

**189BNV EVOLUTION® V  
VARIABLE SPEED AIR CONDITIONER  
WITH PURON® REFRIGERANT  
2, 3, AND 4-TON  
(5-TON COMING Q4 2014)**



## Product Data



The Evolution V air conditioner offers high-efficiency variable speed performance in a remarkably small cabinet and provides up to 19 SEER cooling efficiency. The variable speed inverter capacity control delivers up to 5 stages of operation for exceptional load matching, dehumidification and zoning performance.

This product has been designed and manufactured to provide flexible system matching and work with a wide variety of indoor units and controls.

**NOTE: Ratings contained in this document are subject to change at any time. Always refer to the AHRI directory ([www.ahridirectory.org](http://www.ahridirectory.org)) for the most up-to-date ratings information.**

### INDUSTRY LEADING FEATURES / BENEFITS

#### Energy Efficiency

- Up to 19 SEER / up to 12.5 EER
- Microtube Technology™ refrigeration system

#### Sound

- Sound level as low as 56 dBA in low speed (Silencer System II).
- Soft start and smooth ramp to operating speeds

#### Comfort

- Variable speed compressor operates at 5 stages with capacity range from as wide as 25-100%
- Air cooled Inverter variable speed drive
  - System requires Evolution® Connex™ Control with version 11 software or newer for 5 stage operation
  - Ratings provided with 2-stage thermostats and suitable non-communicating indoor products for 2-stage operation.

#### Reliability

- Puron® refrigerant - environmentally sound, won't deplete the ozone layer and low lifetime service cost.
- Front-seating service valves
- Inverter control drives compressor and fan motor
- No control module attached to fan motor
- Evolution intelligence monitors critical system parameters
- Pressure equalizer valve for easy compressor starting
- High pressure switch
- Suction pressure transducer
- Compressor discharge temperature sensor
- Suction temperature sensor
- Filter drier (field installed)
- Internal crankcase heater standard

#### Flexibility and installation:

- 2 control wires to outdoor unit in complete Evolution system and Control
- Smaller and lighter than 2-stage units
- Minimum and Maximum adjustments with Evolution® Connex™ Control
- Compatible with non-communicating thermostats

#### Durability

DuraGuard™ protection package:

- Solid, Durable sheet metal construction
- Steel louver coil guard
- Baked-on, complete outer coverage, powder paint

#### Applications

- Line sets up to 100 ft (30.5 m) equivalent length
- No long-line accessories required.

## MODEL NUMBER NOMENCLATURE

1	2	3	4	5	6	7	8	9	10	11	12	14
N	N	N	A	A/N	N	N	N	N	A/N	A/N	N	A
1	8	9	B	N	V	0	3	6	0	0	0	A
Product Family 1=AC	Tier 8= Evolution Series	SEER 9 = 19 SEER	Major Series B=Puron	Voltage N= 208–230–1 or 208/230–1	Variations V = Variable Speed	Cooling Capacity			Open 0=Not Defined	Open 0=Not Defined	Open 0=Not Defined	Series A = Original Series



Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program. For verification of certification for individual products, go to [www.ahridirectory.org](http://www.ahridirectory.org).



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## STANDARD FEATURES

FEATURES	Unit Size – Voltage, Series			
	024–A	025–A	036–A	048–A
Puron Refrigerant	X	X	X	X
Variable Speed Rotary Compressor	X	X	X	X
Air–Cooled Integrated Inverter Drive	X	X	X	X
Louvered Coil Guard	X	X	X	X
Field Installed Filter Drier	X	X	X	X
Front Seating Service Valves	X	X	X	X
Internal Pressure and Temperature Protection	X	X	X	X
Suction Pressure Transducer	X	X	X	X
High Pressure Switch	X	X	X	X
Internal Crankcase Heater	X	X	X	X
Enhanced Diagnostics with Evolution® Connex™ Control (version 11 software or newer)	X	X	X	X
Deluxe Sound Blanket	X	X	X	X
Outdoor Air Temperature Sensor	X	X	X	X

X = Standard

# REFRIGERANT PIPING LENGTH LIMITATIONS

## Maximum Line Lengths:

The maximum allowable total equivalent length for air conditioners can vary depending on the vertical separation. See the tables below for allowable lengths depending on whether the outdoor unit is on the same level, above or below the outdoor unit.

### Maximum Line Lengths for Air Conditioner Applications

	MAXIMUM ACTUAL LENGTH ft (m)	MAXIMUM EQUIVALENT LENGTH† ft (m)	MAXIMUM VERTICAL SEPARATION ft (m)
Units on equal level	100 (30.5)	100 (30.5)	N/A
Outdoor unit ABOVE indoor unit	100 (30.5)	100 (30.5)	100 (30.5)
Outdoor unit BELOW indoor unit	See Table 'Maximum Total Equivalent Length: Outdoor Unit BELOW Indoor Unit'		

† Total equivalent length accounts for losses due to elbows or fitting. See the Long Line Guideline for details.

### Maximum Total Equivalent Length† - Outdoor Unit BELOW Indoor Unit

Size	Liquid Line Diameter w/ TXV	HP with Puron® Refrigerant – Maximum Total Equivalent Length† Vertical Separation ft (m) Outdoor unit BELOW indoor unit;						
		0–20 (0 – 6.1)	21–30 (6.4 – 9.1)	31–40 (9.4 – 12.2)	41–50 (12.5 – 15.2)	51–60 (15.5 – 18.3)	61–70 (18.6 – 21.3)	71–80 (21.6 – 24.4)
2–Ton	3/8	100*	100*	100*	100*	100*	100*	100*
3–Ton	3/8	100*	100*	100*	100*	100*	100*	100*
4–Ton	3/8	100*	100*	100*	100*	100	100	--

\* Maximum actual length not to exceed 100 ft (30.5 m)

† Total equivalent length accounts for losses due to elbows or fitting.

-- = outside acceptable range

## LONG LINE APPLICATIONS

Unit is approved for up to 100 ft (30.5 m) equivalent length and vertical separations shown above with no additional accessories. Longer line set applications are not permitted.

## COOLING CAPACITY LOSS TABLE

Nominal Size (Btuh)	Line OD (in.)	189BNV Cooling Capacity Loss (%)				
		Total Equivalent Line Length (ft)				
		25	50	75	80	100
024–A	5/8	0.5	1.2	1.8	1.9	2.4
	3/4	0.1	0.4	0.6	0.7	0.8
	<b>7/8</b>	0.0	0.1	0.3	0.3	0.4
025–A	5/8	0.5	1.2	1.8	1.9	2.4
	3/4	0.1	0.4	0.6	0.7	0.8
	<b>7/8</b>	0.0	0.1	0.3	0.3	0.4
036–A	5/8	1.1	2.4	3.7	4.0	5.0
	3/4	0.3	0.8	1.3	1.4	1.8
	<b>7/8</b>	0.0	0.3	0.5	0.6	0.8
048–A	3/4	0.7	1.6	2.4	2.6	3.2
	7/8	0.3	0.7	1.1	1.2	1.6
	<b>1 1/8</b>	0.0	0.1	0.2	0.3	0.4

Rating Line Size in **Bold**

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## MIN/MAX AIRFLOW TABLES

The indoor airflow delivered by this system varies significantly based on outdoor temperature, indoor unit combination, and system demand. The airflows on these tables are for duct design considerations. Duct systems capable of these ranges will ensure

the system will deliver full capacity at all outdoor temperatures. Minimum and maximum airflows can be adjusted from these numbers in the Evolution Control Setup screen.

Cooling – Comfort Mode			Minimum Cooling (Dehum or Zoning)
Size	Max Capacity Airflow	Highest Min Capacity Airflow	
2–Ton	739	263	222
3–Ton	990	289	236
4–Ton	1389	542	457

Cooling – Efficiency Mode		
Size	Max Capacity Airflow	Highest Min Capacity Airflow
2–Ton	825	585
3–Ton	1050	600
4–Ton	1400	875

### LEGEND::

**Max Capacity Airflow** – Stage 5 airflow varies depending on conditions. This is the highest airflow the system will attempt to deliver in this particular mode. Ductwork for non-zoned systems should be sized for this airflow to ensure the system can deliver full capacity when needed. Improper duct design may result in excessive airflow noise and/or cutback occurrences at max airflow conditions.

**Highest Min. Capacity Airflow** – Stage 1 airflow also varies depending on conditions. In zoned systems, each zone must be capable of delivering this airflow for the system to deliver full capacity into the zone. Otherwise, airflow may be diverted to other zones or cutback may occur.

**Min Cooling (Dehum or Zoning)** – Lowest airflow the system will deliver. May operate down to this airflow in dehumidification mode or in zoning applications where ductwork restrictions have caused the blower to cut-back.

## PHYSICAL DATA

UNIT SIZE SERIES	024–A	025–A	036–A	048–A
Operating Weight lb (kg)	160 (72.6)	160 (72.6)	160 (72.6)	216 (100.0)
Shipping Weight lb (kg)	186 (72.6)	186 (72.6)	186 (72.6)	255 (115.7)
Compressor Type	Variable Speed Rotary			
REFRIGERANT	Puron® (R-410A)			
Control	TXV (Puron® Hard Shutoff)			
Charge lb (kg)	5.5 (2.50)	5.5 (2.50)	6.0 (2.72)	7.5 (3.40)
COND FAN	Forward Swept Propeller Type, Direct Drive			
Air Discharge	Vertical			
Air Qty (CFM)	2500	2500	2500	4500
Motor HP	1/3	1/3	1/3	1/3
Motor RPM	1050	1050	1050	850
COND COIL				
Face Area (Sq ft)	13.90	13.90	13.90	21.50
Fins per In.	20	20	20	20
Rows	1	1	1	1
Circuits	6	6	6	8
VALVE CONNECT. (In. ID)				
Vapor	3/4	3/4	3/4	7/8
Liquid	3/8		3/8	
REFRIGERANT TUBES (In. OD)				
Rated Vapor*	7/8	7/8	7/8	1–1/8
Max Liquid Line	3/8		3/8	

\* Units are rated with 25 ft (7.6 m) of lineset length. See Vapor Line Sizing and Cooling Capacity Loss table when using other sizes and lengths of lineset.

