A DX option. For 2-15 ton units, this option includes high capacity coils for improved energy efficiency. Only non-compressorized unit is available with this option for RQ Series units.

**C** = *R-410A - Standard Efficiency* - DX cooling with R-410A refrigerant. Unit efficiency and weight will be reduced when compared with option B. Option is available on 2-15 ton units.

## Model Option A1 - Refrigerant Style Continued

**E** = *R-410A Variable Capacity Scroll Compressor (VCC) - High Efficiency* - Compressorized DX cooling with R-410A refrigerant using 10-100% variable capacity scroll compressors. See Feature A4 for selection of quantity of variable capacity compressors. A suction pressure sensor will be provided per variable capacity compressor. Option provides the unit with tighter temperature control, improved humidity control and energy savings at part load conditions. For 16-50, 60, and 70 ton units, this is the standard R-410A variable capacity compressor DX option. For 3-15 ton units, this option includes high capacity coils for improved energy efficiency. Option is not available on 2 ton units. Part of the D-PAC control system. See Feature 13 and the Controls Section for more D-PAC information. Note for DDC controls by others: AAON requires 1 analog input signal per variable capacity compressor for the RQ and RNA, B, & C cabinets (2-25 and 30 tons) and 2 analog input signals for the RND cabinets (26-50, 60, and 70 tons). If all compressors are ordered as variable capacity on a RND cabinet, compressors 1 & 2 will be wired to one analog point and compressors 3 & 4 will be wired to a second analog point.

**F** = *R-410A Variable Capacity Scroll Compressor (VCC) - Standard Efficiency* - Compressorized DX cooling with R-410A refrigerant using 10-100% variable capacity scroll compressors. See Feature A4 for selection of quantity of variable capacity compressors. A suction pressure sensor will be provided per variable capacity compressor. Option provides the unit with tighter temperature control, improved humidity control and energy savings at part load conditions. Unit efficiency and weight will be reduced when compared with option E. Option is available on 3-15 ton units. Note for DDC controls by others: AAON requires 1 analog input signal per variable capacity compressor.

**G** = *R-410A Two-Step Scroll Compressor - High Efficiency* - Compressorized DX cooling with R-410A refrigerant using a two-step scroll compressor. Capacity steps are 100% and 67%. Option provides the unit with improved temperature control, improved humidity control and energy savings at part load conditions. This option includes high capacity coils for improved energy efficiency. Option is available on RQ Series units.

**H** = *R-410A Two-Step Scroll Compressor - Standard Efficiency* - Compressorized DX cooling with R-410A refrigerant using 10-100% variable capacity scroll compressors. Capacity steps are 100% and 67%. Option provides the unit with improved temperature control, improved humidity control and energy savings at part load conditions. Unit efficiency and weight will be reduced when compared with option G. Option is available on RQ Series units.

**J** = *R-410A VFD Compatible Scroll Compressor* - Compressorized DX cooling with R-410A using individually circuited VFD compatible scroll compressors. Air-cooled condenser coils will be copper tubes with aluminum (copper) fins. See Feature A4 for selection of modulation options. Option is available on 55, 65, and 75-140 ton units.

**K** = *R-410A VFD Compatible Scroll Compressor + Microchannel Condenser* - Compressorized DX cooling with R-410A using individually circuited VFD compatible scroll compressors. Air-cooled condenser coils will be aluminum microchannel tubes. See Model Option A4 for selection of modulation options. Option is available on 55, 65, and 75-140 ton units.

**L** = *R-410A VFD Compatible Tandem Compressors* - Compressorized DX cooling with R-410A using VFD compatible tandem compressors. Air-cooled condenser coils will be aluminum microchannel tubes. See Model Option A4 for selection of modulation options. Option is available on 55, 65, and 75-140 ton units.

# Model Option

## Model Option A2 - Unit Configuration

Example: RN-025-3-0-**B**02-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000B

**0** = *No Cooling* - Heating only air handling unit.

**A** = *Air-Cooled Condenser with Standard Evaporator Coil* - Air-cooled condenser with standard capacity DX evaporator coils.

**B** = *Air-Cooled Condenser with 6 Row Evaporator Coil* - Air-cooled condenser with six row high capacity DX evaporator coils. High capacity coils improve unit's energy efficiency and dehumidification capability. Option is not available on 2, 3, 70, 130 and 140 ton units.

**J** = *Water-Cooled Condenser with Standard Evaporator Coil* - Water-cooled condenser with standard capacity DX evaporator coils. RN Series units feature brazed plate water-cooled condensers. RQ Series units feature coaxial water-cooled condensers.

**K** = *Water-Cooled Condenser with 6 Row Evaporator Coil* - Water-cooled condenser with six row high capacity DX evaporator coils. High capacity coils improve unit's energy efficiency and dehumidification capability. RN Series units feature brazed plate water-cooled condensers. RQ Series units feature coaxial water-cooled condensers. Option is not available on 2, 3, 70, 130 and 140 ton units.

**P** = *Air-Cooled Condenser with 6 Row Evaporator Coil and Mixed Air Bypass* - Air-cooled condenser with six row DX evaporator coils. Option includes a damper with fully modulating actuator above the evaporator coils which allows mixed return and outside air to bypass around the coils for reheat. Option is used for single coil humidity control. With Feature 13 as a "Controls by Others" option a 0-10 VDC control signal for the damper actuator is required. Option is available on RN Series units.

**Q** = *Air-Cooled Condenser with 6 Row Evaporator Coil and Return Air Bypass* - Air-cooled condenser with six row DX evaporator coils. Option includes a return air bypass economizer with a separate return air bypass damper which allows up to 50% of the return air to bypass around the evaporator coils for reheat. The economizer routes of all outside air across the evaporator coils and the return air either through or around the evaporator coils. Option is used as single coil humidity control. Economizer includes outside air, return air and return air bypass damper sections each with their own fully modulating actuators. Part of the D-PAC and PAC control systems. See Feature 13 and the Controls Section for more D-PAC and PAC information. With Feature 13 as a "Controls by Others" option 0-10 VDC control signals for all three actuators are required. Option is available on RN Series units.



## Model Option A2 - Unit Configuration Continued

**R** = *Water-Cooled Condenser with 6 Row Evaporator Coil and Return Air Bypass* - Water-cooled condenser with six row DX evaporator coils. Option includes a return air bypass economizer with a separate return air bypass damper which allows up to 50% of the return air to bypass around the evaporator coils for reheat. The economizer routes of all outside air across the evaporator coils and the return air either through or around the evaporator coils. Option is used as single coil humidity control. Economizer includes outside air, return air and return air bypass damper sections each with their own fully modulating actuators. RN Series units feature brazed plate water-cooled condensers. Part of the D-PAC and PAC control systems. See Feature 13 and Controls section for more D-PAC and PAC information. With Feature 13 as a “Controls by Others” option 0-10 VDC control signals for all three actuators are required. Option is available on RN Series units.

**T** = *Water-Cooled Condenser with 6 Row Evaporator Coil and Mixed Air Bypass* - Water-cooled condenser with six row DX evaporator coil. Option includes a damper with fully modulating actuator above the evaporator coils which allows mixed return and outside air to bypass around the coils for reheat. Option is used as single coil humidity control. RN Series units feature brazed plate water-cooled condensers. With Feature 13 as a “Controls by Others” option a 0-10 VDC control signal for the damper actuator is required. Option is available on RN Series units.

**U** = *Chilled Water Coil - 4 Row* - Four row chilled water cooling coil. No valves or valve controls are included with this option. 50- 75 ton units include two coils and thus include two inlet and two outlet water connections. 90-140 ton units include four coils and thus include four inlet and four outlet water connections.

**W** = *Chilled Water Coil - 6 Row* - Six row chilled water cooling coil. No valves or valve controls are included with this option. 50- 75 ton units include two coils and thus include two inlet and two outlet water connections. 90-140 ton units include four coils and thus include four inlet and four outlet water connections.

**2** = *Non-Compressorized with Standard Evaporator Coil* - Air handling unit with standard capacity evaporator coil, but no compressors or condenser. Option is used with a remote condensing unit. Thermal expansion valve and hot gas bypass connection are included. 2-8 and 10 ton units include one coil and one circuit. 9, 11-25 and 30 ton units include one coil and two circuits. 26, 31 and 40 ton units include one coil and four circuits. 50, 60 and 70 ton units include two coils and four circuits.

**4** = *Non-Compressorized with 6 Row Evaporator Coil* - Air handling unit with six row high capacity evaporator coil, but no compressors or condenser. Option is used with a remote condensing unit. Thermal expansion valve and hot gas bypass connection are included. 4-8 and 10 ton units include one coil and one circuit. 9, 11-25 and 30 ton units include one coil and two circuits. 26, 31 and 40 ton units include one coil and four circuits. 50 and 60 ton units include two coils and four circuits. Option is not available on 2, 3, 70, 130 and 140 ton units.

**6** = *Air-Source Heat Pump* - Air-source heat pump which can provide energy efficient heating and cooling. Refrigerant piping with reversing valves, filter dryers, check valves, accumulators and thermal expansion valves is factory installed. See Model Options B1, B2 and B3 for emergency (backup) heat options and Feature 3 and Model Option A4 for auxiliary (supplemental) heat options. Option is not available on 50-140 ton units.

## Model Option A2 - Unit Configuration Continued

**7** = *Water-Source/Geothermal Heat Pump* - Water-source heat pump which can provide energy efficient heating and cooling. Refrigerant-to-water heat exchangers and refrigerant piping with reversing valves, filter dryers, check valves and thermal expansion valves are factory installed. RN Series units feature brazed plate refrigerant-to-water heat exchangers. RQ Series units feature coaxial refrigerant-to-water heat exchangers. See Model Options B1, B2 and B3 for emergency (backup) heat options and Feature 3 and Model Option A4 for auxiliary (supplemental) heat options. For 100% outside air, water-source heat pump units may require electric preheat for proper operation. Check application considerations section of unit rating sheer in ECat.

## Model Option Model Option A3 - Coil Coating

Example: RN-025-3-0-BB**0**2-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000B

**0** = *Standard*

**1** = *Polymer E-Coated Evaporator and Condenser Coils* - Polymer e-coating applied to both the condenser and evaporator coils. Complete coil and casing are coated. Coating exceeds a 6,000 hour salt spray test per ASTM B 117-90 requirements, yet is only 0.8-1.2 mils thick and has excellent flexibility. Option is intended for use in coastal saltwater conditions under the stress of heat, salt, sand and wind and is applicable to all corrosive environments where a polymer e-coating is acceptable. Coating includes a 5 year non-prorated warranty. Coating includes a 5 year warranty, from the date of original equipment shipment from the factory. The first 12 months from the date of equipment startup, or 18 months from the date of original equipment shipment from the factory, whichever is less, will be covered under the standard AAON limited parts warranty. The remaining period of the warranty will be covered by Luvata Electrofin. The Luvata Electrofin written instructions for installation, operation, coil cleaning, maintenance, and recording keeping must be followed. Refer to the Luvata Electrofin Terms and Conditions of Sale.

**8** = *Polymer E-Coated Condenser Coil* - Polymer e-coating is applied only to the condenser coils. Complete coil and casing are coated. Coating exceeds a 6,000 hour salt spray test per ASTM B 117-90 requirements, yet is only 0.8-1.2 mils thick and has excellent flexibility. Option is intended for use in coastal saltwater conditions under the stress of heat, salt, sand and wind and is applicable to all corrosive environments where a polymer e-coating is acceptable. Coating includes a 5 year warranty, from the date of original equipment shipment from the factory. The first 12 months from the date of equipment startup, or 18 months from the date of original equipment shipment from the factory, whichever is less, will be covered under the standard AAON limited parts warranty. The remaining period of the warranty will be covered by Luvata Electrofin. The Luvata Electrofin written instructions for installation, operation, coil cleaning, maintenance, and recording keeping must be followed. Refer to the Luvata Electrofin Terms and Conditions of Sale.

## Model Option A3 - Coil Coating Continued

**9** = *Polymer E-Coated Cooling Coil* - Polymer e-coating is applied only to the cooling coils. Complete coil and casing are coated. Coating exceeds a 6,000 hour salt spray test per ASTM B 117-90 requirements, yet is only 0.8-1.2 mils thick and has excellent flexibility. Option is intended for use in coastal saltwater conditions under the stress of heat, salt, sand and wind and is applicable to all corrosive environments where a polymer e-coating is acceptable. Coating includes a 5 year warranty, from the date of original equipment shipment from the factory. The first 12 months from the date of equipment startup, or 18 months from the date of original equipment shipment from the factory, whichever is less, will be covered under the standard AAON limited parts warranty. The remaining period of the warranty will be covered by Luvata Electrofin. The Luvata Electrofin written instructions for installation, operation, coil cleaning, maintenance, and recording keeping must be followed. Refer to the Luvata Electrofin Terms and Conditions of Sale.

**A** = *Stainless Steel Evaporator Coil Casing and Polymer E-Coated Condenser Coil* - 18 gauge 304 stainless steel casing only on the evaporator coils and polymer e-coating applied only to the condenser coils. Coating exceeds a 6,000 hour salt spray test per ASTM B 117-90 requirements, yet is only 0.8-1.2 mils thick and has excellent flexibility. Coating is intended for use in coastal saltwater conditions under the stress of heat, salt, sand, and wind and is applicable to all corrosive environments where a polymer e-coating is acceptable. Coating includes a 5 year warranty, from the date of original equipment shipment from the factory. The first 12 months from the date of equipment startup, or 18 months from the date of original equipment shipment from the factory, whichever is less, will be covered under the standard AAON limited parts warranty. The remaining period of the warranty will be covered by Luvata Electrofin. The Luvata Electrofin written instructions for installation, operation, coil cleaning, maintenance, and recording keeping must be followed. Refer to the Luvata Electrofin Terms and Conditions of Sale. This option is available only on RN series units.

**D** = *Stainless Steel Cooling Coil Casing* - 18 gauge 304 stainless steel casing only on the cooling coils. This option is available only on RN series units.

## Model Option

### Model Option A4 - Cooling/Heat Pump Staging

Example: RN-025-3-0-BB0**2**-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000B

**0** = *No Cooling* - Heating only air handling unit.

**1** = *1 Stage* - One stage cooling unit or one stage cooling and one stage heat pump heating unit without auxiliary heat. Option is available on 2-8 and 10 ton units. See Model Options B1, B2 and B3 for emergency heat options.

**2** = *2 Stage* - Two stage cooling unit or two stage cooling and two stage heat pump heating unit without auxiliary heat. Option is available on RQ Series units and 9 and 11-70 ton RN Series units. Two stage RQ Series units include a two-step compressor with 100% and 67% capacity steps. See Model Options B1, B2 and B3 for emergency heat options.

## Model Option A4 - Cooling/Heat Pump Staging Continued

**4** = *4 Stage* - Four stage cooling unit or four stage cooling and four stage heat pump heating unit without auxiliary heat. Option is available on 26 and 31-140 ton units. See Model Options B1, B2 and B3 for emergency heat options.

**9** = *Modulating - Lead Variable Capacity Compressor* - Modulating DX cooling unit or modulating DX cooling and modulating heat pump heating unit without auxiliary heat. 2-8 and 10 ton units include a single 10-100% variable capacity scroll compressor. 9, 11-25, and 30 ton units include a single 10-100% variable capacity scroll compressor and a single on/off scroll compressor. 26, 31-50, 60 and 70 ton units include two 10-100% variable capacity scroll compressors (Stages 1 and 2) and two on/off scroll compressors. 55, 65, and 75-105 ton individually circuited units include one on/off controlled VFD compatible compressors and one VFD controlled variable speed compressor with one factory provided VFD. 120-140 ton individually circuited units include two on/off controlled VFD compatible compressors and two VFD controlled variable speed compressors with two factory provided VFDs. 55, 65, and 75-140 ton tandem circuited units include three on/off controlled VFD compatible compressors and one VFD controlled variable speed compressor with one factory provided VFD. With factory provided controls, on/off compressors are staged on while the variable capacity compressors modulate their capacity as needed. See Model Options B1, B2 and B3 for emergency heat options.

**A** = *Modulating - All Variable Capacity Compressors* - Modulating DX cooling unit or modulating DX cooling and modulating heat pump heating unit without auxiliary heat. 9, 11-25, and 30 ton units include two 10-100% variable capacity scroll compressors. 26, 31-50, 60, and 70 ton units include four 10-100% variable capacity scroll compressors. 55, 65, and 75-105 ton individually circuited units include two VFD controlled variable speed compressors and two factory provided VFDs. 120-140 ton individually circuited units include four VFD controlled variable speed compressors and four factory provided VFDs. 55, 65, and 75-140 ton tandem circuited units include two on/off controlled VFD compatible compressors and two VFD controlled variable speed compressors with two factory provided VFD. Option is not available on 2-8 and 10 ton units because the units include only a single compressor. With factory provided controls, variable capacity compressors are staged on, as efficiently as possible, while modulating their capacity as needed. See Model Options B1, B2 and B3 for emergency heat options.

**B** = *1 Stage Heat Pump with 1 Stage Auxiliary Heat* - One stage cooling and one stage heat pump heating with one stage of auxiliary heat available during heat pump heating. Option is available on 2-8 and 10 ton units. See Model Options B1, B2 and B3 for emergency heat options and Feature 3 for auxiliary heat capacity options.

**C** = *2 Stage Heat Pump with 1 Stage Auxiliary Heat* - Two stage cooling and two stage heat pump heating with one stage of auxiliary heat available during heat pump heating. Option is available on RQ Series units and 9 and 11-70 ton RN Series units. Two stage RQ Series units include a two-step compressor with 100% and 67% capacity steps. See Model Options B1, B2 and B3 for emergency heat options and Feature 3 for auxiliary heat capacity options.

**D** = *4 Stage Heat Pump with 1 Stage Auxiliary Heat* - Four stage cooling and four stage heat pump heating with one stage of auxiliary heat available during heat pump heating. Option is available on 26 and 31-70 ton units. See Model Options B1, B2, and B3 for emergency heat options and Feature 3 for auxiliary heat capacity options.

## Model Option A4 - Cooling/Heat Pump Staging Continued

**E** = *Modulating Heat Pump - Lead Variable Capacity Compressor with 1 Stage Auxiliary Heat* - Modulating DX cooling unit or modulating DX cooling and modulating heat pump heating unit one stage of auxiliary heat available during heat pump heating. 2-8 and 10 ton units include a single 10-100% variable capacity scroll compressor. 9, 11-25 and 30 ton units include a single 10-100% variable capacity scroll compressor and a single on/off scroll compressor. 26, 31-50, 60 and 70 ton units include two 10-100% variable capacity scroll compressors (Stages 1 and 2) and two on/off scroll compressors. With factory provided controls, on/off compressors are staged on while the variable capacity compressors modulate their capacity as needed. See Model Options B1, B2 and B3 for emergency heat options and Feature 3 for auxiliary heat capacity options.

**F** = *Modulating Heat Pump - All Variable Capacity Compressors with 1 Stage Auxiliary Heat* - Modulating DX cooling unit or modulating DX cooling and modulating heat pump heating unit one stage of auxiliary heat available during heat pump heating. 9, 11-25 and 30 ton units include two 10-100% variable capacity scroll compressors. 26, 31-50, 60 and 70 ton units include four 10-100% variable capacity scroll compressors. Option is not available on 2-8 and 10 ton units because the units include only a single compressor. With factory provided controls, variable capacity compressors are staged on, as efficiently as possible, while modulating their capacity as needed. See Model Options B1, B2 and B3 for emergency heat options and Feature 3 for auxiliary heat capacity options.

**H** = *Single Serpentine 8 fpi* - Chilled water coil with single serpentine circuitry and 8 fins per inch. No valves or valve controls are included with this option. 50- 75 ton units include two coils and thus include two inlet and two outlet water connections. 90-140 ton units include four coils and thus include four inlet and four outlet water connections.

**J** = *Half Serpentine 8 fpi* - Chilled water coil with half serpentine circuitry and 8 fins per inch. No valves or valve controls are included with this option. 50- 75 ton units include two coils and thus include two inlet and two outlet water connections. 90-140 ton units include four coils and thus include four inlet and four outlet water connections.

**K** = *Single Serpentine 10 fpi - Standard chilled water coil option* with single serpentine circuitry and 10 fins per inch. No valves or valve controls are included with this option. 50- 75 ton units include two coils and thus include two inlet and two outlet water connections. 90-140 ton units include four coils and thus include four inlet and four outlet water connections. Option is available on RN Series units.

**L** = *Half Serpentine 10 fpi* - Chilled water coil with half serpentine circuitry and 10 fins per inch. No valves or valve controls are included with this option. 50- 75 ton units include two coils and thus include two inlet and two outlet water connections. 90-140 ton units include four coils and thus include four inlet and four outlet water connections. Option is available on RN Series units.

**M** = *Single Serpentine 12 fpi* - Chilled water coil with single serpentine circuitry and 12 fins per inch. No valves or valve controls are included with this option. 50- 75 ton units include two coils and thus include two inlet and two outlet water connections. 90-140 ton units include four coils and thus include four inlet and four outlet water connections.

**N** = *Half Serpentine 12 fpi* - Chilled water coil with half serpentine circuitry and 12 fins per inch. No valves or valve controls are included with this option. 50- 75 ton units include two coils and thus include two inlet and two outlet water connections. 90-140 ton units include four coils and thus include four inlet and four outlet water connections.

## Model Option A4 - Cooling/Heat Pump Staging Continued

**P = 1 Stage Heat Pump with 2 Stage Auxiliary Heat** - One stage cooling and one stage heat pump heating with two stages of auxiliary heat available during heat pump heating. Option is available on 2-8 and 10 ton units. See Model Options B1, B2 and B3 for emergency heat options and Feature 3 for auxiliary heat capacity options.

**Q = 2 Stage Heat Pump with 2 Stage Auxiliary Heat** - Two stage cooling and two stage heat pump heating with two stages of auxiliary heat available during heat pump heating. Option is available on RQ Series units and 9, 11-50, 60 and 70 ton RN Series units. Two stage RQ Series units include a two-step compressor with 100% and 67% capacity steps. See Model Options B1, B2 and B3 for emergency heat options and Feature 3 for auxiliary heat capacity options.

**R = 4 Stage Heat Pump with 2 Stage Auxiliary Heat** - Four stage cooling and four stage heat pump heating with two stages of auxiliary heat available during heat pump heating. Option is available on 26 and 31-70 ton units. See Model Options B1, B2 and B3 for emergency heat options and Feature 3 for auxiliary heat capacity options.

**S = Modulating Heat Pump - Lead Variable Capacity Compressor with 2 Stage Auxiliary Heat** - Modulating DX cooling unit or modulating DX cooling and modulating heat pump heating unit two stages of auxiliary heat available during heat pump heating. 2-8 and 10 ton units include a single 10-100% variable capacity scroll compressor. 9, 11-25 and 30 ton units include a single 10-100% variable capacity scroll compressor and a single on/off scroll compressor. 26, 31-50, 60 and 70 ton units include two 10-100% variable capacity scroll compressors (Stages 1 and 2) and two on/off scroll compressors. With factory provided controls, on/off compressors are staged on while the variable capacity compressors modulate their capacity as needed. See Model Options B1, B2 and B3 for emergency heat options and Feature 3 for auxiliary heat capacity options.

**T = Modulating Heat Pump - All Variable Capacity Compressors with 2 Stage Auxiliary Heat** - Modulating DX cooling unit or modulating DX cooling and modulating heat pump heating unit two stages of auxiliary heat available during heat pump heating. 9, 11-25 and 30 ton units include two 10-100% variable capacity scroll compressors. 26, 31-50, 60 and 70 ton units include four 10-100% variable capacity scroll compressors. Option is not available on 2-8 and 10 ton units because the units include only a single compressor. With factory provided controls, variable capacity compressors are staged on, as efficiently as possible, while modulating their capacity as needed. See Model Options B1, B2 and B3 for emergency heat options and Feature 3 for auxiliary heat capacity options.

**U = 1 Stage Heat Pump with 4 Stage Auxiliary Heat** - One stage cooling and one stage heat pump heating with four stages of auxiliary heat available during heat pump heating. Option is available on 2-8 and 10 ton units. See Model Options B1, B2, and B3 for emergency heat options and Feature 3 for auxiliary heat capacity options.

**V = 2 Stage Heat Pump with 4 Stage Auxiliary Heat** - Two stage cooling and two stage heat pump heating with four stages of auxiliary heat available during heat pump heating. Option is available on RQ Series units and 9 and 11-70 ton RN Series units. Two stage RQ Series units include a two-step compressor with 100% and 67% capacity steps. See Model Options B1, B2 and B3 for emergency heat options and Feature 3 for auxiliary heat capacity options.

**W = 4 Stage Heat Pump with 4 Stage Auxiliary Heat** - Four stage cooling and four stage heat pump heating with four stages of auxiliary heat available during heat pump heating. Option is available on 26, 31-50, 60 and 70 ton units. See Model Options B1, B2 and B3 for emergency heat options and Feature 3 for auxiliary heat capacity options.

## Model Option A4 - Cooling/Heat Pump Staging Continued

**Y** = *Modulating Heat Pump - Lead Variable Capacity Compressor with 4 Stage Auxiliary Heat* - Modulating DX cooling unit or modulating DX cooling and modulating heat pump heating unit four stages of auxiliary heat available during heat pump heating. 2-8 and 10 ton units include a single 10-100% variable capacity scroll compressor. 9, 11-25 and 30 ton units include a single 10-100% variable capacity scroll compressor and a single on/off scroll compressor. 26, 31-50, 60 and 70 ton units include two 10-100% variable capacity scroll compressors (Stages 1 and 2) and two on/off scroll compressors. With factory provided controls, on/off compressors are staged on while the variable capacity compressors modulate their capacity as needed. See Model Options B1, B2 and B3 for emergency heat options and Feature 3 for auxiliary heat capacity options.

**Z** = *Modulating Heat Pump - All Variable Capacity Compressors with 4 Stage Auxiliary Heat* - Modulating DX cooling unit or modulating DX cooling and modulating heat pump heating unit four stages of auxiliary heat available during heat pump heating. 9, 11-25 and 30 ton units include two 10-100% variable capacity scroll compressors. 26, 31-50, 60 and 70 ton units include four 10-100% variable capacity scroll compressors. Option is not available on 2-8 and 10 ton units because the units include only a single compressor. With factory provided controls, variable capacity compressors are staged on, as efficiently as possible, while modulating their capacity as needed. See Model Options B1, B2 and B3 for emergency heat options and Feature 3 for auxiliary heat capacity options.

## Model Option Model Option B1 - Heating Type

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000B

**0** = *No Heating*

**1** = *Electric Heat* - Electric heater with multiple elements.

**2** = *Natural Gas Aluminized* - Natural gas heater with aluminized steel heat exchanger with a 15 year non-prorated warranty. The maximum temperature rise across the heater exchanger is 70°F. The maximum outlet temperature is 180°F. RQ and RN Series A, B, C and D cabinet units (2-50, 60, and 70 tons) require only a single gas connection. RN Series E cabinet units (55, 65, and 75-140 tons) require two gas connections.

**3** = *Natural Gas Stainless Steel* - Natural gas heater with 304 stainless steel heat exchanger with a 25 year non-prorated warranty. Stainless steel heat exchangers are required where the outside air rate is greater than or equal to 50% of the supply cfm or where the temperature rise across the heater exceeds the rating for the aluminized steel option (70°F). The maximum temperature rise for stainless steel heat exchangers is 100°F. The maximum outlet temperature is 180°F. RQ and RN Series A, B, C and D cabinet units (2-50, 60, and 70 tons) require only a single gas connection. RN Series E cabinet units (55, 65, and 75-140 tons) require two gas connections.

## Model Option B1 - Heating Type Continued

**4** = *High Altitude Natural Gas Aluminized* - Natural gas heater with aluminized steel heat exchanger with a 15 year non-prorated warranty. Burner orifices are chosen based on altitude at or above 2,000 feet as selected in AAON ECat. The maximum temperature rise across the heat exchanger is 70°F. The maximum outlet temperature is 180°F. RQ and RN Series A, B, C and D cabinet units (2-50, 60, and 70 tons) require only a single gas connection. RN Series E cabinet units (55, 65, and 75-140 tons) require two gas connections.

**5** = *High Altitude Natural Gas Stainless Steel* - Natural gas heater with 304 stainless steel heat exchanger with a 25 year non-prorated warranty. Burner orifices are chosen based on altitude at or above 2,000 feet as selected in AAON ECat. Stainless steel heat exchangers are required where the outside air rate is greater than or equal to 50% of the supply cfm or where the temperature rise across the heater exceeds the rating for the aluminized steel option (70°F). The maximum temperature rise for stainless steel heat exchangers is 100°F. The maximum outlet temperature is 180°F. RQ and RN Series A, B, C and D cabinet units (2-50, 60, and 70 tons) require only a single gas connection. RN Series E cabinet units (55, 65, and 75-140 tons) require two gas connections.

**6** = *LP Gas Aluminized* - Liquid propane gas heater with aluminized steel heat exchanger with a 15 year non-prorated warranty. The maximum temperature rise across the heater is 70°F. The maximum outlet temperature is 180°F. RQ and RN Series A, B, C and D cabinet units (2-50, 60, and 70 tons) require only a single gas connection. RN Series E cabinet units (55, 65, and 75-140 tons) require two gas connections.

**7** = *LP Gas Stainless Steel* - Liquid propane gas heater with 304 stainless steel heat exchanger with a 25 year non-prorated warranty. Stainless steel heat exchangers are required where the outside air rate is greater than or equal to 50% of the supply cfm or where the temperature rise across the heater exceeds the rating for the aluminized steel option (70°F). The maximum temperature rise for stainless steel heat exchangers is 100°F. The maximum outlet temperature is 180°F. RQ and RN Series A, B, C and D cabinet units (2-50, 60, and 70 tons) require only a single gas connection. RN Series E cabinet units (55, 65, and 75-140 tons) require two gas connections.

**8** = *High Altitude LP Gas Aluminized* - Liquid propane gas heater with aluminized steel heat exchanger with a 15 year non-prorated warranty. Burner orifices are chosen based on altitude at or above 2,000 feet as selected in AAON ECat. The maximum temperature rise across the heater is 70°F. The maximum outlet temperature is 180°F. RQ and RN Series A, B, C and D cabinet units (2-50, 60, and 70 tons) require only a single gas connection. RN Series E cabinet units (55, 65, and 75-140 tons) require two gas connections.

**9** = *High Altitude LP Gas Stainless Steel* - Liquid propane gas heater with 304 stainless steel heat exchanger with a 25 year non-prorated warranty. Burner orifices are chosen based on altitude at or above 2,000 feet as selected in AAON ECat. Stainless steel heat exchangers are required where the outside air rate is greater than or equal to 50% of the supply cfm or where the temperature rise across the heater exceeds the rating for the aluminized steel option (70°F). The maximum temperature rise for stainless steel heat exchangers is 100°F. The maximum outlet temperature is 180°F. RQ and RN Series A, B, C and D cabinet units (2-50, 60, and 70 tons) require only a single gas connection. RN Series E cabinet units (55, 65, and 75-140 tons) require two gas connections.



## Model Option B1 - Heating Type Continued

**C** = *Steam Distributing Standard Coil* - Steam heating coil. No valves or valve controls are included with this option. The maximum operating pressure for steam coils is 25 psi.

**D** = *Steam Distributing Polymer E-Coated Coil* - Steam heating coil with a polymer e-coating applied to the complete coil and casing. Coating exceeds a 6,000 hour salt spray test per ASTM B 117-90 requirements, yet is only 0.8-1.2 mils thick and has excellent flexibility. Option is intended for use in coastal saltwater conditions under the stress of heat, salt, sand and wind and is applicable to all corrosive environments where a polymer e-coating is acceptable. No valves or valve controls are included with this option. The maximum operating pressure for steam coils is 25 psi. Coating includes a 5 year warranty, from the date of original equipment shipment from the factory. The first 12 months from the date of equipment startup, or 18 months from the date of original equipment shipment from the factory, whichever is less, will be covered under the standard AAON limited parts warranty. The remaining period of the warranty will be covered by Luvata Electrofin. The Luvata Electrofin written instructions for installation, operation, coil cleaning, maintenance, and recording keeping must be followed. Refer to the Luvata Electrofin Terms and Conditions of Sale.

**E** = *Hot Water Standard Coil* - Hot water heating coil. No valves or valve controls are included with this option.

**F** = *Hot Water Polymer E-Coated Coil* - Hot water coil with a polymer e-coating applied to the complete coil and casing. Coating exceeds a 6,000 hour salt spray test per ASTM B 117-90 requirements, yet is only 0.8-1.2 mils thick and has excellent flexibility. Option is intended for use in coastal saltwater conditions under the stress of heat, salt, sand and wind and is applicable to all corrosive environments where a polymer e-coating is acceptable. No valves or valve controls are included with this option. Coating includes a 5 year warranty, from the date of original equipment shipment from the factory. The first 12 months from the date of equipment startup, or 18 months from the date of original equipment shipment from the factory, whichever is less, will be covered under the standard AAON limited parts warranty. The remaining period of the warranty will be covered by Luvata Electrofin. The Luvata Electrofin written instructions for installation, operation, coil cleaning, maintenance, and recording keeping must be followed. Refer to the Luvata Electrofin Terms and Conditions of Sale.

# Model Option

## Model Option B2 - Heating Designation

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000B

**0** = No Heating

**H** = 1 Row Coil - Single row hot water or steam heating coil. No valves or valve controls are included with this option.

**J** = 2 Row Coil - Two row hot water or steam heating coil. No valves or valve controls are included with this option.

Table 2 - Electric and Gas Heating Capacities

	Gas Heat		Electric Heat	
	Input Capacity	Output Capacity	Capacity	
	MBH	MBH	kW (208V)	kW (230V, 380V, 460V, 575V)
<b>1</b> = Heat 1	60.0	48.6	7.5	10
<b>2</b> = Heat 2	90.0	72.0	15.0	20
<b>3</b> = Heat 3	100.0	81.0	22.5	30
<b>4</b> = Heat 4	270.0	218.7	30.0	40
<b>5</b> = Heat 5	140.0	113.4	37.5	50
<b>6</b> = Heat 6	390.0	315.9	45.1	60
<b>7</b> = Heat 7	160.0	129.6	60.1	80
<b>8</b> = Heat 8	405.0	328.1	75.1	100
<b>9</b> = Heat 9			90.1	120
<b>A</b> = Heat A			120.1	160
<b>B</b> = Heat B			150.2	200
<b>C</b> = Heat C	540.0	432.0	180.2	240
<b>D</b> = Heat D	810.0	648.0	210.3	280
<b>E</b> = Heat E	1080.0	864.0	240.3	320
<b>F</b> = Heat F	195.0	156.0		
<b>G</b> = Heat G	292.5	234.0		
<b>K</b> = Heat K	150.0	120.0		
<b>L</b> = Heat L	210.0	168.0		
<b>M</b> = Heat M	800.0	640.0		
<b>N</b> = Heat N	1600.0	1280.0		
<b>P</b> = Heat P	2400.0	1920.0		

**Note:** AAON ECat will select the correct heating designation option for gas or electric heat based on the desired leaving air and entering air temperature conditions. For heat pump units this is the emergency or backup heat capacity, which is the capacity of the secondary heater available when heat pump heating is not in use. See General Data section for tonnage specific heating information.

