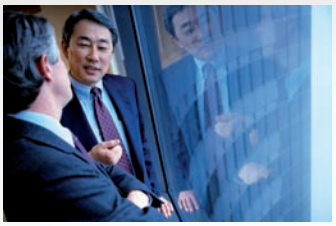
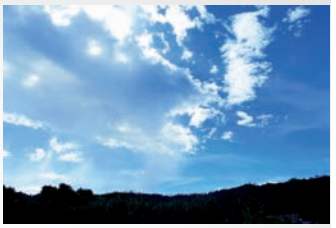
FALCON

Rooftop Units
ACPSJ 60Hz
Cooling Capacity : 189 to 1585 MBH (55 to 465 kW)
Heating Capacity : 191 to 1654 MBH (56 to 485 kW)





R410A

Intertek

DUNHAM-BUSH®

Products that perform...By people who care

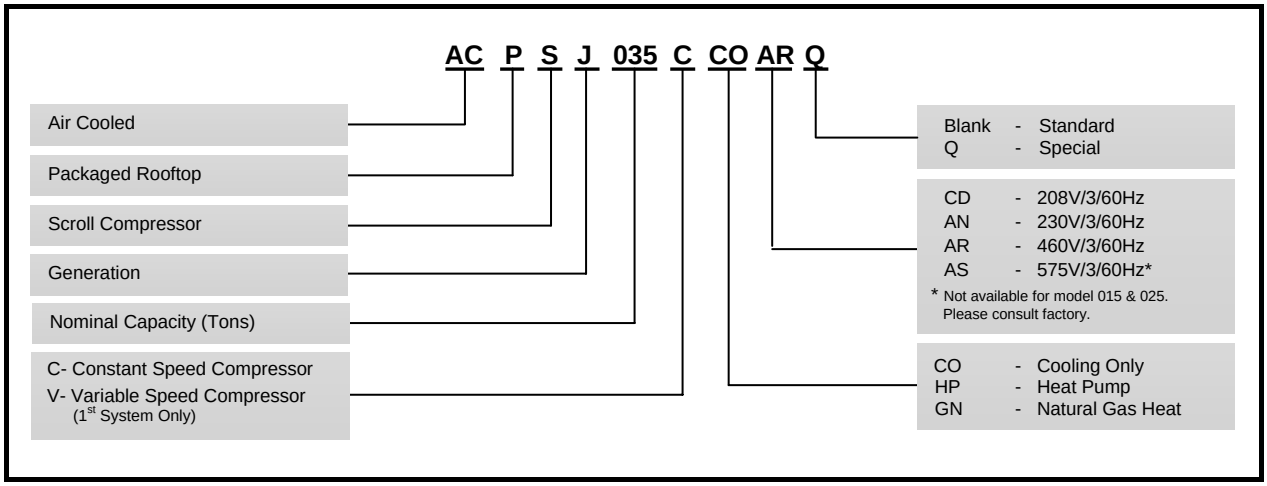
TABLE OF CONTENTS

INTRODUCTION

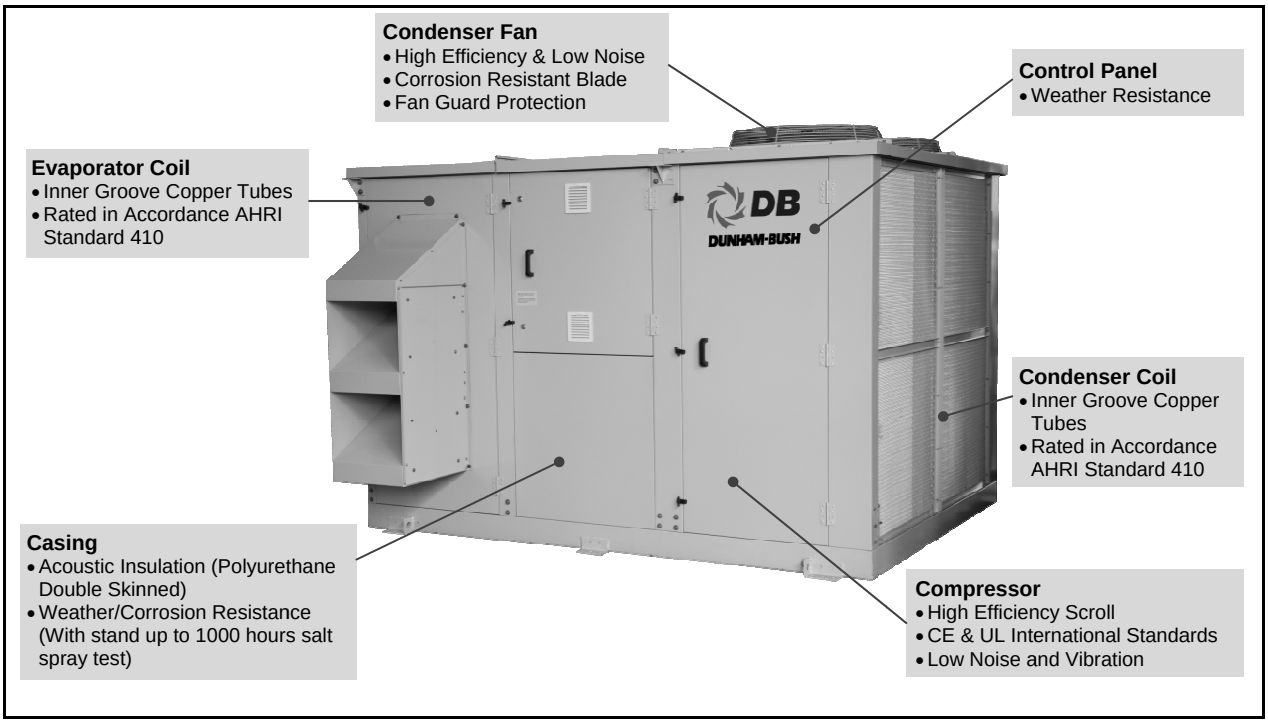
The ACPSJ series are specially designed and manufactured to makes Dunham-Bush packaged rooftop unit to perform at the highest efficiency possible and operate in a wide ambient temperature range 66°F [18.9°C] to 115°F [46.0°C]it is built specifically for outdoor installation. This series is using R410A refrigerant with cooling capacity range of 189 to 1585 MBH [55 to 465 kW] and heating capacity range of 191 to 1654 MBH [56 to 485 kW]. The units are rated in accordance with AHRI standards 210/240 and 340/360.