**Note:** See unit Installation Instruction for proper installation.

## ACCESSORIES

KIT NUMBER	KIT NAME	24-30	25-30	36-30	48-30
KSASF0201AAA	SUPPORT FEET	X	X	X	
KSASF0101AAA	SUPPORT FEET				X
KSATX0201PUR	TXV	X	X		
KSATX0301PUR	TXV			X	
KSATX0401PUR	TXV				X

x = Accessory S = Standard

### Accessory Description and Usage

#### Support Feet

Raises unit above base pad. 2 and 3 ton kit contains 5 feet for stable installation with small base. 4 and 5 ton kit contains 4 feet.

Usage Guideline:

Recommended for rooftop applications

#### Thermostatic Expansion Valve (TXV)

A modulating flow-control valve which meters refrigerant liquid flow rate into the evaporator in response to the superheat of the refrigerant gas leaving the evaporator.

Usage Guideline:

Required if indoor unit does not already contain Puron® refrigerant TXV

## CONTROLS

SYSTXBBECN01-A	Evolution Connex Control (non-Wi-Fi) version 11 or newer
SYSTXBBECC01-A	Evolution Connex Control (Wi-Fi)
SYSTXBBECW01-A	Evolution Connex Control with Wi-Fi & Wireless Access Point
SYSTXBBNIM01	Evolution Network Interface Module (Connects Heat Recovery and Energy Recovery Ventilators on non-zoning applications.)
SYSTXBB4ZC01	Evolution 4-Zone Damper Control Module
SYSTXBBSMS01-E	Evolution Smart Sensor

## THERMOSTATS

PART NUMBER	PROGRAM	GAS	ELECTRIC	HEAT	COOL
T6-PAC01	7-Day	√	√	1	1
T6-NRH01-A	NP	√	√	3	2
T6-NAC01	NP	√	√	1	1

# ELECTRICAL DATA

UNIT SIZE - VOLTAGE, SERIES	V/PH	OPER VOLTS*		COMPR		FAN	MCA	MIN WIRE SIZE†	MIN WIRE SIZE†	MAX LENGTH ft (m)‡	MAX LENGTH ft (m)‡	MAX FUSE* * or CKT BRK AMPS
		MAX	MIN	LRA	RLA	FLA		60°C	75°C	60°C	75°C	
024-A	208-230-1	253	197	N/A	17.7	1.2	23.6	12	12	52 (15.9)	50 (16.2)	40
025-A				N/A	17.7	1.2	23.6	12	12	52 (15.9)	50 (16.2)	40
036-A				N/A	18.3	1.2	24.4	12	12	51 (15.5)	48 (14.6)	40
048-A				N/A	25.1	1.2	31.4	10	10	64 (19.5)	60 (18.3)	50

\* Permissible limits of the voltage range at which the unit will operate satisfactorily

† If wire is applied at ambient greater than 30°C, consult table 310-16 of the NEC (NFPA 70). The ampacity of non-metallic-sheathed cable (NM), trade name ROMEX, shall be that of 60°C conditions, per the NEC (NFPA 70) Article 336-26. If other than uncoated (no-plated), 60 or 75°C insulation, copper wire (solid wire for 10 AWG or smaller, stranded wire for larger than 10 AWG) is used, consult applicable tables of the NEC (NFPA 70).

‡ Length shown is as measured 1 way along wire path between unit and service panel for voltage drop not to exceed 2%.

\*\* Time-Delay fuse.

FLA - Full Load Amps

LRA - Locked Rotor Amps

MCA - Minimum Circuit Amps

RLA - Rated Load Amps

NOTE: Control circuit is 24-V on all units and requires external power source. Copper wire must be used from service disconnect to unit.

All motors/compressors contain internal overload protection.

Complies with 2010 requirements of ASHRAE Standards 90.1

## CHARGING SUBCOOLING (TXV-TYPE EXPANSION DEVICE)

UNIT SIZE - VOLTAGE, SERIES	
024-A	If a Connex™ Control is installed, subcooling recommendation displayed in Charging Mode must be followed. If not, subcooling chart shown on the charging label must be followed
025-A	
036-A	
048-A	

## SOUND POWER LEVEL (dBA)

Unit Size - Voltage, Series	Typical Octave Band Spectrum (without tone adjustment)	Min Speed Cooling	Max Speed Cooling
024-A	Freq (Hz)	1200 RPM	3300 RPM
	125	40.4	43.9
	250	44.4	53.9
	500	46.3	61.8
	1000	45.0	59.0
	2000	37.2	56.7
	4000	31.0	60.0
	8000	28.4	45.4
	Sound Rating (dBA)	56.0	71.0
025-A	Freq (Hz)	1200 RPM	3300 RPM
	125	40.4	45.4
	250	44.4	57.9
	500	46.3	61.3
	1000	45.0	58.0
	2000	37.2	54.7
	4000	31.0	52.0
	8000	28.4	41.9
	Sound Rating (dBA)	56.0	69.0
036-A	Freq (Hz)	1200 RPM	4800 RPM
	125	40.4	43.9
	250	44.4	53.9
	500	46.3	61.8
	1000	45.0	59.0
	2000	37.2	56.7
	4000	31.0	60.0
	8000	28.4	45.4
	Sound Rating (dBA)	56.0	71.0
048-A	Freq (Hz)	1500 RPM	4320 RPM
	125	40.9	42.4
	250	46.4	54.4
	500	47.3	60.3
	1000	56.5	63.5
	2000	39.2	56.7
	4000	35.0	56.0
	8000	31.9	44.9
	Sound Rating (dBA)	62.0	72.0

NOTE: Tested in compliance with AHRI 270-2008 but not listed with AHRI.

# RPM-CAPACITY-SOUND (dBA)\*

STAGE #	COMP RPM	CAPACITY %	SOUND (dBA)
<b>189BNV024</b>			
1	1200	36%	56
2	1900	58%	61
3	2400	73%	64
4	2600	79%	68
5	3300	100%	71
<b>189BNV025</b>			
1	1200	36%	56
2	1900	58%	61
3	2400	73%	63
4	2600	79%	67
5	3300	100%	69
<b>189BNV036</b>			
1	1200	25%	56
2	2400	50%	61
3	3300	69%	65
4	4200	88%	69
5	4800	100%	71
<b>189BNV048</b>			
1	1500	35%	62
2	2460	57%	65
3	2800	65%	67
4	3650	84%	70
5	4320	100%	72

\*Estimated sound for stages 2, 3, and 4

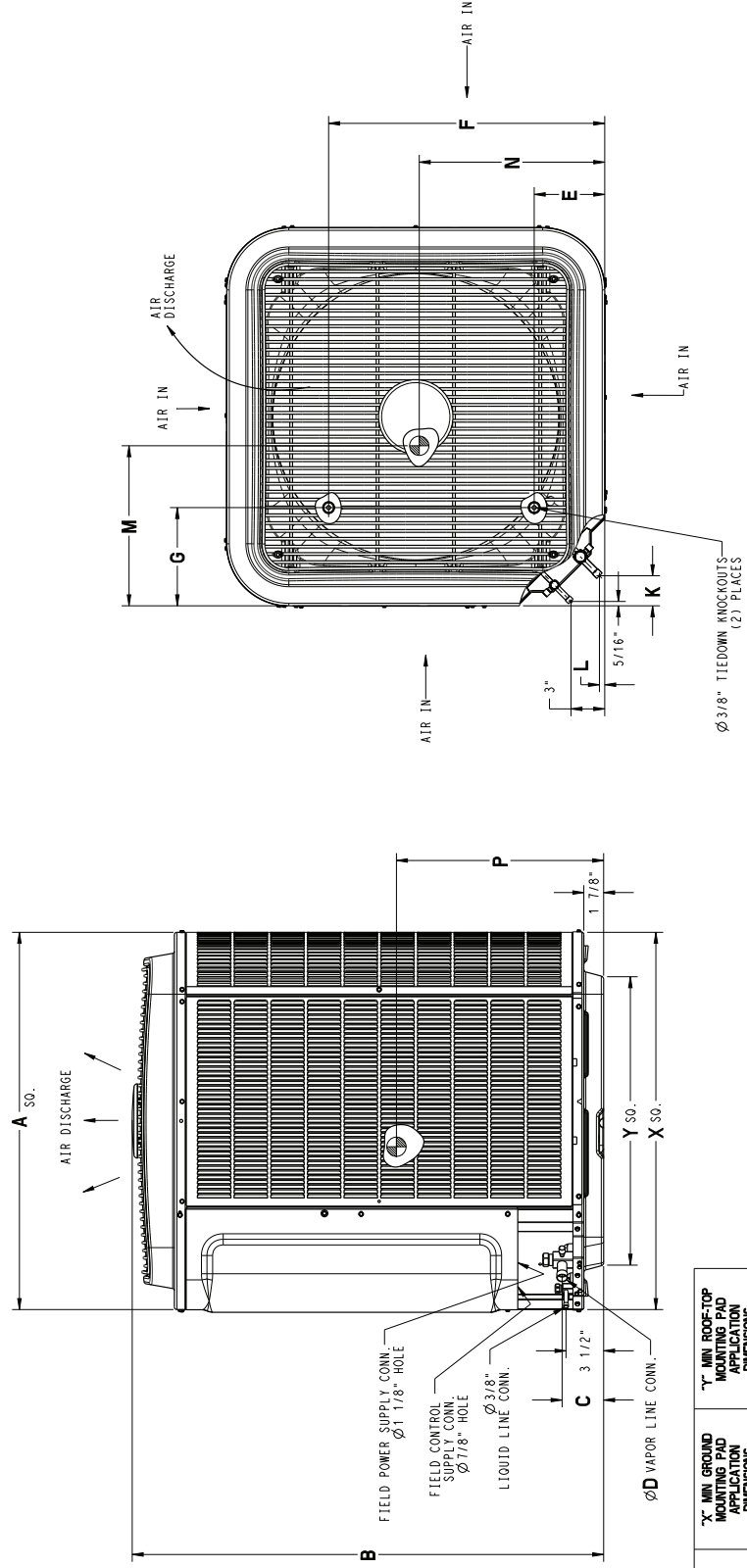
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**DIMENSIONS - ENGLISH**