# Model Option

## Model Option B3 - Heating Staging

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000B

**0** = *No Heating*

**1** = *1 stage* - Single stage heat control.

**2** = *2 stage* - Two stage heat control.

**3** = *3 stage* - Three stage heat control.

**4** = *4 stage* - Four stage heat control.

**5** = *5 stage* - Five stage heat control.

**6** = *6 stage* - Six stage heat control.

**7** = *7 stage* - Seven stage heat control.

**8** = *8 stage* - Eight stage heat control.

**9** = *Modulating Gas - Temperature Control or Modulating/SCR Electric - Potentiometer Control*

*Modulating Gas - Temperature Control* - Heater gas valve and the speed of the induced draft fan are modulated by a DDC controller. For 2-6 ton RQ Series units, turndown is 3:1 of full rated capacity for the 60, 100, 140 and 160 MBH heaters. For 6-8 and 10 ton units, turndown is 3:1 of full rated capacity for the 90, 150 and 210 MBH heaters. For 9 and 11-15 ton units, turndown is 3:1 of full rated capacity for the 195, 295 and 390 MBH heaters. For 16-25 and 30 ton units, turndown is 3:1 of full rated capacity for the 270 and 540 MBH heaters and 5:1 of full rated capacity for the 405 MBH heater. For 26, 31-50, 60 and 70 ton units, turndown is 3:1 of full rated capacity for the 540 MBH heater, 5:1 of full rated capacity for the 810 MBH heater, and 6:1 of full rated capacity for the 1080 MBH heater. For 55, 65 and 75-140 ton units, turndown is 3:1 of full rated capacity for the 800, 6:1 of full rated capacity for the 1600, and 10:1 of full rated capacity for the 2400 MBH heater. Includes a factory wired supply air temperature sensor which is field installed in the supply ductwork. Controller can be used in standalone applications or connected to a WattMaster VCM-X controller via modular cable (Feature 22 = A or C). In standalone application, on a call for heating, the controller will modulate gas valve and speed of induced draft blower to maintain a constant supply air temperature setpoint that is set using a DIP switch on the controller. The supply air temperature can be reset to a supply air temperature reset setpoint using a field provided 0-10 VDC reset input signal and another DIP switch on the controller. When the modulating gas heat controller is connected to a WattMaster VCM-X controller (Feature 22 = A or C) supply air temperature setpoint, supply air temperature sensor offset, and supply air high temperature limit setpoint will be set with the unit controller's operator interface. The heat enable signal is provided by the unit controller. Modulating gas heat requires a stainless steel natural gas heat exchanger (Model Option B1 = 3 or 5).'

## Model Option B3 - Heating Staging Continued

*Modulating/SCR Electric - Potentiometer Control* - Fully modulating electric heating, controlled by a Silicon Controlled Rectifier (SCR) and DDC controller. Includes a factory wired supply air temperature sensor, which is field installed in the supply ductwork, and a factory wired supply air temperature setpoint adjustment potentiometer, which is field mounted. Potentiometer dial uses variable resistance to provide simple setpoint control.

**A** = *Modulating/SCR Electric - 0-10V Control Signal* - Fully modulating electric heating, controlled by an SCR and DDC controller. A terminal strip to connect a 0-10 VDC control signal by others is included. Heating elements line voltage is modulated linearly with respect to the control signal.

**H** = *Single Serpentine 8 fpi* - Hot water or steam heating coil with single serpentine circuitry and 8 fins per inch. No valves or valve controls are included with this option.

**J** = *Half Serpentine 8 fpi* - Hot water heating coil with half serpentine circuitry and 8 fins per inch. No valves or valve controls are included with this option.

**K** = *Single Serpentine 10 fpi* - Hot water or steam heating coil with single serpentine circuitry and 10 fins per inch. Standard steam coil option and standard 2 row hot water coil option. No valves or valve controls are included with this option. Option is available on RN Series units.

**L** = *Half Serpentine 10 fpi* - Hot water heating coil with half serpentine circuitry and 10 fins per inch. Standard 1 row hot water coil option. No valves or valve controls are included with this option. Option is available on RN Series units.

**M** = *Single Serpentine 12 fpi* - Hot water or steam heating coil with single serpentine circuitry and 12 fins per inch. No valves or valve controls are included with this option.

**N** = *Half Serpentine 12 fpi* - Hot water heating coil with half serpentine circuitry and 12 fins per inch. No valves or valve controls are included with this option.

**Note:** For heat pump units this is the number of emergency or backup heat stages, which is the number of stages of the secondary heater available when heat pump heating is not in use. See General Data section for tonnage specific heating information.

## Feature 1A Return/Outside Air Section

Example: RN-025-3-0-BB02-384:**A**000-D0B-DEH-0BA-0D0000L-00-00B00000B

**0** = *Manually Adjustable Outside Air Opening with Return Air Opening* - 0-25% manually adjustable outside air opening. Option includes a return air opening in the unit base.

**A** = *Economizer* - Extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly with factory installed actuator and barometric relief damper on the return air section. See Feature 2 for actuator control options.

## Feature 1A - Return/Outside Air Section Continued

**B** = *Economizer with Power Exhaust* - Extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly with power exhaust for space pressurization control during the economizer mode of operation. See Feature 2 for actuator control options. Variable flow power exhaust is available with the selection of a VFD, ECM, or speed controller in Feature 1B.

**C** = *Economizer with Power Return* - Extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly with power return for use with high return static pressure applications. See Feature 2 for actuator control options. Variable flow power return is available with the selection of a VFD, ECM, or speed controller in Feature 1B. Option is available on 16-140 ton units.

**D** = *Economizer with Power Exhaust - Discharge Damper Volume Control* - Extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly with modulating power exhaust. Exhaust air is modulated by a floating point actuator, outlet dampers and a null pressure switch. Switch provides signal to damper actuator to open or close. See Feature 2 for economizer actuator control options. Option is available on 6-15 ton RN Series units.

**E** = *Economizer with Power Exhaust - Discharge Damper Volume Control with 0-10V Control Signal* - Extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly with modulating power exhaust. Exhaust air is modulated by outlet dampers, actuator and field provided 0-10 VDC control signal. See Feature 2 for economizer actuator control options. Option is available on 6-15 ton RN Series units.

**F** = *Low cfm Total AAONAIRES Energy Recovery Wheel* - Factory installed total energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. The wheel's styrene heat transfer material is treated with silica gel desiccant for sensible and latent energy recovery. Outside air flow is limited to the maximum air flow rating of the wheel shown in Table 3. Note, this option may not allow enough airflow for 100% outside air economizer operation. See Feature 2 for economizer actuator control options.

**G** = *Low cfm Total AAONAIRES Energy Recovery Wheel with Bypass Damper* - Factory installed total energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. Bypass damper with two position actuator allows air to flow around the wheel. Select when the outside air flow is greater than the maximum air flow rating of the wheel or when additional air flow is needed during economizer operation. The wheel's styrene heat transfer material is treated with silica gel desiccant for sensible and latent energy recovery. Outside air flow through the wheel is limited to the maximum air flow rating of the wheel shown in Table 3. See Feature 2 for economizer actuator control options.

**H** = *Low cfm Sensible AAONAIRES Energy Recovery Wheel* - Factory installed sensible energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. Wheel does not have silica gel desiccant on the substrate. Outside airflow is limited to the maximum air flow rating of the wheel shown in Table 3. Note, this option may not allow enough airflow for 100% outside air economizer operation. See Feature 2 for economizer actuator control options.



## Feature 1A - Return/Outside Air Section Continued

**J** = *Low cfm Sensible AAONAIRES Energy Recovery Wheel with Bypass Damper* - Factory installed sensible energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. Bypass damper with two position actuator allows air to flow around the wheel. Select when the outside air flow is greater than the maximum air flow rating of the wheel or when additional air flow is needed during economizer operation. Wheel does not have silica gel desiccant on the substrate. Outside air flow through the wheel is limited to the maximum air flow rating of the wheel shown in Table 3. See Feature 2 for economizer actuator control options.

**K** = *100% Outside Air, No Return Air* - Outside air opening in the unit which can accommodate 100% of the unit air flow. The outside air opening is not adjustable, and the unit will not have a return air opening. Unit must have a stainless steel heat exchanger if gas heat is specified. Hot gas bypass on all refrigeration circuits without variable capacity scroll compressors, is required on the RN Series with this option.

**L** = *Motorized Outside Air Dampers with Return Air* - Extruded aluminum, low leakage, aluminum gear driven outside air dampers to control the outside air intake. Option includes a return air opening in the unit base. Dampers open on a call for the supply fan. See Feature 2 for outside air damper actuator control options.

**M** = *Motorized 100% Outside Air Dampers, No Return Air* - Extruded aluminum, low leakage, gear driven outside air dampers to control the outside air intake. This option is for 100% outside air applications and unit will not have a return air opening. Units must have a stainless steel heat exchanger if gas heat is specified. Hot gas bypass on all refrigeration circuits, without variable capacity scroll compressors, is required on the RN Series with this option. Dampers open on a call for the supply fan. See Feature 2 for outside air damper actuator control options.

**N** = *Empty Energy Recovery Wheel Option Box without Power Exhaust* - Factory installed empty energy recovery wheel option box with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly for field installation of special options. Option does not include power exhaust. The return air opening and the unit filter rack are in the standard energy recovery wheel locations. Energy recovery wheel filters are not included with this option. See Feature 2 for economizer actuator control options.

**P** = *Empty Energy Recovery Wheel Option Box with Power Exhaust* - Factory installed empty energy recovery wheel option box with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly for field installation of special options. Option includes power exhaust. The return air opening and the unit filter rack are in the standard energy recovery wheel locations. Energy recovery wheel filters are not included with this option. See Feature 2 for economizer actuator control options.

**Q** = *1% Purge Low cfm Total AAONAIRES Energy Recovery Wheel* - Factory installed total energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. The wheel's styrene heat transfer material is treated with silica gel desiccant for sensible and latent energy recovery Option includes an adjustable purge sector, which can reduce carryover to no more than 1%. Used for applications which require limiting cross contamination of the ventilation air with exhaust air. Outside air flow is limited to the maximum air flow rating of the wheel shown in Table 3. Option is available on RN Series units. Note, this option may not allow enough airflow for 100% outside air economizer operation. See Feature 2 for economizer actuator control options.

## Feature 1A - Return/Outside Air Section Continued

**R = 1% Purge Low cfm Total AAONAIRES Energy Recovery Wheel with Bypass Damper** - Factory installed total energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. Bypass damper with two position actuator allows air to flow around the wheel. Select when the outside air flow is greater than the maximum air flow rating of the wheel or when additional air flow is needed during economizer operation. The wheel's styrene heat transfer material is treated with silica gel desiccant for sensible and latent energy recovery. Option includes an adjustable purge sector, which can reduce carryover to no more than 1%. Used for applications which require limiting cross contamination of the ventilation air with exhaust air. Outside air flow through the wheel is limited to the maximum air flow rating of the wheel shown in Table 3. Option is available on 6-8 ton and 10 ton RN Series units. See Feature 2 for economizer actuator control options.

**S = 1% Purge Low cfm Sensible AAONAIRES Energy Recovery Wheel** - Factory installed sensible energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. Wheel does not have silica gel desiccant on the substrate. Option includes an adjustable purge sector, which can reduce carryover to no more than 1%. Used for applications which require limiting cross contamination of the ventilation air with exhaust air. Outside air flow is limited to the maximum air flow rating of the wheel shown in Table 3. Option is available on 6-8 ton and 10 ton RN Series units. Note, this option may not allow enough airflow for 100% outside air economizer operation. See Feature 2 for economizer actuator control options.

**T = 1% Purge Low cfm Sensible AAONAIRES Energy Recovery Wheel with Bypass Damper** - Factory installed sensible energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. Bypass damper with two position actuator allows air to flow around the wheel. Select when the outside air flow is greater than the maximum air flow rating of the wheel or when additional air flow is needed during economizer operation. Wheel does not have silica gel desiccant on the substrate. Option includes an adjustable purge sector, which can reduce carryover to no more than 1%. Used for applications which require limiting cross contamination of the ventilation air with exhaust air. Outside air flow is limited to the maximum air flow rating of the wheel shown in Table 3. Option is available on 6-8 ton and 10 ton RN Series units. See Feature 2 for economizer actuator control options.

**U = High cfm Total AAONAIRES Energy Recovery Wheel** - Factory installed total energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. The wheel's styrene heat transfer material is treated with silica gel desiccant for sensible and latent energy recovery. Outside air flow is limited to the maximum air flow rating of the wheel shown in Table 4. Option is available on 9 ton and 11-70 ton RN Series units. Note, this option may not allow enough airflow for 100% outside air economizer operation. See Feature 2 for economizer actuator control options.



## Feature 1A - Return/Outside Air Section Continued

**V** = *High cfm Total AAONAIRES Energy Recovery Wheel with Bypass Damper* - Factory installed total energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. Bypass damper with two position actuator allows air to flow around the wheel. Select when the outside air flow is greater than the maximum air flow rating of the wheel or when additional air flow is needed during economizer operation. The wheel's styrene heat transfer material is treated with silica gel desiccant for sensible and latent energy recovery. Outside air flow through the wheel is limited to the maximum air flow rating of the wheel shown in Table 4. Option is available on 9 ton and 11-70 ton RN Series units. See Feature 2 for economizer actuator control options.

**W** = *High cfm Sensible AAONAIRES Energy Recovery Wheel* - Factory installed sensible energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. Wheel does not have silica gel desiccant on the substrate. Outside air flow is limited to the maximum air flow rating of the wheel shown in Table 4. Option is available on 9 ton and 11-70 ton RN series units. Note, this option may not allow enough airflow for 100% outside air economizer operation. See Feature 2 for economizer actuator control options.

**Y** = *High cfm Sensible AAONAIRES Energy Recovery Wheel with Bypass Damper* - Factory installed sensible energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. Bypass damper with two position actuator allows air to flow around the wheel. Select when the outside air flow is greater than the maximum air flow rating of the wheel or when additional air flow is needed during economizer operation. Wheel does not have silica gel desiccant on the substrate. Outside air flow through the wheel is limited to the maximum air flow rating of the wheel shown in Table 4. Option is available on 9 ton and 11-70 ton RN series units. See Feature 2 for economizer actuator control options.

**Z** = *1% Purge High cfm Total AAONAIRES Energy Recovery Wheel* - Factory installed total energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. The wheel's styrene heat transfer material is treated with silica gel desiccant for sensible and latent energy recovery. Option includes an adjustable purge sector, which can reduce carryover to no more than 1%. Used for applications which require limiting cross contamination of the ventilation air with exhaust air. Outside air flow is limited to the maximum air flow rating of the wheel shown in Table 4. Option is available on 9 ton and 11-70 ton RN series units. Note, this option may not allow enough airflow for 100% outside air economizer operation. See Feature 2 for economizer actuator control options.



## Feature 1A - Return/Outside Air Section Continued

**1 = 1% Purge High cfm Total AAONAIRES Energy Recovery Wheel with Bypass Damper** - Factory installed total energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. Bypass damper with two position actuator allows air to flow around the wheel. Select when the outside air flow is greater than the maximum air flow rating of the wheel or when additional air flow is needed during economizer operation. The wheel's styrene heat transfer material is treated with silica gel desiccant for sensible and latent energy recovery. Option includes an adjustable purge sector, which can reduce carryover to no more than 1%. Used for applications which require limiting cross contamination of the ventilation air with exhaust air. Outside air flow through the wheel is limited to the maximum air flow rating of the wheel shown in Table 4. Option is available on 9 ton and 11-70 ton RN series units. See Feature 2 for economizer actuator control options.

**2 = 1% Purge High cfm Sensible AAONAIRES Energy Recovery** - Factory installed sensible energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. Wheel does not have silica gel desiccant on the substrate. Option includes an adjustable purge sector, which can reduce carryover to no more than 1%. Used for applications which require limiting cross contamination of the ventilation air with exhaust air. Outside air flow is limited to the maximum air flow rating of the wheel shown in Table 4. Option is available on 9 ton and 11-70 ton RN series units. Note, this option may not allow enough airflow for 100% outside air economizer operation. See Feature 2 for economizer actuator control options.

**3 = 1% Purge High cfm Sensible AAONAIRES Energy Recovery Wheel with Bypass Damper** - Factory installed sensible energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. Bypass damper with two position actuator allows air to flow around the wheel. Select when the outside air flow is greater than the maximum air flow rating of the wheel or when additional air flow is needed during economizer operation. Wheel does not have silica gel desiccant on the substrate. Option includes an adjustable purge sector, which can reduce carryover to no more than 1%. Used for applications which require limiting cross contamination of the ventilation air with exhaust air. Outside air flow is limited to the maximum air flow rating of the wheel shown in Table 4. Option is available on 9 ton and 11-70 ton RN series units. See Feature 2 for economizer actuator control options.

**4 = Single Total AAONAIRES Energy Recovery Wheel with Large Bypass Damper** - Factory installed total energy recovery wheel with factory installed extruded aluminum, low leakage, aluminum gear driven, economizer damper assembly. Bypass damper with two position actuator allows air to flow around the wheel. Select when the outside air flow is greater than the maximum air flow rating of the wheel or when additional air flow is needed during economizer operation. The wheel's styrene heat transfer material is treated with silica gel desiccant for sensible and latent energy recovery. Outside air flow through the wheel is limited to the maximum air flow rating of the wheel shown in Table 4. See Feature 2 for economizer actuator control options. Option is available on 26 and 31-70 ton units.

**5 = 100 % Return Air, No Outside Air** - Return air opening in the unit which can accommodate 100% of the unit air flow. The return air opening is not adjustable, and the unit will not have an outside air opening.

## Feature 1A - Return/Outside Air Section Continued

Table 3 - Low cfm Energy Recovery Wheel Information

Feature 1A	Cabinet	Model	Energy Recovery Wheel	
			Qty/Diameter/Width	Maximum Air Flow Through the Wheel
<b>Low cfm Wheel</b> Options: F, G, H, J, Q, R, S, T		RQ-002	1/21"/2.0"	1,050 cfm
		RQ-003		
		RQ-004		
		RQ-005		
		RQ-006		
	A	RN-006	1/30"/3.0"	2,000 cfm
		RN-007		
		RN-008		
		RN-010		
	B	RN-009	1/36"/1.5"	2,400 cfm
		RN-011		
		RN-013		
		RN-015		
	C	RN-016	1/52"/1.5"	5,000 cfm
		RN-018		
		RN-020		
		RN-025		
		RN-030		
	D	RN-026	2/52"/1.5"	10,000 cfm
		RN-031		
		RN-040		
		RN-050		
		RN-060		
		RN-070		
	E	RN-055	1/81"/3"	15,500 cfm
		RN-065		
		RN-075		
		RN-090		
RN-105				
RN-120				
RN-130				
RN-140				

## Feature 1A - Return/Outside Air Section Continued

Table 4 - High cfm and Single Wheel Energy Recovery Wheel Information

Feature 1A	Cabinet	Model	Energy Recovery Wheel	
			Qty/Diameter/Width	Maximum Air Flow Through the Wheel
<b>High cfm Wheel</b> Options: U, V, W, Y, Z, 1, 2, 3	B	RN-009	1/36"/3.0"	3,300 cfm
		RN-011		
		RN-013		
		RN-015		
	C	RN-016	1/52"/3.0"	6,600 cfm
		RN-018		
		RN-020		
		RN-025		
		RN-030		
	D	RN-026	2/52"/3.0"	12,000 cfm
		RN-031		
		RN-040		
		RN-050		
		RN-060		
		RN-070		
	E	RN-055	2/64"/3.0"	19,000 cfm
		RN-065		
RN-075				
RN-090				
RN-105				
RN-120				
RN-130				
RN-140				
<b>Single Wheel</b> Option: 4	D	RN-026	1/64"/3.0"	9,000 cfm
		RN-031		
		RN-040		
		RN-050		
		RN-060		
		RN-070		

# Feature 1B

## Return/Exhaust Air Blower Configuration

Example: RN-025-3-0-BB02-384:A**0**00-D0B-DEH-0BA-0D0000L-00-00B00000B

**0** = *Standard – None*

**A** = *1 Blower with Standard Efficiency Motor*

**C** = *1 Blower with Premium Efficiency Motor*

**D** = *2 Blowers with Premium Efficiency Motors*

**\*E** = *1 Blower with Premium Efficiency Motor with 1 VFD*

**\*F** = *2 Blowers with Premium Efficiency Motors with 2 Motors on 1 VFD*

**\*G** = *2 Blowers with Premium Efficiency Motors with 2 Motors on 2 VFDs*

**\*H** = *1 Blower with High Efficiency Electronically Commutated Motor (ECM)*

**\*J** = *1 Blower with Single Phase Motor with Speed Control*

\*Power exhaust with VFD or Speed Control requires field supplied control signal.

AAON ECat will select the correct available options for Feature 1B based on unit conditions and the input from the fan selection program. When building a fan configuration with AAON ECat you must first select a power return, power exhaust or energy recovery wheel option in Feature 1A. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the “Fan Selection” window. In the “Fan Selection” window you will be able to choose the number of fans, VFDs, and motor efficiency. General fan information, fan sound information, and fan curves will be available for viewing in the “Fan Selection” window.

**Note:** If a bypass on the VFD is required it should be selected in AAON ECat and the Applications Department should also be contacted for required Special Pricing Authorization (SPA).

# Feature 1C

## Return/Exhaust Air Blower

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000B

**0** = *Standard - None*

**A** = *12" x 9" Belt Driven Forward Curved Fan*

**B** = *15" Belt Driven Backward Curved Plenum Fan*

**C** = *18.5" Belt Driven Backward Curved Plenum Fan*

**D** = *22" Belt Driven Backward Curved Plenum Fan*

**F** = *27" Belt Driven Backward Curved Plenum Fan (RQ Series and RN Series 6-50, 60 and 70 ton Units)/ 27" Direct Drive Backward Curved Plenum Fan (RN Series 55, 65 and 75-140 ton Units)*

**G** = *22" Direct Drive Axial Flow Fan*

**H** = *35.5" Direct Drive Axial Flow Fan*

**J** = *15" Belt Driven Backward Curved Plenum Fan, 70% Width (RQ)/15" Belt Driven Backward Curved Plenum Fan, 50% Width with Banding (RN)*

**K** = *18.5" Belt Driven Backward Curved Plenum Fan, 70% Width with Banding*

**L** = *22" Belt Driven Backward Curved Plenum Fan, 70% Width with Banding*

**M** = *27" Belt Driven Backward Curved Plenum Fan, 70% Width with Banding*

**N** = *16" Direct Drive Axial Flow Fan (RQ Series)/30" Direct Drive Backward Curved Plenum Fan (RN Series)*

**P** = *42" 9 Blade Direct Drive Axial Flow Fan*

**Q** = *42" 12 Blade Direct Drive Axial Flow Fan*

**R** = *24" Direct Drive Backward Curved Plenum Fan*

**S** = *33" Direct Drive Backward Curved Plenum Fan*

AAON ECat will select the correct available options for Feature 1C based on unit conditions and the input from the fan selection program. When building a fan configuration with AAON ECat you must first select a power return, power exhaust or energy recovery wheel option in Feature 1A. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the "Fan Selection" window. In the "Fan Selection" window you will be able to choose the number of fans, VFDs and motor efficiency. General fan information, fan sound information and fan curves will be available for viewing in the "Fan Selection" window.

# Feature 1D

## Return/Exhaust Air Blower Motor

Example: RN-025-3-0-BB02-384:A00**0**-D0B-DEH-0BA-0D0000L-00-00B00000B

<b>0</b> = Standard - None	<b>*R</b> = 5.0 hp - 1170 rpm
<b>A</b> = 0.25 hp - 850 rpm	<b>*S</b> = 7.5 hp - 1170 rpm
<b>B</b> = 0.5 hp - 1075 rpm	<b>T</b> = 10 hp - 1170 rpm
<b>C</b> = 1.0 hp - 1760 rpm	<b>U</b> = 15 hp - 1170 rpm
<b>D</b> = 2.0 hp - 1760 rpm	<b>V</b> = 20 hp - 1170 rpm
<b>E</b> = 3.0 hp - 1760 rpm	<b>W</b> = 0.75 hp - 1760 rpm (RQ Series)/ 25 hp - 1170 rpm (RN Series)
<b>F</b> = 5.0 hp - 1760 rpm	<b>Y</b> = 30 hp - 1170 rpm
<b>G</b> = 7.5 hp - 1760 rpm	<b>Z</b> = 0.167 hp - 825 rpm
<b>H</b> = 10 hp - 1760 rpm	<b>3</b> = 25 hp - 1760 rpm
<b>L</b> = 15 hp - 1760 rpm	<b>4</b> = 30 hp - 1760 rpm
<b>M</b> = 20 hp - 1760 rpm	<b>5</b> = 40 hp - 1760 rpm
<b>*N</b> = 1.0 hp - 1170 rpm	<b>6</b> = 50 hp - 1760 rpm
<b>*P</b> = 2.0 hp - 1170 rpm	
<b>*Q</b> = 3.0 hp - 1170 rpm	

\*Available with axial flow RN Series fan options. These options allow selection of motor rpm closest to application requirements, such as VFD applications and high volume, low static applications.

AAON ECat will select the correct available options for Feature 1D based on unit conditions and the input from the fan selection program. When building a fan configuration with AAON ECat you must first select a return/exhaust fan or energy recovery wheel in Feature 1A. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the “Fan Selection” window. In the “Fan Selection” window you will be able to choose the number of fans, VFDs and motor efficiency. General fan information, fan sound information and fan curves will be available for viewing in the “Fan Selection” window.

## Feature 2

### Outside Air Control

Example: RN-025-3-0-BB02-384:A000-**D**0B-DEH-0BA-0D0000L-00-00B00000B

**0** = *Standard - None* - No economizer or motorized outside air dampers.

**A** = *3 Position Actuator with Sensible Limit* - Economizer actuator with three positions. Position one is the closed position. Position two is the minimum outside air position, which is activated when there is a call for supply fan operation. Position three is the economizer mode position with outside air dampers fully open. The minimum outside air position can be field adjusted for the desired amount of outside air. The range for the changeover control is 45°F to 95°F and responds to sensible temperature only. The actuator is spring return closed. During economizer mode supply air temperature will vary with outside air temperature.

**B** = *3 Position Actuator with Enthalpy Limit* - Economizer actuator with three positions. Position one is the closed position. Position two is the minimum outside air position, which is activated when there is a call for supply fan operation. Position three is the economizer mode position with outside air dampers fully open. The minimum outside air position can be field adjusted for the desired amount of outside air. Changeover control responds to sensible and latent heat of the ambient air. The actuator is spring return closed.

**C** = *Fully Modulating Actuator with Sensible Limit* - Fully modulating economizer actuator with two positions. Position one is the closed position. Position two is the minimum outside air position, which is activated when there is a call for supply fan operation. During the economizer mode actuator modulates between minimum outside air position and having the outside air dampers fully open to maintain a discharge temperature of 55°F. The minimum outside air position can be field adjusted for the desired amount of outside air. The range for the changeover control is 45°F to 95°F and responds to sensible temperature only. The actuator is spring return closed.

**D** = *Fully Modulating Actuator with Enthalpy Limit* - Fully modulating economizer actuator with two positions. Position one is the closed position. Position two is the minimum outside air position, which is activated when there is a call for supply fan operation. During the economizer mode actuator modulates between minimum outside air position and having the outside air dampers fully open to maintain a discharge temperature of 55°F. The minimum outside air position can be field adjusted for the desired amount of outside air. Changeover control responds to sensible and latent heat of the ambient air. The actuator is spring return closed.

**E** = *DDC Actuator* - Economizer actuator with terminal strip (EC1 and EC2) in the controls compartment for a field supplied outside air control signal. Actuator is factory configured for a 4-20 mA control signal, but can be configured for a 0-10 VDC control signal by removing the resistor between the terminals, EC1 and EC2. Use this option where customer supplied controls are employed for unit and economizer functions. All economizer functions will be by others. AAON provides the damper assembly and actuator only. Part of the D-PAC and PAC control systems. See Feature 13 and Controls section for more D-PAC and PAC information.

## Feature 2 - Outside Air Control Continued

**F** = *Constant Volume Outside Air* - Option maintains a minimum amount of outside air in VAV units. Velocity pressure of the air entering the unit is measured and the dampers are adjusted to maintain constant pressure, and thus a constant volume, of fresh air regardless of the supply air volume. Minimum supply air setting on the VFD control should be greater than or equal to outside air requirement. Option is available on the RN Series. If economizer mode is required, select from options G, H, J, K or L.

**G** = *Constant Volume Outside Air + 3 Position Actuator with Sensible Limit* - Options F + A

**H** = *Constant Volume Outside Air + 3 Position Actuator with Enthalpy Limit* - Options F + B

**J** = *Constant Volume Outside Air + Fully Modulating Actuator with Sensible Limit* - Options F + C

**K** = *Constant Volume Outside Air + Fully Modulating Actuator with Enthalpy Limit* - Options F + D

**L** = *Constant Volume Outside Air + DDC Actuator* - Options F + E

**M** = *CO<sub>2</sub> Override + 3 Position Actuator with Sensible Limit* - Option A + CO<sub>2</sub> ventilation controller that senses the return air stream through a pitot tube. Used for demand controlled ventilation applications where outside air ventilation is based on actual not assumed demand, for energy savings. The sensor is self-calibrating with a 14-day log that will automatically correct for sensor drift and has onboard push buttons with LCD display for specifying CO<sub>2</sub> setpoint. This option works best with air velocities in the 600 to 1200 fpm range.

**N** = *CO<sub>2</sub> Override + 3 Position Actuator with Enthalpy Limit* - Option B + CO<sub>2</sub> ventilation controller that senses the return air stream through a pitot tube. Used for demand controlled ventilation applications where outside air ventilation is based on actual not assumed demand, for energy savings. The sensor is self-calibrating with a 14-day log that will automatically correct for sensor drift and has onboard push buttons with LCD display for specifying CO<sub>2</sub> setpoint. This option works best with air velocities in the 600 to 1200 fpm range.

**P** = *CO<sub>2</sub> Override + Fully Modulating Actuator with Sensible Limit* - Option C + CO<sub>2</sub> ventilation controller that senses the return air stream through a pitot tube. Used for demand controlled ventilation applications where outside air ventilation is based on actual not assumed demand, for energy savings. The sensor is self-calibrating with a 14-day log that will automatically correct for sensor drift and has onboard push buttons with LCD display for specifying CO<sub>2</sub> setpoint. This option works best with air velocities in the 600 to 1200 fpm range.

**Q** = *CO<sub>2</sub> Override + Fully Modulating Actuator with Enthalpy Limit* - Option D + CO<sub>2</sub> ventilation controller that senses the return air stream through a pitot tube. Used for demand controlled ventilation applications where outside air ventilation is based on actual not assumed demand, for energy savings. The sensor is self-calibrating with a 14-day log that will automatically correct for sensor drift and has onboard push buttons with LCD display for specifying CO<sub>2</sub> setpoint. This option works best with air velocities in the 600 to 1200 fpm range.

**R** = *CO<sub>2</sub> Override + DDC Actuator* - Option E + CO<sub>2</sub> ventilation controller that senses the return air stream through a pitot tube. Used for demand controlled ventilation applications where outside air ventilation is based on actual not assumed demand, for energy savings. The sensor is self-calibrating with a 14-day log that will automatically correct for sensor drift and has onboard push buttons with LCD display for specifying CO<sub>2</sub> setpoint. This option works best with air velocities in the 600 to 1200 fpm range. The CO<sub>2</sub> sensor will be wired back to a set of terminals or customer supplied factory installed DDC controller.



## Feature 2 - Outside Air Control Continued

**S** = *Dual Minimum Position Potentiometers with Fully Modulating Actuator with Sensible Limit*  
- Fully modulating economizer with sensible limit actuator with two minimum position potentiometers. Remote contact closure will allow the outside air to open the second minimum setting. During the economizer mode actuator modulates between minimum outside air position and having the outside air dampers fully open to maintain a discharge temperature of 55°F. The minimum outside air positions can be field adjusted for the desired amount of outside air. The range for the changeover control is 45°F to 95°F and responds to sensible temperature only. The actuator is spring return closed.

**T** = *Dual Minimum Position Potentiometers with Fully Modulating Actuator with Enthalpy Limit*  
- Fully modulating economizer with enthalpy limit actuator with two minimum position potentiometers. Remote contact closure will allow the outside air to open the second minimum setting. During the economizer mode actuator modulates between minimum outside air position and having the outside air dampers fully open to maintain a discharge temperature of 55°F. The minimum outside air positions can be field adjusted for the desired amount of outside air. Changeover control responds to sensible and latent heat of the ambient air. The actuator is spring return closed.

**U** = *2 Position Actuator* - Used with motorized outside air options in Feature 1. Position one is the closed position. Position two is the fully open position, which is activated when there is a call for supply fan operation.

# Feature 3

## Heat Options

Example: RN-025-3-0-BB02-384:A000-D**0**B-DEH-0BA-0D0000L-00-00B00000B

**\*0** = *Standard* - For heat pump units, the auxiliary gas heat capacity is equal to the emergency gas heat capacity shown in Model Option B2.

**E** = *Discharge Air Override* - This option is used to prevent temperature swings common with space thermostats in makeup air applications where large amounts of untreated air are permitted to enter prior to space thermostat reaction. A supply air temperature sensor and thermostat are wired to the heat terminals. If the supply air temperature falls below the field adjustable setpoint, heat is energized to prevent cold outside air introduction to the space. A timer is provided that can be field adjusted to the amount of time the heater will operate before the space thermostat initiates a call for heat.

Table 5 - Auxiliary Electric Heating Capacities

	kW (208V)	kW (230V, 380V, 460V, 575V)
<b>*K</b> = Heat K	7.5	10.0
<b>*L</b> = Heat L	15.0	20.0
<b>*M</b> = Heat M	22.5	30.0
<b>*N</b> = Heat N	30.0	40.0
<b>*P</b> = Heat P	37.5	50.0
<b>*Q</b> = Heat Q	45.1	60.0
<b>*R</b> = Heat R	60.1	80.0
<b>*S</b> = Heat S	75.1	100.0
<b>*T</b> = Heat T	90.1	120.0
<b>*U</b> = Heat U	120.1	160.0
<b>*V</b> = Heat V	150.2	200.0
<b>*W</b> = Heat W	180.2	240.0

\*AAON ECat will select the correct auxiliary or supplemental heating designation option for gas or electric heat based on the desired leaving air and entering air temperature conditions. This is the auxiliary heat capacity, which is the capacity of the secondary heater available when heat pump heating is in use. See General Data section for tonnage specific heating information.

## Feature 4 Maintenance Options

Example: RN-025-3-0-BB02-384:A000-D0**B**-DEH-0BA-0D0000L-00-00B00000B

**0** = *Standard - None*

**A** = *Field Wired 115V Convenience Outlet* - Field wired 2x4 electrical box with ground fault interrupter receptacle, located inside the unit control cabinet. Receptacle is rated for 20 amps. The outlet must be field wired to a 115 VAC power supply.