The ACPSJ series with new features is suitable for hotel, office, hospital, school, factory and supermarket applications. The low noise and compact series are completely leak tested, evacuated, dehydrated and charged with refrigerant prior to shipment (except for unit which evaporator and condenser section is shipped out loosely, refrigerant is charged at field).

NOMENCLATURE



COMPONENTS



STANDARD FEATURES

GENERAL

- 9 models from 189 to 1585 MBH (Cooling) and 191 to 1654 MBH (Heating) with nominal air flow up to 46000 CFM.
- Multiple compressors units provide redundancy and part load operation by cycling off compressor operation to match building load (except for model 015).
- No total shut down when servicing compressor for units with two or more refrigerant systems design.
- Unit design to allowed continuous operation up to 115 °F [46 °C].

COMPRESSOR(S)

- Most reliable hermetic compact scroll
- No contact scroll design that minimizes friction, increases volumetric efficiency and reduces vibration, thus longer service life.
- Suction gas cooled motor.
- Compact and light with minimum wear and tear.
- Unique ability to handle slight liquid refrigerant.
- Built-in thermal protectors to prevent motor overheating, loss of phase and low refrigerant or oil charge.
- High EER.
- Crankcase heater is supplied as standard offering to minimize liquid refrigerant migration to compressor during off cycle.

STANDARD FEATURES

EVAPORATOR SECTION

Efficient Evaporator Coil

- Evaporator coil is constructed with seamless inner-grooved copper tubes expanded into die-formed aluminum fins (except for model 015 and 025 are using hydrophilic fin as standard) in staggered configuration and rated in accordance with AHRI standard 410.
- Factory leak and pressure tested at 650psig [45 bar].
- Independent thermal expansion valve with external equalizer for better refrigerant control and wider load condition.

Blowers and Drive Package

- All evaporator fans are single-inlet-single-width (SISW), plenum with backward curved blades to provide more efficient, quieter, and experience less vibration.
- Direct driven transmission blowers with variable speed drives that improve the system efficiency grades and reduce maintenance costs.

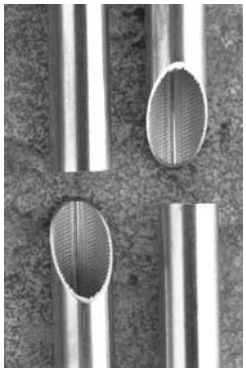
- All fans are statically and dynamically balanced to ensure smooth performance.
- Dedicated downflow configuration and horizontal as options.
- Direct driven blowers are driven by external rotor motor for model 015 and 025 (EC Fan/ Blower), internal rotor motor for model 035 to 130 (AC Fan/ Blower), IP55 enclosure rating with class F insulation motor.

*The motor efficiency for model 015 and 025 is surpassing NEMA Premium Efficiency class and for model 035 to 130, motor efficiency is equivalent to or better than NEMA High Efficiency class.

CONDENSER SECTION

Efficient Condenser Coil

- Condenser coils are manufactured of staggered row of 3/8”OD inner groove seamless cooper tube, rated in accordance with AHRI Standard 410.
- 25 to 30% more surface areas which guarantee better heat transfer.
- Mechanically expanded into die-formed corrugated bonded to aluminum fins.
- Integral sub-cooling circuit to maximize efficiency.
- Factory leak and pressure tested at 650psig [45 bar].



Condenser Fans

- Motor with Class “F” Insulation permits higher operating ambient temperature conditions.
- Low motor speed at 1140 rpm delivers quiet condenser fan operation and superior sound level.

FILTER SECTION

- High efficiency disposable type MERV 8 filter.
- 2” thick filter with (more than 90%) average arrestance efficiency.

CASING

- Casing is constructed from heavy gauge galvanized steel.
- Epoxy painted finishing, offers excellent corrosion resistance for outdoor applications, which withstand up to 1000 hours salt spray test in accordance to ASTM B-117.
- Wide ample access doors are provided for easy service and maintenance of unit internal parts.
- Double skinned 1” (25mm) thick in fill panel construction from pressure injected polyurethane foam (PU) insulation, heavy density for thermal insulation and sound attenuation.

ELECTRICAL AND CONTROLS

- High and low pressure switch is provided to each of the refrigerant system as standard safety feature.
- These safety switches prevents compressors to be operated at unsafe conditions.
- Built-in IEC DOL starter package and control package.

OPTIONAL ACCESSORIES

- Inverter Compressor
- Gas Heating
- Hot Gas Bypass
- Hot Water Heating Coil
- Discharge / Suction / Liquid Service Valves
- Alternative Fin Material for Evaporator Coil
- Alternative Fin Material for Condenser Coil
- Stainless Steel Drain Pan
- Replaceable Core Filter Drier
- Electronic Expansion Valve (EEV)
- Liquid Line Solenoid Valve (LLSV)
- Condenser Coil Guard
- Suction accumulator (only applicable for cooling only models)
- High and Low Pressure Gauges
- Evaporator Blower Isolator
- 4-Inch Filter on top of standard 2" Filter (2+4" Filter)
- 0-30% Outside Air Intake (consult factory for unit layout)
- Economizer (consult factory for unit layout)
- Barometric Relief (consult factory for unit layout)
- Exhaust/Return Fan System (consult factory for unit layout)
- EC Evaporator Fan
- EC Condenser Axial Fan
- Modulating Hot Gas Reheat
- Electric Heater
- Electric Heater Starter
- Door interlock Main Incoming Isolator
- Indicating Lights
- UVR/Phase Failure Protect
- Interface Module
- Lock Out Stop
- Differential Pressure Switch for Evaporator Blower
- Voltmeter
- Ammeter
- Compressor Soft Start
- VFD for Base Condenser Motor
- CO_2 Sensor
- 24VAC fire relay with transformer
- Supply Duct Static Pressure Sensor
- Building Pressurization Sensor
- Convenience Outlet