UNIT	SERIES	ELECTRICAL CHARACTERISTICS	A	B	C	D	E	F	G	K	L	M	N	P	OPERATING WEIGHT (lbs)	SHIPPING WEIGHT (lbs)	SHIPPING DIMENSIONS (L x W x H)
189BNV024	A	X 0 0	23 1/8"	38 1/2"	3 3/4"	3/4"	4 7/16"	18 1/16"	7 13/16"	2 13/16"	1/2"	10 3/4"	10 3/4"	18 1/4"	160	186	25 1/4" X 25 1/4" X 43 3/8"
189BNV025	A	X 0 0	23 1/8"	38 1/2"	3 3/4"	3/4"	4 7/16"	18 1/16"	7 13/16"	2 13/16"	1/2"	10 3/4"	10 3/4"	18 1/4"	160	186	25 1/4" X 25 1/4" X 43 3/8"
189BNV036	A	X 0 0	23 1/8"	38 1/2"	3 3/4"	3/4"	4 7/16"	18 1/16"	7 13/16"	2 13/16"	1/2"	10 3/4"	10 3/4"	18 1/4"	160	186	25 1/4" X 25 1/4" X 43 3/8"
189BNV048	A	X 0 0	31 3/16"	38 15/16"	3 7/8"	7/8"	6 9/16"	24 11/16"	9 1/8"	2 15/16"	5/8"	14 1/2"	14 5/8"	18 3/4"	216	255	33 3/8" x 33 3/8" x 46 1/8"

X = YES  
O = NO

208/230-160	230-160	460-360
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UNIT SIZE	X" MIN. GROUND MOUNTING PAD APPLICATION DIMENSIONS	Y" MIN. ROOF-TOP MOUNTING PAD APPLICATION DIMENSIONS
24, 25, 36	23 1/8"	17 3/4"
-	25 3/4"	20 7/16"
48	31 3/16"	23"
-	35"	26 3/4"

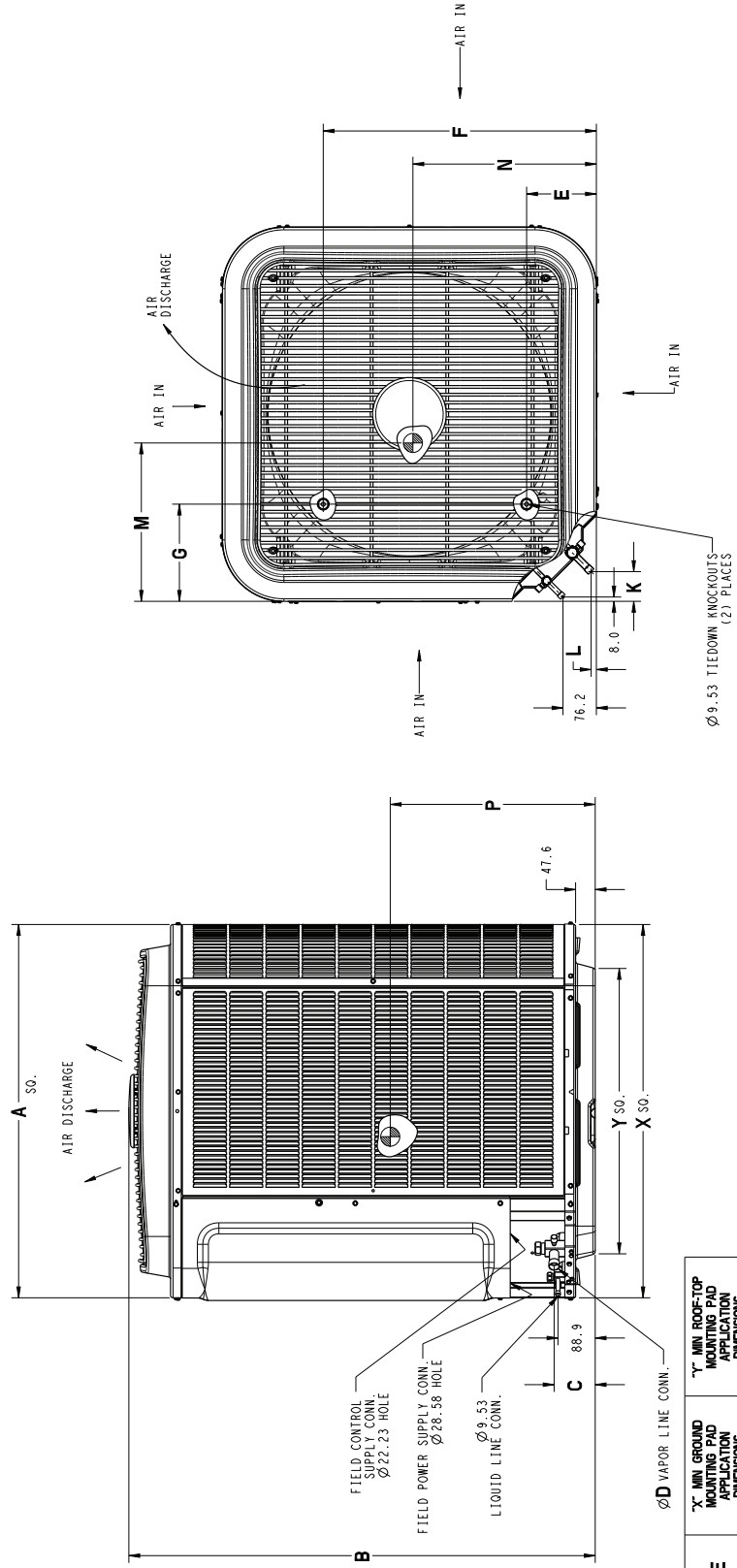


# DIMENSIONS - SI

UNIT	SERIES	ELECTRICAL CHARACTERISTICS	A	B	C	D	E	F	G	K	L	M	N	P	OPERATING WEIGHT (Kgs)	SHIPPING WEIGHT (Kgs)	SHIPPING DIMENSIONS (L x W x H)
189BNV024	A	X 0 0 0	587.3	980.1	96.1	19.1	112.7	458.8	198.4	71.4	12.7	273.1	273.1	463.6	72.6	84.4	641.5 X 641.5 X 1102.2
189BNV025	A	X 0 0 0	587.3	980.1	96.1	19.1	112.7	458.8	198.4	71.4	12.7	273.1	273.1	463.6	72.6	84.4	641.5 X 641.5 X 1102.2
189BNV036	A	X 0 0 0	587.3	980.1	96.1	19.1	112.7	458.8	198.4	71.4	12.7	273.1	273.1	463.6	72.6	84.4	641.5 X 641.5 X 1102.2
189BNV048	A	X 0 0 0	792.2	988.5	98.4	22.2	166.7	627.1	231.8	74.6	15.9	368.3	371.5	476.3	98.0	115.7	846.6 X 846.6 X 1172.2

208/230-160	230-160	208/230-3-60	460-3-60
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X = YES  
O = NO



UNIT SIZE	X MIN GROUND MOUNTING PAD APPLICATION DIMENSIONS	Y MIN ROOF-TOP MOUNTING PAD APPLICATION DIMENSIONS
24,25,36	587.4	451.3
48	654.0	518.5
72	792.2	583.2
96	889.0	679.7

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**TESTED AHRI COMBINATION RATINGS\***

Advance PD ratings shown below. Ratings will be available in AHRI ratings database 30 days prior to first production.

Model Number	Coil Model Number	Furnace Model Number	Cooling Capacity High	SEER	EER	ID CFM
189BNV024-A	FE4AN(B,F)005L+UI		23000	17.5	11.0	825
189BNV024-A	FV4CN(B,F)003L		22600	16.0	11.0	700
189BNV025-A	FE4AN(B,F)005L+UI		24000	19.0	12.5	825
189BNV025-A	FV4CN(B,F)003L		22600	19.0	12.0	700
189BNV036-A	FE4AN(B,F)005L+UI		35000	18.0	10.5	1050
189BNV036-A	FV4CN(B,F)005L		35000	16.0	10.5	1050
189BNV048-A	FE4ANB006L+UI		46500	19.0	11.0	1400
189BNV048-A	FV4CNB006L		46000	15.5	11.0	1400

\* Ratings are net values reflecting the effects of circulating fan heat. Supplemental electric heat is not included. Ratings are based on:

**Cooling Standard:** 80°F (27°C) db 67°F (19°C) wb indoor entering air temperature and 95°F (35°C) db air entering outdoor unit.