**B** = *Factory Wired 115V Convenience Outlet* - Factory wired 2x4 electrical box with ground fault interrupter receptacle, located inside the unit control cabinet. The circuit is rated at 13 amps and is factory wired to a step-down transformer, fuse block and outlet disconnect. The circuit is wired to the line side of the unit power block, permitting use of the outlet while power to the unit is shut off. **Caution: When the power to the unit is disconnected at the factory installed unit power switch, the convenience outlet will remain live.**

**C** = *Blower Auxiliary Contact* - Contacts on the low voltage terminal block that close when the supply fan is energized. This option is used to interface with other devices or to indicate unit operation.

**D** = *Remote Start/Stop Terminals* - Remote start/stop terminals labeled ST1 and ST2. This option is normally used with a remote time clock or space type thermostat with occupied/unoccupied capability. Field supplied contact closure is needed for unit operation. When contacts are open, the low voltage circuit is broken and the unit will not operate.

**E** = *Field Wired 115V Convenience Outlet + Blower Aux. Contact* - Options A + C

**F** = *Field Wired 115V Convenience Outlet + Remote Start/Stop Terminals* - Options A + D

**G** = *Factory Wired 115V Convenience Outlet + Blower Aux. Contact* - Options B + C

**H** = *Factory Wired 115V Convenience Outlet + Remote Start/Stop Terminals* - Options B + D

**J** = *Field Wired 115V Convenience Outlet + Blower Aux. Contact + Remote Start/Stop Terminals* - Options A + C + D

**K** = *Factory Wired 115V Convenience Outlet + Blower Aux. Contact + Remote Start/Stop Terminals* - Options B + C + D

**L** = *Blower Auxiliary Contact + Remote Start/Stop Terminals* - Options C + D

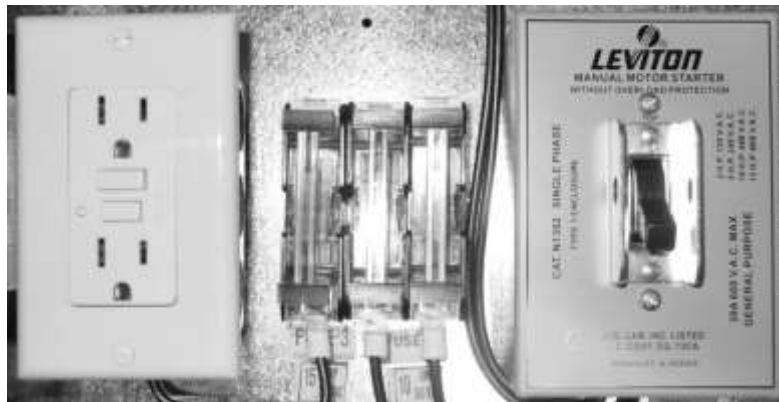


Figure 1 - Factory Wired Convenience Outlet

# Feature 5A

## Supply Blower Configuration

Example: RN-025-3-0-BB02-384:A000-D0B-**D**EH-0BA-0D0000L-00-00B00000B

- 0** = 1 Blower with Standard Efficiency Motor
- \*A** = 2 Blowers with Standard Efficiency Motors
- B** = 1 Blower with Premium Efficiency Motor
- \*C** = 2 Blowers with Premium Efficiency Motors
- D** = 1 Blower with Premium Efficiency Motor with One VFD
- \*F** = 2 Blowers with Premium Efficiency Motors with Two Motors on One VFD
- \*G** = 2 Blowers with Premium Efficiency Motors with Two Motors on Two VFDs
- P** = 1 Blower with High Efficiency Electronically Commutated Motor (ECM)
- Q** = 1 Blower with Inverter Rated Motor with One VFD
- R** = 1 Blower with Single Phase Motor and Speed Control

\*Available on 26 and 31-140 ton units.

AAON ECat will select the correct available options for Feature 5A based on unit conditions and the input from the fan selection program. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the “Fan Selection” window. In the “Fan Selection” window you will be able to choose the number of fans, VFDs and motor efficiency. General fan information, fan sound information and fan curves will be available for viewing in the “Fan Selection” window.

**Note:** If field installed controls are chosen (Feature 13, options: 0, H, L, and W) with an ECM supply fan motor, a factory installed speed control potentiometer will be provided.

**Note:** If a bypass on the VFD is required it should be selected in AAON ECat and the Applications Department should also be contacted for required Special Pricing Authorization (SPA).

# Feature 5B

## Supply Blower

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000B

- B** = 15" Direct Drive Backward Curved Plenum Fan
- C** = 18.5" Direct Drive Backward Curved Plenum Fan
- D** = 24" Direct Drive Backward Curved Plenum Fan
- E** = 27" Direct Drive Backward Curved Plenum Fan
- F** = 30" Direct Drive Backward Curved Plenum Fan, 90% Width, 1750 rpm Max, Aluminum Wheel
- G** = 15" Direct Drive Backward Curved Plenum Fan, 70% Width
- H** = 18.5" Direct Drive Backward Curved Plenum Fan, 70% Width
- J** = 18.5" Direct Drive Backward Curved Plenum Fan
- K** = 18.5" Direct Drive Backward Curved Plenum Fan, 60% Width
- L** = 30" Direct Drive Backward Curved Plenum Fan, 1600 rpm Max, Aluminum Wheel
- M** = 13.5" Direct Drive Backward Curved Plenum Fan
- N** = 13.5" Direct Drive Backward Curved Plenum Fan, 70% Width
- P** = 24" Direct Drive Backward Curved Plenum Fan, 60% Width
- Q** = 27" Direct Drive Backward Curved Plenum Fan, 60% Width
- R** = 22" Direct Drive Backward Curved Plenum Fan
- S** = 22" Direct Drive Backward Curved Plenum Fan, 70% Width
- T** = 17" Direct Drive Backward Curved Plenum Fan
- U** = 17" Direct Drive Backward Curved Plenum Fan, 70% Width
- V** = 33" Direct Drive Backward Curved Plenum Fan
- W** = 36.5" Direct Drive Backward Curved Plenum Fan
- Y** = 42.5" Direct Drive Backward Curved Plenum Fan

AAON ECat will select the correct available options for Feature 5B based on unit conditions and the input from the fan selection program. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the "Fan Selection" window. In the "Fan Selection" window you will be able to choose the number of fans, VFDs and motor efficiency. General fan information, fan sound information and fan curves will be available for viewing in the "Fan Selection" window.

# Feature 5C

## Supply Blower Motor

Example: RN-025-3-0-BB02-384:A000-D0B-DE**H**-0BA-0D0000L-00-00B00000B

<b>0</b> = Standard - None	<b>*R</b> = 5.0 hp - 1170 rpm
<b>A</b> = 0.25 hp - 850 rpm	<b>*S</b> = 7.5 hp - 1170 rpm
<b>B</b> = 0.5 hp - 1075 rpm	<b>*T</b> = 10 hp - 1170 rpm
<b>C</b> = 1.0 hp - 1760 rpm	<b>U</b> = 15 hp - 1170 rpm
<b>D</b> = 2.0 hp - 1760 rpm	<b>*V</b> = 20 hp - 1170 rpm
<b>E</b> = 3.0 hp - 1760 rpm	<b>W</b> = 0.75 hp - 1760 rpm (RQ Series)/ 25 hp - 1170 rpm (RN Series)
<b>F</b> = 5.0 hp - 1760 rpm	<b>*Y</b> = 30 hp - 1170 rpm
<b>G</b> = 7.5 hp - 1760 rpm	<b>Z</b> = 0.167 hp - 825 rpm
<b>H</b> = 10 hp - 1760 rpm	<b>3</b> = 25 hp - 1760 rpm
<b>L</b> = 15 hp - 1760 rpm	<b>4</b> = 30 hp - 1760 rpm
<b>M</b> = 20 hp - 1760 rpm	<b>5</b> = 40 hp - 1760 rpm
<b>*N</b> = 1.0 hp - 1170 rpm	<b>6</b> = 50 hp - 1760 rpm
<b>*P</b> = 2.0 hp - 1170 rpm	
<b>*Q</b> = 3.0 hp - 1170 rpm	

\*Options allow selection of motor rpm closest to application requirements, such as VFD applications and high volume, low static applications.

AAON ECat will select the correct available options for Feature 5C based on unit conditions and the input from the fan selection program. When all of the other features have been selected, you will be prompted to select supply fans, return or exhaust fans, motors and VFDs under the “Fan Selection” window. In the “Fan Selection” window you will be able to choose the number of fans, VFDs and motor efficiency. General fan information, fan sound information and fan curves will be available for viewing in the “Fan Selection” window.

## Feature 6A

### Pre Filter Type

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000B

**0** = *Standard - None*

**A** = *2" Pleated Pre Filter - 30% Efficient* - 2 inch pleated, 30% efficient, MERV 8 pre filters mounted adjacent and upstream of the 4" high efficiency unit filters (Feature 6B).

**B** = *Metal Mesh Outside Air Pre Filter* - Washable expanded aluminum mesh filters mounted over the outside air intake. Initial resistance is 0.088 in. w.g. at 520 fpm. Filters are coated for adhesion. Option is used to filter large particles in the outside air and to prevent moisture carryover in humid environments. Filters meet the requirements of UL Class 2.

**C** = *Lint Screen Pre Filter* - 5/16 inch galvanized steel filter frame with 16 wires per inch aluminum mesh filter media upstream of the unit filters. Option is used to reduce surface loading on the pleated filters in environments where lint and other large particles are prevalent. Option is available on RN Series units.

**D** = *Energy Recovery Wheel 2" Pleated Exhaust Air Filter - 30% Efficient* - 2 inch pleated, 30% efficient, MERV 8 filters mounted adjacent and upstream of the energy recovery wheel in the exhaust air stream. With this option, the outside air energy recovery wheel filters are 2 inch pleated, 30% efficient, MERV 8 filters.

**E** = *2" Pleated Pre Filter - 30% Efficient + Metal Mesh Outside Air Pre Filter* - Options A + B

**F** = *2" Pleated Pre Filter + Energy Recovery Wheel 2" Pleated Exhaust Air Filter* - Options A + D

**G** = *Metal Mesh Outside Air Pre Filter + Energy Recovery Wheel 2" Pleated Exhaust Air Filter* - Options B + D

**H** = *2" Pleated Pre Filter - 30% Efficient + Metal Mesh Outside Air Pre Filter + Energy Recovery Wheel 2" Pleated Exhaust Air Filter - 30% Efficient* - Options A + B + D

## Feature 6B

### Unit Filter Type

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000B

**0** = *2" Pleated Unit Filter- 30% Efficient* - 2 inch pleated, 30% efficient, MERV 8 unit filters mounted adjacent and upstream of the evaporator coil and downstream of the return and outside air openings.

## Feature 6B - Unit Filter Continued

**B** = 4" Pleated Unit Filter - 30% Efficient - 4 inch pleated, 30% efficient, MERV 8 unit filters mounted adjacent and upstream of the evaporator coil and downstream of the return and outside air openings.

**C** = 2" Permanent Filter Frame with Replaceable Media - 2 inch metal frame replaceable media filters. Media is a filter pad, 2 inches thick, with non woven polyester bonded fiber, rated to 500 fpm.

**F** = 4" Pleated Unit Filter - 65% Efficient - MERV 11 - 4 inch pleated, 65% efficient, MERV 11 unit filters mounted adjacent and upstream of the evaporator coil and downstream of the return and outside air openings. 2 inch pleated, 30% efficient, MERV 8 pre filters are standard with this option (Feature 6A = A). Not available on 6-25, 30 and 50-70 ton units with the return air bypass option (Model Option A2) and 6-25 and 30 ton units with preheat (Feature 14).

**G** = 4" Pleated Unit Filter - 85% Efficient - MERV 13 - 4 inch pleated, 85% efficient, MERV 13 unit filters mounted adjacent and upstream of the evaporator coil and downstream of the return and outside air openings. 2 inch pleated, 30% efficient, MERV 8 pre filters are standard with this option (Feature 6A = A). Not available on 6-25, 30 and 50-70 ton units with the return air bypass option (Model Option A2) and 6-25 and 30 ton units with preheat (Feature 14).

**H** = 4" Pleated Unit Filter - 95% Efficient - MERV 14 - 4 inch pleated, 95% efficient, MERV 14 unit filters mounted adjacent and upstream of the evaporator coil and downstream of the return and outside air openings. 2 inch pleated, 30% efficient, MERV 8 pre filters are standard with this option (Feature 6A = A). Not available on 6-25, 30 and 50-70 ton units with the return air bypass option (Model Option A2) and 6-25 and 30 ton units with preheat (Feature 14).

## Feature 6C Filter Options

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000B

**0** = Standard

**\*A** = Clogged Filter Switch (CFS) - Adjustable differential pressure switch sensing pressure drop across the filter bank and cooling coil. The range of adjustment is 0.17 to 5.0 in. W.C. with contact closure on rise. The switch is mounted in the fan compartment with terminal connections in the low voltage control section. Normally open dry contacts (C1 and C2) are provided for clogged filter indication.

**\*B** = Magnehelic Gauge - Magnehelic gauge reading pressure drop across the filter bank and cooling coil. The gauge reads from 0 to 3 in. W.C. in 0.10 in. graduations, and is mounted in the control cabinet.

**\*C** = Clogged Filter Switch + Magnehelic Gauge - Options A + B

\*A Special Pricing Authorization (SPA) is required if the CFS or Magnehelic gauge is to be used to respond to the pressure drop across the energy recovery wheel or only the cooling coil.





Figure 2 - Magnehelic Gauge

## Feature 7

### Refrigeration Control

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-**0**D0000L-00-00B00000B

**0** = *Standard* - 55°F fixed compressor cooling lockout. Heat pump units also include an adjustable compressor heating lockout (-10 to 70°F). See Model Option A2 for heat pump options.

**A** = *5 Minute Time Delay Relay - Compressor Off Time* - Time delay relays which guarantee a 5 minute compressor “off time” to prevent short cycling of the compressors, which causes undue stress and wear. The delay timers are located in the low voltage section of the controls cabinet and there are no field adjustments. Option is recommended where electromechanical thermostats are used. Use with some programmable thermostats or DDC controllers may cause excessive time delay. Time delay relay is not included on refrigeration circuits with variable capacity compressors because variable capacity compressor controller includes an anti-short cycle timer. Not available on 26, 31, 40 and 50 ton units because these units include a Comfort Alert™ module for each compressor which provides compressor diagnostics and includes a 3 minute anti-short cycle timer.

**B** = *20 Second Time Delay Relay - Compressor Staging Delay* - 20 second time delay relays that prevent multiple cooling stages from starting simultaneously. The delay timers are located in the low voltage section of the controls cabinet and the range of adjustment is 6 to 300 seconds. The timers limit current draw during cooling cycle start up. Option is recommended where electromechanical thermostats are used. Use with some programmable thermostats or DDC controllers may cause excessive time delay. Option is only available on multiple compressor units (9, 11-50, 60 and 70 ton units).

**C** = *Fan Cycling* - Device which cycles the condenser fans to maintain refrigerant circuit head pressures at acceptable levels during cooling operation down to 35°F ambient. This option is required when ordering any 0°F low ambient option (Feature 8). An adjustable compressor lockout (-10 to 70°F) for the first refrigeration circuit is included with this selection.

## Feature 7 - Refrigeration Control Continued

**D** = *Adjustable Compressor Lockouts on Each Circuit* - Adjustable compressor lockouts (-10 to 70°F) on each refrigeration circuit, located behind the near the outside air opening. Hot gas bypass on the lead compressors are required for this selection on units without variable capacity scroll compressors. Hot gas bypass on the lag compressor is strongly recommended. When fan cycling (option C) is selected an adjustable compressor lockout is included on the first refrigeration circuit. Option is recommended if cooling operation is required at less than 55°F ambient.

**E** = *Freeze Stats on Each Circuit* - Adjustable temperature sensor (-10 to 70°F) mounted on the tubing of the first cooling circuit and wired to de-energize all cooling circuits if tubing temperature falls below setpoint. Option is used to prevent freezing of evaporator coil.

**F** = 5 MTDR + 20 STDR - Options A + B

**G** = 5 MTDR + Fan Cycling - Options A + C

**H** = 5 MTDR + Adjustable CLO - Options A + D

**J** = 5 MTDR + Freeze Stat - Options A + E

**K** = 20 STDR + Fan Cycling - Options B + C

**L** = 20 STDR + Adjustable CLO - Options B + D

**M** = 20 STDR + Freeze Stat - Options B + E

**N** = Fan Cycling + Adjustable CLO - Options C + D

**P** = Fan Cycling + Freeze Stat - Options C + E

**Q** = Adjustable CLO + Freeze Stat - Options D + E

**R** = 5 MTDR + 20 STDR + Fan Cycling - Options A + B + C

**S** = 5 MTDR + 20 STDR + Adjustable CLO - Options A + B + D

**T** = 5 MTDR + 20 STDR + Freeze Stat - Options A + B + E

**U** = 5 MTDR + Fan Cycling + Adjustable CLO - Options A + C + D

**V** = 5 MTDR + Fan Cycling + Freeze Stat - Options A + C + E

**W** = 5 MTDR + Adjustable CLO + Freeze Stat - Options A + D + E

**Y** = 20 STDR + Fan Cycling + Adjustable CLO - Options B + C + D

**Z** = 20 STDR + Fan Cycling + Freeze Stat - Options B + C + E

**1** = 20 STDR + Adjustable CLO + Freeze Stat - Options B + D + E

**2** = Fan cycling + Adjustable CLO + Freeze Stat - Options C + D + E

**3** = 5 MTDR + 20 STDR + Fan Cycling + Adjustable CLO - Options A + B + C + D

**4** = 5 MTDR + 20 STDR + Fan Cycling + Freeze Stat - Options A + B + C + E

**5** = 5 MTDR + 20 STDR + Adjustable CLO + Freeze Stat - Options A + B + D + E

**6** = 5 MTDR + Fan Cycling + Adjustable CLO + Freeze Stat - Options A + C + D + E

**7** = 20 STDR + Fan Cycling + Adjustable CLO + Freeze Stat - Options B + C + D + E

**8** = 5 MTDR + 20 STDR + Fan Cycling + Adjustable CLO + Freeze Stat - Options A + B + C + D + E

# Feature 8

## Refrigeration Options

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0**D**0000L-00-00B00000B

**0** = *Standard* - Each refrigeration circuit includes a manual reset high pressure cutout, an automatic reset low pressure cutout, compressor overload protection and a thermal expansion valve.

**A** = *Hot Gas Bypass on the Lead Stage or Hot Gas Bypass on the Lag Stage with Lead Stage Variable Capacity Compressor* - Field adjustable pressure activated bypass valve on the lead refrigeration circuits factory setup to divert hot compressor discharge gas to the evaporator coil if pressure on the evaporator side of the valve drops below 105 psi for R-410A (34°F at sea level). The bypass valve is at full capacity after six degrees of differential (28°F at sea level). This option is used to prevent coil freeze-up during periods of low air flow or cold entering coil conditions without cycling of the compressors on and off. This option is used for refrigeration system protection only and cannot be used for cooling capacity modulation. **Hot gas bypass is required on all Variable Air Volume (VAV) and Makeup Air (MUA) units without variable capacity or VFD controlled variable speed scroll compressors. Hot gas bypass on the lag circuits is recommended on all VAV and MUA units with variable capacity or VFD controlled variable speed scroll compressors on only the lead circuits.** Hot gas bypass is not available on RQ Series units, because these units are available with a two-step compressor.

*Hot Gas Bypass on the Lead Stage* - 6-25 and 30 ton units include a bypass valve on the first refrigeration circuit. 26 and 31-70 ton units include bypass valves on first and second stage refrigeration circuits.

*Hot Gas Bypass on the Lag Stage with Lead Stage Variable Capacity Compressor* - When lead circuits include variable capacity scroll compressors, this option includes hot gas bypass on the lag circuits. With lead VCC, the 9, 11-25, and 30 ton units include a bypass valve on the second refrigeration circuit. With lead VCC, the 26 and 31-70 ton units include bypass valves on third and fourth stage refrigeration circuits. With lead VCC, the 55, 65, and 75-140 ton units include a bypass valve on the second stage refrigeration circuit.

## Feature 8 - Refrigeration Options Continued

**B = Hot Gas Bypass on the Lead and Lag Stages** - Field adjustable pressure activated bypass valves on the lead and lag refrigeration circuits factory setup to divert hot compressor discharge gas to the evaporator coil if the pressure on the evaporator side of the valve drops below 105 psi for R-410A (34°F at sea level). The bypass valve is at full capacity after six degrees of differential (28°F at sea level). This option prevents coil freeze-up during periods of low air flow or cold entering coil conditions without cycling of the compressors on and off. This option is used for refrigerant system protection only and cannot be used for cooling capacity modulation. **Hot gas bypass on all circuits is required on 90 and 105 ton units with face split coils and VAV or MUA controls. Hot gas bypass on all circuits is required on units with VFD controlled variable speed scroll compressors if the minimum load is less than 50%.** Hot gas bypass is not available on RQ Series units, because these units are available with a two-step compressor. Option is not available on 6-8 and 10 ton RN Series units because these units include only a single lead refrigeration circuit.

*Hot Gas Bypass on the Lead and Lag Stages* - 9, 11-25 and 30 ton units include bypass valves on the first and second stage refrigeration circuits. 26 and 31-70 ton units include bypass valves on the first, second, third, and fourth stage refrigeration circuits. 55, 65, and 75-140 ton units include bypass valves on the first and second stage refrigeration circuits.

**C = Hot Gas Reheat** - Reheat coil mounted downstream of the evaporator and piped to the lead cooling circuits and on/off controls which provide the unit with a dehumidification mode of operation for when the cooling load has been satisfied.

*Thermostat units:* A terminal contact (RH1) is included for connecting a humidistat. Upon a dry contact closure signal from the humidistat and no call for cooling or heating from the thermostat, the lead compressors are activated. After 3 minutes, the reheat coil is energized along with the lag compressors. A call for cooling or heating will deactivate the reheat coil, returning all refrigerant to the condenser coils. A wall mounted humidistat is available as an accessory. Receiver tanks are standard with this option.

*Field Installed DDC Controls by others:* A terminal contact (RH1) is included for connecting to the customer supplied controller. The unit will require a contact closure to RH1 to enable dehumidification mode. Units with controls by others will need to provide control logic to enable the compressors and to modulate the variable capacity compressors (if ordered) during dehumidification mode. The customer supplied controller will also need to be able to set cooling or dehumidification as the priority.

*Field provided Factory Installed DDC Controls by others:* The customer supplied DDC controller must provide a digital point to enable dehumidification mode. Units with controls by others will need to provide control logic to enable the compressors and modulate the variable capacity compressors (if ordered) during dehumidification mode. The customer supplied controller will also need to be able to set cooling or dehumidification as the priority.

## Feature 8 - Refrigeration Options Continued

**D = Modulating Hot Gas Reheat** - Reheat coil mounted downstream of the evaporator and piped to the lead cooling circuits which provides the unit with a dehumidification mode of operation for when the cooling load has been satisfied. Option includes modulating condenser control valve, modulating reheat control valve, supply air temperature sensor and DDC controller to maintain the supply air temperature during the dehumidification mode of operation.

*Thermostat units:* A terminal contact (RH1) is included for connecting a humidistat. A wall mounted humidistat is available as an accessory. Receiver tanks are standard with this option. This option provides constant supply air temperature control during dehumidification, which prevents space temperature swings and is ideal for VAV and makeup air applications. Part of the D-PAC and PAC control systems. See Feature 13 and Controls section for more D-PAC and PAC information.

*Field Installed DDC Controls by others:* A terminal contact (RH1) and reset terminals (AI1 & COM) are included for connecting to the customer supplied controller. The unit will require a contact closure to RH1 to able dehumidification mode. It is optional to provide a 0-10VDC signal to reset the supply air set point. Units with controls by others will need to provide control logic to enable the compressors and modulate the variable capacity compressors (if ordered) during dehumidification mode. The customer supplied controller will also need to be able to set cooling or dehumidification as the priority.

*Field provided Factory Installed DDC Controls by others:* The customer supplied DDC controller must provide a digital point to enable dehumidification mode. It is optional to provide a 0-10VDC signal to reset the supply air set point. Units with controls by others will need to provide control logic to enable the compressors and modulate the variable capacity compressors (if ordered) during dehumidification mode. The customer supplied controller will also need to be able to set cooling or dehumidification as the priority.

**E = 0°F Low Ambient Lead Stage** - Factory installed, flooded condenser, head pressure control option which allows cooling operation down to 0°F ambient. When the ambient temperature drops, the condensing pressure drops. A 3-way pressure activated valve then allows discharge gas to bypass around the condenser. Mixing of the discharge gas with liquid creates a high pressure at the condenser outlet, reducing the flow and causing liquid to back up into the condenser. Flooding the condenser reduces the area available for condensing, resulting in a rise in condensing pressure. Additional option components include a receiver tank, sight glass and access port. Fan cycling is required with this option (Feature 7). It is highly recommended that hot gas bypass be selected with this option. Hot gas reheat and modulating hot gas reheat are not available with this option. Used for low ambient applications such as computer equipment rooms.

**F = HGB Lead + HGR** - Options A + C

**G = HGB Lead and Lag + HGR** - Options B + C

**H = HGB Lead + MHGR** - Options A + D

**J = HGB Lead and Lag + MHGR** - Options B + D

**K = HGB Lead + Low Ambient** - Options A + E

**L = HGB Lead Lag + Low Ambient** - Options B + E



## Feature 8 - Refrigeration Options Continued

### **M** = Polymer E-coated Hot Gas Reheat- Options C + Polymer E-coating

Polymer E-coated hot gas reheat coil. Coating exceeds a 6,000 hour salt spray test per ASTM B 117-90 requirements, yet is only 0.8-1.2 mils thick and has excellent flexibility. Coating is intended for use in coastal saltwater conditions under the stress of heat, salt, sand, and wind and is applicable to all corrosive environments where a polymer e-coating is acceptable. Coating includes a 5 year warranty, from the date of original equipment shipment from the factory. The first 12 months from the date of equipment startup, or 18 months from the date of original equipment shipment from the factory, whichever is less, will be covered under the standard AAON limited parts warranty. The remaining period of the warranty will be covered by Luvata Electrofin. The Luvata Electrofin written instructions for installation, operation, coil cleaning, maintenance, and recording keeping must be followed. Refer to the Luvata Electrofin Terms and Conditions of Sale.

### **N** = Polymer E-coated Modulating Hot Gas Reheat – Option D + Polymer E-coating

Polymer E-coated modulating hot gas reheat coil. Coating exceeds a 6,000 hour salt spray test per ASTM B 117-90 requirements, yet is only 0.8-1.2 mils thick and has excellent flexibility. Coating is intended for use in coastal saltwater conditions under the stress of heat, salt, sand, and wind and is applicable to all corrosive environments where a polymer e-coating is acceptable. Coating includes a 5 year warranty, from the date of original equipment shipment from the factory. The first 12 months from the date of equipment startup, or 18 months from the date of original equipment shipment from the factory, whichever is less, will be covered under the standard AAON limited parts warranty. The remaining period of the warranty will be covered by Luvata Electrofin. The Luvata Electrofin written instructions for installation, operation, coil cleaning, maintenance, and recording keeping must be followed. Refer to the Luvata Electrofin Terms and Conditions of Sale.

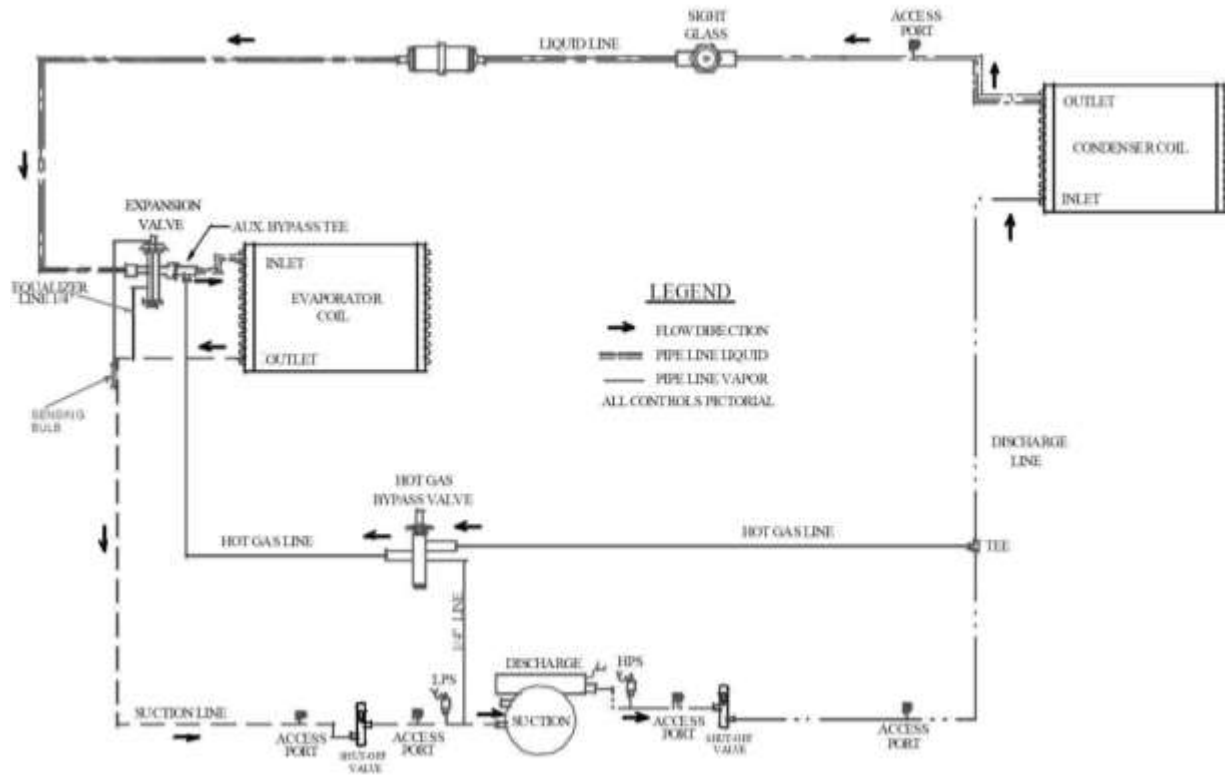


Figure 3 - Hot Gas Bypass Piping Schematic

# Feature 9

## Refrigeration Accessories

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000B

**0** = *Standard*

**A** = *Sight Glass* - Moisture indication sight glass attached to the refrigeration circuit liquid lines. A green color refrigerant indicates a dry condition, a chartreuse color (green with a yellow tint or bright green) indicates caution and a yellow color indicates a wet condition. The sight glass is not a charge indicator.

**B** = *Compressor Isolation Valves* - Ball type service valves mounted on the refrigeration circuit discharge and suction lines permitting isolation of the compressor for service or replacement. This option can reduce the amount of refrigerant that must be recovered during compressor service or replacement. The valves are located close to the compressors and work through a quarter turn from open to closed. Teflon seals and gaskets are used with a nylon cap gasket to prevent accidental loss.

**C** = *Sight Glass + Compressor Isolation Valves* - Options A + B

**D** = *ECM Condenser Fan - Multiple Speed* - Electronically Commutated Motors on the condenser fans which allow matching condenser fan speed with cooling capacity stages. Fan speed is controlled by a factory installed fan cycle switch. Option is available on RQ Series 2-6 tons and RN Series 6, 7, 9, and 11 ton units.

**E** = *ECM Condenser Fan - Head Pressure Control* - Electronically Commutated Motors on the condenser fans which are controlled by factory installed head pressure control module. The control module receives inputs from pressure transducers on each refrigerant circuit and modulates the fan speed based on the pressure inputs. Option is available on RQ Series 2-6 tons. Option is available on RN Series 6, 7, 9, and 11 ton units for all voltages and RN 8, 10, 13-50, 60, and 70 ton units with 208V or 230V. With WattMaster unit controls, ECM's will be controlled directly by WattMaster Control System. With JENEsys unit controls, ECM's will be controlled directly by the JENEsys Control System.

**F** = *VFD Controlled Condenser Fans - Variable Speed* - VFD Controlled Condenser Fans - Variable Speed - Factory provided and factory programmed VFD(s) receives inputs from pressure transducers on each refrigerant circuit and varies the fan speed based on the pressure inputs to maintain a discharge pressure. Standard pressure setpoint is 340 psi for standard air-cooled systems and 400 psi for modulating hot gas reheat air-cooled systems. Option is available on 8, 10, and 13-140 ton units. With WattMaster unit controls, VFD's will be controlled directly by WattMaster Control System. With JENEsys unit controls, VFD's will be controlled directly by the JENEsys Control System.

**G** = *ECM Condenser Fan - Multiple Speed + Sight Glass* - Options A + D

**H** = *ECM Condenser Fan - Multiple Speed + Compressor Isolation Valves* - Options B + D

**J** = *ECM Condenser Fan - Multiple Speed + Sight Glass + Compressor Isolation Valves* - Options A + B + D

**K** = *ECM Condenser Fan - Head Pressure Control + Sight Glass* - Options A + E

**L** = *ECM Condenser Fan - Head Pressure Control + Compressor Isolation Valves* - Options B + E



## Feature 9 - Refrigeration Accessories Continued

**M** = ECM Condenser Fan - Head Pressure Control + Sight Glass + Compressor Isolation Valves - Options A + B + E

**N** = VFD Controlled Condenser Fans - Variable Speed + Sight Glass - Options A + F

**P** = VFD Controlled Condenser Fans - Variable Speed + Compressor Isolation Valves - Options B + F

**Q** = VFD Controlled Condenser Fans - Variable Speed + Sight Glass + Compressor Isolation Valves - Options C + F

Table 6 - Moisture Content in the Refrigerant

Refrigerant Indicator Color	75° F Liquid Line Temperature
Green DRY	Below 75 ppm
Chartreuse CAUTION	75-150 ppm
Yellow WET	Above 150 ppm

## Feature 10 Power Options

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0**0**00L-00-00B00000B

**0** = Standard Power Block

**A** = 100 Amp Power Switch

**B** = 150 Amp Power Switch

**C** = 225 Amp Power Switch

**D** = 400 Amp Power Switch

**E** = 600 Amp Power Switch

**F** = 60 Amp Power Switch

**5** = 800 Amp Power Switch

**6** = 1200 Amp Power Switch

Individual components within the controls compartment are fused and/or internally protected. Switch options include molded case, non-fused, and disconnect switch inside the unit controls compartment. The switch is accessible from the exterior of the unit and protected by a cast metal, lockable cover. The switch disconnects high voltage service to the unit. To add a switch, choose any switch and after all options have been selected and the fan program is completed AAON ECat will automatically calculate the minimum allowable ampacity and choose the correct size switch.

# Feature 11

## Safety Options

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000B

**0** = *Standard*

**A** = *Return and Supply Air Firestats* - Bimetallic snap-action safety switches sensing temperature only, mounted in both the supply and return air streams. The supply air switch is rated to 200°F, the return air switch is rated to 125°F. Both switches manually reset and are wired to shut down the 24 VAC control circuit. Firestats are non-addressable.

**B** = *Return Air Smoke Detector* - Photoelectric type smoke detector factory mounted in the return air section of the unit. Detector is wired to shut down the 24 VAC control circuit upon detector activation, thereby shutting off the unit. Relay contacts are provided for interfacing the detector with alarm panels. A test magnet is supplied in the unit controls cabinet. Smoke detectors are non-addressable.