COOLING & HEATING PORTFOLIO

Model	Cooling		Heating	
	EER	Capacity MBH	COP	Capacity MBH
ACPSJ015	10.1	188.9	3.0	190.8
ACPSJ025	10.8	302.3	3.5	298.8
ACPSJ035	10.2	423.5	3.2	423.6
ACPSJ045	10.1	554.2	3.1	546.6
ACPSJ055	10.0	661.7	3.2	666.5
ACPSJ080	10.4	955.2	3.3	963.4
ACPSJ100	10.9	1205.2	3.5	1238.8
ACPSJ115	10.6	1402.0	3.5	1447.4
ACPSJ130	10.4	1584.8	3.4	1654.4

Notes: 1) Cooling Mode: At 80˚F (DB), 67˚F (WB) air on evaporator and 95˚F ambient air temperature on condenser.
2) Heating Mode: At 70˚F (DB) air on evaporator and 47˚F ambient air temperature on condenser.
3) Ratings are gross capacities. For net cooling capacity, deduct evaporator blower motor heat. Add evaporator blower motor heat for net heating capacity.
4) EER & COP published as above is gross EER & COP.

PHYSICAL SPECIFICATIONS

Cooling Only

Model	EER	Compressor		Condenser Coil		Condenser Fan		Evaporator Blower				Evaporator Coil		Air Filter	Refrigerant Charge	Approx. Unit Weight Lbs	Sound Pressure Level ±2 dB(A)
		Qty	No. of Refrigerant Circuit	Face Area ft^2	Row/ FPI	Size (Qty) Inches	Motor HP (Qty)	Standard Size mm	Nominal HP	Airflow (Nominal) CFM	Airflow Range CFM	Face Area ft^2	Row/ FPI	Size (Qty) Inches	Per System (Qty) Lbs		
ACPSJ 015CCO	10.1	1	1	23.3	3/16	28(2)	1-1/2(2)	450	n/a	4,800	3,600 - 5,700	12.0	4/12	20x25x2(4)	26.8 (1)	2848	66
ACPSJ 025CCO	10.8	2	2	34.0	5/12	28(2)	1-1/2(2)	500	n/a	7,800	6,000 - 8,500	20.0	5/14	20x25x2(6)	32.4 (2)	3389	68
ACPSJ 035CCO	10.2	3	2	44.6	4/16	31.5(2) or 31.7(2)	2(2) or 2 2/3(2)	710	7.5	11,000	8,800 - 16,000	29.2	4/14	20x25x2(9)	23.2 (1) 46.5 (1)	5071	76
ACPSJ 045CCO	10.1	3	2	58.3	4/16	28 (4)	1-1/2(4)	800	10.0	14,000	9,000 - 16,500	30.0	4/14	20x25x2(9)	29.8 (1) 59.6 (1)	6085	70
ACPSJ 055CCO	10.0	4	2	89.2	3/12	31.5(4)or 31.7(4)	2(4) or 2-2/3(4)	900	10.0	18,000	12,000 - 22,000	40.0	4/14	20x25x2(12)	52.4 (2)	8455	79
ACPSJ 080CCO	10.4	5	3	109.5	4/16	31.5(4) or 31.7(4)	2(4) or 2-2/3(4)	1120	15.0	25,000	18,200 - 31,500	60.4	4/14	20x25x2(18)	67.9 (2) 33.9 (1)	10443	79
ACPSJ 100CCO	10.9	6	3	164.3	4/16	31.5(6) or 31.7(6)	2(6) or 2-2/3(6)	1250	20.0	35,000	25,900 - 47,300	86.1	4/14	20x20x2(32)	85.5 (3)	14522	80
ACPSJ 115CCO	10.6	7	4	191.6	4/16	28(2) / 31.5(6) or 31.7(6)	1-1/2(2) / 2(6) or 2-2/3(6)	1250	25.0	42,000	27,500 - 50,300	91.5	4/14	20x20x2(16) 20x25x2(16)	84.3 (3) 42.1 (1)	15968	80
ACPSJ 130CCO	10.4	8	4	219.0	4/16	31.5(8) or 31.7(8)	2(8) or 2-2/3(8)	1250	40.0	46,000	32,300 - 59,200	107.6	4/14	20x20x2(32) 20x25x2(8)	84.5 (4)	16925	82

Notes:
1. Ratings are based on nominal airflow with on evaporator dry/wet bulb temperatures of 80/67°F [27/19.4°C] and condenser entering air temperature of 95°F [35°C].
2. Ratings are gross capacities. For net capacity deduct evaporator blower motor heat.
3. EER published as above is gross EER.
4. Evaporator blower motor's nominal HP is based on 1in WG ESP (external static pressure) for model 015 to 115 and 1.5 in WG for model 130.
5. For supply voltage 208/230/460V/3/60Hz, condenser fan diameter is 31.7" and condenser motor hp is 2-2/3hp.
6. For supply voltage 575V/3/60Hz, condenser fan diameter is 31.5" and condenser motor hp is 2hp.
7. Sound Pressure Level is calculated based on nominal airflow at external static pressure of 1in WG (for model 015 to 115) and 1.5in WG (for model 130). Rated at 3m [10ft] distance away from unit at free field. Unit supply and return are assumed to be entirely insulated. The actual sound at field could be affected by the supply and return duct break out noise.