**EER** — Energy Efficiency Ratio

**SEER** — Seasonal Energy Efficiency Ratio

**UI** — User Interface

**NOTE:** Ratings contained in this document are subject to change at any time.

# DETAILED COOLING CAPACITIES# - EFFICIENCY MODE

189BNV024 / FE4ANF005 EFFICIENCY MODE - CONDENSER ENTERING AIR TEMPERATURES ° F (° C)

EDB ° F (° C)	EVAR AIR	115 (46.1)			105 (40.5)			95 (35)			85 (29.4)			75 (23.9)			65 (18.3)			
		ID SCFM	Capacity MBtuh		Total S <sub>1</sub> KW**	ID SCFM	Capacity MBtuh		Total S <sub>1</sub> KW**	ID SCFM	Capacity MBtuh		Total S <sub>1</sub> KW**	ID SCFM	Capacity MBtuh		Total S <sub>1</sub> KW**			
			Total	Sens†			Total	Sens†			Total	Sens†			Total	Sens†				
<b>STAGE 5</b>																				
75 (23.9)	72 (22.2)	825	22.62	9.54	3.24	24.04	10.06	2.64	25.34	10.54	2.07	26.67	11.04	1.60	27.98	11.54	1.19	29.26	12.02	0.84
	67 (19.4)		20.57	13.18	3.23	21.88	13.76	2.65	23.10	14.30	2.09	24.34	14.86	1.64	25.55	15.40	1.24	26.73	15.94	0.89
	63 (17.2)		19.06	16.04	3.22	20.29	16.66	2.66	21.44	17.24	2.11	22.60	17.84	1.66	23.74	18.43	1.26	24.85	19.00	0.92
	57 (13.9)		18.09	18.09	3.21	19.09	19.09	2.66	20.03	20.03	2.11	20.96	20.96	1.67	21.88	21.88	1.29	22.76	22.76	0.96
	67 (19.4)		22.46	13.14	3.23	23.87	13.70	2.63	25.16	14.23	2.06	26.50	14.77	1.60	27.81	15.31	1.19	29.08	15.83	0.84
80 (26.7)	72 (22.2)	825	20.49	16.75	3.23	21.80	17.38	2.65	23.00	17.96	2.09	24.24	18.55	1.63	25.45	19.14	1.23	26.62	19.72	0.89
	67 (19.4)		19.26	19.26	3.22	20.37	20.17	2.66	21.49	20.84	2.10	22.63	21.50	1.65	23.75	22.13	1.26	24.84	22.76	0.92
	63 (17.2)		19.23	19.23	3.22	20.27	20.27	2.66	21.24	21.24	2.10	22.23	22.23	1.66	23.17	23.17	1.27	24.09	24.09	0.93
	57 (13.9)		14.79	6.34	1.83	15.85	6.73	1.53	16.71	7.05	1.17	17.74	7.44	0.92	18.76	7.82	0.69	19.79	8.21	0.48
	67 (19.4)		13.41	8.96	1.84	14.39	9.41	1.55	15.23	9.79	1.19	16.18	10.23	0.95	17.11	10.66	0.73	18.04	11.09	0.53
75 (23.9)	72 (22.2)	650	12.45	11.02	1.84	13.36	11.51	1.56	14.16	11.95	1.21	15.05	12.42	0.97	15.92	12.89	0.76	16.79	13.36	0.57
	67 (19.4)		12.03	12.03	1.84	12.79	12.79	1.56	13.48	13.48	1.21	14.22	14.22	0.99	14.94	14.94	0.78	15.66	15.66	0.59
	63 (17.2)		14.68	8.95	1.82	15.72	9.38	1.52	16.57	9.74	1.16	17.60	10.16	0.91	18.61	10.59	0.69	19.68	11.03	0.48
	57 (13.9)		13.38	11.54	1.84	14.35	12.03	1.55	15.17	12.46	1.19	16.11	12.94	0.95	17.04	13.41	0.73	17.96	13.88	0.53
	67 (19.4)		12.82	12.82	1.84	13.63	13.63	1.56	14.33	14.33	1.20	15.12	15.05	0.97	15.96	15.61	0.76	16.81	16.13	0.56
75 (23.9)	72 (22.2)	N/A	12.80	12.80	1.84	13.60	13.60	1.56	14.30	14.30	1.20	15.07	15.07	0.97	15.83	15.83	0.76	16.57	16.57	0.57
	67 (19.4)		10.33	4.57	0.57	11.13	4.87	0.46	11.97	5.18	0.35	12.86	5.51	0.22	13.74	5.84	0.19	14.61	6.11	0.14
	63 (17.2)		9.38	6.70	0.59	10.11	7.06	0.50	10.86	7.43	0.39	11.66	7.81	0.27	12.44	8.10	0.24	13.18	8.38	0.19
	57 (13.9)		8.74	8.37	0.61	9.41	8.78	0.52	10.10	9.19	0.42	10.83	9.62	0.31	11.51	9.85	0.24	12.24	10.47	0.16
	67 (19.4)		8.63	8.63	0.61	9.24	9.24	0.52	10.01	9.24	0.46	10.74	9.43	0.35	11.47	9.62	0.27	12.19	10.07	0.21
80 (26.7)	72 (22.2)	N/A	9.35	8.78	0.59	10.08	9.20	0.49	10.83	9.62	0.39	11.63	10.07	0.27	12.44	10.48	0.40	13.18	11.16	0.29
	67 (19.4)		9.20	9.20	0.59	9.84	9.84	0.50	10.48	9.84	0.40	11.16	11.16	0.29	11.94	11.94	0.29	12.69	12.69	0.29
	63 (17.2)		9.19	9.19	0.59	9.82	9.82	0.50	10.47	9.82	0.40	11.14	11.14	0.29	11.90	11.90	0.29	12.65	12.65	0.29
	57 (13.9)		9.19	9.19	0.59	9.82	9.82	0.50	10.47	9.82	0.40	11.14	11.14	0.29	11.90	11.90	0.29	12.65	12.65	0.29
	67 (19.4)		9.19	9.19	0.59	9.82	9.82	0.50	10.47	9.82	0.40	11.14	11.14	0.29	11.90	11.90	0.29	12.65	12.65	0.29

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# DETAILED COOLING CAPACITIES# - EFFICIENCY MODE CONTINUED

189BNV025 / FE4ANF005 EFFICIENCY MODE - CONDENSER ENTERING AIR TEMPERATURES ° F (° C)

EDB °F (°C)	EVAR AIR	115 (46.1)			105 (40.5)			95 (35)			85 (29.4)			75 (23.9)			65 (18.3)		
		ID SCFM	Capacity MBTuh		Total Sys KW**	ID SCFM	Capacity MBTuh		Total Sys KW**	ID SCFM	Capacity MBTuh		Total Sys KW**	ID SCFM	Capacity MBTuh		Total Sys KW**		
			Total	Sens†			Total	Sens†			Total	Sens†			Total	Sens†			
<b>75</b> <b>(23.9)</b>	72 (22.2)		23.70	9.99	2.53	25.14	10.52	2.23	26.44	11.00	1.90	27.78	11.50	1.62	29.08	11.99	1.34		
	67 (19.4)		21.55	13.82	2.52	22.88	14.39	2.24	24.10	14.92	1.92	25.35	15.47	1.65	26.55	16.01	1.39		
	63 (17.2)	825	19.97	16.81	2.52	21.22	17.42	2.24	22.37	17.99	1.93	23.54	18.58	1.67	24.67	19.15	1.42		
	57 (13.9)		18.96	18.96	2.51	19.96	19.96	2.24	20.90	20.90	1.94	21.83	21.83	1.69	22.74	22.74	1.45		
	72 (22.2)		23.54	13.77	2.52	24.96	14.33	2.22	26.26	14.85	1.89	27.59	15.38	1.61	28.90	15.91	1.34		
<b>80</b> <b>(26.7)</b>	67 (19.4)	825	21.47	17.56	2.52	22.79	18.17	2.23	24.00	18.74	1.92	25.24	19.32	1.65	26.44	19.89	1.39		
	63 (17.2)		20.18	20.18	2.52	21.30	21.09	2.24	22.42	21.75	1.93	23.56	22.38	1.67	24.68	23.00	1.42		
	57 (13.9)		20.15	20.15	2.52	21.20	21.20	2.24	22.17	22.17	1.93	23.14	23.14	1.68	24.08	24.08	1.43		
	72 (22.2)		15.26	6.54	1.53	16.32	6.93	1.36	17.19	7.25	1.10	18.22	7.64	0.92	19.23	8.02	0.74		
	67 (19.4)	650	13.84	9.25	1.54	14.82	9.69	1.38	15.66	10.07	1.13	16.61	10.50	0.96	17.55	10.93	0.79		
<b>75</b> <b>(23.9)</b>	63 (17.2)		12.84	11.37	1.54	13.76	11.85	1.39	14.57	12.26	1.14	15.45	12.75	0.98	16.33	13.22	0.82		
	57 (13.9)		12.41	12.41	1.54	13.18	13.18	1.39	13.86	13.86	1.15	14.60	14.60	0.99	15.32	15.32	0.84		
	72 (22.2)		15.14	9.23	1.53	16.19	9.66	1.35	17.04	10.01	1.10	18.07	10.44	0.92	19.08	10.86	0.74		
	67 (19.4)	650	13.80	11.91	1.54	14.77	12.39	1.37	15.60	12.81	1.12	16.54	13.28	0.96	17.47	13.75	0.79		
	63 (17.2)		13.23	13.23	1.54	14.04	14.04	1.38	14.73	14.73	1.13	15.52	15.46	0.98	16.36	16.00	0.81		
<b>75</b> <b>(23.9)</b>	57 (13.9)		13.21	13.21	1.54	14.01	14.01	1.38	14.71	14.71	1.14	15.48	15.48	0.98	16.23	16.23	0.82		
	72 (22.2)																		
	67 (19.4)	N/A																	
	63 (17.2)																		
	57 (13.9)																		
<b>80</b> <b>(26.7)</b>	72 (22.2)																		
	67 (19.4)																		
	63 (17.2)	N/A																	
	57 (13.9)																		
	72 (22.2)																		
<b>75</b> <b>(23.9)</b>	67 (19.4)																		
	63 (17.2)																		
	57 (13.9)																		
	72 (22.2)																		
	67 (19.4)																		
<b>80</b> <b>(26.7)</b>	63 (17.2)																		
	57 (13.9)																		
	72 (22.2)																		
	67 (19.4)																		
	57 (13.9)																		