**C** = *Supply Air Smoke Detector* - Photoelectric type smoke detector factory mounted in the filter/economizer section with sensor mounted to the fan/heating compartment, sensing the supply air downstream of the fan. Detector is wired to shut down the 24 VAC control circuit upon detector activation, thereby shutting off the unit. Relay contacts are provided for interfacing the detector with alarm panels. A test magnet is supplied in the unit controls cabinet. Smoke detectors are non-addressable.

**D** = *Return and Supply Air Smoke Detectors* - Options B + C

**E** = *Return and Supply Air Firestats + Return Air Smoke Detector* - Options A + B

**F** = *Return and Supply Air Firestats + Supply Air Smoke Detector* - Options A + C

**G** = *Return and Supply Air Firestats + Return and Supply Air Firestats* - Options A + D

**H** = *Remote Safety Shutdown Terminals* - Low voltage terminals labeled BI1 and BI2 for wiring to a field installed smoke detector, Firestat, or building safety automatic shutdown system. When contacts are open the unit 24 VAC control circuit is broken and the unit will not operate. Remove the factory supplied jumper before installing.

**J** = *Return and Supply Air Firestats + Remote Safety Shutdown Terminals* - Options A + H

**K** = *Return Air Smoke Detector + Remote Safety Shutdown Terminals* - Options B + H

**L** = *Supply Air Smoke Detector + Remote Safety Shutdown Terminals* - Options C + H

**M** = *Return and Supply Air Smoke Detectors + Remote Safety Shutdown Terminals* - Options D + H

**N** = *Return and Supply Air Firestats + Return Air Smoke Detector + Remote Safety Shutdown Terminals* - Options A + B + H

**P** = *Return and Supply Air Firestats + Supply Air Smoke Detector + Remote Safety Shutdown Terminals* - Options A + C + H

**Q** = *Return and Supply Air Firestats + Return Air Smoke Detector + Supply Air Smoke Detector + Remote Safety Shutdown Terminals* - Options A + B + C + H

# Feature 12

## Controls

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000**0**L-00-00B00000B

**0** = *Standard*

**A** = *Low Limit Controls* - Temperature limit switch and factory provided supply air temperature sensor that must be field wired in the supply air ductwork. Limit switch shuts off the unit when discharge temperature reaches the low limit setpoint. The switch is adjustable from -10°F to 70°F, and is manually reset by disconnecting power to the unit.

**B** = *Phase and Brown Out Protection* - Voltage monitor that is used to protect motors and compressors from voltage imbalance, over/under voltage and phase loss. Reset is automatic. When DDC controls by others is ordered, the Phase and Brown Out protection will be wired back to a set of terminals or to customer supplied controller for status.

**C** = *Energy Recovery Wheel Defrost* - Adjustable temperature sensor and timer wired to periodically stop the wheels rotation and allow warm exhaust air to defrost the wheel.

**D** = *Energy Recovery Wheel Rotation Detection* - Wheel rotation sensor and speed switch output module mounted in the energy recovery wheel section. The module contains a normally open and a normally closed set of contacts wired to the low voltage terminal block for field indication of wheel rotation.

**E** = *Compressor Power Factor Correction* - Power factor correction capacitors applied to the compressors only. Maximum correction factor is 0.9. Option is not available for variable capacity scroll compressors.

**F** = *Low Limit Controls + Phase and Brown Out Protection* - Options A + B

**G** = *Low Limit Controls + ERW Defrost* - Options A + C

**H** = *Low Limit Controls + ERW Rotation Detection* - Options A + D

**J** = *Low Limit Controls + PF Correction* - Options A + E

**K** = *Phase and Brown Out Protection + ERW Defrost* - Options B + C

**L** = *Phase and Brown Out Protection + ERW Rotation Detection* - Options B + D

**M** = *Phase and Brown Out Protection + PF Correction* - Options B + E

**N** = *ERW Defrost + ERW Rotation Detection* - Options C + D

**P** = *ERW Defrost + PF Correction* - Options C + E

**Q** = *ERW Rotation Detection + PF Correction* - Options D + E

**R** = *Low Limit Controls + Phase and Brown Out Protection + ERW Defrost* - Options A + B + C

**S** = *Low Limit Controls + Phase and Brown Out Protection + ERW Rotation Detection* - Options A + B + D

**T** = *Low Limit Controls + Phase and Brown Out Protection + PF Correction* - Options A + B + E

**U** = *Low Limit Controls + ERW Defrost + ERW Rotation Detection* - Options A + C + D

**V** = *Low Limit Controls + ERW Defrost + PF Correction* - Options A + C + E

**W** = *Low Limit Controls + ERW Rotation Detection + PF Correction* - Options A + D + E

**Y** = *Phase and Brown Out Protection + ERW Defrost + ERW Rotation Detection* - Options B + C + D

## Feature 12 - Controls Continued

- Z** = *Phase and Brown Out Protection + ERW Defrost + PF Correction - Options B + C + E*
- 1** = *Phase and Brown Out Protection + ERW Rotation Detection + PF Correction - Options B + D + E*
- 2** = *ERW Defrost + ERW Rotation Detection + PF Correction - Options C + D + E*
- 3** = *Low Limit Controls + Phase and Brown Out Protection + ERW Defrost + ERW Rotation Detection - Options A + B + C + D*
- 4** = *Low Limit Controls + Phase and Brown Out Protection + ERW Defrost + PF Correction - Options A + B + C + E*
- 5** = *Low Limit Controls + Phase and Brown Out Protection + ERW Rotation Detection + PF Correction - Options A + B + D + E*
- 6** = *Low Limit Controls + ERW Defrost + ERW Rotation Detection + PF Correction - Options A + C + D + E*
- 7** = *Phase and Brown Out Protection + ERW Defrost + ERW Rotation Detection + PF Correction - Options B + C + D + E*
- 8** = *Low Limit Controls + Phase and Brown Out Protection + ERW Defrost + ERW Rotation Detection + PF Correction - Options A + B + C + D + E*

## Feature 13 Special Controls

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000**L**-00-00B00000B

- 0** = *Terminal Block for Thermostat Control* - Terminal strip for use with a thermostat. See Controls section and Thermostat Terminals sheet from AAON ECat for more information.
- D** = *Variable Air Volume Unit Controller - Variable Air Volume Cooling and Constant Volume Heating* - Standard VAV controls for non-heat pump systems and heat pump systems. During the cooling mode of operation the supply fan modulates based on the supply static pressure and mechanical cooling modulates based on the supply air temperature. During the heating mode of operation the supply fan provides constant air flow and heating modulates based on the controlling temperature. Return and outside air temperature sensors are factory mounted and wired. Supply air static pressure probe and supply air temperature sensor are factory supplied for field installation. Space temperature sensor with setpoint reset and unoccupied override is factory supplied with WattMaster controller for field installation. A building static pressure sensor is factory supplied for field installation if power exhaust with VFD is selected. Outside air humidity sensor is factory mounted and wired if enthalpy controlled economizer is selected. See Controls section for more information.

## Feature 13 - Special Controls Continued

**E = Constant Volume Unit Controller - Constant Volume Cooling and Constant Volume Heating** - Standard Constant Volume controls for non-heat pump systems. During the cooling mode of operation the supply fan provides constant air flow and mechanical cooling modulates based on the controlling temperature. During the heating mode of operation the supply fan provides constant air flow and heating modulates based on the controlling temperature. Outside air temperature sensor is factory mounted and wired. Supply air temperature sensor and space temperature sensor with setpoint reset and unoccupied override are factory supplied for field installation. A building static pressure sensor is factory supplied for field installation if power exhaust with VFD is selected. Outside air humidity sensor is factory mounted and wired if enthalpy controlled economizer is selected. See Controls section for more information.

**F = Makeup Air Unit Controller - Constant Volume Cooling and Constant Volume Heating** - Standard Makeup Air controls for non-heat pump systems. During the cooling mode of operation the supply fan provides constant air flow and mechanical cooling modulates based on the controlling temperature. During the heating mode of operation the supply fan provides constant air flow and heating modulates based on the controlling temperature. Outside air temperature sensor is factory mounted and wired. Supply air temperature sensor is factory supplied for field installation. A building static pressure sensor is factory supplied for field installation if power exhaust with VFD is selected. See Controls section for more information.

**L = Terminal Block for Thermostat Control with Isolation Relays** - Standard terminal strip for use with thermostats only, with factory installed isolation relays to prevent voltage drop in the controls circuit. This option is strongly recommended on applications where there is a question about the length of thermostat wiring. See Controls section and Thermostat Terminals sheet from AAON ECat for more information.

**U = D-PAC, Digital Precise Air Controller** - Factory installed constant volume DDC controller which allow the unit to provide energy efficient temperature and humidity control under extended loading conditions that are not at the design point. Option requires variable capacity compressor (Model Option A1), return air bypass (Model Option A2), modulating hot gas reheat (Feature 8), and DDC actuator (Feature 2). Outside air temperature sensor is factory mounted and wired. Supply air temperature sensor, space temperature sensor with setpoint reset and unoccupied override, and space humidity sensor are factory supplied for field installation. A building static pressure sensor is factory supplied for field installation if power exhaust with VFD is selected. See Controls section for more information. Option is not available on RQ Series units.

**V = PAC, Precise Air Controller** - Factory installed constant volume DDC controller which allows the unit to provide energy efficient temperature and humidity control under extended loading conditions that are not at the design point. Option does not include variable capacity compressor (Model Option A1). Option requires return air bypass (Model Option A2), modulating hot gas reheat (Feature 8), and DDC actuator (Feature 2). Outside air temperature sensor is factory mounted and wired. Supply air temperature sensor, space temperature sensor with setpoint reset and unoccupied override, and space humidity sensor are factory supplied for field installation. A building static pressure sensor is factory supplied for field installation if power exhaust with VFD is selected. See Controls section for more information. Option is not available on RQ Series units.

## Feature 13 - Special Controls Continued

**Y** = *Variable Air Volume Single Zone Heat Pump Unit Controller - Variable Air Volume Cooling and Variable Air Volume Heating* - VAV controls for heat pump systems which control the temperature and humidity for only a single zone. During the cooling mode of operation the supply fan modulates based on the space temperature and mechanical cooling modulates based on the supply air temperature. During the heating mode of operation the supply fan will modulate based on the space temperature and heat pump heating and auxiliary heating will modulate based on the supply air temperature. Air-source or water-source heat pump configuration is required with this option. Variable capacity compressors are required on all refrigeration circuits with this option. With gas auxiliary heat, modulating gas heating control is required. Return and outside air temperature sensors are factory mounted and wired. Supply air temperature sensor is factory supplied for field installation. Space temperature sensor with setpoint reset and unoccupied override is factory supplied with WattMaster controller for field installation. A building static pressure sensor is factory supplied for field installation if power exhaust with VFD is selected. Outside air humidity sensor is factory mounted and wired if enthalpy controlled economizer is selected. See Controls section for more information.

**Z** = *Constant Volume Heat Pump Unit Controller - Constant Volume Cooling and Constant Volume Heating* - Standard Constant Volume controls for heat pump systems. During the cooling mode of operation the supply fan provides constant air flow and mechanical cooling modulates based on the controlling temperature. During the heating mode of operation the supply fan provides constant air flow and heating modulates based on the controlling temperature. Air-source or water-source heat pump configuration is required with this option. Outside air temperature sensor is factory mounted and wired. Supply air temperature sensor and space temperature sensor with setpoint reset and unoccupied override are factory supplied for field installation. A building static pressure sensor is factory supplied for field installation if power exhaust with VFD is selected. Outside air humidity sensor is factory mounted and wired if enthalpy controlled economizer is selected. See Controls section for more information.

**1** = *Makeup Air Heat Pump Unit Controller - Constant Volume Cooling and Constant Volume Heating* - Standard Makeup Air controls for heat pump systems. During the cooling mode of operation the supply fan provides constant air flow and mechanical cooling modulates based on the controlling temperature. During the heating mode of operation the supply fan provides constant air flow and heating modulates based on the controlling temperature. Air-source or water-source heat pump configuration is required with this option. Outside air temperature sensor is factory mounted and wired. Supply air temperature sensor is factory supplied for field installation. A building static pressure sensor is factory supplied for field installation if power exhaust with VFD is selected. See Controls section for more information.

## Feature 13 - Special Controls Continued

**2** = *VAV Single Zone Unit Controller VAV Cool + CV Heat* - VAV controls for systems which control the space temperature for only a single zone. During the cooling mode of operation the supply fan modulates based on the space temperature and mechanical cooling modulates based on the supply air temperature. Variable capacity or two-step compressors are required. During the heating mode of operation the supply fan provides constant air flow and heating modulates based on the controlling temperature. Supply air temperature sensor is factory installed. Space temperature sensor with setpoint reset and unoccupied override is factory supplied with WattMaster controller or AAON remote mini controller for field installation. A building static pressure sensor is factory supplied for field installation if power exhaust with VFD is selected. Outside air humidity sensor is factory mounted and wired if enthalpy controlled economizer is selected. See Controls section for more information.

**3** = *VAV Single Zone Unit Controller VAV Cool + VAV Heat* - VAV controls for systems which control the space temperature for only a single zone. During the cooling mode of operation the supply fan modulates based on the space temperature and mechanical cooling modulates based on the supply air temperature. During the heating mode of operation the supply fan will modulate based on the space temperature and the heating will modulate based on the supply air temperature. Variable capacity or two-step compressors are required. With gas heat, modulating gas heating control is required. Supply air temperature sensor is factory installed. Space temperature sensor with setpoint reset and unoccupied override is factory supplied with WattMaster controller or AAON remote mini controller for field installation. A building static pressure sensor is factory supplied for field installation if power exhaust with VFD is selected. Outside air humidity sensor is factory mounted and wired if enthalpy controlled economizer is selected. See Controls section for more information.

**4** = *Field Installed DDC Controls by Others* - Provides an expanded terminal strip to interface with controls by others. This expanded terminal strip includes terminals for remote start/stop of the heat wheel, remote start/stop of power exhaust fan, CO2 sensor, and Phase & Brown out. See Controls section and Field controlled Terminal sheet from AAON ECat for more information.

**5** = *Field Installed DDC Controls Furnished by Others with Isolation Relays* - Provides an expanded terminal strip to interface with controls by others, with factory installed isolation relays to prevent voltage drop in the controls circuit. This option is strongly recommended on applications where there is a question about the length of control wiring. This expanded terminal strip includes terminals for remote start/stop of the heat wheel, remote start/stop of power exhaust fan, CO2 sensor, and Phase & Brown out. See Controls section and Field controlled Terminal sheet from AAON ECat for more information.

## Feature 13 - Special Controls Continued

**6** = *Factory Installed DDC Controls Furnished by Others with Isolation Relays (SPA)* - Factory installed controls with factory installed isolation relays to prevent a voltage drop in the controls circuit. Requires a Special Pricing Authorization (SPA) issued by the Applications Department. AAON sales representative must provide a controls parts list, cut sheets, and wiring diagrams before the SPA will be issued. Once the order is entered a completed Special Parts Request Form is sent to the sales rep with control numbers assigned. The sales rep must then forward the form to the controls supplier who must then transfer these numbers to all parts and boxes that are sent to AAON. Proper routing of customer supplied parts to units in production will be delayed if this procedure is not followed. AAON will not deal directly with the controls provider. The AAON sales rep must be the information conduit. See the "Policy Manual for Sales Representatives" for more detailed information on the proper procedure. See Field controlled Terminal sheet from AAON ECat for more information.

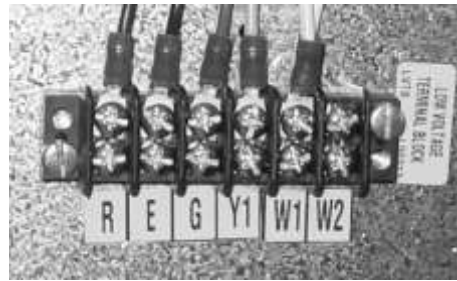


Figure 4 - Example Low Voltage Terminal Block

## Feature 14A Preheat Configuration

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-**0**0-00B00000B

**0** = *Standard - None*

**A** = *Steam Distributing Preheat Coil - 1 Row* - One row steam distributing preheat coil. 2-25 and 30 ton units include a mixed air preheat coil mounted adjacent and upstream of the cooling coil and downstream of the unit filters. The maximum operating pressure for steam coils is 25 psi. 26 and 31-70 ton units include an outside air preheat coil mounted inside the outside air hood. Option is available on 2-25 and 30 ton units without DX cooling. Option is only available on 26 and 31-70 ton units with DX cooling and the power exhaust, power return, or empty energy recovery wheel options, or with chilled water cooling and the empty energy recovery wheel options. No valves or controls are included with this option.



## Feature 14A - Preheat Configuration Continued

**B** = *Steam Distributing Preheat Coil - 2 Row* - Two row steam distributing preheat coil. 6-25 and 30 ton units include a mixed air preheat coil mounted adjacent and upstream of the cooling coil and downstream of the unit filters. The maximum operating pressure for steam coils is 25 psi. 26 and 31-70 ton units include an outside air preheat coil mounted inside the outside air hood. Option is available on 6-25 and 30 ton RN Series units without DX cooling. Option is only available on 26 and 31-70 ton units with DX cooling and the power exhaust, power return, or empty energy recovery wheel options, or with chilled water cooling and the empty energy recovery wheel options. No valves or controls are included with this option.

**C** = *Hot Water Preheat Coil - 1 Row* - One row hot water preheat coil. 2-25 and 30 ton units include a mixed air preheat coil mounted adjacent and upstream of the cooling coil and downstream of the unit filters. 26 and 31-70 ton units include an outside air preheat coil mounted inside the outside air hood. Option is only available on 2-25 and 30 ton units without DX cooling. No valves or controls are included with this option.

**D** = *Hot Water Coil - 2 Row* - Two row hot water preheat coil. 6-25 and 30 ton units include a mixed air preheat coil mounted adjacent and upstream of the cooling coil and downstream of the unit filters. 26 and 31-70 ton units include an outside air preheat coil mounted inside the outside air hood. Option is only available on 6-25 and 30 ton RN Series units without DX cooling. No valves or controls are included with this option.

**E** = *Modulating Electric Preheat* - Modulating electric preheat is used to heat the outdoor air to a leaving air temperature setpoint. Modulation capacity will be controlled by an SCR (Silicon Controlled Rectifier). A preheat enable signal shall be required from the unit controller. Option is available on 2-6 ton RQ Series and 6-25 and 30 ton RN Series, all with three phase voltage. Option is not available with manually adjustable outside air opening or AAON Mini Controller.

## Feature 14B Preheat Sizing

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000B

**0** = *Standard - None*

**A** = *Single Serpentine 8 fpi* - Steam or hot water coil with single serpentine circuitry and 8 fins per inch. Preheat is only available on 2-25 and 30 ton units without DX cooling. Preheat is only available on 26 and 31-70 ton units with DX cooling and the power exhaust, power return, or empty energy recovery wheel options, or with chilled water cooling and the empty energy recovery wheel options. No valves or valve controls are included with this option.

**B** = *Half Serpentine 8 fpi* - Hot water coil with half serpentine circuitry and 8 fins per inch. Preheat is only available on 2-25 and 30 ton units without DX cooling. Preheat is only available on 26 and 31-70 ton units with DX cooling and the power exhaust, power return, or empty energy recovery wheel options, or with chilled water cooling and the empty energy recovery wheel options. No valves or valve controls are included with this option.

## Feature 14B - Preheat Sizing Continued

**C** = *Single Serpentine 10 fpi* - Standard steam and hot water preheat coil option with single serpentine circuitry and 10 fins per inch. Preheat is only available on 2-25 and 30 ton units without DX cooling. Preheat is only available on 26 and 31-70 ton units with DX cooling and the power exhaust, power return, or empty energy recovery wheel options, or with chilled water cooling and the empty energy recovery wheel options. No valves or valve controls are included with this option. Option is available on RN Series units.

**D** = *Half Serpentine 10 fpi* - Hot water coil with half serpentine circuitry and 10 fins per inch. Preheat is only available on 2-25 and 30 ton units without DX cooling. Preheat is only available on 26 and 31-70 ton units with DX cooling and the power exhaust, power return, or empty energy recovery wheel options, or with chilled water cooling and the empty energy recovery wheel options. No valves or valve controls are included with this option. Option is available on RN Series units.

**E** = *Single Serpentine 12 fpi* - Steam or hot water coil with single serpentine circuitry and 12 fins per inch. Preheat is only available on 2-25 and 30 ton units without DX cooling. Preheat is only available on 26 and 31-70 ton units with DX cooling and the power exhaust, power return, or empty energy recovery wheel options, or with chilled water cooling and the empty energy recovery wheel options. No valves or valve controls are included with this option.

**F** = *Half Serpentine 12 fpi* - Hot water coil with half serpentine circuitry and 12 fins per inch. Preheat is only available on 2-25 and 30 ton units without DX cooling. Preheat is only available on 26 and 31-70 ton units with DX cooling and the power exhaust, power return, or empty energy recovery wheel options, or with chilled water cooling and the empty energy recovery wheel options. No valves or valve controls are included with this option.

**G** = 10 kW (7.5 kW @208V)

**H** = 15 kW (11.3 kW @208V)

**J** = 20 kW (15 kW @208V)

**K** = 30 kW (22.5 kW @208V)

**L** = 40 kW (30 kW @208V)

**M** = 50 kW (37.6 kW @208V)

**N** = 60 kW (45.1 kW @208V)

**P** = 70 kW (52.6 kW @208V)

**Q** = 80 kW (60.1 kW @208V)

**R** = 90 kW (67.6 kW @208V)

**S** = 100 kW (75.1 kW @208V)

**T** = 110 kW (82.6 kW @208V)

**U** = 120 kW (90.1 kW @208V)

When selecting electric preheat in AAON ECat, the program choose the capacity (kW) based on the outside air temperature and the desired leaving air temperature conditions entered on the conditions screen under the preheating tab. AAON ECat will report the capacity in the unit (kW amount) and how much capacity is needed to achieve the desired discharge temperature (kW used). Electric service calculations will use the full capacity when determining amp draws.

## Feature 15

### Glycol Percentage

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-**0**0B00000B

**0** = *Standard* - None

**C** = *Field Adjustable for Glycol Percentage* - Water-source/geothermal heat pump designed for operation with a field adjusted percent propylene glycol to help prevent the freezing of heat pump source water. The controller is factory set at 0% glycol and must be field adjusted from 5-40% in 5% increments.

## Feature 16

### Interior Cabinet Options

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-**0**0B00000B

**0** = *Standard* - Unit construction consists of 2 inch thick double wall closed cell polyurethane foam insulated composite panels with a minimum R-value of 13. A thermal break between the inside and outside of the cabinet is included in the panels. Drain pans are fabricated of 18 gauge 304 stainless steel, include 1 inch of fiberglass insulation under the drain pan and are double sloped to meet ASHRAE 62.1, Indoor Air Quality guidelines.

**B** = *Service Lights* - Standard unit construction with service lights included in the controls and compressor compartments. The light circuit is wired to the line side of the unit power block, permitting use of the lights while the power to the unit is shut off.

## Feature 17

### Exterior Cabinet Options

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00**B**00000B

**0** = *Standard* - Unit is fabricated of double wall rigid polyurethane foam panels with G90 galvanized sheet metal on the exterior which is spray coated with a two-part polyurethane, heat baked exterior paint. The paint is capable of withstanding at least 2,500 hours, with no visible corrosive effects, when tested in a salt spray and fog atmosphere in accordance with the ASTM B 117-95 test procedure.

## Feature 17 - Exterior Cabinet Options Continued

**A = Base Insulation** - 1/2 inch foam insulation is added to the bottom of the air tunnel base pan. Option is available on 2-25 and 30 ton units which only include a G90 galvanized sheet metal unit base pan as standard. 26, 31-50, 60 and 70 ton units include a 1 inch double wall rigid polyurethane foam panel base pan as standard. 55, 65 and 75-140 ton units include a 3 inch double wall rigid polyurethane foam panel base as standard. Select this option if the unit is to be supported on rails or similar structure, or if the unit air tunnel base is exposed to the outside air and subject to sweating.

**B = Burglar Bars** - 1/2 inch diameter welded steel bars crosshatched 6-8 inches apart across the unit base pan supply and return air openings.

**C = Condenser Coil Guards** - Condenser coil guards fabricated from galvanized sheet metal, painted and factory mounted across the condenser coil face. Condenser coil guards are optional on 6-25 and 30 ton RN Series units. Condenser coil guards are standard on 55, 65, and 75-140 ton RN Series units.

**D = Base Insulation + Burglar Bars** - Options A + B

**E = Base Insulation + Condenser Coil Guards** - Options A + C

**F = Burglar Bars + Condenser Coil Guards** - Options B + C

**G = Base Insulation + Burglar Bars + Condenser Coil Guards** - Options A + B + C



Figure 5 - Condenser Coil Guard Option

## Feature 18

### Customer Code

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B**0**0000B

**0** = *Standard - None*

Feature is used for national account customers.

## Feature 19

### Code Options

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B**0**0000B

**0** = *Standard - ETL U.S.A. Listing* - All AAON equipment is ETL U.S.A. listed and tested in accordance with the latest revision of UL 1995. If a Special Pricing Authorization (SPA) is applied there may be additional costs incurred to secure the ETL label.

**B** = *Chicago - Cool and Gas* - Chicago code for a unit with cooling and gas heat. Chicago code states that unit wiring to the condenser fan motors must be in flexible conduit and refrigerant pressure relief valves must be supplied.

**C** = *Chicago - Cool and Electric* - Chicago code for a unit with cooling and electric heat.

**D** = *Chicago - Cool Only* - Chicago code for a cooling only unit.

**E** = *Chicago - Gas Only* - Chicago code for a gas heat only unit.

**F** = *Chicago - Electric Only* - Chicago code for an electric heat only unit.

**G** = *Chicago - No Cool and No Heat* - Chicago code for a unit with no cooling and no heat.

**H** = *ETL U.S.A. and Canada Listing* - Equipment is ETL U.S.A. and Canada listed and tested in accordance with the latest revision of UL Standard 1995/CSA C22.2 No. 236. The nameplate, safety labels and warnings will be in English and French.

**K** = *California OSHPD Certification* - State of California Office of Statewide Health Planning and Development (OSHPD) special seismic certification pre-approval. Specials (SPA's) are not available with OSHPD pre-approval. This option is available on all 2-50, 60, and 70 ton units, except 26, 31, and 40 ton air-source heat pumps. The anchorage between unit and building is field provided.

**L** = *Shake Table Certification (ASCE 7-05/ICC-ES AC 156)* - Unit is ASCE 7-05/ICC-ES AC 156 tested with engineer's approval for units that require seismic certification but contain options different than those included in the OSHPD tested units. This option requires a licensed engineer's approval of modifications to the unit that do not significantly change the mass or construction of the unit. This option is available on 2-50, 60, and 70 ton units, except 26, 31, and 40 ton air-source heat pumps. The anchorage between unit and building is field provided.

## Feature 19 - Code Options Continued

**M** = *Seismic Construction (Non-Certified)* - Units will be built with the same reinforcements of the OSHPD and AC156 seismically certified units but may include additional non-certified options. No seismic certification will be provided with the seismic construction option. This option is for units that require a reinforced construction for additional structural integrity but do not require seismic certification. This option is available on 2-50, 60, and 70 ton units. The anchorage between unit and building is field provided.

**N** = *California OSHPD Certification + Chicago code* - Option K + Option B, C, D, E, F or G. Applicable Chicago code option depends on the unit configuration. This option is available on 2-50, 60, and 70 ton units, except 26, 31, and 40 ton air-source heat pumps. The anchorage between unit and building is field provided.

**P** = *Shake Table Certification (ASCE 7-05/ICC-ES AC 156) + Chicago code* - Option L + Option B, C, D, E, F or G. Applicable Chicago code option depends on the unit configuration. This option is available on 2-50, 60, and 70 ton units, except 26, 31, and 40 ton air-source heat pumps. The anchorage between unit and building is field provided.

**Q** = *Seismic Construction (Non-Certified) + Chicago code* - Option M + Option B, C, D, E, F or G. Applicable Chicago code option depends on the unit configuration. This option is available on 2-50, 60, and 70 ton units. The anchorage between unit and building is field provided.

## Feature 20 Crating

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B000**0**0B

**0** = *Standard*

**A** = *Export Crating* - Crating for units with condensers for overseas shipping. Crate fabricated from dimensional lumber and plywood.

**B** = *Export Crating - No Condenser Section* - Crating for units without condensers for overseas shipping. Crate is fabricated from dimensional lumber and plywood.

## Feature 21 Water-Cooled Condenser

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B000**0**0B

**0** = *Standard - None* - Unit without a water-cooled condenser or refrigerant-to-water heat exchanger.

**A** = *Balancing Valves* - Factory installed ball type valve in the condenser plumbing with pressure taps on either side of the valve for water balancing.

## Feature 21 - Water-Cooled Condenser Continued

**B** = *Water Flow Switch* - Factory installed flow switch which shuts down the unit's compressors if the water flow to the condenser is interrupted.

**C** = *Motorized Shut-off Valve* - Factory installed two position motorized valve which shut off water flow to the condenser when the unit is off.

**D** = *Head Pressure Control* - Factory installed modulating head pressure control condenser water valve and head pressure control module which allow operation below 65°F condenser water temperature.

**E** = *Balancing Valves + Water Flow Switch* - Options A + B

**F** = *Balancing Valves + Motorized Shut-off Valve* - Options A + C

**G** = *Balancing Valves + Head Pressure Control* - Options A + D

**H** = *Water Flow Switch + Motorized Shut-off Valve* - Options B + C

**J** = *Water Flow Switch + Head Pressure Control* - Options B + D

**L** = *Balancing Valves + Water Flow Switch + Motorized Shut-off Valve* - Options A + B + C

**M** = *Balancing Valves + Water Flow Switch + Head Pressure Control* - Options A + B + D

**R** = *SMO 254 Corrosion Resistant Brazed Plate/CuNi Corrosion Resistant Coaxial Refrigerant-to-Water Heat Exchanger* - SMO 254 brazed plate or CuNi coaxial refrigerant-to-water heat exchanger provides additional chloride corrosion resistance. This option is required with open loop condenser water cooling tower applications. SMO 254 brazed plate heat exchanger option is available on RN units. CuNi coaxial heat exchanger is available on RQ units.

**S** = *Corrosion Resistant Heat Exchanger + Balancing Valves* - Options A + R

**T** = *Corrosion Resistant Heat Exchanger + Water Flow Switch* - Options B + R.

**U** = *Corrosion Resistant Heat Exchanger + Motorized Shut-off Valve* - Options C + R.

**V** = *Corrosion Resistant Heat Exchanger + Head Pressure Control* - Options D + R.

**W** = *Corrosion Resistant Heat Exchanger + Balancing Valves + Water Flow Switch* - Options A + B + R

**Y** = *Corrosion Resistant Heat Exchanger + Balancing Valves + Motorized Shut-off Valve* - Options A + C + R

**Z** = *Corrosion Resistant Heat Exchanger + Balancing Valves + Head Pressure Control* - Options A + D + R

**1** = *Corrosion Resistant Heat Exchanger + Water Flow Switch + Motorized Shut-off Valve* - Options B + C + R

**2** = *Corrosion Resistant Heat Exchanger + Water Flow Switch + Head Pressure Control* - Options B + D + R

**3** = *Corrosion Resistant Heat Exchanger + Motorized Shut-off Valve + Head Pressure Control* - Options C + D + R

**4** = *Corrosion Resistant Heat Exchanger + Balancing Valves + Water Flow Switch + Motorized Shut-off Valve* - Options A + B + C + R

**5** = *Corrosion Resistant Heat Exchanger + Balancing Valves + Water Flow Switch + Head Pressure Control* - Options A + B + D + R

# Feature 22

## Control Vendors

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B0000**0**B

**0** = *Standard - None* - No factory provided controls.

**A** = *WattMaster Orion VCM-X Controls System* - AAON supplied and factory installed WattMaster VCM-X controller (Feature 13). Option requires the selection of an operator interface in AAON ECat to set up controller. See Controls section for more information.

**B** = *JENEsys Controls System with Web UI* - AAON supplied and factory installed JENEsys controller. See Feature 13 for available control configurations. Web UI interface is standard with all JENEsys controllers. See Controls section and unit specific Controller Components worksheet in AAON ECat for more information.

**C** = *WattMaster Orion VCM-X Controls System with Specials* - AAON supplied and factory installed WattMaster VCM-X controller (Feature 13) with additional features for controller. Use AAON ECat to select these features. Option requires the selection of an operator interface in AAON ECat to set up controller. See Controls section for more information.

**E** = *Remote Mount Mini Controller* – Factory installed AAON remote mount mini controller (Feature 13). See Controls section for more information.

**F** = *JENEsys Controls System with Web UI + Fox* - AAON supplied and factory installed JENEsys controller with Fox protocol license. See Feature 13 for available control configurations. Web UI interface is standard with all JENEsys controllers. See Controls section and unit specific Controller Components worksheet in AAON ECat for more information.

**G** = *JENEsys Controls System with Web UI + Lon* - AAON supplied and factory installed JENEsys controller with Lon protocol license. See Feature 13 for available control configurations. Web UI interface is standard with all JENEsys controllers. See Controls section and unit specific Controller Components worksheet in AAON ECat for more information.

**H** = *JENEsys Controls System with Web UI + Bacnet MSTP* - AAON supplied and factory installed JENEsys controller with Bacnet MSTP license. See Feature 13 for available control configurations. Web UI interface is standard with all JENEsys controllers. See Controls section and unit specific Controller Components worksheet in AAON ECat for more information.

**J** = *JENEsys Controls System with Web UI + Bacnet IP* - AAON supplied and factory installed JENEsys controller with Bacnet IP license. See Feature 13 for available control configurations. Web UI interface is standard with all JENEsys controllers. See Controls section and unit specific Controller Components worksheet in AAON ECat for more information.

**K** = *JENEsys Controls System with Web UI + Modbus RTU* - AAON supplied and factory installed JENEsys controller with Modbus RTU license. See Feature 13 for available control configurations. Web UI interface is standard with all JENEsys controllers. See Controls section and unit specific Controller Components worksheet in AAON ECat for more information.

**L** = *JENEsys Controls System with Web UI + TCP* - AAON supplied and factory installed JENEsys controller with TCP license. See Feature 13 for available control configurations. Web UI interface is standard with all JENEsys controllers. See Controls section and unit specific Controller Components worksheet in AAON ECat for more information.



## Feature 22 - Control Vendors Continued

**T** = *WattMaster Orion VCB-X Controls System with Integrated BACnet MSTP* - AAON supplied and factory installed WattMaster VCB-X controller (Feature 13). Option requires the selection of an operator interface in AAON ECat to set up controller. See Controls section for more information.

**U** = *WattMaster Orion VCB-X Controls System with Integrated BACnet MSTP with Specials* - AAON supplied and factory installed WattMaster VCB-X controller (Feature 13) with additional features for controller. Use AAON ECat to select these features. Option requires the selection of an operator interface in AAON ECat to set up controller. See Controls section for more information.

**V** = *WattMaster Orion VCC-X Controls System + Integrated BACnet MSTP* - AAON supplied and factory installed WattMaster VCC-X controller (Feature 13). Option requires the selection of an operator interface in AAON ECat to set up controller. See Controls section for more information.