Heat Pump

Model	EER	Compressor		Condenser Coil		Condenser Fan		Evaporator Blower				Evaporator Coil		Air Filter	Refrigerant Charge	Approx. Unit Weight (Lbs)	Sound Pressure Level ±2 dB(A)
		Qty	No. of Refrigerant Circuit	Face Area ft^2	Row/ FPI	Size (Qty) Inches	Motor HP (Qty)	Standard Size mm	Nominal HP	Airflow (Nominal) CFM	Airflow Range CFM	Face Area ft^2	Row/ FPI	Size (Qty) Inches	Per System (Qty) Lbs		
ACPSJ 015CHP	3.0	1	1	23.3	4/12	28(2)	1-1/2(2)	450	n/a	4,800	3,600 - 5,700	12.0	4/12	20x25x2(4)	34.8 (1)	2905	66
ACPSJ 025CHP	3.5	2	2	34.0	5/12	28(2)	1-1/2(2)	500	n/a	7,800	6,000 - 8,500	20.0	5/14	20x25x2(6)	32.4 (2)	3456	68
ACPSJ 035CHP	3.2	3	2	44.6	5/12	31.5(2) or 31.7(2)	2(2) or 2-2/3(2)	710	7.5	11,000	8,800 - 16,000	29.2	4/14	20x25x2(9)	28.3 (1) 56.7 (1)	5172	76
ACPSJ 045CHP	3.1	3	2	58.3	5/12	28(4)	1-1/2(4)	800	10.0	14,000	9,000 - 16,500	30.0	4/14	20x25x2(9)	36.5 (1) 73.0 (1)	6206	70
ACPSJ 055CHP	3.2	4	2	89.2	3/12	31.5(4) or 31.7(4)	2(4) or 2-2/3(4)	900	10.0	18,000	12,000 - 22,000	40.0	4/14	20x25x2(12)	52.4 (2)	8624	79
ACPSJ 080CHP	3.3	5	3	109.5	5/12	31.5(4) or 31.7(4)	2(4) or 2-2/3(4)	1120	15.0	25,000	18,200 - 31,500	60.4	4/14	20x25x2(18)	82.9 (2) 41.5 (1)	10652	79
ACPSJ 100CHP	3.5	6	3	164.3	5/12	31.5(6) or 31.7(6)	2(6) or 2-2/3(6)	1250	20.0	35,000	25,900 - 47,300	86.1	4/14	20x20x2(32)	103.4 (3)	14812	80
ACPSJ 115CHP	3.5	7	4	191.6	5/12	28(2) / 31.5(6) or 31.7(6)	1-1/2(2) / 2(6) or 2-2/3(6)	1250	25.0	42,000	27,500 - 50,300	91.5	4/14	20x20x2(16) 20x25x2(16)	103.0 (3) 51.5 (1)	16287	80
ACPSJ 130CHP	3.4	8	4	219.0	5/12	31.5(8) or 31.7(8)	2(8) or 2-2/3(8)	1250	40.0	46,000	32,300 - 59,200	107.6	4/14	20x20x2(32) 20x25x2(8)	103.2 (4)	17263	82

Notes:
1. Heat Pump models' cooling capacity is identical with Cooling Only models' cooling capacity.
2. Heating mode ratings are based on nominal airflow with on evaporator dry bulb temperatures of 70°F [21.1°C] and condenser entering air temperature of 47°F[8.3°C].
3. Ratings are gross capacities. For net cooling capacity deduct evaporator blower motor heat, net heating capacity to add blower motor heat.
4. COP published as above are gross COP.
5. Evaporator blower motor's nominal HP is based on 1in WG ESP (external static pressure) for model 015 to 115 and 1.5 in WG for model 130.
6. For supply voltage 208/230/460V/3/60Hz, condenser fan diameter is 31.7" and condenser motor hp is 2-2/3hp.
7. For supply voltage 575V/3/60Hz, condenser fan diameter is 31.5" and condenser motor hp is 2hp.
8. Sound Pressure Level is calculated based on nominal airflow at external static pressure of 1in WG (for model 015 to 115) and 1.5in WG (for model 130). Rated at 3m [10ft] distance away from unit at free field. Unit supply and return are assumed to be entirely insulated. The actual sound at field could be affected by the supply and return duct break out noise.