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# DETAILED COOLING CAPACITIES# - EFFICIENCY MODE CONTINUED

189BNV036 / FE4ANF005 EFFICIENCY MODE - CONDENSER ENTERING AIR TEMPERATURES ° F (° C)

EDB ° F (° C)	EVAR AIR	115 (46.1)				105 (40.5)				95 (35)				85 (29.4)				75 (23.9)				65 (18.3)									
		Capacity MBtuh		ID SCFM	Total Swh KW**	Capacity MBtuh		ID SCFM	Total Swh KW**	Capacity MBtuh		ID SCFM	Total Swh KW**	Capacity MBtuh		ID SCFM	Total Swh KW**	Capacity MBtuh		ID SCFM	Total Swh KW**	Capacity MBtuh		ID SCFM	Total Swh KW**						
		Total	Sens†			Total	Sens†			Total	Sens†			Total	Sens†			Total	Sens†			Total	Sens†			Total	Sens†	Total	Sens†		
<b>STAGE 5</b>																															
75 (23.9)	72 (22.2)	34.24	14.18	4.44	36.41	14.99	3.89	38.29	15.70	3.36	40.30	16.47	2.87	42.28	17.24	2.41	44.19	17.98	1.98	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050		
	67 (19.4)	31.38	19.07	4.38	33.35	19.95	3.85	35.13	20.75	3.34	36.99	21.80	2.87	38.79	22.42	2.43	40.52	23.22	2.02	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050		
	63 (17.2)	29.21	22.90	4.33	31.07	23.84	3.81	32.74	24.70	3.31	34.48	25.59	2.86	36.17	26.47	2.44	37.79	27.32	2.04	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	
	57 (13.9)	27.05	27.05	4.27	28.50	28.50	3.77	29.85	29.85	3.28	31.20	31.20	2.84	32.65	32.25	2.44	34.08	33.21	2.06	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	
	72 (22.2)	34.04	18.92	4.44	36.21	19.79	3.88	38.09	20.56	3.35	40.10	21.39	2.86	42.08	22.22	2.41	43.98	23.01	1.98	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	
80 (26.7)	67 (19.4)	31.25	23.78	4.38	33.23	24.72	3.84	35.00	25.57	3.33	36.86	26.47	2.86	38.66	27.35	2.42	40.39	28.21	2.02	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	
	63 (17.2)	29.21	27.55	4.33	31.05	28.56	3.81	32.70	29.48	3.31	34.43	30.44	2.86	36.11	31.38	2.43	37.72	32.28	2.04	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	
	57 (13.9)	28.61	28.61	4.32	30.14	30.14	3.80	31.53	31.53	3.30	32.95	32.95	2.85	34.31	34.31	2.44	35.64	35.64	2.05	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050	
	72 (22.2)	21.81	9.32	1.96	23.25	9.85	1.83	24.29	10.24	1.67	25.66	10.75	1.50	27.01	11.26	1.31	28.33	11.76	1.10	900	900	900	900	900	900	900	900	900	900	900	900
	67 (19.4)	19.85	13.12	1.96	21.18	13.71	1.84	22.21	14.19	1.68	23.48	14.77	1.52	24.72	15.33	1.35	25.94	15.89	1.15	900	900	900	900	900	900	900	900	900	900	900	900
80 (26.7)	63 (17.2)	18.41	16.08	1.95	19.66	16.73	1.85	20.68	17.29	1.68	21.87	17.91	1.54	23.02	18.53	1.37	24.16	19.14	1.19	900	900	900	900	900	900	900	900	900	900	900	900
	57 (13.9)	17.71	17.71	1.95	18.75	18.75	1.85	19.63	19.63	1.68	20.61	20.61	1.54	21.57	21.57	1.39	22.50	22.50	1.22	900	900	900	900	900	900	900	900	900	900	900	
	72 (22.2)	21.64	13.06	1.95	23.07	13.65	1.83	24.08	14.08	1.66	25.46	14.65	1.49	26.81	15.21	1.31	28.13	15.76	1.10	900	900	900	900	900	900	900	900	900	900	900	900
	67 (19.4)	19.77	16.83	1.95	21.09	17.48	1.84	22.11	18.01	1.67	23.37	18.64	1.52	24.60	19.26	1.35	25.82	19.87	1.15	900	900	900	900	900	900	900	900	900	900	900	900
	63 (17.2)	18.86	18.86	1.95	19.95	19.95	1.84	20.82	20.82	1.68	21.94	21.67	1.53	23.07	22.38	1.37	24.19	23.06	1.19	900	900	900	900	900	900	900	900	900	900	900	900
75 (23.9)	72 (22.2)							10.82	4.81	0.48				11.57	5.09	0.46				600	600	600	600	600	600	600	600	600	600	600	
	67 (19.4)							9.83	7.10	0.49				10.52	7.42	0.49				600	600	600	600	600	600	600	600	600	600	600	600
	63 (17.2)							9.17	8.88	0.51				9.81	9.25	0.51				600	600	600	600	600	600	600	600	600	600	600	600
	57 (13.9)							9.09	9.09	0.51				9.66	9.66	0.52				600	600	600	600	600	600	600	600	600	600	600	600
	72 (22.2)							10.67	7.06	0.47				11.46	7.39	0.46				600	600	600	600	600	600	600	600	600	600	600	600
80 (26.7)	67 (19.4)							9.80	9.32	0.49				10.49	9.70	0.49				600	600	600	600	600	600	600	600	600	600	600	600
	63 (17.2)							9.68	9.68	0.49				10.28	10.28	0.49				600	600	600	600	600	600	600	600	600	600	600	600
	57 (13.9)							9.67	9.67	0.49				10.26	10.26	0.49				600	600	600	600	600	600	600	600	600	600	600	600
	72 (22.2)																				600	600	600	600	600	600	600	600	600	600	600
	67 (19.4)																				600	600	600	600	600	600	600	600	600	600	600

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# DETAILED COOLING CAPACITIES# - EFFICIENCY MODE CONTINUED

189BNV048 / FE4BNN006 EFFICIENCY MODE - CONDENSER ENTERING AIR TEMPERATURES ° F (° C)