**W** = *WattMaster Orion VCC-X Controls System + Integrated BACnet MSTP with Specials* - AAON supplied and factory installed WattMaster VCC-X controller (Feature 13). Option requires the selection of an operator interface in AAON ECat to set up controller. See Controls section for more information.

## Feature 23 Type

Example: RN-025-3-0-BB02-384:A000-D0B-DEH-0BA-0D0000L-00-00B00000**B**

**B** = *Standard* - Cabinet exterior is primer washed then spray coated with a two-part polyurethane, heat-baked exterior paint. The paint is gray in color and capable of withstanding at least 2,500 hours, with no visible corrosive effects, when tested in a salt spray and fog atmosphere in accordance with the ASTM B 117-95 test procedure. RN Series includes a standard 1 year parts only warranty. RN Series unit warranty coverage is 12 months from the date of equipment startup or 18 months from the date of original equipment shipment from the factory, whichever is less. RQ Series includes a standard 2 year parts only warranty. RQ Series unit warranty coverage is 24 months from date of original equipment shipment from the factory.

**U** = *Special Price Authorization with Special Paint* - If a special paint color is specified, a set-up charge and price add per unit is required. Use this designation if other special paint options are necessary. The Applications Department must issue a Special Pricing Authorization (SPA) to include a non-standard option.

**X** = *Special Price Authorization with Standard Paint* - The Applications Department must issue a Special Pricing Authorization (SPA) to include a non-standard option.

**1** = *Standard Paint + 2 Year Parts Only Warranty* - Standard gray AAON paint (Option B) with extended unit warranty. Unit warranty coverage is for two years from the date of original equipment shipment from the factory. Option is available on the RN Series.



## Feature 23-Type Continued

**4** = *Standard Paint + 5 Year Parts Only Warranty* - Standard gray AAON paint (Option B) with extended unit warranty. Unit warranty coverage is for five years from the date of original equipment shipment from the factory.

**9** = *Standard Paint + 10 Year Parts Only Warranty* - Standard gray AAON paint (Option B) with extended unit warranty. Unit warranty coverage is for ten years from the date of original equipment shipment from the factory.

# General Data

## Unit Information

Table 7 - RQ Series (2-6 tons) DX Cooling Information

	Model				
	002	003	004	005	006
<b>Compressors</b>					
<i>Quantity/Nominal tons</i>					
R-410A	1/2	1/3	1/4	1/5	1/6
R-410A Two-Step	1/2 T-S.	1/3 T-S.	1/4 T-S.	1/5 T-S.	1/6 T-S.
R-410A Lead Variable Capacity Scroll Compressor		1/3 Var.	1/4 Var.	1/5 Var.	1/6 Var.
Capacity Steps (%)	100, 100/67 with two-step compressor or 10-100% with variable capacity scroll compressor				
<b>Evaporator Coil</b>					
Number of Circuits	1				
<i>R-410 High Efficiency Coil</i>					
Quantity/Face Area	5.3 ft <sup>2</sup>				
Rows/fpi	3/14		4/14		
<i>R-410A Standard Efficiency Coil</i>					
Quantity/Face Area	5.3 ft <sup>2</sup>				
Rows/fpi	2/14		3/14		
<i>R-410A 6 Row Coil</i>					
Quantity/Face Area			5.3 ft <sup>2</sup>		
Rows/fpi			6/14		
<b>Water-Cooled Condenser</b>					
Minimum gpm	4.5	6.0	7.0	10.0	12.5
Maximum gpm	18.0	24.0	28.0	40.0	50.0

Table 8 - RQ Series (2-6 tons) Heating and Hydronic Cooling Information

	Model				
	002	003	004	005	006
<b>Electric Heat</b>					
<i>Capacity (kW)</i>					
230/380/460/575V 3Φ	10, 20		10, 20, 30, 40		
208V 3Φ	7.5, 15.0		7.5, 15.0, 22.5, 30.0		
Stages (kW)	<u>10 kW</u> - 1 or Fully Modulating with SCR <u>20 kW</u> - 2 or Fully Modulating with SCR <u>30 kW</u> - 2, 3 or Fully Modulating with SCR <u>40 kW</u> - 2, 3, 4 or Fully Modulating with SCR				
<b>Gas Heat</b>					
Input Capacity/Output Capacity (MBH)	60/48.6, 100/81, 140/113.4, 160/129.6				
Natural Gas Input Capacity Steps (MBH)	<u>60 MBH</u> - 2 Stage - 60/42, 4 Stage - 60/48/42/14, or Modulating - 3:1 Turndown <u>100 MBH</u> - 2 Stage - 100/70, 4 Stage - 100/82/70/28, or Modulating - 3:1 Turndown <u>140 MBH</u> - 2 Stage - 140/98, 4 Stage - 140/116/98/42, or Modulating - 3:1 Turndown <u>160 MBH</u> - 2 Stage - 160/112, 4 Stage - 160/130/112/42, or Modulating - 3:1 Turndown				
LP Gas Input Capacity Steps (MBH)	<u>60 MBH</u> - 60/42 <u>100 MBH</u> - 100/70 <u>140 MBH</u> - 140/98 <u>160 MBH</u> - 160/112				
<b>Hot Water Heating Coil</b>					
Quantity/Face Area	Vertical - 1/2.71 ft <sup>2</sup>				
Rows/fpi	1 or 2/8 or 12 (Single or Half Serpentine)				
Standard Coil	1 Row Half Serpentine with 8 fpi or 2 Row Single Serpentine with 8 fpi				
<b>Steam Heating Coil</b>					
Quantity/Face Area	Vertical - 1/2.52 ft <sup>2</sup>				
Rows/fpi	1 or 2/8 or 12				
Standard Coil	8 fpi				
<b>Chilled Water Coil</b>					
Quantity/Face Area	1/4.4 ft <sup>2</sup>				
Rows/fpi	4 or 6/8 or 12 (Single or Half Serpentine)				
Standard Coil	Single Serpentine with 12 fpi				

Table 9 - RQ Series (2-6 tons) Preheat and Fan Information

	Model				
	002	003	004	005	006
<b>Hot Water Preheat Coil</b>					
Quantity/Face Area	1/4.41 ft <sup>2</sup> (Mixed Air Preheat)				
Rows/fpi	1/8 or 12 (Single of Half Serpentine)				
Standard Coil/Type	Half Serpentine with 8 fpi/Integrated				
<b>Steam Preheat Coil</b>					
Quantity/Face Area	1/4.30 ft <sup>2</sup> (Mixed Air Preheat)				
Rows/fpi	1/12				
Standard Coil/Type	12 fpi/Integrated				
<b>Electric Preheat</b>					
Capacity (kW)					
208V 3Φ	7.5, 11.3, 15				
230/380/460/575V 3Φ	10, 15, 20				
Stages (kW)	<u>10 kW</u> - Modulating with SCR <u>15 kW</u> - Modulating with SCR <u>20 kW</u> - Modulating with SCR				
<b>Supply Fans</b>					
Quantity/Type	1/Direct Drive Backward Curved Plenum				
<b>Air-Cooled Condenser Fans</b>					
Quantity	1				
Type/hp	30" Propeller Fan/0.167 (On/Off) 30" Propeller Fan/0.33 (ECM)	30" Propeller Fan/0.33			
<b>Power Exhaust Fans</b>					
Quantity/Type	1/Direct Drive Axial Flow Fan				
hp	0.167, 0.25, 0.5, 0.75, 1, 2				
<b>Energy Recovery Wheel Exhaust Fans</b>					
Quantity/Type	1/Belt Driven Backward Curved Plenum				
hp	0.167, 0.75, 1, 2				

Table 10 - RN Series A Cabinet (6-8 and 10 tons) DX Cooling Information

	Model			
	006	007	008	010
<b>Compressors</b>				
<i>Quantity/Nominal tons</i>				
R-410A	1/6	1/7	1/8	1/10
R-410A Lead Variable Capacity Scroll Compressor	1/6 Var.	1/7 Var.	1/8 Var.	1/10 Var.
Capacity Steps (%)	100 or 10-100% with variable capacity scroll compressors			
<b>Evaporator Coil</b>				
Number of Circuits	1			
<i>R-410 High Efficiency Coil</i>				
Quantity/Face Area	1/8.5 ft <sup>2</sup>			
Rows/fpi	2/14	3/14		
<i>R-410A Standard Efficiency Coil</i>				
Quantity/Face Area	1/8.5 ft <sup>2</sup>		1/8.5 ft <sup>2</sup>	
Rows/fpi	2/14		3/14	
<i>6 Row Coil</i>				
Quantity/Face Area	1/8.5 ft <sup>2</sup>			
Rows/fpi	6/12			
<i>Return Air Bypass Coil</i>				
Quantity/Face Area	1/6.6 ft <sup>2</sup>			
Rows/fpi	6/12			
<i>Mixed Air Bypass Coil</i>				
Quantity/Face Area	1/6.6 ft <sup>2</sup>			
Rows/fpi	6/12			
<b>Water-Cooled Condenser</b>				
Minimum gpm	8.10	9.45	11.50	13.50
Maximum gpm	32.40	37.80	47.50	54.00

Table 11 - RN Series A Cabinet (6-8 and 10 tons) Heating and Hydronic Cooling Information

	Model			
	006	007	008	010
<b>Electric Heat</b>				
<i>Capacity (kW)</i>				
230/380/460/575V 3Φ	10, 20, 30, 40, 50, 60			
208V 3Φ	7.5, 15.0, 22.5, 30.0, 37.5, 45.1			
Stages (kW)	<u>10 kW</u> - 1 or Fully Modulating with SCR <u>20 kW</u> - 2 or Fully Modulating with SCR <u>30 kW</u> - 2, 3 or Fully Modulating with SCR <u>40 kW</u> - 2, 3, 4 or Fully Modulating with SCR <u>50 kW</u> - 2, 3, 4, 5, or Fully Modulating with SCR <u>60 kW</u> - 2, 3, 4, 5, 6 or Fully Modulating with SCR			
<b>Gas Heat</b>				
Input Capacity/Output Capacity (MBH)	90/72, 150/120, 210/168			
Natural Gas Input Capacity Steps (MBH)	<u>90 MBH</u> - 2 Stage - 90/63, 4 Stage - 90/72/63/21, or Modulating - 3:1 Turndown <u>150 MBH</u> - 2 Stage - 150/105, 4 Stage - 150/123/105/42, or Modulating - 3:1 Turndown <u>210 MBH</u> - 2 Stage - 210/147, 4 Stage - 210/174/147/63, or Modulating - 3:1 Turndown			
LP Gas Input Capacity Steps (MBH)	<u>90 MBH</u> - 90/63 <u>150 MBH</u> - 150/105 <u>210 MBH</u> - 210/147			
<b>Hot Water Heating Coil</b>				
Quantity/Face Area	1/3.68 ft <sup>2</sup>			
Rows/fpi	1 or 2/8, 10, or 12 (Single or Half Serpentine)			
Standard Coil	1 Row Half Serpentine with 10 fpi or 2 Row Single Serpentine with 10 fpi			
<b>Steam Heating Coil</b>				
Quantity/Face Area	1/3.38 ft <sup>2</sup>			
Rows/fpi	1 or 2/8, 10, or 12			
Standard Coil	10 fpi			
<b>Chilled Water Coil</b>				
Quantity/Face Area	1/7.8 ft <sup>2</sup>			
Rows/fpi	4 or 6/8, 10, or 12 (Single or Half Serpentine)			
Standard Coil	Single Serpentine with 10 fpi			

Table 12 - RN Series A Cabinet (6-8 and 10 tons) Preheat and Fan Information

	Model			
	006	007	008	010
<b>Hot Water Preheat Coil</b>				
Quantity/Face Area	1/7.78 ft <sup>2</sup> (Mixed Air Preheat)			
Rows/fpi	1 or 2/8, 10, or 12 (Single or Half Serpentine)			
Standard Coil	2 Row Single Serpentine with 10 fpi			
<b>Steam Preheat Coil</b>				
Quantity/Face Area	1/7.33 ft <sup>2</sup> (Mixed Air Preheat)			
Rows/fpi	1 or 2/8, 10 or 12			
Standard Coil	10 fpi			
<b>Electric Preheat</b>				
Capacity (kW)				
208V 3Φ	7.5, 11.3, 15, 22.5, 30, 37.5, 45.1			
230/380/460/575V 3Φ	10, 15, 20, 30, 40, 50, 60			
Stages (kW)	<u>10 kW</u> - Modulating with SCR <u>15 kW</u> - Modulating with SCR <u>20 kW</u> - Modulating with SCR <u>30 kW</u> - Modulating with SCR <u>40 kW</u> - Modulating with SCR <u>50 kW</u> - Modulating with SCR <u>60 kW</u> - Modulating with SCR			
<b>Supply Fans</b>				
Quantity/Type	1/Direct Drive Backward Curved Plenum			
<b>Air-Cooled Condenser Fans</b>				
Quantity	1			
Type/hp	30" Propeller Fan/0.33		30" Propeller Fan/0.75	
<b>Power Exhaust Fans</b>				
Quantity/Type	1/Belt Driven Forward Curved Fan			
hp	1, 2, 3			
<b>Energy Recovery Wheel Exhaust Fans</b>				
Quantity/Type	1/Belt Driven Backward Curved Plenum			
hp	1, 2, 3			



Table 13 - RN Series B Cabinet (9 and 11-15 tons) DX Cooling Information

	Model			
	009	011	013	015
<b>Compressors</b>				
<i>Quantity/Nominal tons</i>				
R-410A	2/4	2/5	2/6	2/7
R-410A Lead Variable Capacity Scroll Compressor	1/4, 1/4 Var.	1/5, 1/5 Var.	1/6, 1/6 Var.	1/7, 1/7 Var.
R-410A All Variable Capacity Scroll Compressors	2/4 Var.	2/5 Var.	2/6 Var.	2/7 Var.
Capacity Steps (%)	100/50 or 5-100% with variable capacity scroll compressors			
<b>Evaporator Coil</b>				
Number of Circuits	2, Interlaced			
<i>R-410 High Efficiency Coil</i>				
Quantity/Face Area	1/14.6 ft <sup>2</sup>			
Rows/fpi	2/14	3/14	4/14	
<i>R-410A Standard Efficiency Coil</i>				
Quantity/Face Area	1/14.6 ft <sup>2</sup>			
Rows/fpi	2/14		3/14	4/14
<i>6 Row Coil</i>				
Quantity/Face Area	1/14.6 ft <sup>2</sup>			
Rows/fpi	6/12			
<i>Return Air Bypass Coil</i>				
Quantity/Face Area	1/11.8 ft <sup>2</sup>			
Rows/fpi	6/12			
<i>Mixed Air Bypass Coil</i>				
Quantity/Face Area	1/11.8 ft <sup>2</sup>			
Rows/fpi	6/12			
<b>Water-Cooled Condenser</b>				
Minimum gpm	12.25	16.00	19.25	23.00
Maximum gpm	53.00	67.00	80.00	95.00

Table 14 - RN Series B Cabinet (9 and 11-15 tons) Heating and Hydronic Cooling Information

	Model			
	009	011	013	015
<b>Electric Heat</b>				
Capacity (kW)				
230/380/460/575V 3Φ	20, 30, 40, 50, 60, 80			
208V 3Φ	15.0, 22.5, 30.0, 37.5, 45.1, 60.1			
Stages (kW)	<u>20 kW</u> - 2 or Fully Modulating with SCR <u>30 kW</u> - 2, 3, or Fully Modulating with SCR <u>40 kW</u> - 2, 3, 4 or Fully Modulating with SCR <u>50 kW</u> - 2, 3, 4, 5 or Fully Modulating with SCR <u>60 kW</u> - 2, 3, 4, 5, 6 or Fully Modulating with SCR <u>80 kW</u> - 2, 3, 4, 5, 6, 7 or Fully Modulating with SCR			
<b>Gas Heat</b>				
Input Capacity/Output Capacity (MBH)	195/156, 292.5/234, 390/315.9			
Natural Gas Capacity Steps (MBH)	<u>195 MBH</u> - 2 Stage - 195/136.5, 4 Stage - 195/165.8/136.5/68.3, or Modulating - 3:1 Turndown <u>292.5 MBH</u> - 2 Stage - 292.5/204.75, 4 Stage - 292.5/234/204.8/68.3, or Modulating - 3:1 Turndown <u>390 MBH</u> - 2 Stage - 390/273, 4 Stage - 390/351/273/91, or Modulating - 3:1 Turndown			
LP Gas Capacity Steps (MBH)	<u>195.0 MBH</u> - 195/136.5 <u>292.5 MBH</u> - 292.5/204.75 <u>390 MBH</u> - 390/273			
<b>Hot Water Heating Coil</b>				
Quantity/Face Area	1/5.83 ft <sup>2</sup>			
Rows/fpi	1 or 2/8, 10 or 12 (Single or Half Serpentine)			
Standard Coil	1 Row Half Serpentine with 10 fpi or 2 Row Single Serpentine with 10 fpi			
<b>Steam Heating Coil</b>				
Quantity/Face Area	1/5.75 ft <sup>2</sup>			
Rows/fpi	1 or 2/8, 10 or 12			
Standard Coil	10 fpi			
<b>Chilled Water Coil</b>				
Quantity/Face Area	1/13.1 ft <sup>2</sup>			
Rows/fpi	4 or 6/8, 10 or 12 (Single or Half Serpentine)			
Standard Coil	Single Serpentine with 10 fpi			

Table 15 - RN Series B Cabinet (9 and 11-15 tons) Preheat and Fan Information

	Model			
	009	011	013	015
<b>Hot Water Preheat Coil</b>				
Quantity/Face Area	1/13.06 ft <sup>2</sup> (Mixed Air Preheat)			
Rows/fpi	1 or 2/8, 10 or 12 (Single or Half Serpentine)			
Standard Coil	2 Row Single Serpentine with 10 fpi			
<b>Steam Preheat Coil</b>				
Quantity/Face Area	1/13.06 ft <sup>2</sup> (Mixed Air Preheat)			
Rows/fpi	1 or 2/8, 10 or 12			
Standard Coil	10 fpi			
<b>Electric Preheat</b>				
<i>Capacity (kW)</i>				
208V 3Φ	15, 22.5, 30, 37.5, 45.1, 52.6, 60.1			
230/380/460/575V 3Φ	20, 30, 40, 50, 60, 70, 80			
Stages (kW)	<u>20 kW</u> - Modulating with SCR <u>30 kW</u> - Modulating with SCR <u>40 kW</u> - Modulating with SCR <u>50 kW</u> - Modulating with SCR <u>60 kW</u> - Modulating with SCR <u>70 kW</u> - Modulating with SCR <u>80 kW</u> - Modulating with SCR			
<b>Supply Fans</b>				
Quantity/Type	1/Direct Drive Backward Curved Plenum			
<b>Air-Cooled Condenser Fans</b>				
Quantity	2			
Type/hp	30" Propeller Fan/0.33		30" Propeller Fan/0.75	
<b>Power Exhaust Fans</b>				
Quantity/Type	1/Belt Driven Forward Curved Fan			
hp	1, 2, 3			
<b>Energy Recovery Wheel Exhaust Fans</b>				
Quantity/Type	1/Belt Driven Backward Curved Plenum			
hp	1, 2, 3			

Table 16 - RN Series C Cabinet (16-25 and 30 tons) DX Cooling Information

	Model				
	016	018	020	025	030
<b>Compressors</b>					
<i>Quantity/Nominal tons</i>					
R-410A	2/7	2/8	2/9	2/11	2/13
R-410A Lead Variable Capacity Scroll Compressor	1/7, 1/7 Var.	1/7, 1/7 Var.	1/9, 1/9 Var.	1/11, 1/11 Var.	1/13, 1/13 Var.
R-410A All Variable Capacity Scroll Compressors	2/7 Var.	2/7 Var.	1/9 Var., 1/9 Var.	2/11 Var.	2/13 Var.
Capacity Steps (%)	100/50 or 5-100% with variable capacity scroll compressors				
<b>Evaporator Coil</b>					
Number of Circuits	2, Interlaced				
<i>Standard Coil</i>					
Quantity/Face Area	1/19.9 ft <sup>2</sup>				
Rows/fpi	3/14	4/14			
<i>6 Row Coil</i>					
Quantity/Face Area	1/19.9 ft <sup>2</sup>				
Rows/fpi	6/12				
<i>Return Air Bypass Coil</i>					
Quantity/Face Area	1/16.0 ft <sup>2</sup>				
Rows/fpi	6/12				
<i>Mixed Air Bypass Coil</i>					
Quantity/Face Area	1/16.0 ft <sup>2</sup>				
Rows/fpi	6/12				
<b>Water-Cooled Condenser</b>					
Minimum gpm	21.60	24.30	27.00	33.75	40.50
Maximum gpm	86.40	97.20	108.00	135.00	162.00

Table 17 - RN Series C Cabinet (16-25 and 30 tons) Heating and Hydronic Cooling Information

	Model				
	016	018	020	025	030
<b>Electric Heat</b>					
Capacity (kW)					
230/380/460/575V	20, 40, 60, 80, 100, 120				
208V	15, 30, 45.1, 60.1, 75.1, 90.1				
Stages (kW)	20 kW - 2 or Fully Modulating with SCR 40 kW - 2, 3, 4 or Fully Modulating with SCR 60 kW - 2, 3, 4, 5, 6 or Fully Modulating with SCR 80 kW - 2, 3, 4, 5, 6, 7 or Fully Modulating with SCR 100 kW & 120 kW - 2, 4, 6, 7, 8 or Fully Modulating with SCR				
<b>Gas Heat</b>					
Input Capacity/Output Capacity (MBH)	270/218.7, 405/328.1, 540/432				
Natural Gas Capacity Steps (MBH)	<u>270 MBH</u> : 2 stage - 270/189, 4 stage - 270/229.5/189/94.5, or Modulating - 3:1 Turndown <u>405 MBH</u> : 2 stage - 405/283.5, 4 stage - 405/283.5/189/94.5, or Modulating - 5:1 Turndown <u>540 MBH</u> : 2 stage - 540/378, 4 stage - 540/459/270/189, or Modulating - 3:1 Turndown				
LP Gas Capacity Steps (MBH)	<u>270 MBH</u> : 2 stage - 270/189 <u>405 MBH</u> : 2 stage - 405/283.5 <u>540 MBH</u> : 2 stage - 540/378				
<b>Hot Water Heating Coil</b>					
Quantity/Face Area	1/7.27 ft <sup>2</sup>				
Rows/fpi	1 or 2/8, 10, or 12 (Single or Half Serpentine)				
Standard Coil	1 Row Half Serpentine with 10 fpi or 2 Row Single Serpentine with 10 fpi				
<b>Steam Heating Coil</b>					
Quantity/Face Area	1/7.31 ft <sup>2</sup>				
Rows/fpi	1 or 2/8, 10, or 12				
Standard Coil	10 fpi				
<b>Chilled Water Coil</b>					
Quantity/Face Area	1/18.7 ft <sup>2</sup>				
Rows/fpi	4 or 6/8, 10, or 12 (Single or Half Serpentine)				
Standard Coil	Single Serpentine with 10 fpi				

Table 18 - RN Series C Cabinet (16-25 and 30 tons) Preheat and Fan Information

	Model				
	016	018	020	025	030
<b>Hot Water Preheat Coil</b>					
Quantity/Face Area	1/18.75 ft <sup>2</sup> (Mixed Air Preheat)				
Rows/fpi	1 or 2/8, 10 or 12 (Single or Half Serpentine)				
Standard Coil	2 Row Single Serpentine with 10 fpi				
<b>Steam Preheat Coil</b>					
Quantity/Face Area	1/19.13ft <sup>2</sup> (Mixed Air Preheat)				
Rows/fpi	1 or 2/8, 10 or 12				
Standard Coil	10 fpi				
<b>Electric Preheat</b>					
Capacity (kW)					
208V 3Φ	15, 22.5, 30, 37.5, 45.1, 67.6, 75.1, 82.6, 90.1				
208/230/380/460/575V 3Φ	20, 30 ,40 ,50 ,60 ,70 ,80, 90 ,100, 110, 120				
Stages (kW)	<u>20 kW</u> - Modulating with SCR <u>30 kW</u> - Modulating with SCR <u>40 kW</u> - Modulating with SCR <u>50 kW</u> - Modulating with SCR <u>60 kW</u> - Modulating with SCR <u>70 kW</u> - Modulating with SCR <u>80 kW</u> - Modulating with SCR <u>90 kW</u> - Modulating with SCR <u>100 kW</u> - Modulating with SCR <u>110 kW</u> - Modulating with SCR <u>120 kW</u> - Modulating with SCR				
<b>Supply Fans</b>					
Quantity/Type	1/Direct Drive Backward Curved Plenum Fan				
<b>Air-Cooled Condenser Fans</b>					
Quantity	2			3	
Type/hp	30" Propeller Fan/0.75				
<b>Power Exhaust Fans</b>					
Quantity/Type	1/Belt Driven Backward Curved Plenum Fan				
hp	1, 2, 3, 5, 7.5, 10				
<b>Energy Recovery Wheel Exhaust Fans</b>					
Quantity/Type	1/Belt Driven Backward Curved Plenum Fan				
hp	1, 2, 3, 5, 7.5				
<b>Power Return Fans</b>					
Quantity/Type	1 or 2/Direct Drive Axial Flow Fan				
hp	1, 2, 3, 5, 7.5				

Table 19 - RN Series D Cabinet (26, 31-50, 60 and 70 tons) DX Cooling Information

	Model					
	026	031	040	050	060	070
<b>Compressors</b>						
<i>Quantity/Nominal tons</i>						
R-410A	4/6	4/7	4/9	4/11	4/13	4/15
R-410A Lead Variable Capacity Scroll Compressors	2/6, 2/5 Var.	2/7, 2/7 Var.	2/9, 2/9 Var.	2/11, 2/11 Var.	2/13, 2/13 Var.	2/15, 2/15 Var.
R-410A All Variable Capacity Scroll Compressors	4/5 Var.	4/7 Var.	2/9 Var.	4/11 Var.	4/13 Var.	4/15 Var.
Capacity Steps (%)	100/50, 100/75/50/25, or 5-100% with variable capacity scroll compressors					
<b>Evaporator Coil</b>						
Number of Circuits	4, Interlaced			2 (per coil), Interlaced		
<i>Standard Coil</i>						
Quantity/Face Area	1/31.9 ft <sup>2</sup>			2/21.9 ft <sup>2</sup> (43.8 ft <sup>2</sup> total)		
Rows/fpi	3/14	4/14			6/12	
<i>6 Row Coil</i>						
Quantity/Face Area	1/31.9 ft <sup>2</sup>			2/21.9 ft <sup>2</sup> (43.8 ft <sup>2</sup> total)		
Rows/fpi	6/12					
<i>Return Air Bypass Coil</i>						
Quantity/Face Area	1/30.0 ft <sup>2</sup>			2/18.75 ft <sup>2</sup> (37.5 ft <sup>2</sup> total)		
Rows/fpi	6/12					
<i>Mixed Air Bypass Coil</i>						
Quantity/Face Area	1/26.9 ft <sup>2</sup>			2/17.2 ft <sup>2</sup> (34.4 ft <sup>2</sup> total)		
Rows/fpi	6/12					
<b>Water-Cooled Condenser</b>						
Minimum gpm	35.10	41.85	54.00	67.50	81.00	94.50
Maximum gpm	140.40	167.40	216.00	270.00	324.00	378.00

Table 20 - RN Series D Cabinet (26, 31-50, 60 and 70 tons) Heating and Hydronic Cooling Information

	Model					
	026	031	040	050	060	070
<b>Electric Heat</b>						
<i>Capacity (kW)</i>						
230/380/460/575V						
208V	30, 60.1, 90.1, 120.1	30, 60.1, 90.1, 120.1, 150.2, 180.2				
Stages	40 kW - 2 or Fully Modulating with SCR 80 kW & 120kW - 2, 4 or Fully Modulating with SCR 160 kW, 200 kW & 240 kW - 2, 4, 8 or Fully Modulating with SCR					
<b>Gas Heat</b>						
Input Capacity/Output Capacity (MBH)	540/432, 810/648, 1080/864					
Natural Gas Capacity Steps (MBH)	<u>540 MBH</u> : 2 stage - 540/378, 4 stage - 540/459/270/189, or Modulating - 3:1 Turndown <u>810 MBH</u> : 2 stage - 810/567, 4 stage - 810/688.5/405/283.5, or Modulating - 5:1 Turndown <u>1080 MBH</u> : 2 stage - 1080/756, 4 stage - 1080/918/540/378, or Modulating - 6:1 Turndown					
LP Gas Capacity Steps (MBH)	<u>540 MBH</u> : 2 stage - 540/378 <u>810 MBH</u> : 2 stage - 810/567 <u>1080 MBH</u> : 2 stage - 1080/756					
<b>Hot Water Heating Coil</b>						
Quantity/Face Area	1/18.75 ft <sup>2</sup>					
Rows/fpi	1 or 2/8, 10 or 12 (Single or Half Serpentine)					
Standard Coil	1 Row Half Serpentine with 10 fpi or 2 Row Single Serpentine with 10 fpi					
<b>Steam Heating Coil</b>						
Quantity/Face Area	1/18.75 ft <sup>2</sup>					
Rows/fpi	1 or 2/8, 10 or 12					
Standard Coil	10 fpi					
<b>Chilled Water Coil</b>						
Quantity/Face Area	1/31.9 ft <sup>2</sup>		2/ 20.9ft <sup>2</sup> (41.8 ft <sup>2</sup> total)			
Rows/fpi	4 or 6/8, 10, or 12 (Single or Half Serpentine)					
Standard Coil	Single Serpentine with 10 fpi					



Table 21 - RN Series D Cabinet (26, 31-50, 60 and 70 tons) Preheat and Fan Information

	Model					
	026	031	040	050	060	070
<b>Hot Water Preheat Coil</b>						
Quantity/Face Area	1/10.83 ft <sup>2</sup> (Outside Air Preheat)					
Rows/fpi	1 or 2/8, 10 or 12 (Single or Half Serpentine)					
Standard Coil	2 Row Single Serpentine with 10 fpi					
<b>Steam Preheat Coil</b>						
Quantity/Face Area	1/10.83 ft <sup>2</sup> (Outside Air Preheat)					
Rows/fpi	1 or 2/8, 10 or 12					
Standard Coil	10 fpi					
<b>Supply Fans</b>						
Quantity/Type	1 or 2/Direct Drive Backward Curved Plenum Fan					
<b>Air-Cooled Condenser Fans</b>						
Quantity	4			6		
Type/hp	30" Propeller Fan/0.75					
<b>Power Exhaust Fans</b>						
Quantity/Type	1 or 2/Direct Drive Axial Flow Fan					
hp	1, 2, 3, 5, 7.5, 10, 15, 20					
<b>Energy Recovery Wheel Exhaust Fans</b>						
Quantity/Type	1 or 2/Belt Driven Backward Curved Plenum Fan					
hp	1, 2, 3, 5, 7.5, 10					
<b>Power Return Fans</b>						
Quantity/Type	1 or 2/Direct Drive Axial Flow Fan					
hp	1, 2, 3, 5, 7.5, 10, 15, 20					

Table 22 - RN Series E Cabinet (55, 65, 75, and 90 tons) Compressor Information

	Model			
	055	065	075	090
<b>Independently Circuited Compressor Quantity/ Nominal tons</b>				
<i>Lead Variable Speed: Model Option A4 = 9</i>				
208V & 230V	1/20 & 1/20 Var.	1/32 & 1/25 Var.	1/32 & 1/32 Var.	1/35 & 1/40 Var.
380V		1/25 & 1/32 Var.		1/32 & 1/25 Var.
460V & 575V		1/25 & 1/25 Var.		
<i>All Variable Speed: Model Option A4 = A</i>				
208V, 230V, & 380V	2/20 Var.	1/32 Var. & 1/25 Var.	2/32 Var.	1/40Var. & 1/35 Var.
460V & 575V		1/25 Var. & 1/20 Var.	2/25 Var.	2/32 Var.
Capacity Steps	Variable Capacity			
<i>Compressor VFD Range (Hz)</i>				
208V, 230V, & 380V	35-60			
460V & 575V	35-75			
<b>Tandem Circuited Compressor Quantity/ Nominal tons</b>				
<i>4 Stage: Model Option A4 = 4</i>	2/10 & 2/13	2/11 & 2/15	2/13 & 2/15	2/15 & 2/20
<i>Half Circuits with Variable Speed: Model Option A4 = 9</i>	1/10, 2/13, & 1/10 Var.	1/11, 2/15, & 1/11 Var.	1/13, 2/15, & 1/13 Var.	1/15, 2/20, & 1/15 Var.
<i>All Circuits with Variable Speed: Model Option A4 = A</i>	2/13 & 2/10 Var.	2/15 & 2/11 Var.	2/15 & 2/13 Var.	2/20 & 2/15 Var.
Capacity Steps	4 stage or Variable Capacity			
<i>Compressor VFD Range (Hz)</i>	35-60			

Table 23 - RN Series E Cabinet (55, 65, 75, and 90 tons) DX Cooling Information

	Model			
	055	065	075	090
<b>Evaporator Coil</b>				
Independently Circuited Compressor Number of Circuits	2, Interlaced			2, Face Split
Tandem Circuited Compressor Number of Circuits	2, Interlaced			2, Face Split
<i>Standard Coil</i>				
Quantity/Face Area	2/29.4 ft <sup>2</sup> (58.7 ft <sup>2</sup> total)			4/18.8 ft <sup>2</sup> (75.3 ft <sup>2</sup> total)
Rows/fpi	4/14			
<i>6 Row Coil</i>				
Quantity/Face Area	2/29.4 ft <sup>2</sup> (58.7 ft <sup>2</sup> total)			4/18.8 ft <sup>2</sup> (75.3 ft <sup>2</sup> total)
Rows/fpi	6/12			
<i>Return Air Bypass Coil</i>				
Quantity/Face Area				
Rows/fpi				
<i>Mixed Air Bypass Coil</i>				
Quantity/Face Area				
Rows/fpi				
<b>Water-Cooled Condenser</b>				
Minimum gpm	70.75	91.40		111.70
Maximum gpm	283.00	365.60		446.80

Table 24 - RN Series E Cabinet (55, 65, 75, and 90 tons) Heating and Hydronic Cooling Information