SYSTEM COOLING CAPACITY

PERFORMANCE DATA

Model	EER	Std. Capacity MBH	Air On Evap.			Cooling Capacity @ Ambient Air Temperature On Condenser														
						95ºF [35ºC]					105ºF [41ºC]					115ºF [46ºC]				
						Total		Sensible		kW Input	Total		Sensible		kW Input	Total		Sensible		kW Input
			CFM	WB Temp																
				ºF	ºC	MBH	kW	MBH	kW		MBH	kW	MBH	kW		MBH	kW	MBH	kW	
ACPSJ 015CCO	10.1	188.9	4800	72	22.2	206.3	60.5	100.2	29.4	14.7	198.8	58.3	96.9	28.4	16.6	191.1	56.0	95.2	27.9	18.5
				67	19.4	188.9	55.4	123.1	36.1	14.6	182.0	53.3	121.5	35.6	16.4	166.2	48.7	115.3	33.8	18.2
				62	16.7	172.5	50.6	146.8	43.0	14.3	166.2	48.7	143.9	42.2	16.0	159.9	46.9	141.0	41.3	18.0
ACPSJ 025CCO	10.8	302.3	7800	72	22.2	335.6	98.4	168.4	49.4	23.4	319.7	93.7	163.0	47.8	26.2	285.5	83.7	149.5	43.8	29.6
				67	19.4	302.3	88.6	209.1	61.3	22.4	287.9	84.4	204.0	59.8	25.1	257.3	75.4	191.4	56.1	28.5
				62	16.7	279.7	82.0	251.2	73.6	22.0	267.8	78.5	246.4	72.2	25.2	243.4	71.3	236.9	69.4	29.0
ACPSJ 035CCO	10.2	423.5	11000	72	22.2	468.3	137.3	229.6	67.3	35.1	450.0	131.9	222.0	65.1	39.8	406.7	119.2	210.6	61.7	44.6
				67	19.4	423.5	124.1	288.2	84.5	33.6	407.1	119.3	281.0	82.4	38.1	369.0	108.2	266.7	78.2	43.4
				62	16.7	390.8	114.5	344.9	101.1	33.6	376.1	110.2	338.2	99.1	38.4	344.5	101.0	324.9	95.2	43.5
ACPSJ 045CCO	10.1	554.2	14000	72	22.2	610.2	178.8	294.8	86.4	46.1	587.5	172.2	289.9	85.0	52.1	537.1	157.4	270.5	79.3	58.2
				67	19.4	554.2	162.4	367.6	107.7	45.2	533.7	156.4	358.5	105.1	50.7	488.2	143.1	340.3	99.7	57.3
				62	16.7	509.7	149.4	438.1	128.4	45.0	491.0	143.9	429.6	125.9	50.4	451.7	132.4	412.6	120.9	55.8
ACPSJ 055CCO	10.0	661.7	18000	72	22.2	728.5	213.5	360.8	105.8	52.6	697.5	204.4	348.4	102.1	59.2	630.0	184.7	329.7	96.6	66.0
				67	19.4	661.7	193.9	450.1	131.9	51.4	633.8	185.8	444.2	130.2	58.0	573.6	168.1	420.8	123.3	65.4
				62	16.7	610.4	178.9	548.0	160.6	49.6	585.9	171.7	537.1	157.4	56.4	536.4	157.2	515.2	151.0	63.2
ACPSJ 080CCO	10.4	955.2	25000	72	22.2	1047.2	306.9	531.4	155.8	78.0	1003.0	294.0	514.0	150.7	86.0	906.4	265.7	479.4	140.5	96.5
				67	19.4	955.2	280.0	662.4	194.1	74.8	915.4	268.3	646.0	189.3	83.8	823.8	241.5	613.6	179.8	94.3
				62	16.7	889.8	260.8	805.4	236.1	74.5	855.6	250.8	790.2	231.6	83.0	785.6	230.3	759.8	222.7	92.0
ACPSJ 100CCO	10.9	1205.2	35000	72	22.2	1320.4	387.0	683.6	200.4	85.8	1259.6	369.2	671.6	196.8	96.9	1197.4	351.0	647.2	189.7	108.3
				67	19.4	1205.2	353.2	870.8	255.2	85.8	1144.6	335.5	848.2	248.6	96.0	1098.6	322.0	836.8	245.3	106.8
				62	16.7	1198.0	351.1	1106.8	324.4	75.6	1152.2	337.7	1085.6	318.2	84.6	1107.0	324.5	1064.4	312.0	94.8
ACPSJ 115CCO	10.6	1402.0	42000	72	22.2	1531.4	448.9	803.4	235.5	100.1	1457.8	427.3	774.4	227.0	113.1	1382.6	405.2	759.8	222.7	126.4
				67	19.4	1402.0	410.9	1027.6	301.2	100.1	1338.2	392.2	1013.8	297.1	112.0	1264.4	370.6	986.6	289.2	124.6
				62	16.7	1391.0	407.7	1297.4	380.3	88.2	1336.0	391.6	1271.8	372.8	98.7	1281.4	375.6	1259.0	369.0	110.6
ACPSJ 130CCO	10.4	1584.8	46000	72	22.2	1736.8	509.1	913.4	267.7	114.4	1643.0	481.6	881.4	258.3	129.2	1552.8	455.1	849.6	249.0	144.4
				67	19.4	1584.8	464.5	1142.8	335.0	114.4	1497.8	439.0	1113.0	326.2	128.0	1418.4	415.7	1083.0	317.4	142.4
				62	16.7	1552.4	455.0	1438.4	421.6	100.8	1484.0	435.0	1410.4	413.4	112.8	1415.2	414.8	1382.6	405.2	126.4

Notes: 1) Ratings are based on 80ºF (27ºC) air on evaporator dry bulb temperature.
2) Ratings are gross capacities. For net capacity deduct evaporator blower motor heat.
3) kW input shown are total compressor(s) power input.
4) EER calculation is based on gross capacity and ESP (external static pressure) 1.0inwg for all models except model ACPSJ130 which is ESP 1.5inwg