EDB ° F (° C)	EVAR AIR	115 (46.1)				105 (40.5)				95 (35)				85 (29.4)				75 (23.9)				65 (18.3)																				
		Capacity MBtuh		ID SCFM	Total S <sub>1</sub> KW**	Capacity MBtuh		ID SCFM	Total S <sub>1</sub> KW**	Capacity MBtuh		ID SCFM	Total S <sub>1</sub> KW**	Capacity MBtuh		ID SCFM	Total S <sub>1</sub> KW**	Capacity MBtuh		ID SCFM	Total S <sub>1</sub> KW**	Capacity MBtuh		ID SCFM	Total S <sub>1</sub> KW**																	
		Total	Sens†			Total	Sens†			Total	Sens†			Total	Sens†			Total	Sens†			Total	Sens†			Total	Sens†	Total	Sens†													
<b>STAGE 5</b>																																										
75 (23.9)	72	44.85	18.57	5.52	4.88	51.02	20.92	4.28	3.73	54.02	22.07	3.73	3.22	56.91	23.20	3.22	3.22	59.73	24.30	2.75	2.75	62	44.85	18.57	5.52	4.88	51.02	20.92	4.28	3.73	54.02	22.07	3.73	3.22	56.91	23.20	3.22	3.22	59.73	24.30	2.75	2.75
	67	40.99	24.94	5.42	4.80	46.65	27.53	4.23	3.70	49.36	28.79	3.70	3.20	52.00	30.04	3.20	3.20	54.59	31.26	2.75	2.75	67	40.99	24.94	5.42	4.80	46.65	27.53	4.23	3.70	49.36	28.79	3.70	3.20	52.00	30.04	3.20	3.20	54.59	31.26	2.75	2.75
	63	38.10	29.94	5.35	4.74	43.35	32.70	4.19	3.67	45.88	34.06	3.67	3.19	48.34	35.38	3.19	3.19	50.75	36.69	2.74	2.74	63	38.10	29.94	5.35	4.74	43.35	32.70	4.19	3.67	45.88	34.06	3.67	3.19	48.34	35.38	3.19	3.19	50.75	36.69	2.74	2.74
	57	35.26	35.26	5.26	4.67	39.42	39.42	4.13	3.62	41.41	41.41	3.62	3.16	43.54	43.05	3.16	3.16	45.66	44.56	2.73	2.73	57	35.26	35.26	5.26	4.67	39.42	39.42	4.13	3.62	41.41	41.41	3.62	3.16	43.54	43.05	3.16	3.16	45.66	44.56	2.73	2.73
	72	44.64	24.80	5.51	4.87	50.81	27.37	4.28	3.73	53.80	28.63	3.73	3.22	56.70	29.87	3.22	3.22	59.50	31.07	2.75	2.75	72	44.64	24.80	5.51	4.87	50.81	27.37	4.28	3.73	53.80	28.63	3.73	3.22	56.70	29.87	3.22	3.22	59.50	31.07	2.75	2.75
80 (26.7)	67	40.84	31.13	5.42	4.80	46.50	33.93	4.23	3.70	49.21	35.30	3.70	3.20	51.86	36.64	3.20	3.20	54.44	37.97	2.75	2.75	67	40.84	31.13	5.42	4.80	46.50	33.93	4.23	3.70	49.21	35.30	3.70	3.20	51.86	36.64	3.20	3.20	54.44	37.97	2.75	2.75
	63	38.10	36.03	5.35	4.74	43.30	39.05	4.18	3.67	45.82	40.52	3.67	3.19	48.27	41.96	3.19	3.19	50.67	43.38	2.74	2.74	63	38.10	36.03	5.35	4.74	43.30	39.05	4.18	3.67	45.82	40.52	3.67	3.19	48.27	41.96	3.19	3.19	50.67	43.38	2.74	2.74
	57	37.33	37.33	5.33	4.72	41.69	41.69	4.16	3.65	43.78	43.78	3.65	3.17	45.80	45.80	3.17	3.17	47.78	47.78	2.74	2.74	57	37.33	37.33	5.33	4.72	41.69	41.69	4.16	3.65	43.78	43.78	3.65	3.17	45.80	45.80	3.17	3.17	47.78	47.78	2.74	2.74
	72	29.39	12.61	2.76	2.55	33.64	14.20	2.29	2.06	35.74	14.99	2.06	1.82	37.82	15.78	1.82	1.82	39.84	16.55	1.57	1.57	72	29.39	12.61	2.76	2.55	33.64	14.20	2.29	2.06	35.74	14.99	2.06	1.82	37.82	15.78	1.82	1.82	39.84	16.55	1.57	1.57
	67	26.78	17.83	2.75	2.55	30.71	19.66	2.30	2.08	32.64	20.58	2.08	1.85	34.54	21.48	1.85	1.85	36.42	22.38	1.61	1.61	67	26.78	17.83	2.75	2.55	30.71	19.66	2.30	2.08	32.64	20.58	2.08	1.85	34.54	21.48	1.85	1.85	36.42	22.38	1.61	1.61
75 (23.9)	63	24.88	21.93	2.74	2.55	28.55	23.96	2.30	2.09	30.35	24.97	2.09	1.87	32.12	25.96	1.87	1.87	33.88	26.95	1.64	1.64	63	24.88	21.93	2.74	2.55	28.55	23.96	2.30	2.09	30.35	24.97	2.09	1.87	32.12	25.96	1.87	1.87	33.88	26.95	1.64	1.64
	57	23.99	23.99	2.73	2.55	27.08	27.08	2.30	2.09	28.58	28.58	2.09	1.88	30.06	30.06	1.88	1.88	31.51	31.51	1.67	1.67	57	23.99	23.99	2.73	2.55	27.08	27.08	2.30	2.09	28.58	28.58	2.09	1.88	30.06	30.06	1.88	1.88	31.51	31.51	1.67	1.67
	72	29.20	17.76	2.76	2.55	33.41	19.56	2.28	2.06	35.52	20.46	2.06	1.82	37.59	21.36	1.82	1.82	39.61	22.24	1.57	1.57	72	29.20	17.76	2.76	2.55	33.41	19.56	2.28	2.06	35.52	20.46	2.06	1.82	37.59	21.36	1.82	1.82	39.61	22.24	1.57	1.57
	67	26.68	22.93	2.75	2.55	30.58	24.99	2.29	2.07	32.51	26.01	2.07	1.85	34.40	27.02	1.85	1.85	36.27	28.02	1.61	1.61	67	26.68	22.93	2.75	2.55	30.58	24.99	2.29	2.07	32.51	26.01	2.07	1.85	34.40	27.02	1.85	1.85	36.27	28.02	1.61	1.61
	57	25.53	25.53	2.74	2.55	28.77	28.77	2.30	2.08	30.45	30.20	2.08	1.87	32.18	31.38	1.87	1.87	33.90	32.51	1.64	1.64	57	25.53	25.53	2.74	2.55	28.77	28.77	2.30	2.08	30.45	30.20	2.08	1.87	32.18	31.38	1.87	1.87	33.90	32.51	1.64	1.64
80 (26.7)	72	25.48	25.48	2.74	2.55	28.72	28.72	2.30	2.08	30.32	30.32	2.08	1.87	31.86	31.86	1.87	1.87	33.39	33.39	1.65	1.65	72	25.48	25.48	2.74	2.55	28.72	28.72	2.30	2.08	30.32	30.32	2.08	1.87	31.86	31.86	1.87	1.87	33.39	33.39	1.65	1.65
	67	22.22	19.4	2.75	2.55	26.78	23.96	2.30	2.09	28.72	26.01	2.09	1.85	30.32	27.61	1.85	1.85	32.12	29.61	1.61	1.61	67	22.22	19.4	2.75	2.55	26.78	23.96	2.30	2.09	28.72	26.01	2.09	1.85	30.32	27.61	1.85	1.85	32.12	29.61	1.61	1.61
	63	20.92	18.57	2.74	2.55	25.53	23.96	2.30	2.09	27.08	24.97	2.09	1.87	28.58	26.95	1.87	1.87	30.06	28.02	1.64	1.64	63	20.92	18.57	2.74	2.55	25.53	23.96	2.30	2.09	27.08	24.97	2.09	1.87	28.58	26.95	1.87	1.87	30.06	28.02	1.64	1.64
	57	19.4	17.2	2.73	2.55	24.88	23.96	2.30	2.09	25.53	24.97	2.09	1.87	27.08	26.95	1.87	1.87	28.58	28.02	1.64	1.64	57	19.4	17.2	2.73	2.55	24.88	23.96	2.30	2.09	25.53	24.97	2.09	1.87	27.08	26.95	1.87	1.87	28.58	28.02	1.64	1.64
	72	18.37	16.31	2.72	2.55	23.99	23.96	2.30	2.09	23.99	23.96	2.09	1.88	25.96	25.96	1.88	1.88	28.58	30.39	1.65	1.65	72	18.37	16.31	2.72	2.55	23.99	23.96	2.30	2.09	23.99	23.96	2.09	1.88	25.96	25.96	1.88	1.88	28.58	30.39	1.65	1.65
75 (23.9)	67	19.4	19.4	2.75	2.55	22.22	22.22	2.30	2.09	22.22	22.22	2.09	1.85	24.88	24.88	1.85	1.85	28.58	31.51	1.67	1.67	67	19.4	19.4	2.75	2.55	22.22	22.22	2.30	2.09	22.22	22.22	2.09	1.85	24.88	24.88	1.85	1.85	28.58	31.51	1.67	1.67
	63	17.2	17.2	2.74	2.55	20.92	20.92	2.30	2.09	20.92	20.92	2.09	1.87	23.99	23.99	1.87	1.87	27.08	30.06	1.64	1.64	63	17.2	17.2	2.74	2.55	20.92	20.92	2.30	2.09	20.92	20.92	2.09	1.87	23.99	23.99	1.87	1.87	27.08	30.06	1.64	1.64
	57	15.7	15.7	2.73	2.55	19.4	19.4	2.30	2.09	19.4	19.4	2.09	1.88	22.22	22.22	1.88	1.88	25.53	28.58	1.64	1.64	57	15.7	15.7	2.73	2.55	19.4	19.4	2.30	2.09	19.4	19.4	2.09	1.88	22.22	22.22	1.88	1.88	25.53	28.58	1.64	1.64
	72	14.1	14.1	2.72	2.55	18.37	18.37	2.30	2.09	18.37	18.37	2.09	1.91	20.92	20.92	1.91	1.91	23.99	27.08	1.67	1.67	72	14.1	14.1	2.72	2.55	18.37	18.37	2.30	2.09	18.37	18.37	2.09	1.91	20.92	20.92	1.91	1.91	23.99	27.08	1.67	1.67
	67	13.51	13.51	2.71	2.55	17.83	17.83	2.30	2.09	17.83	17.83	2.09	1.91	20.92	20.92	1.91	1.91	23.99	27.08	1.67	1.67	67	13.51	13.51	2.71	2.55	17.83	17.83	2.30	2.09	17.83	17.83	2.09	1.91	20.92	20.92	1.91	1.91	23.99	27.08	1.67	1.67
80 (26.7)	63	13.51	13.51	2.71	2.55	17.2	17.2	2.30	2.09	17.2	17.2	2.09	1.91	20.92	20.92	1.91	1.91	23.99	27.08	1.67	1.67	63	13.51	13.51	2.71	2.55	17.2	17.2	2.30	2.09	17.2	17.2	2.09	1.91	20.92	20.92	1.91	1.91	23.99	27.08	1.67	1.67
	57																																									