	Model			
	55	65	75	90
<b>Electric Heat</b>	80, 120, 160, 200, 240, 280, 320			
Capacity (kW)				
230/380/460/575V 208V				
Stages	60.1, 90.1, 120.1, 150.2, 180.2, 210.3, 240.4 80 kW - 2 or Fully Modulating with SCR 120kW - 2, 4, 6, 7, 8 or Fully Modulating with SCR 160 kW - 2, 4 or Fully Modulating with SCR 200 kW, 240 kW, 280 kW, 320 kW - 2, 4, 8 or Fully Modulating with SCR			
<b>Gas Heat</b>				
Input Capacity/Output Capacity (MBH)	800/640, 1600/1280, 2400/1920			
Natural Gas Capacity Steps (MBH)	<u>800 MBH</u> : 2 stage – 800/560, 4 stage - 800/680/560/280, or Modulating - 3:1 Turndown <u>1600 MBH</u> : 2 stage - 1600/1120, 4 stage - 1600/1360/800/560, or Modulating - 6:1 Turndown <u>2400 MBH</u> : 2 stage - 2400/1680, 4 stage - 2400/2040/1200/840, or Modulating - 10:1 Turndown			
LP Gas Capacity Steps (MBH)	<u>800 MBH</u> : 2 stage – 800/560 <u>1600 MBH</u> : 2 stage – 1600/1120 <u>2400 MBH</u> : 2 stage - 2400/1680			
<b>Hot Water Heating Coil</b>				
Quantity/Face Area	2/19.9 ft <sup>2</sup> (39.7 ft <sup>2</sup> total)			
Rows/fpi	1/8, 10, or 12 (Half Serpentine) 2/8, 10 or 12 (Single or Half Serpentine)			
Standard Coil	1 Row Half Serpentine with 10 fpi or 2 Row Single Serpentine with 10 fpi			
<b>Steam Heating Coil</b>				
Quantity/Face Area	2/19.2 ft <sup>2</sup> (38.3 ft <sup>2</sup> total)			
Rows/fpi	1 or 2/8, 10 or 12			
Standard Coil	10 fpi			
<b>Chilled Water Coil</b>				
Quantity/Face Area	2/29.2 ft <sup>2</sup> (58.3 ft <sup>2</sup> total)			4/17.6 ft <sup>2</sup> (70.5 ft <sup>2</sup> total)
Rows/fpi	4 or 6/8, 10, or 12 (Single or Half Serpentine)			
Standard Coil	Single Serpentine with 10 fpi			

Table 25 - RN Series E Cabinet (55, 65, 75, and 90 tons) Preheat and Fan Information

	Model			
	55	65	75	90
<b>Hot Water Preheat Coil</b>				
Quantity/Face Area				
Rows/fpi				
Standard Coil				
<b>Steam Preheat Coil</b>				
Quantity/Face Area				
Rows/fpi				
Standard Coil				
<b>Supply Fans</b>				
Quantity/Type	2/Direct Drive Backward Curved Plenum Fan			
<b>Air-Cooled Condenser Fans</b>				
Quantity	4			8
Type/hp	30" Propeller Fan/1.5			
<b>Power Exhaust Fans</b>				
Quantity/Type	1 or 2/Direct Drive Axial Flow Fan			
hp	1, 2, 3, 5, 7.5, 10, 15, 20, 25, 30, 40, 50			
<b>Energy Recovery Wheel Exhaust Fans</b>				
Quantity/Type	1 or 2/Direct Drive Backward Curved Plenum Fan			
hp	1, 2, 3, 5, 7.5, 10, 15, 20, 25, 30, 40, 50			
<b>Power Return Fans</b>				
Quantity/Type	1 or 2/Direct Drive Axial Flow Fan			
hp	1, 2, 3, 5, 7.5, 10, 15, 20, 25, 30, 40, 50			

Table 26 - RN Series E Cabinet (105-140 tons) Compressor Information

	Model			
	105	120	130	140
<b>Independently Circuited Compressor Quantity/ Nominal tons</b>				
<i>Half Variable Speed: Model Option A4 = 9</i>				
208V, 230V, & 380V	1/40 & 1/40 Var.	2/25 & 2/25 Var.	2/25 & 2/32 Var.	2/32 & 2/32 Var.
460V & 575V		2/25 & 2/20 Var.	2/25 & 2/25 Var.	
<i>Full Variable Speed: Model Option A4 = A</i>				
208V, 230V, & 380V	2/40 Var.	4/25 Var.	2/32 Var. & 2/25 Var.	4/32 Var.
460V & 575V		4/20 Var.	2/25 Var. & 2/20 Var.	
Capacity Steps	Variable Capacity			
<i>Compressor VFD Range (Hz)</i>				
208V, 230V, & 380V	35-60			
460V & 575V	35-60	35-75		35-60
<b>Tandem Circuited Compressor Quantity/ Nominal tons</b>				
<i>4 Stage: Model Option A4=4</i>	2/15 & 2/25	2/25 & 2/25	2/25 & 2/32	2/32 & 2/32
<i>Half Circuits with Variable Speed: Model Option A4= 9</i>	1/15, 2/25, & 1/15 Var.	1/25, 2/25, & 1/25 Var.	1/25, 2/32, & 1/25	1/32, 2/32, & 1/32
<i>All Circuits with Variable Speed: Model Option A4=A</i>	2/25 & 2/15 Var.	2/25 & 2/25 Var.	2/32 & 2/25 Var.	2/32 & 2/32 Var.
Capacity Steps	4 stage or Variable Capacity			
<i>Compressor VFD Range (Hz)</i>	35-60			

Table 27 - RN Series E Cabinet (105-140 tons) DX Cooling Information

	Model			
	105	120	130	140
<b>Evaporator Coil</b>				
Independently Circuited Compressor Number of Circuits	2, Face Split	4, Interlaced		
Tandem Circuited Compressor Number of Circuits	2, Face Split			
<i>Standard Coil</i>				
Quantity/Face Area	4/18.8 ft <sup>2</sup> (75.3 ft <sup>2</sup> total)			
Rows/fpi	4/14		6/12	
<i>6 Row Coil</i>				
Quantity/Face Area	4/18.8 ft <sup>2</sup> (75.3 ft <sup>2</sup> total)			
Rows/fpi	6/12			
<i>Return Air Bypass Coil</i>				
Quantity/Face Area				
Rows/fpi				
<i>Mixed Air Bypass Coil</i>				
Quantity/Face Area				
Rows/fpi				
<b>Water-Cooled Condenser</b>				
Minimum gpm	111.70	171.00	229.75	
Maximum gpm	446.80	684.00	919.00	

Table 28 - RN Series E Cabinet (105-140 tons) Heating and Hydronic Cooling Information

	Model			
	105	120	130	140
<b>Electric Heat</b>				
Capacity (kW)				
230/380/460/575V	80, 120, 160, 200, 240, 280, 320			
208V	60.1, 90.1, 120.1, 150.2, 180.2, 210.3, 240.4			
Stages	80 kW - 2 or Fully Modulating with SCR 120kW - 2, 4, 6, 7, 8 or Fully Modulating with SCR 160 kW - 2, 4 or Fully Modulating with SCR 200 kW, 240 kW, 280 kW, 320 kW - 2, 4, 8 or Fully Modulating with SCR			
<b>Gas Heat</b>				
Input Capacity/Output Capacity (MBH)	800/640, 1600/1280, 2400/1920			
Natural Gas Capacity Steps (MBH)	<u>800 MBH</u> : 2 stage – 800/560, 4 stage - 800/680/400/280, or Modulating - 3:1 Turndown <u>1600 MBH</u> : 2 stage - 1600/1120, 4 stage - 1600/1360/800/560, or Modulating - 3:1 Turndown <u>2400 MBH</u> : 2 stage - 2400/1680, 4 stage - 2400/1920/1120/560, or Modulating - 3:1 Turndown			
LP Gas Capacity Steps (MBH)	<u>800 MBH</u> : 2 stage – 800/560 <u>1600 MBH</u> : 2 stage – 1600/1120 <u>2400 MBH</u> : 2 stage - 2400/1680			
<b>Hot Water Heating Coil</b>				
Quantity/Face Area	2/19.9 ft <sup>2</sup> (39.7 ft <sup>2</sup> total)			
Rows/fpi	1/8, 10, or 12 (Half Serpentine) 2/8, 10 or 12 (Single or Half Serpentine)			
Standard Coil	1 Row Half Serpentine with 10 fpi or 2 Row Single Serpentine with 10 fpi			
<b>Steam Heating Coil</b>				
Quantity/Face Area	2/19.2 ft <sup>2</sup> (38.3 ft <sup>2</sup> total)			
Rows/fpi	1 or 2/8, 10 or 12			
Standard Coil	10 fpi			
<b>Chilled Water Coil</b>				
Quantity/Face Area	4/17.6 ft <sup>2</sup> (70.5 ft <sup>2</sup> total)			
Rows/fpi	4 or 6/8, 10, or 12 (Single or Half Serpentine)			
Standard Coil	Single Serpentine with 10 fpi			



Table 29 - RN Series E Cabinet (105-140 tons) Preheat and Fan Information

	Model			
	105	120	130	140
<b>Hot Water Preheat Coil</b>				
Quantity/Face Area				
Rows/fpi				
Standard Coil				
<b>Steam Preheat Coil</b>				
Quantity/Face Area				
Rows/fpi				
Standard Coil				
<b>Supply Fans</b>				
Quantity/Type	2/Direct Drive Backward Curved Plenum Fan			
<b>Air-Cooled Condenser Fans</b>				
Quantity	8			
Type/hp	30" Propeller Fan/1.5			
<b>Power Exhaust Fans</b>				
Quantity/Type	1 or 2/Direct Drive Axial Flow Fan			
hp	1, 2, 3, 5, 7.5, 10, 15, 20, 25, 30, 40, 50			
<b>Energy Recovery Wheel Exhaust Fans</b>				
Quantity/Type	1 or 2/Direct Drive Backward Curved Plenum Fan			
hp	1, 2, 3, 5, 7.5, 10, 15, 20, 25, 30, 40, 50			
<b>Power Return Fans</b>				
Quantity/Type	1 or 2/Direct Drive Axial Flow Fan			
hp	1, 2, 3, 5, 7.5, 10, 15, 20, 25, 30, 40, 50			

## Curb Information

### Acoustical Solid Bottom Curbs

Acoustical solid bottom curbs are lined with 1" 1.5 lb/ft<sup>3</sup> sound attenuating, flexible, resilient, blanket-type insulation which does not support microbial growth. The fibers of the insulation are incombustible and non-hygroscopic. The curbs are available in 14" or 24" tall sizes. Supply and return air connection openings must be field cut into the bottom of the curb for the duct connection. Unit curbs are composed of heavy gauge galvanized steel.

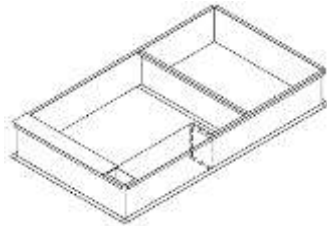


Figure 6 - Example Solid Bottom Curb

### Adjustable Pitch Solid Bottom Curbs

Adjustable pitch acoustical solid bottom curbs are available only with 2-25 and 30 ton units, without water-cooled condensers. The curbs are available in 14" or 24" tall sizes. The supply and return air connection openings must be field cut into the bottom of the curb for the duct connection. The maximum pitch adjustment is 0.75 inch per foot in either direction. Unit curbs are composed of heavy gauge galvanized steel.

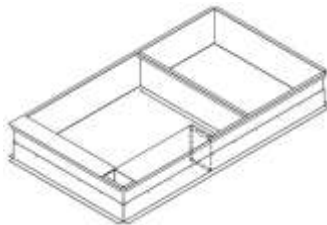


Figure 7 - Example Adjustable Pitch Solid Bottom Curb

### Knock Down Curbs with Duct Support Rails

Knock down curbs are shipped disassembled for field construction. The curbs are available in 14" or 24" tall sizes. Duct support rail kits are purchased separately from knock down curbs. Unit curbs are composed of heavy gauge galvanized steel.



Figure 8 - Example Knock Down Curb (Shown with Duct Support Rail Kit)

### Horizontal Discharge Acoustical Solid Bottom Curb Applications

RN Series acoustical solid bottom curb can be used in applications requiring horizontal return and supply openings. Supply air horizontal connection opening and crossover opening are cut into the curb, while the return air horizontal opening is cut into the unit below the outside air opening in the return air section of the unit. Unit should be ordered without a return air opening. Contact the Applications Department for more information.

#### RQ Series and RN Series A, B, and C Cabinet Curbs (2-25 and 30 tons)

The horizontal supply air opening must include a minimum 3 inches of material from the edge on all four sides. The openings must be reinforced by two opposing diagonal bolt mounted steel L-angles. The minimum required material for the L-angle is 1 inch x 1 inch 14 gauge steel. L-Angles must be bolted in all four corners of the supply air openings before unit is placed on curb.

#### RN Series D Cabinet Curbs (26-50, 60 and 70 tons)

The horizontal discharge air opening must include a minimum 4 inches of material from the edge on all four sides. The openings must be reinforced by two opposing diagonal bolt mounted steel L-Angles. The minimum required material for the L-angle is 1 inch x 1 inch 14 gauge steel. L-angles must be bolted in all four corners of the supply air openings before unit is placed on curb.

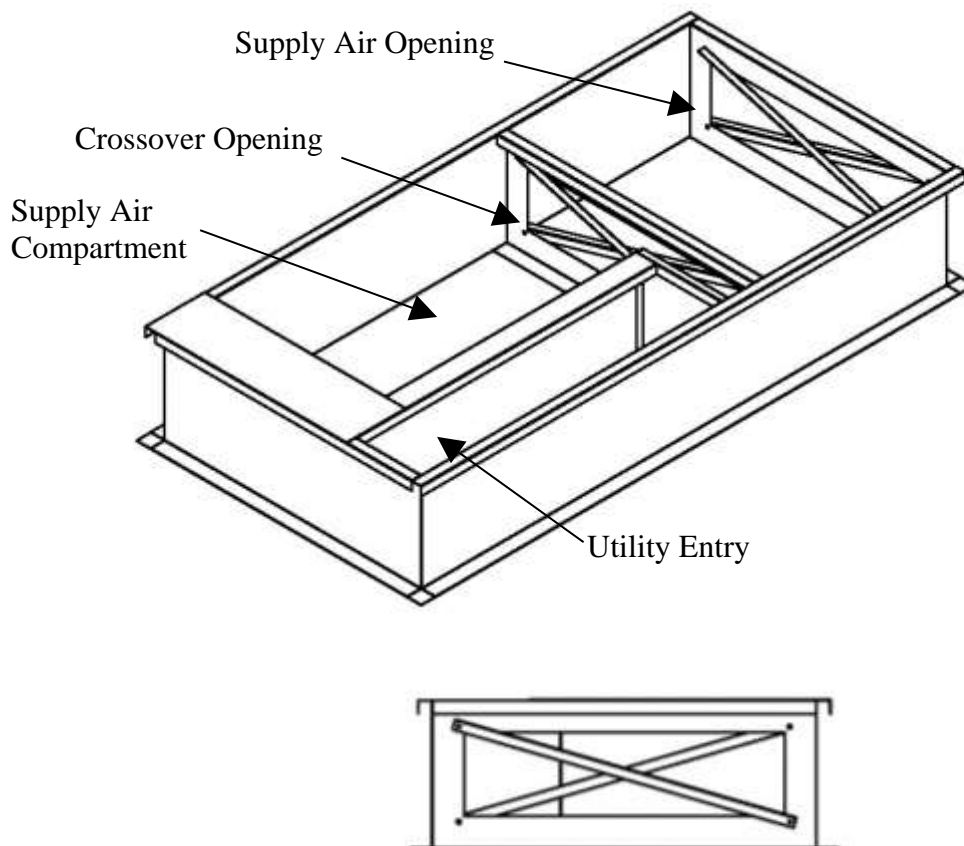


Figure 9 - Acoustical Solid Bottom Curb with Horizontal Discharge Openings

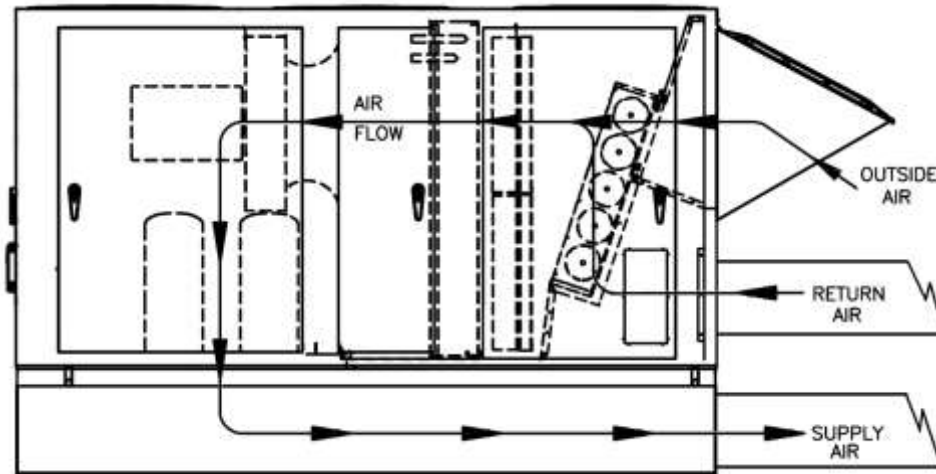


Figure 10 - Example Unit and Curb with Horizontal Return and Supply Openings

## Filter Information

(RAB = Return Air Bypass, PE = Power Exhaust, PR = Power Return)

Table 30 - RQ Series 2-6 ton Pre Filters

Feature 6A	Quantity / Size	Type
0	No Pre Filters	
A	2 / 20" x 20" x 2"	Pleated, 30% Eff, MERV 8
B	1 / 16" x 20" x 1"	Metal Mesh, Outside Air
C	1 / 19.5" x 39" x 5/16"	Lint Screen

Table 31 - RN Series 6-8 and 10 ton Pre Filters

Feature 6A	Quantity / Size	Type
0	No Pre Filters	
A	4 / 16" x 20" x 2"	Pleated, 30% Eff, MERV 8
B	2 / 16" x 20" x 1"	Metal Mesh, Outside Air
C	2 / 40" x 16" x 5/16"	Lint Screen
	with RAB, Feature A2 = Q, R 2 / 40" x 16" x 5/16"	

Table 32 - RN Series 9 and 11-15 ton Pre Filters

Feature 6A	Quantity / Size	Type
0	No Pre Filters	
A	4 / 20" x 25" x 2"	Pleated, 30% Eff, MERV 8
B	2 / 20" x 25" x 1"	Metal Mesh, Outside Air
C	2 / 49" x 20" x 5/16"	Lint Screen
	with RAB, Feature A2 = Q, R 3 / 47" x 12" x 5/16"	

Table 33 - RN Series 16-25 and 30 ton Pre Filters

Feature 6A	Quantity / Size	Type
0	No Pre Filters	
A	6 / 20" x 25" x 2"	Pleated, 30% Eff, MERV 8
B	3 / 20" x 25" x 1"	Metal Mesh, Outside Air
C	2 / 55" x 25" x 5/16"	Lint Screen
	with RAB, Feature A2 = Q, R 3 / 55" x 16" x 5/16"	

Table 34 - RN Series 26, 31, and 40 ton Pre Filters

Feature 6A	Quantity / Size	Type
0	No Pre Filters	
A	8 / 24" x 24" x 2"	Pleated, 30% Eff, MERV 8
	with RAB, Feature A2 = Q, R 16 / 12" x 24" x 2"	
B	6 / 16" x 25" x 1"	Metal Mesh, Outside Air
	with PE or PR, Feature 1A = B, C 4 / 16" x 25" x 1"	
C	8 / 24" x 24" x 5/16"	Lint Screen

Table 35 - RN Series 50, 60, and 70 ton Pre Filters

Feature 6A	Quantity / Size	Type
0	No Pre Filters	
A	24 / 12" x 24" x 2"	Pleated, 30% Eff, MERV 8
B	6 / 16" x 25" x 1"	Metal Mesh, Outside Air
	with PE or PR, Feature 1A = B, C 4 / 16" x 25" x 1"	
C	12 / 47" x 12" x 5/16"	Lint Screen

Table 36 - RN Series 55, 65, and 75 ton Pre Filters

Feature		Quantity / Size	Type
6A	6B		
0	0,B,C,F,G,H	No Pre Filters	
A	0,B,C,F,G,H	15 / 20" x 24" x 2" & 5 / 16" x 20" x 2"	Pleated, 30% Eff, MERV 8
B	0,B,C,F,G,H	28 / 20" x 20" x 1"	Metal Mesh, Outside Air
C	0,C	8 / 40" x 18" x 5/16" & 8 / 20" x 18" x 5/16"	Lint Screen
C	B,F,G,H	1 / 60" x 16" x 5/16" & 3 / 60" x 24" x 5/16" & 1 / 40" x 16" x 5/16" & 3 / 40" x 24" x 5/16"	

Table 37 - RN Series 90-140 ton Pre Filters

Feature		Quantity / Size	Type
6A	6B		
0	0,B,C,F,G,H	No Pre Filters	
A	0,B,C,F,G,H	21 / 20" x 24" x 2" & 7 / 16" x 20" x 2"	Pleated, 30% Eff, MERV 8
B	0,B,C,F,G,H	28 / 20" x 20" x 1"	Metal Mesh, Outside Air
C	0,C	11 / 20" x 18" x 5/16" & 12 / 40" x 18"	Lint Screen
C	B,F,G,H	2 / 40" x 16" x 5/16" & 6 / 40" x 24" x 5/16" & 1 / 60" x 16" x 5/16" & 3 / 60" x 24" x 5/16"	

Table 38 - RQ Series 2-6 ton Unit Filters

Feature 6B	Quantity / Size	Type
0	2 / 20" x 20" x 2"	Pleated, 30% Eff, MERV 8
B	2 / 20" x 20" x 4"	Pleated, 30% Eff, MERV 8
C	2 / 20" x 20" x 2"	Permanent Filter Frame - Replaceable Media
F	2 / 20" x 20" x 4"	Pleated, 65% Eff, MERV 11
G		Pleated, 85% Eff, MERV 13
H		Pleated, 95% Eff, MERV 14

Table 39 - RN Series 6-8 and 10 ton Unit Filters

Feature 6B	Quantity / Size	Type
0	4 / 16" x 20" x 2"	Pleated, 30% Eff, MERV 8
	with RAB, Feature A2 = Q, R 2 / 20" x 20" x 2" and 1/12" x 24" x 2"	
B	4 / 16" x 20" x 4"	Pleated, 30% Eff, MERV 8
	with RAB, Feature A2 = Q, R 2 / 20" x 20" x 4" and 1/12" x 24" x 4"	
C	4 / 16" x 20" x 2"	Permanent Filter Frame - Replaceable Media
	with RAB, Feature A2 = Q, R 2 / 20" x 20" x 2" and 1/12" x 24" x 2"	
F	4 / 16" x 20" x 4"	Pleated, 65% Eff, MERV 11
G		Pleated, 85% Eff, MERV 13
H		Pleated, 95% Eff, MERV 14

Table 40 - RN Series 9 and 11 ton Unit Filters

Feature 6B	Quantity / Size	Type
0	4 / 20" x 25" x 2"	Pleated, 30% Eff, MERV 8
	with RAB, Feature A2 = Q, R 6 / 12" x 24" x 2"	
B	4 / 20" x 25" x 4"	Pleated, 30% Eff, MERV 8
	with RAB, Feature A2 = Q, R 6 / 12" x 24" x 4"	
C	4 / 20" x 25" x 2"	Permanent Filter Frame - Replaceable Media
	with RAB, Feature A2 = Q, R 6 / 12" x 24" x 2"	
F	4 / 20" x 25" x 4"	Pleated, 65% Eff, MERV 11
G		Pleated, 85% Eff, MERV 13
H		Pleated, 95% Eff, MERV 14

Table 41 - RN Series 13 and 15 ton Unit Filters

Feature 6B	Quantity / Size	Type
0	4 / 20" x 25" x 2"	Pleated, 30% Eff, MERV 8
	with RAB, Feature A2 = Q, R 6 / 12" x 24" x 2"	
B	4 / 20" x 25" x 4"	Pleated, 30% Eff, MERV 8
	with RAB, Feature A2 = Q, R 6 / 12" x 24" x 4"	
C	4 / 20" x 25" x 2"	Permanent Filter Frame - Replaceable Media
	with RAB, Feature A2 = Q, R 6 / 12" x 24" x 2"	
F	4 / 20" x 25" x 4"	Pleated, 65% Eff, MERV 11
G		Pleated, 85% Eff, MERV 13
H		Pleated, 95% Eff, MERV 14

Table 42 - RN Series 16-25 and 30 ton Unit Filters

Feature 6B	Quantity / Size	Type
0	6 / 20" x 25" x 2"	Pleated, 30% Eff, MERV 8
	with RAB, Feature A2 = Q, R 9 / 16" x 20" x 2"	
B	6 / 20" x 25" x 4"	Pleated, 30% Eff, MERV 8
	with RAB, Feature A2 = Q, R 9 / 16" x 20" x 4"	
C	6 / 20" x 25" x 2"	Permanent Filter Frame - Replaceable Media
	with RAB, Feature A2 = Q, R 9 / 16" x 20" x 2"	
F	6 / 20" x 25" x 4"	Pleated, 65% Eff, MERV 11
G		Pleated, 85% Eff, MERV 13
H		Pleated, 95% Eff, MERV 14

Table 43 - RN Series 26, 31, and 40 ton Unit Filters

Feature 6B	Quantity / Size	Type
0	8 / 24" x 24" x 2"	Pleated, 30% Eff, MERV 8
	with RAB, Feature A2 = Q, R 16 / 12" x 24" x 2"	
B	8 / 24" x 24" x 4"	Pleated, 30% Eff, MERV 8
	with RAB, Feature A2 = Q, R 16 / 12" x 24" x 4"	
C	8 / 24" x 24" x 2"	Permanent Filter Frame - Replaceable Media
	with RAB, Feature A2 = Q, R 16 / 12" x 24" x 2"	
F	8 / 24" x 24" x 4"	Pleated, 65% Eff, MERV 11
	with RAB, Feature A2 = Q, R 16 / 12" x 24" x 4"	
G	8 / 24" x 24" x 4"	Pleated, 85% Eff, MERV 13
	with RAB, Feature A2 = Q, R 16 / 12" x 24" x 4"	
H	8 / 24" x 24" x 4"	Pleated, 95% Eff, MERV 14
	with RAB, Feature A2 = Q, R 16 / 12" x 24" x 4"	

Table 44 - RN Series 50, 60, and 70 ton Unit Filters

Feature 6B	Quantity / Size	Type
0	24 / 12" x 24" x 2"	Pleated, 30% Eff, MERV 8
	with RAB, Feature A2 = Q, R 28 / 12" x 24" x 2"	
B	24 / 12" x 24" x 4"	Pleated, 30% Eff, MERV 8
	with RAB, Feature A2 = Q, R 28 / 12" x 24" x 4"	
C	24 / 12" x 24" x 2"	Permanent Filter Frame - Replaceable Media
	with RAB, Feature A2 = Q, R 28 / 12" x 24" x 2"	
F	24 / 12" x 24" x 4"	Pleated, 65% Eff, MERV 11
G		Pleated, 85% Eff, MERV 13
H		Pleated, 95% Eff, MERV 14



Table 45 - RN Series 55, 65, and 75 ton Unit Filters

Feature 6B	Quantity / Size	Type
0	25 / 18" x 20" x 2"	Pleated, 30% Eff, MERV 8
B	15 / 20" x 24" x 4" & 5 / 16" x 20" x 4"	Pleated, 30% Eff, MERV 8
C	25 / 18" x 20" x 2"	Permanent Filter Frame - Replaceable Media
F	15 / 20" x 24" x 4" & 5 / 16" x 20" x 4"	Pleated, 65% Eff, MERV 11
G		Pleated, 85% Eff, MERV 13
H		Pleated, 95% Eff, MERV 14

Table 46 - RN Series 90-140 ton Unit Filters

Feature 6B	Quantity / Size	Type
0	35 / 18" x 20" x 2"	Pleated, 30% Eff, MERV 8
B	21 / 20" x 24" x 4" & 7 / 16" x 20" x 4"	Pleated, 30% Eff, MERV 8
C	35 / 18" x 20" x 2"	Permanent Filter Frame - Replaceable Media
F	21 / 20" x 24" x 4" & 7 / 16" x 20" x 4"	Pleated, 65% Eff, MERV 11
G		Pleated, 85% Eff, MERV 13
H		Pleated, 95% Eff, MERV 14

Table 47 - RQ Series 2-6 ton Energy Recovery Wheel Filters

Feature 1A	Quantity / Size	Type
F, G, H, J, Q, R, S, T	1 / 16" x 16" x 2"	Pleated, 30% Eff, MERV 8
	With Energy Recovery Wheel Exhaust Air Filters, Feature 6A - D, F, G, H OA - 1 / 16" x 16" x 2" EA - 1 / 16" x 16" x 2"	

Table 48 - 6-8 and 10 ton Energy Recovery Wheel Filters

Feature 1A	Quantity / Size	Type
F, G, H, J, Q, R, S, T	(Prior to August 2014) 1 / 25" x 16" x 4"	Pleated, 30% Eff, MERV 8
	With Energy Recovery Wheel Exhaust Air Filters, Feature 6A - D, F, G OA - 1 / 25" x 16" x 2" EA - 1 / 25" x 16" x 2"	
	(After August 2014) With V-Bank Outside Air Filters OA - 2 / 25" x 14" x 2"	

Table 49 - 9 and 11-15 ton Energy Recovery Wheel Filters

Feature 1A	Quantity / Size	Type
F, G, H, J, Q, R, S, T, U, V, W, Y, Z, 1, 2, 3	(Prior to August 2014) 2 / 16" x 20" x 4"	Pleated, 30% Eff, MERV 8
	With Energy Recovery Wheel Exhaust Air Filters, Feature 6A - D, F, G OA - 2 / 16" x 20" x 2" EA - 2 / 16" x 20" x 2"	
	(After August 2014) With V-Bank Outside Air Filters OA - 4 / 20" x 12" x 2"	

Table 50 - 16-25 and 30 ton Energy Recovery Wheel Filters

Feature 1A	Quantity / Size	Type
F, G, H, J, Q, R, S, T, U, V, W, Y, Z, 1, 2, 3	(Prior to August 2014) 3 / 20" x 25" x 4"	Pleated, 30% Eff, MERV 8
	With Energy Recovery Wheel Exhaust Air Filters, Feature 6A - D, F, G OA - 3 / 20" x 25" x 2" EA - 6 / 14" x 20" x 2"	
	(After August 2014) With V-Bank Outside Air Filters OA - 6 / 20" x 16" x 2"	

Table 51 - 26, 31-50, 60, and 70 ton Energy Recovery Wheel Filters

Feature 1A	Quantity / Size	Type
F, G, H, J, Q, R, S, T, U, V, W, Y, Z, 1, 2, 3	(Prior to August 2014) 4 / 24" x 24" x 4"	Pleated, 30% Eff, MERV 8
	(After August 2014) With V-Bank Outside Air Filters OA - 8 / 24" x 18" x 2"	
	With Outside Air Preheat 4 / 24" x 24" x 4"	
	With Energy Recovery Wheel Exhaust Air Filters, Feature 6A - D, F, G OA - 4 / 24" x 24" x 2" EA - 8 / 16" x 20" x 2"	
4	(Prior to August 2014) 3 / 24" x 24" x 4"	
	(After August 2014) With V-Bank Outside Air Filters OA - 6 / 24" x 24" x 2"	
	With Outside Air Preheat 3 / 24" x 24" x 4"	
	With Energy Recovery Wheel Exhaust Air Filters, Feature 6A - D, F, G OA - 3 / 24" x 24" x 2" EA - 6 / 16" x 20" x 2"	

Table 52 - RN Series 55, 65, and 75-140 ton Energy Recovery Wheel Filters

Feature 1A	Quantity / Size	Type
F, G, H, J, Q, R, S, T	10 / 24" x 24" x 2"	Pleated, 30% Eff, MERV 8
	With Energy Recovery Wheel Exhaust Air Filters, Feature 6A - D, G OA - 10 / 24" x 24" x 2" EA - 14 / 25" x 16" x 2"	
U, V, W, Y, Z, 1, 2, 3	14 / 24" x 20" x 2"	
	With Energy Recovery Wheel Exhaust Air Filters, Feature 6A - D, G OA - 14 / 20" x 24" x 2" EA - 14 / 25" x 16" x 2"	

Table 53 - RN Series 26, 31-50, 60, and 70 ton Preheat Filters

Feature		Quantity / Size	Type
14A	14B		
A, B, C, D	A, B, C, D, E, F	6 / 16" x 25" x 1"	Metal Mesh, Outside Air
		with PE or PR, Feature 1A = B, C 4 / 16" x 25" x 1"	

## Component Static Pressure Drops

At Minimum, Median, and Maximum cfm

Refer to AAON ECat for static pressure drops at specific unit conditions

Table 54 - RQ Series 2-6 ton Evaporator Coil Static Pressure Drops  
95°F Ambient, 80°F EDB, 67°F EWB

Model	cfm	Standard Efficiency Coil (in. w.g.)	High Efficiency Coil (in. w.g.)	6 Row Coil (in. w.g.)
RQ-002	500	0.02	0.03	
	1,600	0.10	0.16	
	2,600	0.24	0.29	
RQ-003	600	0.03	0.05	
	1,650	0.13	0.17	
	2,700	0.26	0.41	
RQ-004	800	0.07	0.10	0.14
	1,800	0.22	0.28	0.38
	2,800	0.40	0.49	0.65
RQ-005	900	0.10	0.12	0.18
	1,950	0.27	0.34	0.46
	3,000	0.49	0.59	0.76
RQ-006	1,200	0.15	0.19	0.28
	2,200	0.35	0.44	0.59
	3,200	0.59	0.72	0.95

Table 55 - RQ Series 2-6 ton Electric Heating Static Pressure Drops

Model	cfm	Electric Heat [kW] (in. w.g.)			
		10	20	30	40
RQ-002	500	0.02	0.02		
	1,600	0.10	0.10		
	2,600	0.21	0.21		
RQ-003	600	0.03	0.03		
	1,650	0.11	0.11		
	2,700	0.22	0.22		
RQ-004	800	0.04	0.04	0.04	0.04
	1,800	0.12	0.12	0.12	0.12
	2,800	0.24	0.24	0.24	0.24
RQ-005	900	0.04	0.04	0.04	0.04
	1,950	0.14	0.14	0.14	0.14
	3,000	0.27	0.27	0.27	0.27
RQ-006	1,200	0.07	0.07	0.07	0.07
	2,200	0.16	0.16	0.16	0.16
	3,200	0.30	0.30	0.30	0.30

Table 56 - RQ Series 2-6 ton Economizer and Gas Heating Static Pressure Drops

Model	cfm	Economizer (in. w.g.)	Gas Heat [MBH] (in. w.g.)			
			60	100	140	160
RQ-002	500	0.03	0.05			
	1,600	0.29	0.22	0.14	0.09	0.06
	2,600	0.76	0.45	0.35	0.18	0.15
RQ-003	600	0.04	0.06			
	1,650	0.31	0.23	0.15	0.09	0.07
	2,700	0.82	0.47	0.37	0.19	0.16
RQ-004	800	0.03	0.09	0.04		
	1,800	0.16	0.26	0.17	0.10	0.08
	2,800	0.39	0.50	0.40	0.20	0.17
RQ-005	900	0.04	0.10	0.05		
	1,950	0.19	0.29	0.20	0.11	0.09
	3,000	0.44	0.56	0.45	0.23	0.19
RQ-006	1,200	0.07	0.15	0.08	0.06	0.04
	2,200	0.24	0.35	0.25	0.14	0.11
	3,200	0.50	0.62	0.51	0.25	0.22