SYSTEM HEATING CAPACITY

PERFORMANCE DATA

Model	COP	Std. Capacity MBH	Air On Evap.			Heating Capacity @ Ambient Air Temperature On Condenser								
			CFM	DB Temp		37ºF [2.8ºC]			47ºF [8.3ºC]			57ºF [13.9ºC]		
						Capacity		kW Input	Capacity		kW Input	Capacity		kW Input
				°F	°C	MBH	kW		MBH	kW		MBH	kW	
ACPSJ 015CHP	3.0	190.8	4800	60	15.6	170.2	49.9	11.9	194.4	57.0	12.9	218.7	64.1	13.9
				70	21.1	166.6	48.8	13.2	190.8	55.9	14.3	215.0	63.0	15.4
				80	26.7	162.9	47.7	14.7	187.0	54.8	15.9	211.4	62.0	17.1
ACPSJ 025CHP	3.5	298.8	7800	60	15.6	260.8	76.4	16.1	302.0	88.5	17.2	343.5	100.7	18.4
				70	21.1	253.6	74.3	18.0	298.8	87.6	19.4	340.1	99.7	20.7
				80	26.7	242.8	71.2	20.0	287.9	84.4	21.6	325.5	95.4	22.9
ACPSJ 035CHP	3.2	423.6	11000	60	15.6	382.9	112.2	25.5	432.7	126.8	27.1	492.8	144.4	29.3
				70	21.1	373.8	109.6	28.5	423.6	124.2	30.3	483.6	141.7	32.7
				80	26.7	364.7	106.9	32.0	414.5	121.5	34.1	444.3	130.2	35.3
ACPSJ 045CHP	3.1	546.6	14000	60	15.6	496.9	145.6	35.3	557.4	163.4	37.7	642.7	188.4	41.1
				70	21.1	486.1	142.5	39.0	546.6	160.2	41.7	631.7	185.2	45.6
				80	26.7	475.2	139.3	43.4	535.6	157.0	46.4	596.7	174.9	49.5
ACPSJ 055CHP	3.2	666.5	18000	60	15.6	587.0	172.0	37.9	680.7	199.5	41.2	775.5	227.3	44.6
				70	21.1	572.2	167.7	42.2	666.5	195.4	45.8	761.1	223.1	49.6
				80	26.7	558.0	163.5	47.2	652.2	191.2	51.0	739.4	216.7	55.0
ACPSJ 080CHP	3.3	963.4	25000	60	15.6	868.6	254.6	56.8	983.8	288.4	60.8	1122.6	329.0	65.5
				70	21.1	848.4	248.7	62.8	963.4	282.4	67.3	1102.0	323.0	72.5
				80	26.7	827.8	242.6	69.8	942.8	276.3	74.5	1082.0	317.1	80.5
ACPSJ 100CHP	3.5	1238.8	35000	60	15.6	1091.4	319.9	65.4	1251.2	366.7	69.9	1412.8	414.1	74.7
				70	21.1	1094.0	320.7	73.2	1238.8	363.1	77.7	1400.4	410.5	83.1
				80	26.7	1065.4	312.3	81.0	1193.8	349.9	85.5	1355.0	397.2	91.2
ACPSJ 115CHP	3.5	1447.4	42000	60	15.6	1274.4	373.5	76.3	1461.6	428.4	81.6	1651.2	484.0	87.2
				70	21.1	1277.8	374.5	85.4	1447.4	424.2	90.7	1637.0	479.8	97.0
				80	26.7	1244.4	364.7	94.5	1394.8	408.8	99.8	1584.0	464.3	106.4
ACPSJ 130CHP	3.4	1654.4	46000	60	15.6	1461.4	428.3	87.6	1670.8	489.7	93.6	1882.8	551.8	100.0
				70	21.1	1443.4	423.1	97.6	1654.4	484.9	104.0	1844.8	540.7	110.8
				80	26.7	1405.6	412.0	108.0	1531.4	448.9	112.8	1785.2	523.2	121.6

Notes: 1) Ratings are gross capacities. For net capacity add evaporator blower motor heat.
2) kW input shown in the table is total compressor(s) power input.
3) COP calculation is based on gross capacity and ESP (external static pressure) 1.0inwg for all models except model ACPSJ130 which is ESP 1.5inwg

GAS HEAT / ELECTRIC HEAT DATA

GAS HEATING CAPACITY

Model			ACPSJ015	ACPSJ025	ACPSJ035	ACPSJ045	ACPSJ055	ACPSJ080	ACPSJ100	ACPSJ115	ACPSJ130
Type of Gas			Natural Gas								
Nominal Airflow, ft³/min			4,800	7,800	11,000	14,000	18,000	25,000	35,000	42,000	46,000
Gas Heater Input, MBH		Low Heat	n/a	250	350	350	400	600	n/a	n/a	n/a
		High Heat	250	400	700	700	800	1200	1200	1200	1200
Gas Heater Output, MBH		Low Heat	n/a	200	280	280	320	480	n/a	n/a	n/a
		High Heat	200	320	560	560	640	960	960	960	960
Steady State Efficiency, %			80								
Gas Heater Stage		Low Heat	n/a	2	2	2	2	2	n/a	n/a	n/a
		High Heat	2	2	4	4	4	4	4	4	4
Min Airflow Permissible, ft³/min		Low Heat	n/a	3,122	4,351	4,351	4,966	7,423	n/a	n/a	n/a
		High Heat	3,122	4,966	8,652	8,652	9,881	14,797	14,797	14,797	14,797
Natural Gas Inlet Pressure, In.wg	Low Heat	Minimum	n/a	5	5	5	5	6	n/a	n/a	n/a
		Maximum	n/a	13.5	13.5	13.5	13.5	13.5	n/a	n/a	n/a
	High Heat	Minimum	5	5	5	5	5	6	6	6	6
		Maximum	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
Gas connection, Inches (Quantity)		Low Heat	n/a	3/4" MNPT (1)	3/4" MNPT (1)	3/4" MNPT (1)	3/4" MNPT (1)	1" MNPT (1)	n/a	n/a	n/a
		High Heat	3/4" MNPT (1)	3/4" MNPT (1)	2" MNPT (1)	2" MNPT (1)	2" MNPT (1)	2" MNPT (1)	2" MNPT (1)	2" MNPT (1)	2" MNPT (1)
Air Pressure Drop Across Heater, In.wg		Low Heat	n/a	0.60	0.13	0.21	0.37	0.50	n/a	n/a	n/a
		High Heat	0.25	0.37	0.04	0.06	0.10	0.29	0.53	0.75	0.89

Notes: 1) Gas heat performance data is based on entering air (on heater) condition 70°F temperature and 29.92"Hg barometric pressure (standard air density).
2) For gas heater installed at elevation more than 2000 ft, heating capacity deration of 4% per 1000 ft elevation shall be applied.
3) For gas heater installed at elevation more than 6000 ft, please consult factory.
4) Max temperature rise across heater = 60°F ; Min temperature rise across heater = 20°F
5) 'Minimum airflow permissible' calculation is based on gas heater full load/fire at 60°F temp rise

ELECTRIC HEATING CAPACITY

Model		ACPSJ015	ACPSJ025	ACPSJ035	ACPSJ045	ACPSJ055	ACPSJ080	ACPSJ100	ACPSJ115	ACPSJ130
Nominal Airflow, ft³/min		4,800	7,800	11,000	14,000	18,000	25,000	35,000	42,000	46,000
Stages		3					4		5	
Heating Capacity	kW	24	30	36	45	54	72	84	105	105
	MBH	82	102	123	154	184	246	287	359	359
Delta T* (°F)		15.7	15.7	12.1	10.3	10.1	9.4	9.1	7.6	7.9
Pressure drop, inwg		0.10	0.10	0.11	0.18	0.20	0.25	0.28	0.29	0.30