# DETAILED COOLING CAPACITIES# - COMFORT + DEHUMIDIFY MODE

EVB AIR		115 (46.1)			105 (40.5)			95 (35)			85 (29.4)			75 (23.9)			65 (18.3)		
		EWB °F (°C)	ID SCFM	Capacity MBtuh Total	Sens†	Total Sys KW**	ID SCFM	Capacity MBtuh Total	Sens†	Total Sys KW**	ID SCFM	Capacity MBtuh Total	Sens†	Total Sys KW**	ID SCFM	Capacity MBtuh Total	Sens†	Total Sys KW**	
<b>STAGE 5</b>																			
75 (23.9)	72 (22.2)																		
	67 (19.4)	N/A																	
	63 (17.2)					608				634									
	57 (13.9)																		
	72 (22.2)																		
80 (26.7)	67 (19.4)	N/A																	
	63 (17.2)					608				634									
	57 (13.9)																		
	72 (22.2)																		
	67 (19.4)																		
<b>STAGE 3</b>																			
75 (23.9)	72 (22.2)																		
	67 (19.4)	N/A																	
	63 (17.2)					415				437									
	57 (13.9)																		
	72 (22.2)																		
80 (26.7)	67 (19.4)	N/A																	
	63 (17.2)					415				437									
	57 (13.9)																		
	72 (22.2)																		
	67 (19.4)																		
<b>STAGE 1 - FAEAN005 ONLY</b>																			
75 (23.9)	72 (22.2)																		
	67 (19.4)	N/A																	
	63 (17.2)					250				250									
	57 (13.9)																		
	72 (22.2)																		
80 (26.7)	67 (19.4)	N/A																	
	63 (17.2)					250				250									
	57 (13.9)																		
	72 (22.2)																		
	67 (19.4)																		
<b>STAGE 1 - ALL OTHER INDOOR COMBINATIONS</b>																			
75 (23.9)	72 (22.2)																		
	67 (19.4)	N/A																	
	63 (17.2)					222				234									
	57 (13.9)																		
	72 (22.2)																		
80 (26.7)	67 (19.4)	N/A																	
	63 (17.2)					222				234									
	57 (13.9)																		
	72 (22.2)																		
	67 (19.4)																		

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DETAILED COOLING CAPACITIES# - COMFORT + DEHUMIDIFY MODE CONTINUED

189BNV024

COOLING INDOOR MODEL	CAPACITY	POWER	FURNACE MODEL	2-STAGE (Hi-Stage 5, Lo-Stage 2)				
				Cooling Indoor Model	High Speed Cap.	Power	Low Speed Cap.	
*FE4AN(B,F)005L	1.00	1.00		FV4CN(B,F)003L	0.94	0.94	0.99	0.94
FE4AN(B,F)003L	0.96	1.00		FV4CNF002L	0.94	0.94	1.00	0.97
FE4AN(B)006L	0.98	1.08		CAP**2414AL*	0.94	0.99	1.08	1.12
FE4ANF002L	0.96	1.00		CAP**2417AL*	0.94	0.99	1.09	1.12
CAP**3614AL*	0.98	1.03	315(A,J)AV036070	CAP**3014AL*	0.95	0.95	1.08	1.11
CAP**3617AL*	0.98	1.03	315(A,J)AV036070	CAP**3017AL*	0.95	0.95	1.09	1.11
CNPV**3617AL*	0.98	1.01	315(A,J)AV036070	CNPV**2414AL*	0.93	0.98	1.08	1.12
CNPV**3717AL*	0.97	1.02	315(A,J)AV036070	CNPV**2417AL*	0.93	0.98	1.08	1.12
CNPV**4217AL*	0.96	1.00	315(A,J)AV036070	CNPV**3014AL*	0.95	1.00	1.08	1.11
CSPH**3612AL*	1.00	1.05	315(A,J)AV036070	CNPV**3017AL*	0.95	1.00	1.09	1.11
CSPH**4212AL*	1.00	1.05	315(A,J)AV036070	CNPV**3117AL*	0.95	0.95	1.12	1.11
CAP**3617AL*	0.98	1.03	315(A,J)AV048090	CAP**2414AL*	0.93	0.93	1.08	1.08
CAP**3621AL*	0.98	1.03	315(A,J)AV048090	CAP**2417AL*	0.94	0.94	1.08	1.07
CAP**4217AL*	0.99	1.04	315(A,J)AV048090	CAP**3014AL*	0.93	0.93	1.10	1.09
CNPV**3617AL*	0.98	1.03	315(A,J)AV048090	CAP**3017AL*	0.93	0.93	1.11	1.09
CNPV**4217AL*	0.97	1.01	315(A,J)AV048090	CNPV**2414AL*	0.93	0.98	1.08	1.07
CNPV**3717AL*	0.97	1.01	315(A,J)AV048090	CNPV**2417AL*	0.93	0.97	1.10	1.09
CNPV**4217AL*	0.96	1.00	315(A,J)AV048090	CNPV**3017AL*	0.93	0.93	1.11	1.09
CNPV**4217AL*	0.96	1.00	315(A,J)AV048090	CNPV**3117AL*	0.94	0.94	1.12	1.06
CSPH**3612AL*	1.00	1.00	315(A,J)AV048090	CSPH**3012AL*	0.93	0.93	1.11	1.08
CSPH**4212AL*	1.01	1.03	315(A,J)AV048090	CAP**2417AL*	0.93	0.93	1.11	1.09
CAP**3617AL*	0.98	1.03	98(6*B,7*A)H2060V17	CNPV**3017AL*	0.96	0.93	1.11	1.08
CAP**3621AL*	0.98	1.03	98(6*B,7*A)H2060V17	CNPV**3117AL*	0.95	0.93	1.11	1.08
CAP**3717AL*	0.97	1.07	98(6*B,7*A)H2060V17	CNPV**3017AL*	0.93	0.98	1.11	1.08
CNPV**4217AL*	0.98	1.06	98(6*B,7*A)H2060V17	CNPV**3117AL*	0.93	0.93	1.11	1.08
CNPV**3617AL*	0.94	1.03	98(6*B,7*A)H2060V17	CSPH**2412AL*	0.94	0.94	1.13	1.15
CNPV**3621AL*	0.94	1.03	98(6*B,7*A)H2060V17	CSPH**3012AL*	0.95	1.00	1.08	1.13
CNPV**3717AL*	0.97	1.02	98(6*B,7*A)H2060V17	CAP**2414AL*	0.95	0.95	1.14	1.12
CNPV**4217AL*	0.95	1.04	98(6*B,7*A)H2060V17	CAP**2417AL*	0.93	0.98	1.13	1.15
CSPH**3612AL*	0.99	1.04	98(6*B,7*A)H2060V17	CNPV**2412AL*	0.94	0.94	1.13	1.15
CSPH**4212AL*	1.00	1.05	98(6*B,7*A)H2060V17	CNPV**2414AL*	0.94	0.94	1.13	1.15
CAP**3617AL*	0.98	1.03	98(6*B,7*A)H2060V21	CNPV**2417AL*	0.93	0.98	1.13	1.15
CAP**3621AL*	0.98	1.03	98(6*B,7*A)H2060V21	CNPV**3017AL*	0.95	1.00	1.08	1.13
CAP**4217AL*	0.99	1.04	98(6*B,7*A)H2060V21	CNPV**3117AL*	0.95	1.00	1.08	1.13
CNPV**3617AL*	0.98	1.03	98(6*B,7*A)H2060V17	CNPV**3017AL*	0.94	0.99	1.07	1.12
CNPV**4217AL*	0.98	1.03	98(6*B,7*A)H2060V17	CNPV**3117AL*	0.93	0.97	1.07	1.13
CNPV**3717AL*	0.99	1.09	98(6*B,7*A)H2060V17	CNPV**2417AL*	0.93	0.97	1.07	1.13
CNPV**3617AL*	0.95	1.04	98(6*B,7*A)H2060V17	CNPV**3014AL*	0.94	0.99	1.07	1.12
CNPV**3717AL*	0.95	1.04	98(6*B,7*A)H2060V17	CNPV**3017AL*	0.94	0.99	1.07	1.12
CNPV**4217AL*	0.97	1.02	98(6*B,7*A)H2060V17	CNPV**3117AL*	0.94	0.99	1.09	1.12
CNPV**4212AL*	0.97	1.02	98(6*B,7*A)H2060V17	CSPH**2412AL*	0.96	1.05	1.10	1.23
CSPH**3612AL*	1.00	1.05	98(6*B,7*A)H2060V17	CSPH**3012AL*	0.96	1.05	1.10	1.23
CSPH**4212AL*	1.00	1.05	98(6*B,7*A)H2060V17	CNPV**2417AL*	0.96	1.05	1.10	1.17
CAP**3621AL*	0.99	1.03	98(6*B,7MA)R0060V21	CNPV**3012AL*	0.96	1.05	1.10	1.17
CAP**4224AL*	0.99	1.04	98(6*B,7MA)R0060V21	CNPV**2412AL*	0.97	1.01	1.10	1.16

Cooling Indoor Model	2-STAGE (Hi-Stage 5, Lo-Stage 2)			
	High Speed Cap.	Power	Low Speed Cap.	Power
CAP**3017AL*	0.94	0.94	1.12	1.11
CNPV**2414AL*	0.94	0.99	1.09	1.09
CNPV**2417AL*	0.94	0.99	1.09	1.09
CNPV**3014AL*	0.93	0.98	1.11	1.11
CNPV**3017AL*	0.94	0.94	1.12	1.11
CSPH**2412AL*	0.96	0.96	1.13	1.09
CSPH**3012AL*	0.95	0.95	1.09	1.10
CSPH**4212AL*	0.94	0.94	1.12	1.10
CNPV**3012AL*	0.96	1.00	1.11	1.13
CNPV**3014AL*	0.96	1.00	1.11	1.13
CNPV**3017AL*	0.95	0.95	1.13	1.15
CNPV**3117AL*	0.96	1.00	1.10	1.10
CSPH**2412AL*	0.94	0.94	1.12	1.12
CAP**2417AL*	0.93	1.03	1.07	1.17
CAP**2414AL*	0.94	1.04	1.07	1.17
CAP**3014AL*	0.95	1.05	1.07	1.16
CAP**3017AL*	0.95	1.05	1.07	1.15
CNPV**3017AL*	0.93	1.03	1.07	1.17
CNPV**2417AL*	0.93	1.03	1.07	1.17
CNPV**3014AL*	0.95	1.05	1.07	1.16
CNPV**3017AL*	0.95	1.05	1.07	1.15
CNPV**3117AL*	0.96	1.05	1.08	1.13
CSPH**2412AL*	0.95	1.05	1.07	1.17
CSPH**3012AL*	0.95	1.05	1.08	1.15
CAP**2417AL*	0.93	0.97	1.07	1.14
CAP**3017AL*	0.93	0.98	1.07	1.13
CNPV**3017AL*	0.94	1.04	1.08	1.15
CNPV**3117AL*	0.93	1.03	1.07	1.13
CNPV**3117AL*	0.96	1.00	1.09	1.12
CNPV**2417AL*	0.92	1.01	1.07	1.14
CNPV**3012AL*	0.93	0.98	1.07	1.13
CNPV**3117AL*	0.94	0.99	1.09	1.12
CSPH**2412AL*	0.96	1.05	1.10	1.23
CSPH**3012AL*	0.93	0.98	1.08	1.13
CNPV**2417AL*	0.96	1.05	1.10	1.17
CSPH**2412AL*	0.97	1.01	1.10	1.16