Table 57 - RQ Series 2-6 ton Filter Static Pressure Drops

Model	cfm	2" 30% Pleated (in.w.g.)	4" 30% Pleated (in.w.g.)	4" 65% Pleated (in.w.g.)	4" 85% Pleated (in.w.g.)	4" 95% Pleated (in.w.g.)	2" Permanent (in. w.g.)
RQ-002	500	0.00	0.00	0.05	0.05	0.08	0.01
	1,600	0.07	0.09	0.17	0.20	0.30	0.10
	2,600	0.18	0.24	0.32	0.40	0.55	0.23
RQ-003	600	0.01	0.01	0.05	0.06	0.09	0.02
	1,650	0.07	0.10	0.18	0.22	0.31	0.11
	2,700	0.19	0.25	0.34	0.43	0.58	0.24
RQ-004	800	0.02	0.02	0.07	0.08	0.13	0.03
	1,800	0.09	0.12	0.19	0.24	0.34	0.12
	2,800	0.20	0.27	0.36	0.46	0.61	0.25
RQ-005	900	0.02	0.03	0.08	0.10	0.15	0.04
	1,950	0.10	0.14	0.22	0.27	0.38	0.14
	3,000	0.23	0.31	0.39	0.51	0.67	0.28
RQ-006	1,200	0.04	0.05	0.08	0.14	0.21	0.06
	2,200	0.13	0.17	0.25	0.32	0.44	0.17
	3,200	0.26	0.35	0.43	0.56	0.73	0.31

Table 58 - RN Series 6-8 and 10 ton Evaporator Coil Static Pressure Drops  
 95°F Ambient, 80°F EDB, 67°F EWB

Model	cfm	High Efficiency Coil (in. w.g.)	6 Row Coil (in. w.g.)
RN-006	1,000	0.03	0.08
	3,250	0.17	0.31
	5,500	0.46	0.79
RN-007	1,200	0.07	0.10
	3,350	0.26	0.37
	5,500	0.65	0.80
RN-008	1,500	0.10	0.15
	3,400	0.31	0.44
	5,500	0.60	0.81
RN-010	1,700	0.13	0.19
	3,600	0.36	0.53
	5,500	0.67	0.93

Table 59 - RN Series 6-8 and 10 ton Electric Heating Static Pressure Drops

Model	cfm	Electric Heat [kW] (in. w.g.)					
		10	20	30	40	50	60
RN-006	1,000	0.01	0.01	0.01	0.01	0.01	0.01
	3,250	0.04	0.04	0.04	0.05	0.05	0.05
	5,500	0.10	0.10	0.10	0.11	0.11	0.11
RN-007	1,200	0.01	0.01	0.01	0.01	0.01	0.01
	3,350	0.04	0.04	0.04	0.05	0.05	0.05
	5,500	0.10	0.10	0.10	0.11	0.11	0.11
RN-008	1,500	0.02	0.02	0.02	0.02	0.02	0.02
	3,400	0.04	0.04	0.04	0.05	0.05	0.05
	5,500	0.10	0.10	0.10	0.11	0.11	0.11
RN-010	1,700	0.02	0.02	0.02	0.02	0.02	0.02
	3,600	0.05	0.05	0.05	0.06	0.06	0.06
	5,500	0.10	0.10	0.10	0.11	0.11	0.11

Table 60 - RN Series 6-8 and 10 ton Economizer, Refrigerant Reheat Coil and Gas Heating Static Pressure Drops

Model	cfm	Economizer (in. w.g.)	Reheat Coil (in. w.g.)	Gas Heat [MBH] (in. w.g.)		
				90	150	210
RN-006	1,000	0.13	0.01	0.02		
	3,250	0.16	0.07	0.09	0.11	0.13
	5,500	0.35	0.10	0.19	0.24	0.27
RN-007	1,200	0.13	0.01	0.03	0.03	
	3,350	0.16	0.07	0.10	0.12	0.13
	5,500	0.35	0.10	0.19	0.24	0.27
RN-008	1,500	0.14	0.02	0.03	0.04	
	3,400	0.16	0.07	0.10	0.12	0.14
	5,500	0.35	0.10	0.19	0.24	0.27
RN-010	1,700	0.15	0.02	0.04	0.05	0.06
	3,600	0.16	0.07	0.10	0.13	0.15
	5,500	0.35	0.10	0.19	0.24	0.27

Table 61 - RN Series 6-8 and 10 ton Filter Static Pressure Drops

Model	cfm	2" 30% Pleated (in.w.g.)	4" 30% Pleated (in.w.g.)	4" 65% Pleated (in.w.g.)	4" 85% Pleated (in.w.g.)	4" 95% Pleated (in.w.g.)
RN-006	1,000	0.06	0.01	0.06	0.07	0.11
	3,250	0.14	0.14	0.33	0.38	0.50
	5,500	0.39	0.40	0.78	0.92	1.10
RN-007	1,200	0.07	0.01	0.07	0.08	0.13
	3,350	0.15	0.15	0.34	0.39	0.51
	5,500	0.39	0.40	0.78	0.92	1.10
RN-008	1,500	0.07	0.03	0.11	0.13	0.18
	3,400	0.15	0.15	0.34	0.40	0.52
	5,500	0.39	0.40	0.78	0.92	1.10
RN-010	1,700	0.08	0.03	0.12	0.15	0.20
	3,600	0.17	0.17	0.39	0.45	0.59
	5,500	0.39	0.40	0.78	0.92	1.10

Table 62 - RN Series 9 and 11-15 ton Evaporator Coil Static Pressure Drops  
 95°F Ambient, 80°F EDB, 67°F EWB

Model	cfm	High Efficiency Coil (in. w.g.)	6 Row Coil (in. w.g.)
RN-009	1,300	0.02	0.06
	4,400	0.12	0.25
	7,500	0.26	0.59
RN-011	1,500	0.05	0.07
	4,500	0.21	0.30
	7,500	0.41	0.69
RN-013	1,800	0.08	0.10
	4,650	0.30	0.36
	7,500	0.57	0.65
RN-015	2,300	0.13	0.15
	4,900	0.35	0.41
	7,500	0.63	0.72

Table 63 - RN Series 9 and 11-15 ton Electric Heating Static Pressure Drops

Model	cfm	Electric Heat [kW] (in. w.g.)					
		20	30	40	50	60	80
RN-009	1,300	0.02	0.02	0.02	0.02	0.02	NA
	4,400	0.02	0.02	0.03	0.03	0.03	0.04
	7,500	0.10	0.11	0.13	0.15	0.17	0.19
RN-011	1,500	0.02	0.02	0.02	0.02	0.02	0.02
	4,500	0.02	0.02	0.03	0.03	0.04	0.04
	7,500	0.10	0.11	0.13	0.15	0.17	0.19
RN-013	1,800	0.02	0.02	0.02	0.02	0.02	0.02
	4,650	0.02	0.03	0.03	0.04	0.04	0.04
	7,500	0.10	0.11	0.13	0.15	0.17	0.19
RN-015	2,300	0.02	0.02	0.02	0.02	0.02	0.02
	4,900	0.03	0.03	0.04	0.04	0.05	0.05
	7,500	0.10	0.11	0.13	0.15	0.17	0.19



Table 64 - RN Series 9 and 11-15 ton Economizer, Refrigerant Reheat Coil, and Gas Heating Static Pressure Drops

Model	cfm	Economizer (in. w.g.)	Reheat Coil (in. w.g.)	Gas Heat [MBH] (in. w.g.)		
				195	292.5	390
RN-009	1,300	0.13	0.00			
	4,400	0.13	0.04	0.06	0.09	0.12
	7,500	0.41	0.12	0.29	0.35	0.42
RN-011	1,500	0.14	0.00	0.00		
	4,500	0.14	0.04	0.07	0.09	0.12
	7,500	0.41	0.12	0.29	0.35	0.42
RN-013	1,800	0.16	0.01	0.00		
	4,650	0.16	0.05	0.08	0.10	0.13
	7,500	0.41	0.12	0.29	0.35	0.42
RN-015	2,300	0.18	0.01	0.00		
	4,900	0.18	0.05	0.09	0.12	0.15
	7,500	0.41	0.12	0.29	0.35	0.42

Table 65 - RN Series 9 and 11-15 ton Filter Static Pressure Drops

Model	cfm	2" 30% Pleated (in.w.g.)	4" 30% Pleated (in.w.g.)	4" 65% Pleated (in.w.g.)	4" 85% Pleated (in.w.g.)	4" 95% Pleated (in.w.g.)	2" Permanent (in. w.g.)
RN-009	1,300	0.00	0.01	0.05	0.05	0.09	0.01
	4,400	0.08	0.11	0.09	0.10	0.30	0.12
	7,500	0.23	0.31	0.50	0.51	0.67	0.28
RN-011	1,500	0.01	0.01	0.05	0.06	0.09	0.02
	4,500	0.09	0.12	0.23	0.24	0.34	0.12
	7,500	0.23	0.31	0.50	0.51	0.67	0.28
RN-013	1,800	0.06	0.02	0.02	0.03	0.07	0.03
	4,650	0.13	0.12	0.21	0.22	0.33	0.13
	7,500	0.23	0.31	0.50	0.51	0.67	0.28
RN-015	2,300	0.07	0.03	0.05	0.05	0.11	0.04
	4,900	0.14	0.14	0.23	0.23	0.34	0.14
	7,500	0.23	0.31	0.50	0.51	0.67	0.28

Table 66 - RN Series 16-25 and 30 ton Evaporator Coil Static Pressure Drops  
 95°F Ambient, 80°F EDB, 67°F EWB

Model	cfm	Standard Coil (in. w.g.)	6 Row Coil (in. w.g.)
RN-016	2,400	0.06	0.09
	7,500	0.26	0.38
	12,600	0.53	0.77
RN-018	2,400	0.07	0.09
	7,500	0.34	0.39
	12,600	0.66	0.77
RN-020	2,800	0.10	0.11
	7,700	0.37	0.44
	12,600	0.72	0.83
RN-025	3,800	0.16	0.19
	8,200	0.46	0.54
	12,600	0.84	0.95
RN-030	4,400	0.20	0.24
	8,500	0.51	0.59
	12,600	0.88	1.01

Table 67 - RN Series 16-25 and 30 ton Electric Heating Static Pressure Drops

Model	cfm	Electric Heat [kW] (in. w.g.)					
		20	40	60	80	100	120
RN-016	2,400	0.00	0.00	0.00	0.00	0.00	0.00
	7,500	0.12	0.17	0.21	0.21	0.23	0.28
	12,600	0.25	0.34	0.41	0.42	0.45	0.57
RN-018	2,400	0.00	0.00	0.00	0.00	0.00	0.00
	7,500	0.12	0.17	0.21	0.21	0.23	0.28
	12,600	0.25	0.34	0.41	0.42	0.45	0.57
RN-020	2,800	0.01	0.02	0.02	0.02	0.02	0.03
	7,700	0.13	0.18	0.22	0.22	0.24	0.30
	12,600	0.25	0.34	0.41	0.42	0.45	0.57
RN-025	3,800	0.04	0.05	0.06	0.06	0.07	0.08
	8,200	0.14	0.19	0.24	0.24	0.26	0.32
	12,600	0.25	0.34	0.41	0.42	0.45	0.57
RN-030	4,400	0.05	0.07	0.08	0.09	0.09	0.11
	8,500	0.15	0.20	0.23	0.26	0.27	0.34
	12,600	0.25	0.34	0.41	0.42	0.45	0.57

Table 68 - RN Series 16-25 and 30 ton Economizer, Refrigerant Reheat Coil and Gas Heating Static Pressure Drops

Model	cfm	Economizer (in. w.g.)	Reheat Coil (in. w.g.)	Gas Heat [MBH] (in. w.g.)		
				270	405	540
RN-016	2,400	0.15	0.01	0.04		
	7,500	0.15	0.07	0.27	0.27	0.29
	12,600	0.35	0.19	0.70	0.70	0.75
RN-018	2,400	0.16	0.01	0.04		
	7,500	0.16	0.07	0.27	0.27	0.29
	12,600	0.35	0.19	0.70	0.70	0.75
RN-020	2,800	0.17	0.01	0.05		
	7,700	0.17	0.07	0.29	0.29	0.30
	12,600	0.35	0.19	0.70	0.70	0.75
RN-025	3,800	0.23	0.02	0.09	0.09	
	8,200	0.23	0.08	0.32	0.32	0.34
	12,600	0.35	0.19	0.70	0.70	0.75
RN-030	4,400	0.28	0.02	0.11	0.11	0.11
	8,500	0.28	0.09	0.34	0.34	0.36
	12,600	0.35	0.19	0.70	0.70	0.75

Table 69 - RN Series 16-25 and 30 ton Filter Static Pressure Drops

Model	cfm	2" 30% Pleated (in. w.g.)	4" 30% Pleated (in. w.g.)	4" 65% Pleated (in. w.g.)	4" 85% Pleated (in. w.g.)	4" 95% Pleated (in. w.g.)	2" Permanent (in. w.g.)
RN-016	2,400	0.06	0.01	0.01	0.01	0.05	0.02
	7,500	0.15	0.14	0.23	0.24	0.35	0.15
	12,600	0.38	0.38	0.50	0.51	0.68	0.33
RN-018	2,400	0.06	0.01	0.01	0.01	0.04	0.02
	7,500	0.15	0.14	0.23	0.24	0.35	0.15
	12,600	0.38	0.38	0.50	0.51	0.68	0.33
RN-020	2,800	0.06	0.02	0.09	0.09	0.14	0.03
	7,700	0.15	0.15	0.24	0.25	0.37	0.15
	12,600	0.38	0.38	0.50	0.51	0.68	0.33
RN-025	3,800	0.07	0.04	0.06	0.07	0.13	0.05
	8,200	0.17	0.17	0.27	0.27	0.40	0.17
	12,600	0.38	0.38	0.50	0.51	0.68	0.33
RN-030	4,400	0.08	0.05	0.09	0.09	0.16	0.06
	8,500	0.18	0.18	0.28	0.29	0.42	0.18
	12,600	0.38	0.38	0.50	0.51	0.68	0.33

Table 70 - RN Series 26, 31-50, 60, and 70 ton Evaporator Coil Static Pressure Drops  
 95°F Ambient, 80°F EDB, 67°F EWB

Model	cfm	Standard Coil (in. w.g.)	6 Row Coil (in. w.g.)
RN-026	4,300	0.06	0.10
	12,500	0.28	0.40
	20,700	0.56	0.94
RN-031	4,500	0.09	0.11
	12,600	0.37	0.43
	20,700	0.71	0.81
RN-040	6,100	0.15	0.18
	13,400	0.45	0.53
	20,700	0.82	0.94
RN-050	8,000	0.14	0.14
	18,200	0.46	0.47
	28,400	0.89	0.87
RN-060	9,400	0.18	0.18
	18,900	0.50	0.51
	28,400	0.92	0.92
RN-070	9,900	0.21	
	19,150	0.56	
	28,400	0.99	

Table 71 - RN Series 26, 31-50, 60, and 70 ton Electric Heating Static Pressure Drops

Model	cfm	Electric Heat [kW] (in. w.g.)					
		40	80	120	160	200	240
RN-026	4,300	0.01	0.01	0.01	0.01		
	12,500	0.10	0.10	0.10	0.07		
	20,700		0.26	0.26	0.19		
RN-031	4,500	0.01	0.01	0.01	0.01	0.01	0.01
	12,600		0.10	0.10	0.07	0.07	0.07
	20,700		0.26	0.26	0.19	0.19	0.19
RN-040	6,100	0.02	0.02	0.02	0.02	0.02	0.02
	13,400	0.11	0.11	0.11	0.08	0.08	0.08
	20,700		0.26	0.26	0.19	0.19	0.19
RN-050	8,000	0.04	0.04	0.04	0.03	0.03	0.03
	18,200	0.20	0.20	0.20	0.15	0.15	0.15
	28,400		0.40	0.40	0.36	0.36	0.36
RN-060	9,400	0.05	0.05	0.05	0.04	0.04	0.04
	18,900		0.22	0.22	0.16	0.16	0.16
	28,400		0.40	0.40	0.36	0.36	0.36
RN-070	9,900	0.06	0.06	0.06	0.04	0.04	0.04
	19,150		0.23	0.23	0.16	0.16	0.16
	28,400		0.40	0.40	0.36	0.36	0.36

Table 72 - 26, 31-50, 60, and 70 ton Refrigerant Reheat Coil and Gas Heating Static Pressure Drops

Model	cfm	Reheat Coil (in. w.g.)	Gas Heat [MBH] (in. w.g.)		
			540	810	1080
RN-026	4,300	0.01	0.04	0.05	
	12,500	0.07	0.06	0.13	0.16
	20,700	0.20	0.23	0.37	0.44
RN-031	4,500	0.01	0.04	0.06	
	12,600	0.07	0.06	0.14	0.16
	20,700	0.20	0.23	0.37	0.44
RN-040	6,100	0.02	0.05	0.06	
	13,400	0.08	0.08	0.15	0.19
	20,700	0.20	0.23	0.37	0.44
RN-050	8,000	0.02	0.06	0.07	0.03
	18,200	0.08	0.17	0.28	0.35
	28,400	0.20	0.45	0.74	0.77
RN-060	9,400	0.02	0.07	0.08	0.07
	18,900	0.09	0.18	0.31	0.37
	28,400	0.20	0.45	0.74	0.77
RN-070	9,900	0.02	0.07	0.09	0.08
	19,150	0.09	0.19	0.31	0.38
	28,400	0.20	0.45	0.75	0.77

Table 73 - 26, 31-50, 60, and 70 ton Filter Static Pressure Drops

Model	cfm	2" 30% Pleated (in. w.g.)	4" 30% Pleated (in. w.g.)	4" 65% Pleated (in. w.g.)	4" 85% Pleated (in. w.g.)	4" 95% Pleated (in. w.g.)	2" Permanent (in. w.g.)
RN-026	4,300	0.09	0.05	0.07	0.08	0.12	0.03
	12,500	0.19	0.15	0.31	0.31	0.43	0.17
	20,700	0.48	0.42	0.66	0.67	0.85	0.37
RN-031	4,500	0.09	0.05	0.08	0.08	0.13	0.03
	12,600	0.20	0.15	0.31	0.32	0.44	0.17
	20,700	0.48	0.42	0.66	0.67	0.85	0.37
RN-040	6,100	0.12	0.06	0.11	0.12	0.18	0.05
	13,400	0.22	0.17	0.34	0.35	0.48	0.19
	20,700	0.48	0.42	0.66	0.67	0.85	0.37
RN-050	8,000	0.11	0.05	0.12	0.12	0.18	0.04
	18,200	0.19	0.14	0.29	0.30	0.42	0.16
	28,400	0.40	0.35	0.58	0.58	0.75	0.32
RN-060	9,400	0.12	0.06	0.12	0.12	0.19	0.05
	18,900	0.20	0.15	0.31	0.32	0.44	0.17
	28,400	0.40	0.35	0.58	0.58	0.75	0.32
RN-070	9,900	0.12	0.06	0.13	0.13	0.20	0.06
	19,150	0.20	0.16	0.32	0.32	0.45	0.17
	28,400	0.40	0.35	0.58	0.58	0.75	0.32

Table 74 - RN Series 55, 65, and 75-140 ton Evaporator Coil Static Pressure Drops  
 95°F Ambient, 80°F EDB, 67°F EWB

Model	cfm	Standard Coil (in. w.g.)	6 Row Coil (in. w.g.)
RN-055	11,100	0.13	0.16
	22,800	0.33	0.39
	34,500	0.67	0.72
RN-065	11,800	0.15	0.18
	23,500	0.38	0.45
	35,200	0.77	0.86
RN-075	12,500	0.18	0.21
	24,200	0.44	0.52
	35,900	0.76	0.87
RN-090	14,000	0.11	0.13
	25,000	0.25	0.30
	44,500	0.67	0.75
RN-105	14,500	0.13	0.15
	30,000	0.36	0.42
	45,000	0.64	0.74
RN-120	15,000	0.14	0.17
	30,500	0.40	0.47
	45,500	0.73	0.84
RN-130	16,000	0.18	
	31,000	0.48	
	46,000	0.85	
RN-140	19,500	0.26	
	31,500	0.54	
	46,500	0.96	

Table 75 - RN Series 55, 65, and 75-140 ton Electric Heating Static Pressure Drops

Model	cfm	Electric Heat [kW] (in. w.g.)						
		80	120	160	200	240	280	320
RN-055	11,100	0.02	0.02	0.02	0.02	0.01	0.01	0.01
	22,800	0.09	0.09	0.09	0.09	0.05	0.05	0.05
	34,500	0.21	0.21	0.21	0.21	0.12	0.12	0.12
RN-065	11,800	0.02	0.02	0.02	0.02	0.01	0.01	0.01
	23,500	0.10	0.10	0.10	0.10	0.06	0.06	0.06
	35,200	0.22	0.22	0.22	0.22	0.13	0.13	0.13
RN-075	12,500	0.03	0.03	0.03	0.03	0.02	0.02	0.02
	24,200	0.10	0.10	0.10	0.10	0.06	0.06	0.06
	35,900	0.22	0.22	0.22	0.22	0.13	0.13	0.13
RN-090	14,000	0.03	0.03	0.03	0.03	0.02	0.02	0.02
	25,000	0.11	0.11	0.11	0.11	0.06	0.06	0.06
	44,500	0.35	0.35	0.35	0.35	0.20	0.20	0.20
RN-105	14,500	0.04	0.04	0.04	0.04	0.02	0.02	0.02
	30,000	0.16	0.16	0.16	0.16	0.09	0.09	0.09
	45,000	0.35	0.35	0.35	0.35	0.20	0.20	0.20
RN-120	15,000	0.04	0.04	0.04	0.04	0.02	0.02	0.02
	30,500	0.16	0.16	0.16	0.16	0.09	0.09	0.09
	45,500	0.36	0.36	0.36	0.36	0.21	0.21	0.21
RN-130	16,000	0.05	0.05	0.05	0.05	0.03	0.03	0.03
	31,000	0.17	0.17	0.17	0.17	0.10	0.10	0.10
	46,000	0.37	0.37	0.37	0.37	0.21	0.21	0.21
RN-140	19,500	0.07	0.07	0.07	0.07	0.04	0.04	0.04
	31,500	0.17	0.17	0.17	0.17	0.10	0.10	0.10
	46,500	0.38	0.38	0.38	0.38	0.22	0.22	0.22

Table 76 - 55, 65, and 75-140 ton Refrigerant Reheat Coil and Gas Heating Static Pressure Drops

Model	cfm	Reheat Coil (in. w.g.)	Gas Heat [MBH] (in. w.g.)		
			800	1600	2400
RN-055	11,100	0.02	0.14	0.21	
	22,800	0.07	0.28	0.39	0.47
	34,500	0.16	0.40	0.52	0.62
RN-065	11,800	0.02	0.15	0.22	
	23,500	0.08	0.29	0.40	0.48
	35,200	0.17	0.41	0.53	0.63
RN-075	12,500	0.02	0.16	0.23	
	24,200	0.08	0.30	0.41	0.49
	35,900	0.18	0.42	0.54	0.64
RN-090	14,000	0.02	0.18	0.26	
	25,000	0.05	0.31	0.42	0.50
	44,500	0.16	0.50	0.60	0.71
RN-105	14,500	0.02	0.19	0.27	
	30,000	0.07	0.36	0.48	0.57
	45,000	0.17	0.50	0.60	0.71
RN-120	15,000	0.02	0.19	0.28	0.34
	30,500	0.08	0.36	0.48	0.58
	45,500	0.17	0.51	0.61	0.71
RN-130	16,000	0.02	0.20	0.29	0.35
	31,000	0.08	0.37	0.49	0.58
	46,000	0.18	0.51	0.61	0.71
RN-140	19,500	0.03	0.24	0.34	0.42
	31,500	0.08	0.37	0.49	0.59
	46,500	0.18	0.51	0.61	0.72



Table 77 - 55, 65, and 75-140 ton Filter Static Pressure Drops

Model	cfm	2" 30% Pleated (in. w.g.)	4" 30% Pleated (in. w.g.)	4" 65% Pleated (in. w.g.)	4" 85% Pleated (in. w.g.)	4" 95% Pleated (in. w.g.)	2" Permanent (in. w.g.)
RN-055	11,100	0.06	0.01	0.08	0.09	0.13	0.02
	22,800	0.09	0.08	0.24	0.24	0.33	0.08
	34,500	0.17	0.17	0.45	0.46	0.59	0.17
RN-065	11,800	0.06	0.02	0.09	0.09	0.14	0.03
	23,500	0.10	0.08	0.25	0.26	0.34	0.09
	35,200	0.18	0.18	0.47	0.48	0.60	0.18
RN-075	12,500	0.06	0.02	0.10	0.10	0.15	0.03
	24,200	0.10	0.08	0.26	0.27	0.36	0.09
	35,900	0.18	0.18	0.48	0.49	0.62	0.18
RN-090	14,000	0.07	0.03	0.11	0.12	0.17	0.04
	25,000	0.11	0.09	0.27	0.28	0.37	0.10
	44,500	0.27	0.28	0.69	0.69	0.85	0.26
RN-105	14,500	0.07	0.03	0.12	0.13	0.18	0.04
	30,000	0.14	0.13	0.36	0.37	0.48	0.14
	45,000	0.27	0.28	0.70	0.71	0.86	0.26
RN-120	15,000	0.07	0.03	0.13	0.13	0.19	0.04
	30,500	0.14	0.13	0.37	0.38	0.49	0.14
	45,500	0.28	0.29	0.71	0.72	0.88	0.27
RN-130	16,000	0.07	0.04	0.14	0.15	0.21	0.05
	31,000	0.14	0.14	0.38	0.39	0.50	0.14
	46,000	0.29	0.29	0.73	0.73	0.89	0.27
RN-140	19,500	0.08	0.05	0.19	0.19	0.27	0.06
	31,500	0.15	0.14	0.39	0.40	0.51	0.15
	46,500	0.29	0.30	0.74	0.74	0.91	0.27

# AAONNAIRE<sup>®</sup> Factory Installed Energy Recovery Wheel Application Capacities

AAON provides RN and RQ Series rooftop units with optional energy recovery wheels that are certified under AHRI Standard 1060 for Energy Recovery Ventilation Equipment and AHRI Standards 210/240 and 340/360. In the examples below, the outside air quantity passing through the wheel is 50% of the supply air quantity as specified. In heating mode, the outside air is assumed to be 20°F DB and 14°F WB and the return air from the conditioned space is assumed at 70°F DB and 56°F WB. In cooling mode, the outside air is assumed to be 95°F DB and 78°F WB and the return air from the conditioned space is assumed at 75°F DB and 62°F WB. The altitude is assumed to be 0 ft and the return air and outside air sections of the energy wheel section of the unit are assumed to have pressures of -0.1 in. w.g. The combined performance of the energy recovery wheel and the rooftop unit are calculated in accordance with AHRI Guideline V. System EER is at the stated conditions.

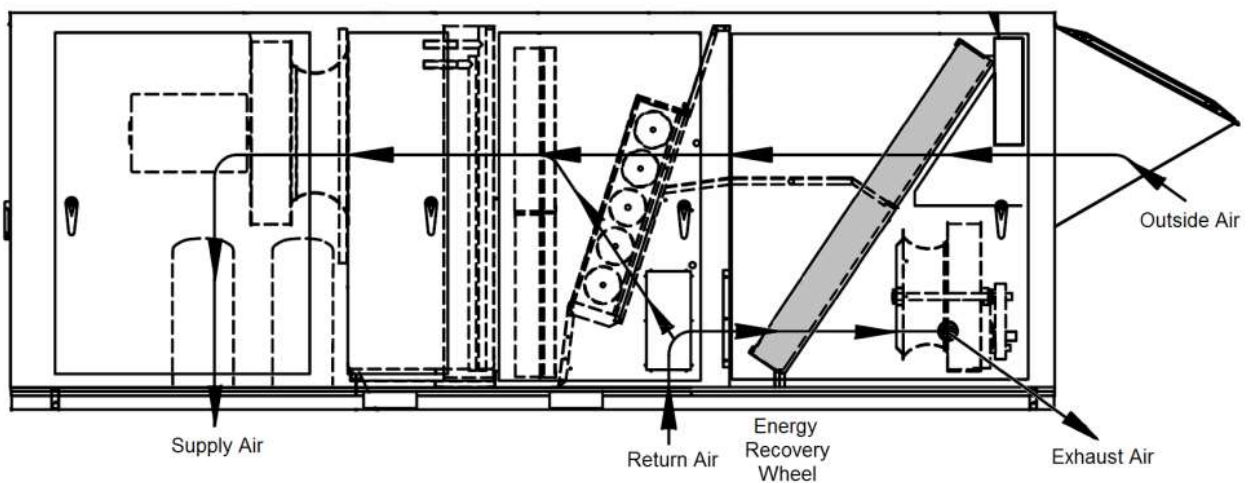


Figure 11 - Example RN Series AAONNAIRE Unit Air Flow

Table 78 - RQ Series and RN Series A, B, and C Cabinet AAONAIRES Unit Capacities Examples

Model	Supply cfm	Outside Air cfm	System EER without Wheel	Energy Recovery Wheel and Unit				
				Heating		Cooling		
				Free Sensible Heat MBH	Moisture Recovery lbs. of water/hr	Tons with Wheel	System EER	Tons % Increase Due to Wheel
RQ Series, Low cfm, Single Wheel, 21" Diameter/2" Width								
RQ-002	850	425	16.4	16.46	8.15	3.29	23.92	38%
RQ-003	1,050	525	14.9	19.31	9.51	4.46	20.80	35%
RQ-004	1,400	700	14.9	23.34	11.38	5.88	19.89	32%
RQ-005	1,700	850	14.4	25.86	12.48	6.75	18.72	31%
RQ-006	1,800	900	13.0	26.46	12.73	7.64	16.54	28%
RN Series, A Cabinet, Low cfm, Single Wheel, 30" Diameter/3" Width								
RN-006	2,000	1,000	12.5	39.86	19.69	7.47	19.47	41%
RN-007	2,400	1,200	12.2	46.22	22.74	8.84	18.68	40%
RN-008	2,600	1,300	12.2	49.23	24.17	10.93	16.81	36%
RN-010	2,800	1,400	12.0	52.11	25.51	12.67	16.73	33%
RN Series, B Cabinet, Low cfm, Single Wheel, 36" Diameter/1.5" Width								
RN-009	2,800	1,400	12.9	56.19	26.83	11.46	19.24	38%
RN-011	3,400	1,700	11.9	65.29	30.96	13.75	17.40	37%
RN-013	3,600	1,800	12.3	68.06	32.21	17.15	16.85	32%
RN-015	3,800	1,900	11.7	70.72	33.42	19.83	15.53	29%
RN Series, B Cabinet, High cfm, Single Wheel, 36" Diameter/3" Width								
RN-009	3,000	1,500	12.9	60.12	29.44	11.62	20.09	40%
RN-011	3,600	1,800	11.9	69.42	33.94	13.85	18.19	38%
RN-013	3,800	1,900	12.3	72.36	35.35	17.41	17.52	34%
RN-015	4,000	2,000	11.7	75.09	36.72	20.14	16.19	31%
RN Series, C Cabinet, Low cfm, Single Wheel, 52" Diameter/1.5" Width								
RN-016	4,400	2,200	12.8	92.80	44.50	21.62	18.57	34%
RN-018	5,700	2,850	13.2	115.30	54.82	25.16	19.33	36%
RN-020	6,200	3,100	12.8	123.24	58.48	27.86	18.45	35%
RN-025	7,000	3,500	12.1	135.37	63.96	33.66	16.81	32%
RN-030	8,000	4,000	11.5	149.10	70.04	37.46	15.83	32%
RN Series, C Cabinet, High cfm, Single Wheel, 52" Diameter/3" Width								
RN-016	4,800	2,400	12.8	100.72	49.34	21.94	19.30	36%
RN-018	5,800	2,900	13.2	118.42	57.90	25.35	19.91	37%
RN-020	6,600	3,300	12.8	131.55	64.19	28.28	19.22	37%
RN-025	8,000	4,000	12.1	152.98	74.61	34.43	17.72	35%
RN-030	9,000	4,500	11.5	166.76	81.25	38.31	16.68	35%

**Table 79 - RN Series D and E Cabinets AAONAIRES Unit Capacities Examples**

Model	Supply cfm	Outside Air cfm	System EER without Wheel	Energy Recovery Wheel and Unit				
				Heating		Cooling		
				Free Sensible Heat MBH	Moisture Recovery lbs. of water/hr	Tons with Wheel	System EER	Tons % Increase Due to Wheel
RN Series, D Cabinet, Low cfm, Two Wheels, 52" Diameter/1.5" Width								
RN-026	10,000	5,000	12.5	206.87	98.84	38.54	19.66	40%
RN-031	11,000	5,500	11.8	224.00	106.64	45.68	17.88	38%
RN-040	13,000	6,500	10.8	255.61	121.19	53.14	16.16	37%
RN-050	16,000	8,000	11.8	298.19	140.07	70.36	16.55	34%
RN-060	18,000	9,000	11.3	322.85	150.96	77.65	15.63	33%
RN-070	20,000	10,000	10.7	344.69	160.20	88.03	14.41	30%
RN Series, D Cabinet, High cfm, Two Wheels, 52" Diameter/3" Width								
RN-026	11,000	5,500	12.5	232.90	114.18	37.99	19.55	38%
RN-031	12,000	6,000	11.8	243.39	118.96	46.34	18.73	40%
RN-040	16,000	8,000	10.8	305.96	149.22	55.07	17.41	42%
RN-050	18,000	9,000	11.8	333.53	162.49	71.94	17.49	37%
RN-060	20,000	10,000	11.3	358.72	174.86	79.40	16.51	36%
RN-070	22,000	11,000	10.7	382.13	185.90	88.71	15.20	31%
RN Series, D Cabinet, Single Wheel, 64" Diameter/3" Width								
RN-026	9,000	4,500	12.5	184.97	91.17	37.99	19.06	38%
RN-031	10,000	5,000	11.8	201.21	98.58	45.02	17.37	36%
RN-040	12,000	6,000	10.8	231.09	111.70	52.36	15.70	35%
RN-050	15,000	7,500	11.8	269.04	127.48	69.31	16.09	32%
RN-060	17,000	8,500	11.3	290.24	135.36	76.48	15.15	31%
RN-070	18,000	9,000	10.7	299.54	138.31	86.68	13.93	28%
RN Series, E Cabinet, Low cfm, Single Wheel, 81" Diameter/3" Width								
RN-055	17,500	8,750	13.0	339.84	165.44	74.15	19.30	36%
RN-065	19,000	9,500	11.5	361.79	175.87	85.03	16.65	34%
RN-075	22,000	11,000	11.2	402.30	195.45	95.33	16.07	34%
RN-090	24,000	12,000	12.7	426.58	207.05	115.74	17.22	30%
RN-105	26,000	13,000	12.4	449.50	218.05	124.74	16.65	30%
RN-120	28,500	14,250	11.6	474.28	230.01	143.91	15.17	28%
RN-130	29,500	14,750	11.0	483.76	234.46	158.18	14.09	26%
RN-140	31,000	15,500	10.8	504.17	244.52	172.50	13.59	24%
RN Series, E Cabinet, High cfm, Two Wheels, 64" Diameter/3" Width								
RN-055	19,000	9,500	13.0	377.17	184.33	75.78	20.04	39%
RN-065	20,000	10,000	11.5	393.24	191.82	86.30	17.16	36%
RN-075	24,000	12,000	11.2	451.82	220.41	97.46	16.72	37%
RN-090	30,000	15,000	12.7	527.56	256.84	120.19	18.15	35%
RN-105	32,500	16,250	12.4	553.99	270.02	128.58	17.51	34%
RN-120	35,000	17,500	11.6	578.67	281.55	148.41	15.86	32%
RN-130	36,500	18,250	11.0	591.65	288.25	163.20	14.73	30%
RN-140	38,000	19,000	10.8	604.69	294.05	178.06	14.16	28%

# Control Options

## Terminal Block

Low voltage terminal block for field wiring unit controls

### Required Features

Feature 13 - Terminal Block, or

Feature 13 - Field Installed DDC Controls by Others

Feature 13 - Field Installed DDC Controls by Others with isolation relays

Feature 13 - Terminal Block with Isolation Relays

### Standard Terminals Labels

[R] - 24VAC control voltage

[E] - Common

[G] - Fan enable

[Y1], [Y2], ..., [Y8] - Cooling stage(s) enable(s)

[DC1-], [DC1+], [DC2-], [DC2+], [DC3-], [DC3+], [DC4-], [DC4+] - Variable Capacity Compressor (1.44-5VDC) Signal(s)

[SP1-], [SP1+], [SP2-], [SP2+], [SP3-], [SP3+], [SP4-], [SP4+] - Suction Pressure Sensor(s) - (0-5VDC)

[W1], [W2], ..., [W12] - Heating stage(s) enable(s) or Aux Heat Stage(s) enable(s)

[+], [-] - Modulating gas reset control signal, 0-10VDC or SCR supply air temperature control signal 0-10VDC

[RV] - Reversing Valve (Heat Pump) Enable

[O] - Reversing Valve (Cooling) Enable

[EH1], [EH2], ..., [EH12] - Emergency Heating stage(s) enable(s)

[HW] - Heat Wheel Enable

[NO], [C], [NC] - Set of normally open and normally closed low voltage heat wheel rotation detection contacts.