Notes: *Temperature difference/rise is calculated at nominal cfm

BLOWER PERFORMANCE

EVAPORATOR

Model	Airflow on Evaporator Coil		Blower Size	Internal Static Pressure (ISP)		External Static Pressure (ESP)														
						1.00					1.50					2.00				
	CFM	m³/h		in WG	Pa	Total St. Pressure	Fan RPM	BHP	Max Fan RPM	Installed Motor Hp	Total St. Pressure	Fan RPM	BHP	Max Fan RPM	Installed Motor Hp	Total St. Pressure	Fan RPM	BHP	Max Fan RPM	Installed Motor Hp
ACPSJ015	4800	8155	450	0.89	221.7	1.89	1861	2.5	2600	N/A	2.39	1957	2.9	2,600	N/A	2.89	2052	3.5	2,600	N/A
ACPSJ025	7800	13252	500	1.06	264.0	2.06	1991	4.5	2250	N/A	2.56	2059	5.3	2,250	N/A	3.06	2127	6.1	2,250	N/A
ACPSJ035	11000	18689	710	0.93	231.6	1.93	1078	4.9	1450	7.5	2.43	1142	5.9	1,450	7.5	2.93	1207	7.0	1,450	10
ACPSJ045	14000	23786	800	1.10	274.0	2.10	976	6.6	1280	10	2.60	1034	7.9	1,280	10	3.10	1091	9.3	1,280	15
ACPSJ055	18000	30582	900	1.06	264.0	2.06	871	8.4	1130	10	2.56	921	10.0	1,130	15	3.06	971	11.8	1,130	15
ACPSJ080	25000	42475	1120	1.09	271.5	2.09	691	11.6	900	15	2.59	733	14.0	900	20	3.09	754	16.5	920	20
ACPSJ100	35000	59465	1250	1.07	266.5	2.07	606	15.9	830	20	2.57	645	19.2	830	25	3.07	682	22.7	830	30
ACPSJ115	42000	71358	1250	1.20	298.9	2.20	677	21.6	830	25	2.70	709	25.3	830	30	3.20	741	29.2	830	40
ACPSJ130	46000	78155	1250	1.12	279.0	N/A	N/A	N/A	N/A	N/A	2.62	740	28.2	830	40	3.12	770	32.3	1,100	40

Notes: 1) Model 015 and 025 are using EC (Electronically Commutated) plenum fan.
2) For model 015 and 025, the stated "Brake Horse Power" information is "Power Input" information.
3) Internal static pressure (ISP) includes pressure drops through evaporator coil, standard filter and unit casing.
4) Please consult factory for shaded area and ESP exceeds what has been specified in the above table.

LIMITS AND CORRECTION FACTORS

OPERATING LIMITS

COOLING (AIR TEMPERATURE °F)

		DB	WB
OUTDOOR	MAX.	115	-
	MIN.	66	-

HEATING (AIR TEMPERATURE °F)

		DB	WB
OUTDOOR	MAX.	75	-
	MIN.	15	-

CORRECTION FACTORS

TO CORRECT FOR VARIATION IN AIR FLOW, USE THIS MULTIPLIER

AIR FLOW VARIATION	TOTAL CAPACITY	SENSIBLE CAPACITY
0.9	0.980	0.950
1.0	1.000	1.000
1.1	1.015	1.045

TO CORRECT FOR ALTITUDE, USE THIS MULTIPLIER

AIR ABOVE SEA LEVEL - FT	COOLING CAPACITY
0	1
2000	0.98
3000	0.97
4000	0.96
5000	0.95
6000	0.93

ELECTRICAL DATA

208V / 3Ph / 60Hz

Model	Sys	Compressor		Compressor Rating			Condenser Fan			Evaporator Blower (Std.)				Unit Rating (Std.)		
		Qty	Power Supply	MRA (Each)	NRA (Each)	LRA (Each)	Qty	Mtr. HP (Each)	FLA (Each)	Qty	Mtr. HP (Each)	FLA (Each)	LRA (Each)	FLA	MCA	MFS
ACPSJ015	1	1	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0	2	1.5	5.5	1	7.6	19.9	-	82.9	95.9	150.0
ACPSJ025	1	1	200-230V/3PH/60Hz	1x55.0	1x38.0	1x245.0	2	1.5	5.5	1	7.6	19.9	-	106.9	116.4	150.0
	2	1	200-230V/3PH/60Hz	1x55.0	1x38.0	1x245.0										
ACPSJ035	1	2	200-230V/3PH/60Hz	1x55.0	1x38.0	1x245.0	2	2.0	7.2	1	7.5	19.7	140.4	148.1	157.6	200.0
	2	1	200-230V/3PH/60Hz	1x55.0	1x38.0	1x245.0										
ACPSJ045	1	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0	4	1.5	5.5	1	10.0	25.7	179.1	203.7	216.7	250.0
	2	1	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										
ACPSJ055	1	2	200-230V/3PH/60Hz	1x59.0	1x42.8	1x300.0	4	2.0	7.2	1	10.0	25.7	179.1	225.7	236.4	300.0
	2	2	200-230V/3PH/60Hz	1x59.0	1x42.8	1x300.0										
ACPSJ080	1	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0	4	2.0	7.2	1	15.0	38.3	256.5	327.1	340.1	400.0
	2	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										
	3	1	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										
ACPSJ100	1	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0	6	2.0	7.2	1	20.0	51.5	320.7	406.7	419.7	500.0
	2	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										
	3	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										
ACPSJ115	1	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0	2	1.5	5.5	1	25.0	63.9	403.6	482.1	495.1	600.0
	2	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										
	3	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0	6	2.0	7.2							
	4	1	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										
ACPSJ130	1	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0	8	2.0	7.2	1	40.0	98.9	641.3	572.5	585.5	700.0
	2	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										
	3	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										
	4	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										