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# DETAILED COOLING CAPACITIES# - COMFORT + DEHUMIDIFY MODE

**189BNV036 / FE4NF005 COMFORT + DEHUMIDIFY MODE - CONDENSER ENTERING AIR TEMPERATURES ° F (° C)**

EDB ° F (° C)	EVAP AIR ° F (° C)	115 (46.1)				105 (40.5)				95 (35)				85 (29.4)				75 (23.9)				65 (18.3)			
		Capacity MBtuh		ID SCFM	Total Sensible KW**	Capacity MBtuh		ID SCFM	Total Sensible KW**	Capacity MBtuh		ID SCFM	Total Sensible KW**	Capacity MBtuh		ID SCFM	Total Sensible KW**	Capacity MBtuh		ID SCFM	Total Sensible KW**	Capacity MBtuh		ID SCFM	Total Sensible KW**
		Total	Sens†			Total	Sens†			Total	Sens†			Total	Sens†			Total	Sens†			Total	Sens†		
<b>75</b> (23.9)	72 (22.2)																								
	67 (19.4)																								
	63 (17.2)																								
	57 (13.9)																								
	72 (22.2)																								
<b>80</b> (26.7)	72 (22.2)																								
	67 (19.4)																								
	63 (17.2)																								
	57 (13.9)																								
	72 (22.2)																								
<b>75</b> (23.9)	72 (22.2)																								
	67 (19.4)																								
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	57 (13.9)																								
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<b>80</b> (26.7)	72 (22.2)																								
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<b>80</b> (26.7)	72 (22.2)																								
	67 (19.4)																								
	63 (17.2)																								
	57 (13.9)																								
	72 (22.2)																								

See notes on page 26







# DETAILED COOLING CAPACITIES# - COMFORT + DEHUMIDIFY MODE

**189BNV048 / FE4BNB006 COMFORT+DEHUMIDIFY MODE - CONDENSER ENTERING AIR TEMPERATURES ° F (° C)**

EDB ° F (° C)	EVAP AIR	115 (46.1)				105 (40.5)				95 (35)				85 (29.4)				75 (23.9)				65 (18.3)			
		Capacity MBtuh		ID SCFM	Total S KW**	Capacity MBtuh		ID SCFM	Total S KW**	Capacity MBtuh		ID SCFM	Total S KW**	Capacity MBtuh		ID SCFM	Total S KW**	Capacity MBtuh		ID SCFM	Total S KW**	Capacity MBtuh		ID SCFM	Total S KW**
		Total	Sens†			Total	Sens†			Total	Sens†			Total	Sens†			Total	Sens†			Total	Sens†		
<b>75</b> (23.9)	<sup>72</sup> (22.2)																								
	<sup>67</sup> (19.4)																								
	<sup>63</sup> (17.2)																								
	<sup>57</sup> (13.9)																								
	<sup>72</sup> (22.2)																								
<b>80</b> (26.7)	<sup>67</sup> (19.4)																								
	<sup>63</sup> (17.2)																								
	<sup>57</sup> (13.9)																								
	<sup>72</sup> (22.2)																								
	<sup>67</sup> (19.4)																								
<b>75</b> (23.9)	<sup>72</sup> (22.2)																								
	<sup>67</sup> (19.4)																								
	<sup>63</sup> (17.2)																								
	<sup>57</sup> (13.9)																								
	<sup>72</sup> (22.2)																								
<b>80</b> (26.7)	<sup>67</sup> (19.4)																								
	<sup>63</sup> (17.2)																								
	<sup>57</sup> (13.9)																								
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# GUIDE SPECIFICATIONS

## GENERAL

### System Description

Outdoor-mounted, air-cooled, split-system air conditioning unit suitable for ground or rooftop installation. Unit consists of a hermetic compressor, an air-cooled coil, forward-swept blade propeller-type condenser fan, and a control box. Unit will discharge supply air upward as shown on contract drawings. Unit will be used in a refrigeration circuit to match up to a packaged fan coil or coil unit.

### Quality Assurance

- Unit will be rated in accordance with the latest edition of AHRI Standard 240.
- Unit will be certified for capacity and efficiency, and listed in the latest AHRI directory.
- Unit construction will comply with latest edition of ASHRAE and with NEC.
- Unit will be constructed in accordance with UL standards and will carry the UL label of approval. Unit will have C-UL approval.
- Unit cabinet will be capable of withstanding Federal Test Method Standard No. 141 (Method 6061) 500-hr salt spray test.
- Air-cooled condenser coils are pressure tested and the outdoor units are leak tested.
- Unit constructed in ISO9001 approved facility.

### Delivery, Storage, and Handling

- Unit will be shipped as single package only and is stored and handled per unit manufacturer's recommendations.

### Warranty (for inclusion by specifying engineer)

- U.S. and Canada only.

## PRODUCTS

### Equipment

- Factory-assembled, single-piece, air-cooled air conditioning unit. Contained within the unit enclosure is all factory wiring, piping, controls, compressor, refrigerant charge Puron® (R-410A) refrigerant, and special features required prior to field start-up.

### Unit Cabinet

- Unit cabinet will be constructed of galvanized steel, bonderized, and coated with a powder coat paint.

### Fans

- Condenser fan will be direct-drive propeller type, forward swept blade, discharging air upward.

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- Condenser fan motors will be totally enclosed, 1-phase type with class B insulation and permanently lubricated.
- Shafts will be corrosion resistant.
- Fan blades will be statically and dynamically balanced.
- Condenser fan openings will be equipped with coated steel wire safety guards.

### Compressor

- Compressor will be hermetically sealed.
- Compressor will be mounted on rubber vibration isolators.
- Compressor will be covered with a sound absorbing blanket.

### Condenser Coil

- Condenser coil will be air cooled.
- Coil will be constructed of aluminum fins mechanically bonded to copper tubes which are then cleaned, dehydrated, and sealed.

### Refrigeration Components

- Refrigeration circuit components will include liquid-line front-seating shutoff valve with sweat connections, vapor-line front-seating shutoff valve with sweat connections, system charge of Puron® (R-410A) refrigerant, POE compressor oil, accumulator, charge compensator, electronic expansion valve, and reversing valve.
- Unit will be equipped with high-pressure switch, suction pressure transducer, and filter drier for Puron® refrigerant.

### Operating Characteristics

- The capacity of the unit will meet or exceed \_\_\_\_\_ Btuh at a suction temperature of \_\_\_\_\_ °F (°C). The power consumption at full load will not exceed \_\_\_\_\_ kW.
- Combination of the unit and the evaporator or fan coil unit will have a total net cooling capacity of \_\_\_\_\_ Btuh or greater at conditions of \_\_\_\_\_ CFM entering air temperature at the evaporator at \_\_\_\_\_ °F (°C) wet bulb and \_\_\_\_\_ °F (°C) dry bulb, and air entering the unit at \_\_\_\_\_ °F (°C).
- The system will have a SEER of \_\_\_\_\_ Btuh/watt or greater at DOE conditions.

### Electrical Requirements

- Nominal unit electrical characteristics will be \_\_\_\_\_ v, single phase, 60 hz. The unit will be capable of satisfactory operation within voltage limits of \_\_\_\_\_ v to \_\_\_\_\_ v.
- Unit electrical power will be single point connection.
- Control circuit will be 24v.
- Compliant with IEC 61000-4-5 Transient Surge Requirement.

### Special Features

- Refer to section of this literature identifying accessories and descriptions for specific features and available enhancements.
- Evolution control with appropriate software version is required for full featured operation.

## SYSTEM DESIGN SUMMARY

1. Intended for outdoor installation with free air inlet and outlet. Outdoor fan external static pressure available is less than 0.01-in. wc.
2. This product is not qualified for low ambient cooling operation.  
Minimum cooling outdoor operating temperatures:
  - Communicating systems: 40°F (4.44°C)
  - Non-communicating systems: 55°F (12.8°C)
3. For reliable operation, unit should be level in all horizontal planes.
4. This unit is qualified for up to 100 ft (30.5 m) equivalent length of line set without additional accessories.
5. If any refrigerant tubing is buried, provide a 6 in. (152.4 mm) vertical rise to the valve connections at the unit. Refrigerant tubing lengths up to 36 in. (914.4 mm) may be buried without further consideration. Do not bury refrigerant lines longer than 36 in. (914.4 mm).
6. Use only copper wire for electric connection at unit. Aluminum and clad aluminum are not acceptable for the type of connector provided.
7. Do not apply capillary tube indoor coils to these units.
8. Puron refrigerant TXV required on indoor coil.