[PE1] - Power Exhaust Enable

[B1-], [B2+] - Exhaust fan VFD(s), Discharge Damper Volume Control or ECM control contacts, 0-10VDC.

[A1], [A2] - Economizer override contacts, factory wired together, used to control occupied/unoccupied operation.

[EC1-], [EC2+] - Economizer DDC actuator control signal for 0-10 VDC operation.

[CO2-], [CO2+] - CO2 Sensor (0-10VDC)

[ST1], [ST2] - Remote start/stop contacts, must be closed for unit to operate.

[BA-], [BA+] - Blower Aux contact

[S1-], [S2+] - Supply fan VFD(s) or ECM control contacts, 0-10 VDC.

[PR1-], [PR2+] - Return fan VFD(s) or ECM control contacts, 0-10 VDC.

[C1], [C2], [C3], [C4] - Clogged filter switch contacts, normally open.

[RH1] - Humidistat or DDC control signal, used with reheat coil.

[AI1] & [COM] - Reheat Reset Signal (0-10VDC)

[BI1], [BI2] - Field installed smoke detector or remote Fire Alarm Shutdown contacts, must be closed for unit to operate.

[PBO-], [PBO+] - Phase & Brown Out status



**[CV-], [CV+]** - Proportional (DDC) condenser valve 2-10 VDC

**[BP-], [BP+]** - Proportional (DDC) bypass valve 2-10 VDC

**[COM], [PHO] & [PHC]** - Feedback terminals that can be used to determine if the electric preheat is in operation. PHO is a normally open contact, PHC is a normally closed contact, and COM is the common. These terminals are not required to be connected.

**[PHE]** - 24VAC Electric Preheat Operation Enable. Note that enabling preheat operation does not mean preheat will start. This only allows the preheat controller to start up when preheat is needed based on the temperatures and set points of the preheat controller.

**[PH+], [PH-]** - Preheat set point reset 2-10VDC

## **Variable Air Volume (VAV) Unit Controller**

### **Operation - Variable Air Volume Cooling and Constant Volume Heating**

With standard AAON VAV controls, during the cooling mode of operation the supply fan modulates based on the supply air static pressure while mechanical cooling modulates based on the supply air temperature. During the heating mode of operation the supply fan provides constant airflow and heating modulates based on the controlling temperature.

Factory mounted and tested supply fan VFDs and ECMs are used to vary the speed of the supply fans and thus vary the amount of supply air. Because of the reduced speed, VAV units can be very energy efficient at part load conditions. VAV units can be used to serve multiple spaces with diverse or changing heating and cooling requirements, with only a single unit being required for multiple zones. Space temperature sensor included with WattMaster controller is used for supply air temperature setpoint reset and unoccupied override. See Control Vendors section following for WattMaster, MCS and JENEsys specifics.

### **Required Features**

Feature 1A - Motorized Outside Air Damper or Economizer

Feature 8 - Hot Gas Bypass Lead Stage - Required on units without variable capacity scroll compressors or VFD controlled variable speed scroll compressors.

Feature 13 - VAV Unit Controller

- With VFD controlled variable speed scroll compressor units, hot gas bypass is required on all circuits if the minimum load is less than 50%.
- With RN-90 and RN-105 individually circuited units that include a face split configuration, hot gas bypass is required on all circuits.
- With RN-55, 65, and 75-140 ton tandem circuited units hot gas bypass is required on the lag circuit. RN-90 through 105 ton units include a face split configuration.

### **Standard Supplied Sensors**

Outside Air Temperature

Supply Air Duct Temperature

Supply Air Duct Static Pressure

Return Air Temperature

Space Temperature with Temperature Setpoint Reset and Unoccupied Override (WattMaster)

### **Recommended Features**

Model Option A4 - Variable Capacity Scroll Compressors on all circuits

Model Option B3 - Modulating Gas/SCR Electric

Feature 1 - Economizer and AAONAIRES Energy Recovery Wheel

Feature 2 - Fully Modulating Actuator

Feature 2 - Constant Volume Outside Air

Feature 5 – VFD or ECM Controlled Supply Fans

Feature 8 - Modulating Hot Gas Reheat

Feature 8 - Hot Gas Bypass Lead and Lag Stage - Recommended on all circuits without variable capacity scroll compressors or VFD controlled variable speed scroll compressors.

## **Single Zone Variable Air Volume (Single Zone VAV) Unit Controller**

### **Operation - Variable Air Volume Cooling and Constant Volume/Variable Air Volume Heating**

With standard AAON Single Zone VAV controls, during the cooling mode of operation the supply fan modulates based on the space or return air temperature, while mechanical cooling modulates based on the supply air temperature. For constant volume heating, during the heating mode of operation the supply fan provides constant airflow and heating modulates based on the controlling temperature. For variable air volume heating, during the heating mode of operation the supply fan modulates based on the space or return air temperature and heating modulates based on the supply air temperature.

Factory mounted and tested supply fan VFDs and ECMs are used to vary the speed of the supply fans and thus vary the amount of supply air. Because of the reduced speed, VAV units can be very energy efficient at part load conditions. AAON Single Zone VAV units should be applied to only a single zone. Space temperature sensor included with WattMaster controller is used for supply air temperature setpoint reset and unoccupied override. See Control Vendors section following for WattMaster, MCS and JENEsys specifics.

### **Required Features**

Feature 1A - Motorized Outside Air Damper or Economizer

Feature 8 - Hot Gas Bypass Lead Stage - Required on units without variable capacity scroll compressors or VFD controlled variable speed scroll compressors.

Feature 13 - VAV Unit Controller

- With VFD controlled variable speed scroll compressor units, hot gas bypass is required on all circuits if the minimum load is less than 50%.
- With RN-90 and RN-105 individually circuited units that include a face split configuration, hot gas bypass is required on all circuits.
- With RN-55, 65, and 75-140 ton tandem circuited units hot gas bypass is required on the lag circuit. RN-90 through 105 ton units include a face split configuration.

### **Standard Supplied Sensors**

Outside Air Temperature

Supply Air Duct Temperature

Return Air Temperature

Space Temperature with Temperature Setpoint Reset and Unoccupied Override (WattMaster)

### **Recommended Features**

Model Option A4 - Variable Capacity Scroll Compressors on all circuits

Model Option B3 - Modulating Gas/SCR Electric

Feature 1 - Economizer and AAONAIRES Energy Recovery Wheel

Feature 2 - Fully Modulating Actuator

Feature 2 - Constant Volume Outside Air

Feature 5 – VFD or ECM Controlled Supply Fans

Feature 8 - Modulating Hot Gas Reheat

Feature 8 - Hot Gas Bypass Lead and Lag Stage - Recommended on all circuits without variable capacity scroll compressors or VFD controlled variable speed scroll compressors.



## **Constant Volume (CV) Unit Controller**

### **Operation - Constant Volume Cooling and Constant Volume Heating**

With standard AAON Constant Volume controls, during the cooling mode of operation the supply fan provides constant air flow and mechanical cooling modulates based on the controlling temperature. During the heating mode of operation the supply fan provides constant air flow and heating modulates based on the controlling temperature.

A Constant Volume unit can be used to serve spaces with uniform heating and cooling requirements. Multiple units may be required for multiple zones allowing for redundancy. Space or supply air temperature sensor can be used as the controlling sensor. If supply air temperature is not used as the controlling sensor it is used as a temperature lockout. If supply air temperature sensor is used as the controlling sensor, space temperature sensor is used for supply air temperature setpoint reset and unoccupied override.

See Control Vendors section following for WattMaster, MCS and JENEsys specifics.

### **Required Features**

Feature 1A - Motorized Outside Air Damper or Economizer

Feature 13 - Constant Volume Unit Controller

### **Standard Supplied Sensors**

Outside Air Temperature

Supply Air Duct Temperature

Space Temperature with Temperature Setpoint Reset and Unoccupied Override

### **Recommended Features**

Model Option A1 - Variable Capacity Scroll Compressor

Model Option A3 - Return Air Bypass

Model Option B3 - Modulating Gas/SCR Electric

Feature 1 - Economizer and AAONNAIRE Energy Recovery Wheel

Feature 2 - Fully Modulating Actuator

Feature 3 - Discharge Air Override - Units with gas heating.

Feature 8 - Modulating Hot Gas Reheat



## **Makeup Air (MUA) Unit Controller**

### **Operation - Constant Volume Cooling and Constant Volume Heating**

With standard AAON Makeup Air controls, during the cooling mode of operation the supply fan provides constant airflow and mechanical cooling modulates based on the controlling temperature. During the heating mode of operation the supply fan provides constant airflow and heating modulates based on the controlling temperature.

Makeup Air units are designed to provide 100% outside air to the system for ventilation purposes. Makeup Air units can improve indoor air quality (IAQ) and also be used to positively pressurize the space. See Control Venders section following for WattMaster, MCS and JENEsys specifics.

### **Required Features**

Model Option B - Stainless Steel Heat Exchanger - Units with Gas Heat

Feature 1A - Motorized or Non-Motorized 100% Outside Air

Feature 2 - Two Position Actuator - With Motorized 100% Outside Air

Feature 8 - Hot Gas Bypass Lead Stage - Required on units without variable capacity scroll compressors or VFD controlled variable speed scroll compressors.

Feature 13 - Makeup Air Unit Controller

- With VFD controlled variable speed scroll compressor units, hot gas bypass is required on all circuits if the minimum load is less than 50%.
- With RN-90 and RN-105 individually circuited units that include a face split configuration, hot gas bypass is required on all circuits.
- With RN-55, 65, and 75-140 ton tandem circuited units hot gas bypass is required on the lag circuit. RN-90 through 105 ton units include a face split configuration.

### **Standard Supplied Sensors**

Outside Air Temperature

Supply Air Temperature

### **Recommended Features**

Model Option A1 - Variable Capacity Scroll Compressor

Model Option B3 - Modulating Gas/SCR Electric

Feature 1 - AAONAIRES Energy Recovery Wheel

Feature 8 - Hot Gas Bypass Lag Stage - Units without variable capacity scroll compressors.

Feature 8 - Modulating Hot Gas Reheat

Feature 8 - Hot Gas Bypass Lead and Lag Stage - Recommended on all circuits without variable capacity scroll compressors or VFD controlled variable speed scroll compressors.

## **Digital Precise Air Control (D-PAC) Unit Controller**

### Operation - Constant Volume Cooling and Constant Volume Heating

AAON D-PAC units are constant volume with a variable capacity scroll compressor, return air bypass, modulating hot gas reheat, and space temperature and humidity control. During the cooling mode of operation the supply fan provides constant air flow and mechanical cooling modulates based on the controlling temperature. During the heating mode of operation the supply fan provides constant air flow and heating modulates based on the controlling temperature. The patented D-PAC system provides tight temperature control and superior moisture removal capabilities under all space and outside conditions, while still being energy efficient.

See Control Venders section following for WattMaster, MCS and JENEsys specifics.

### Required Features

Model Option A1 - Variable Capacity Scroll Compressor

Model Option A2 - Return Air Bypass

Feature 2 - DDC Actuator

Feature 8 - Modulating Hot Gas Reheat

Feature 13 - D-PAC Digital Precise Air Controller

### Standard Supplied Sensors

Outside Air Temperature

Supply Air Duct Temperature

Space Temperature with Temperature Setpoint Reset and Unoccupied Override

Space Humidity

Suction Pressure Transducer

### Recommended Features

Model Option B3 - Modulating Gas/SCR Electric

Feature 1 - AAONNAIRE Energy Recovery Wheel



## **Precise Air Control (PAC) Unit Controller**

### **Operation - Constant Volume Cooling and Constant Volume Heating**

AAON PAC units are constant volume units with space temperature and humidity control. During the cooling mode of operation the supply fan provides constant air flow and mechanical cooling modulates based on the controlling temperature. During the heating mode of operation the supply fan provides constant air flow and heating modulates based on the controlling temperature. The PAC system provides temperature control and superior moisture removal capabilities under all space and outside conditions while still being energy efficient. PAC units are the same as D-PAC units without the variable capacity scroll compressor.

See Control Venders section following for WattMaster, MCS and JENEsys specifics.

### **Required Features**

Model Option A2 - Return Air Bypass

Feature 3 - DDC Actuator

Feature 8 - Modulating Hot Gas Reheat

Feature 13 - PAC Precise Air Controller - No variable capacity scroll compressor.

### **Standard Supplied Sensors**

Outside Air Temperature

Supply Air Duct Temperature

Space Temperature with Temperature Setpoint Reset and Unoccupied Override

Space Humidity

Suction Pressure Transducer

### **Recommended Features**

Model Option B3 - Modulating Gas/SCR Electric

Feature 1 - AAONNAIRE Energy Recovery Wheel

# Control Vendors

## WattMaster - Orion™ Controls System



Figure 12 - WattMaster VCM-X Controller

The WattMaster VCM-X unit controller, which is part of the Orion Controls System, can be factory provided and factory installed in AAON RN and RQ Series units. It provides advanced control features, without complexity, in an easy to install and setup package. The VCM-X controller can be individually configured, including setpoint adjustment, sensor status viewing, and occupancy scheduling. It can control VAV, CV, MUA, PAC, and D-PAC units. Additional features and options can be managed by the controller with the addition of modular expansion I/O boards for the controller.

The VCM-X controller can be operated as a Stand Alone System, connected via modular cable to multiple VCM-X controllers in an Interconnected System, or connected via modular cable to multiple VCM-X controllers, VAV/Zone controllers, and Add-On controllers in a Networked System.

Protocol Adaptability™ is available from WattMaster for interfacing to LonWorks®, BACnet® or Johnson Controls N2 controls systems with the addition of specific gateways.

### Required Options

To configure the VCM-X controller, an operator interface is needed. Available operator interfaces are the Modular Service Tool, Modular System Manager, System Manager TS, Tactio SI Touch Screen Interface connected via a Commlink II and a PC equipped with free Microsoft Windows® based Orion Prism II software connected via a Commlink II. With optional accessories, remote connectivity to the controller via Prism II software can be accomplished.

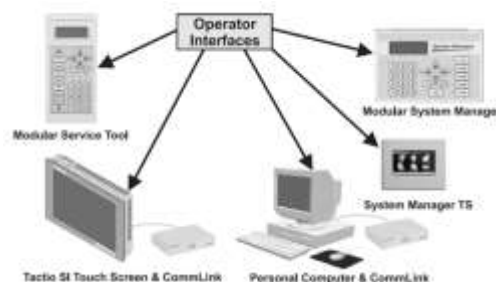


Figure 13 - VCM-X Controller Operator Interfaces

## WattMaster - Orion™ Controls System

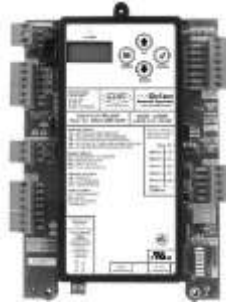


Figure 14 - WattMaster VCB-X Controller

The WattMaster VCB-X unit controller, which is part of the Orion Controls System, can be factory provided and factory installed in AAON RN and RQ Series units. It provides advanced control features, without complexity, in an easy to install and setup package. The VCB-X controller can be individually configured, including setpoint adjustment, sensor status viewing, and occupancy scheduling. It can control VAV, CV, MUA, and Single Zone VAV units. Additional features and options can be managed by the controller with the addition of modular expansion I/O boards for the controller.

The VCB-X controller can be operated as a Stand Alone System, connected via modular cable to multiple VCB-X controllers in an Interconnected System, or connected via modular cable to multiple VCB-X controllers, VAV/Zone controllers, and add-on controllers in a Networked System.

Protocol Adaptability™ is available from WattMaster for interfacing to LonWorks®, BACnet® or Johnson Controls N2 controls systems with the addition of specific gateways.

### Required Options

To configure the VCB-X controller an operator interface is needed. Available operator interfaces are the Modular Service Tool, Modular System Manager, System Manager TS, Tactio SI Touch Screen Interface connected via a Commlink II and a PC equipped with free Microsoft Windows® based Orion Prism II software connected via a Commlink II. With optional accessories, remote connectivity to the controller via Prism II software can be accomplished.

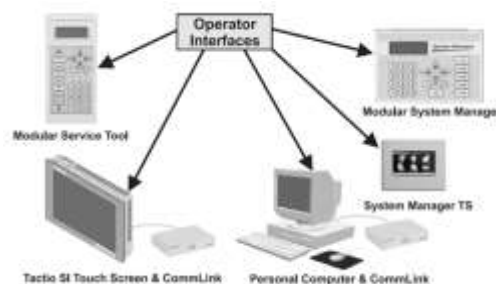


Figure 15 - VCB-X Controller Operator Interfaces

## WattMaster - Orion™ Controls System

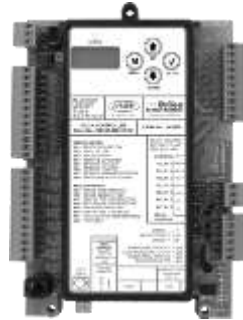


Figure 16- WattMaster VCC-X Controller

The WattMaster VCC-X unit controller, which is part of the Orion Controls System, can be factory provided and factory installed in AAON RN units. It provides advanced control features, without complexity, in an easy to install and setup package. The VCC-X controller can be individually configured, including setpoint adjustment, sensor status viewing, and occupancy scheduling. It can control VAV, CV, MUA, Single Zone VAV, PAC, and D-PAC units. Additional features and options can be managed by the controller with the addition of modular expansion I/O boards for the controller.

The VCC-X controller can be operated as a Stand Alone System, connected via modular cable to multiple VCC-X controllers in an Interconnected System, or connected via modular cable to multiple VCC-X controllers, VAV/Zone controllers, and Add-On controllers in a Networked System.

Protocol Adaptability™ is available from WattMaster for interfacing to LonWorks®, BACnet® or Johnson Controls N2 controls systems with the addition of specific gateways.

### Required Options

To configure the VCC-X controller, an operator interface is needed. Available operator interfaces are the Modular Service Tool, Modular System Manager, System Manager TS, Tactio SI Touch Screen Interface connected via a Commlink II and a PC equipped with free Microsoft Windows® based Orion Prism II software connected via a Commlink II. With optional accessories, remote connectivity to the controller via Prism II software can be accomplished.

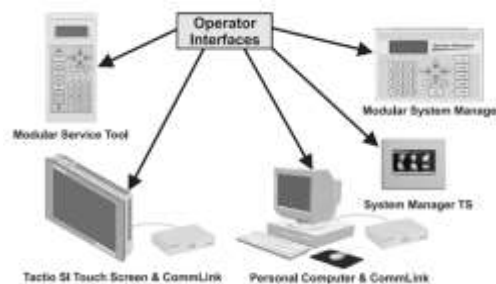


Figure 17- VCC-X Controller Operator Interfaces

## AAON JENEsys Controls System



Figure 18 - AAON JENEsys Controller

The AAON JENEsys controller, powered by Niagara<sup>AX</sup> Framework<sup>TM</sup>, is an Internet-based stand-alone controller developed for network applications which can be factory provided and factory installed in AAON RN and RQ Series units. It can be configured to control VAV, CV, MUA, PAC and D-PAC units, as well as other custom controls solutions. The controller is IP addressable, can reside on a TCP/IP network and can have all unit and system functions controlled with an Internet browser in real-time; including setpoint adjustment, scheduling, alarming, trending, logging, and diagnostics.

### *Interoperability*

The JENEsys controller can be directly integrated into Fox, LonWorks<sup>®</sup>, BACnet<sup>®</sup>, Modbus<sup>®</sup> and other widely-used building automation systems. Connections included on controller include two RJ-45 Ethernet ports, one RS-232 port and one RS-485 port. No external devices are needed for integration.

### *Scalability*

The JENEsys controller is scalable with up to one 34 I/O point and two 16 I/O point expansion modules available to manage additional features and options. Individual sensor options and unit control options are also scalable with extra sensors available to be added to any controls package.

### *Security*

The JENEsys controller uses XML security functions that cover platform, administration and user access. Thus, operational control of the unit controller will be allowed only to those who need it.

Contact the Applications Department for more information.

### Required Options

In order to configure the JENEsys controller, a PC connected directly to the controller or connected to the TCP/IP network that the controller resides on is needed. From the PC, direct Internet browser control is then available.



## Micro Control Systems (MCS) Magnum Control System



Figure 19 - LCD Interface, MCS Magnum Controller, and Touchscreen Interface

The MCS Magnum controller efficiently varies the capacity of the compressors to maintain a temperature setpoint over a wide variety of operating conditions for VAV, Constant Volume, or Makeup Air applications.

### *Configuration*

Standard LCD interface is included within the controls compartment for unit configuration, setpoint adjustment, sensor status viewing, unit alarm viewing, and occupancy scheduling. PC with free MCS-Connect software can be connected to the controller via RS-232 or Ethernet for unit configuration, setpoint adjustment, sensor status viewing, unit alarm viewing, and occupancy scheduling. Optional full color 15" 1024x768 pixel touchscreen interface is available, and includes graphical user interface that allows for easy monitoring and troubleshooting of the unit. Unit, controls, compressor, and VFD literature can be viewed from the touchscreen.

### *Diagnostics*

Optional diagnostic sensors are available to provide each refrigerant circuit's suction, discharge and liquid temperature and pressure and also monitor each compressor's current. These sensors can be monitored from the MCS-Connect software.

### *Network Capability*

The MCS Magnum controller can be directly integrated with BACnet IP or Modbus IP protocols via Ethernet port and Modbus RTU or Johnson N2 protocols via EIA-485 port. With adapter, the controller can be integrated with BACnet MS/TP or LonTalk protocols. Optional 56K modem allows remote communication to the unit from MCS, AAON, or the customer to assist with service, diagnosis, and program updates.

## AAON Mini Controller



Figure 20 - Remote Mounted AAON Mini Controller

The AAON Mini Controller is a simple controls option for energy saving applications. It is remote mounted in the space similar to a conventional thermostat.

### *Controllable Features*

A lead/single variable capacity scroll compressor (with up to two total compressor stages), air conditioner or heat pump configuration, ECM driven/VFD controlled variable speed supply fan, sensible or enthalpy controlled economizer and modulating gas/SCR electric heating are controllable with the AAON Mini Controller. Modulating hot gas reheat is available with a space temperature sensor and space relative humidity sensor version of the controller. Push button override, alarms and trend logging are available directly from the controller.

### *Applications*

The controller can be used for constant volume air conditioner and heat pump applications or single zone VAV air conditioner and heat pump applications.

### *Scheduling*

Weekday, weekend, entire week or daily scheduling is available with the AAON Mini Controller. Twelve days of holiday scheduling are also available.

### *Networking*

The AAON Mini Controller can be directly connected to a BACnet<sup>®</sup> MSTP network through an EIA-485 connection. The MAC Address, Baud Rate and Max Master are configurable.

### *Security*

The AAON Mini Controller includes password protected User, Operator and Administrator profiles for configuration, scheduling and setpoint adjustment levels of control.

### Required Options

The AAON Mini Controller is available on 3-25 and 30 ton RN and RQ Series units with a variable capacity compressor and either Constant Volume or Single Zone VAV unit controller selected. 1-3 stages of heat are available with an air conditioner and 1-2 stages of emergency heat are available with a heat pump. The controller has a limited quantity of inputs and outputs and thus the quantity of features which can be controlled and are available in AAON ECat are limited.

# Electrical Service Sizing Data

Use the following equations to size the electrical service wiring and disconnect switch for the unit. Electrical data for a specific unit configuration can be found with the AAON ECat software. For further assistance in determining the electrical ratings, contact the Applications Department, or consult U.L. 1995.

The Minimum Circuit Ampacity (MCA) and Maximum Overcurrent Protection (MOP) must be calculated for all modes of operation which include the cooling mode of operation, the heating mode of operation, and if the unit is a heat pump the emergency heating mode of operation and auxiliary heating mode of operation. The emergency or backup heating mode of operation is when the secondary heater is in operation and heat pump or compressor heating is not in operation. The auxiliary or supplemental heating mode of operation is when heat pump or compressor heating is in operation and the secondary heater is also in operation.

To calculate the MCA and MOP, the number of motors and other current drawing devices in operation must be known for each mode of operation. The largest MCA and MOP values calculated from all the modes operation are the correct values and are also on the unit nameplate.

For example, during the cooling mode of operation of an air-cooled DX unit or an air-source heat pump the supply fans, compressors, and condenser fans are all in operation. During the heating mode of operation of an air-cooled DX unit or the emergency heating mode of operation of an air-source heat pump only the supply fans and heater are in operation. During the auxiliary heating mode of operation of an air-source heat pump the supply fans, compressors, condenser fans, and secondary heater are all in operation.

Once it is determined what current drawing devices are operating during each mode of operation use the equations shown below to calculate the MCA and MOP.

Use Rated Load Amps (RLA) for compressors and Full Load Amps (FLA) for all other motors and electric heaters. Exhaust fan motor current should only be added to the calculations if the unit is 10 tons and smaller, includes a two position actuator (Feature 2 = U), has no compressors, includes an energy recovery wheel and/or when DDC controls by others factory or field installed is ordered.

- Load 1 = Current of the largest motor/compressor in operation
- Load 2 = Sum of the currents of the remaining motors/compressors in operation
- Load 3 = Current of electric heaters in operation
- Load 4 = Any remaining loads greater than or equal to 1 amp

## Electric Heat FLA Calculation

Single Phase

Three Phase

$$FLA = \frac{(Heating\ Element\ kW) \times 1000}{Rated\ Voltage}$$

$$FLA = \frac{(Heating\ Element\ kW) \times 1000}{(Rated\ Voltage) \times \sqrt{3}}$$

## Electrical Service Sizing Data Continued

### Cooling Mode Equations

$$\text{MCA} = 1.25(\text{Load 1}) + \text{Load 2} + \text{Load 4}$$

$$\text{MOP} = 2.25(\text{Load 1}) + \text{Load 2} + \text{Load 4}$$

### Heating Mode or Emergency/Backup Heating Mode without Electric Heat Equations

$$\text{MCA} = 1.25(\text{Load 1}) + \text{Load 2} + \text{Load 4}$$

$$\text{MOP} = 2.25(\text{Load 1}) + \text{Load 2} + \text{Load 4}$$

### Heating Mode or Emergency/Backup Heating Mode with Less than 50 kW of Electric Heat Equations

$$\text{MCA} = 1.25(\text{Load 1} + \text{Load 2} + \text{Load 3} + \text{Load 4})$$

$$\text{MOP} = 2.25(\text{Load 1}) + \text{Load 2} + \text{Load 3} + \text{Load 4}$$

### Heating Mode or Emergency/Backup Heating Mode with Greater than or Equal to 50 kW of Electric Heat Equations

$$\text{MCA} = 1.25(\text{Load 1} + \text{Load 2}) + \text{Load 3} + 1.25(\text{Load 4})$$

$$\text{MOP} = 2.25(\text{Load 1}) + \text{Load 2} + \text{Load 3} + \text{Load 4}$$

### Auxiliary/Supplemental Heating Mode without Electric Heat Equations

$$\text{MCA} = 1.25(\text{Load 1}) + \text{Load 2} + \text{Load 4}$$

$$\text{MOP} = 2.25(\text{Load 1}) + \text{Load 2} + \text{Load 4}$$

### Auxiliary/Supplemental Heating Mode with Less than 50 kW of Electric Heat Equations

$$\text{MCA} = 1.25(\text{Load 1}) + \text{Load 2} + 1.25(\text{Load 3}) + \text{Load 4}$$

$$\text{MOP} = 2.25(\text{Load 1}) + \text{Load 2} + \text{Load 3} + \text{Load 4}$$

### Auxiliary/Supplemental Heating Mode with Greater than or Equal to 50 kW of Electric Heat Equations

$$\text{MCA} = 1.25(\text{Load 1}) + \text{Load 2} + \text{Load 3} + \text{Load 4}$$

$$\text{MOP} = 2.25(\text{Load 1}) + \text{Load 2} + \text{Load 3} + \text{Load 4}$$

## Electrical Service Sizing Data Continued

### Fuse Selection

Select a fuse rating equal to the MOP value. If the MOP does not equal a standard fuse rating select the next lower standard fuse rating. If the MOP is less than the MCA then select the fuse rating equal to or greater than the MCA.

The standard ampere ratings for fuses, from the *NEC Handbook, 240-6*, shall be considered 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250, 300, 350, 400, 450, 500, 600, 700, 800 and 1000 amperes.

### Disconnect (Power) Switch Size

$DSS \geq MOP$

Select the standard switch size equal to the calculated MOP value. If this value is not a standard size, select the next larger size.

## Literature Change History

### **July 2009**

Update of catalog adding 9-15 ton RN Series B cabinet unit information.

### **August 2009**

Update of catalog to clarify that Feature 1A Empty Energy Recovery Wheel options do not include energy recovery wheel filters.

### **September 2009**

Update of the catalog adding the Feature 13 heat pump controls options and Feature 21 SMO 254 brazed plate refrigerant-to-water heat exchanger options and removing R-22 information and unit drawings.

### **November 2009**

Update of the catalog adding 6-8 and 10 ton RN Series A cabinet unit information.

### **March 2010**

Update of the catalog adding 2-6 ton RQ Series unit information. RN-020 and RN-040 variable capacity compressor sizes were changed from using 7 and 10 ton VCCs to 9 ton VCCs.

### **June 2010**

Update of the VAV controller description to include single zone. Added RN series B cabinet high cfm energy recovery wheel information.

### **August 2010**

Update of Feature 9 for the RN Series to include ECM condenser fans.

### **September 2010**

Correction of RN 9 and 11-15 ton option B metal mesh filter quantity.

### **December 2010**

Update of Feature 1A to include 100% return air option. Update of Feature 13 to include single zone VAV options. Update of Feature 15 to include Glycol Percentage options. Update of Feature 22 and controls vendors description to include the Remote Mini Controller option. Standard Efficiency motor options (Features 1B and 5A) were removed. Catalog is updated to include changes to the controls by others options.

### **January 2011**

Stainless steel coil casing options (Model Option A3) were removed for RQ Series units.

### **June 2011**

Updated 2" pleated 30% efficient filters from MERV 7 to MERV 8.

**March 2012**

Update of catalog to include RN unit sizes of 55, 65 and 75-140 tons. Catalog is updated to include AAON JENEsys controls.

**June 2012**

Updated enthalpy changeover switch information. Enthalpy changeover switch adjustment details have been added to the IOM. Added Seismic options to Feature 19.

**December 2012**

Update of the catalog adding VFD controlled condenser fan option, correcting RN E cabinet gas connections from one to two required connections, adding the RN-E cabinet modulating gas heater turndown, adding RN E cabinet chilled water coil connection requirements.

**June 2013**

Added new model and feature options including microchannel condenser coil option for 55-140 ton units. Added microchannel coil cleaning section.

**September 2013**

Changed tables for filters and pre filters for 55, 65, and 75-140 ton units to be correct sizes. Changed Model Option A1=J to be for water-cooled RN-E units only. Changed the required and recommended model and feature options for VAV, Single Zone VAV, and MUA configurations for proper operation.

**February 2014**

Added electric preheat options for 2-6 ton RQ Series and 6-25 and 30 ton RN Series units. Corrected maximum airflow through energy recovery wheel values under Feature 1A.

**March 2014**

Corrected metal mesh filter size for 26, 31-50, 60, and 70 ton units.

**June 2014**

Updated the AAONAIRES Unit Capacities tables.

**July 2014**

Added VCB-X features and information. Added 380V/50Hz voltage option.

**August 2014**

Added the steam heating coil maximum operating pressure. Added energy recovery wheel v-bank filter sizes. Corrected the 4 stage gas heat staging capacities.

**November 2014**

Added R-410A VFD Tandem Compressors Feature. Added WattMaster VCC-X controls system to the Control Vendors Feature.

**January 2015**

Updated the *Gas Heat Output Capacities* table for options 1, 3, 5, and 7.

**February 2015**

Added Horizontal Discharge Curb Cutting Rules.

**March 2015**

Updated the *Interior Corrosion Protection* coverage for all applicable options.

**May 2015**

Updated Table 23 *RN Series E Cabinet (55, 65, 75, and 90 tons) DX Cooling Information* Tandem Circuited Compressor Number of Circuits for Model 090 ton to 2, Face Split.

**July 2015**

Removed 2" Throwaway Unit Filter-25% Efficient from Filter Replacement information.

**August 2015**

Updated *Low Limit Controls* description.

**September 2015**

Updated RQ Metal Mesh size.

**July 2015**

Updated Natural Gas modulation to show turndown.

**November 2015**

Updated Feature 6B on RN Pre Filters tables.

**January 2016**

Updated Energy Recovery Wheel filter sizes for RN Series 55, 65, and 75-140 tons.

**March 2016**

Updated Metal Mesh Pre Filter quantity for RN-E cabinet. Updated RN-D cabinet energy recovery filters quantity and size for outside air preheat.











**AAON**  
**2425 South Yukon Ave.**  
**Tulsa, OK 74107-2728**  
**Phone: 918-583-2266**  
**Fax: 918-583-6094**  
**[www.aaon.com](http://www.aaon.com)**

**RN/RQ Series Engineering Catalog**  
**R71120 · Rev. D · 160309**

It is the intent of AAON to provide accurate and current product information. However, in the interest of product improvement, AAON reserves the right to change pricing, specifications, and/or design of its product without notice, obligation, or liability.

Copyright © AAON, all rights reserved throughout the world.  
AAON® and AAONAIRE® are registered trademarks of AAON, Inc., Tulsa, OK.