230V / 3Ph / 60Hz

Model	Sys	Compressor		Compressor Rating			Condenser Fan			Evaporator Blower (Std.)				Unit Rating (Std.)		
		Qty	Power Supply	MRA (Each)	NRA (Each)	LRA (Each)	Qty	Mtr. HP (Each)	FLA (Each)	Qty	Mtr. HP (Each)	FLA (Each)	LRA (Each)	FLA	MCA	MFS
ACPSJ015	1	1	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0	2	1.5	5.5	1	7.6	18.0	-	81.0	94.0	150.0
ACPSJ025	1	1	200-230V/3PH/60Hz	1x55.0	1x38.0	1x245.0	2	1.5	5.5	1	7.6	18.0	-	105.0	114.5	150.0
	2	1	200-230V/3PH/60Hz	1x55.0	1x38.0	1x245.0										
ACPSJ035	1	2	200-230V/3PH/60Hz	1x55.0	1x38.0	1x245.0	2	2.0	6.8	1	7.5	17.8	127.0	145.4	154.9	200.0
	2	1	200-230V/3PH/60Hz	1x55.0	1x38.0	1x245.0										
ACPSJ045	1	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0	4	1.5	5.5	1	10.0	23.2	162.0	201.2	214.2	250.0
	2	1	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										
ACPSJ055	1	2	200-230V/3PH/60Hz	1x59.0	1x42.8	1x300.0	4	2.0	6.8	1	10.0	23.2	162.0	221.6	232.3	300.0
	2	2	200-230V/3PH/60Hz	1x59.0	1x42.8	1x300.0										
ACPSJ080	1	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0	4	2.0	6.8	1	15.0	34.6	232.0	321.8	334.8	400.0
	2	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										
	3	1	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										
ACPSJ100	1	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0	6	2.0	6.8	1	20.0	46.6	290.0	399.4	412.4	500.0
	2	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										
	3	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										
ACPSJ115	1	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0	2	1.5	5.5	1	25.0	57.8	365.0	473.6	486.6	600.0
	2	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										
	3	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0	6	2.0	6.8							
	4	1	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										
ACPSJ130	1	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0	8	2.0	6.8	1	40.0	89.4	580.0	559.8	572.8	700.0
	2	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										
	3	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										
	4	2	200-230V/3PH/60Hz	1x74.0	1x52.0	1x340.0										

ELECTRICAL DATA

460V/3PH/60Hz

Model	Sys	Compressor		Compressor Rating			Condenser Fan			Evaporator Blower (Std.)				Unit Rating (Std.)		
		Qty	Power Supply	MRA (Each)	NRA (Each)	LRA (Each)	Qty	Mtr. HP (Each)	FLA (Each)	Qty	Mtr. HP (Each)	FLA (Each)	LRA (Each)	FLA	MCA	MFS
ACPSJ015	1	1	460V/3PH/60Hz	1x34.0	1x26.3	1x179.0	2	1.5	2.7	1	7.6	9.0	-	40.7	47.3	70.0
ACPSJ025	1	1	460V/3PH/60Hz	1x25.0	1x18.0	1x125.0	2	1.5	2.7	1	7.6	9.0	-	50.4	54.9	70.0
	2	1	460V/3PH/60Hz	1x25.0	1x18.0	1x125.0										
ACPSJ035	1	2	460V/3PH/60Hz	1x25.0	1x18.0	1x125.0	2	2.0	3.4	1	7.5	8.9	63.5	69.7	74.2	90.0
	2	1	460V/3PH/60Hz	1x25.0	1x18.0	1x125.0										
ACPSJ045	1	2	460V/3PH/60Hz	1x34.0	1x26.3	1x179.0	4	1.5	2.7	1	10.0	11.6	81.0	101.3	107.9	125.0
	2	1	460V/3PH/60Hz	1x34.0	1x26.3	1x179.0										
ACPSJ055	1	2	460V/3PH/60Hz	1x31.0	1x21.0	1x150.0	4	2.0	3.4	1	10.0	11.6	81.0	109.2	114.5	150.0
	2	2	460V/3PH/60Hz	1x31.0	1x21.0	1x150.0										
ACPSJ080	1	2	460V/3PH/60Hz	1x34.0	1x26.3	1x179.0	4	2.0	3.4	1	15.0	17.3	116.0	162.4	169.0	200.0
	2	2	460V/3PH/60Hz	1x34.0	1x26.3	1x179.0										
	3	1	460V/3PH/60Hz	1x34.0	1x26.3	1x179.0										
ACPSJ100	1	2	460V/3PH/60Hz	1x34.0	1x26.3	1x179.0	6	2.0	3.4	1	20.0	23.3	145.0	201.5	208.1	225.0
	2	2	460V/3PH/60Hz	1x34.0	1x26.3	1x179.0										
	3	2	460V/3PH/60Hz	1x34.0	1x26.3	1x179.0										
ACPSJ115	1	2	460V/3PH/60Hz	1x34.0	1x26.3	1x179.0	2	1.5	2.7	1	25.0	28.9	182.5	238.8	245.4	300.0
	2	2	460V/3PH/60Hz	1x34.0	1x26.3	1x179.0										
	3	2	460V/3PH/60Hz	1x34.0	1x26.3	1x179.0	6	2.0	3.4							
	4	1	460V/3PH/60Hz	1x34.0	1x26.3	1x179.0										
ACPSJ130	1	2	460V/3PH/60Hz	1x34.0	1x26.3	1x179.0	8	2.0	3.4	1	40.0	44.7	290.0	282.3	288.9	300.0
	2	2	460V/3PH/60Hz	1x34.0	1x26.3	1x179.0										
	3	2	460V/3PH/60Hz	1x34.0	1x26.3	1x179.0										
	4	2	460V/3PH/60Hz	1x34.0	1x26.3	1x179.0										

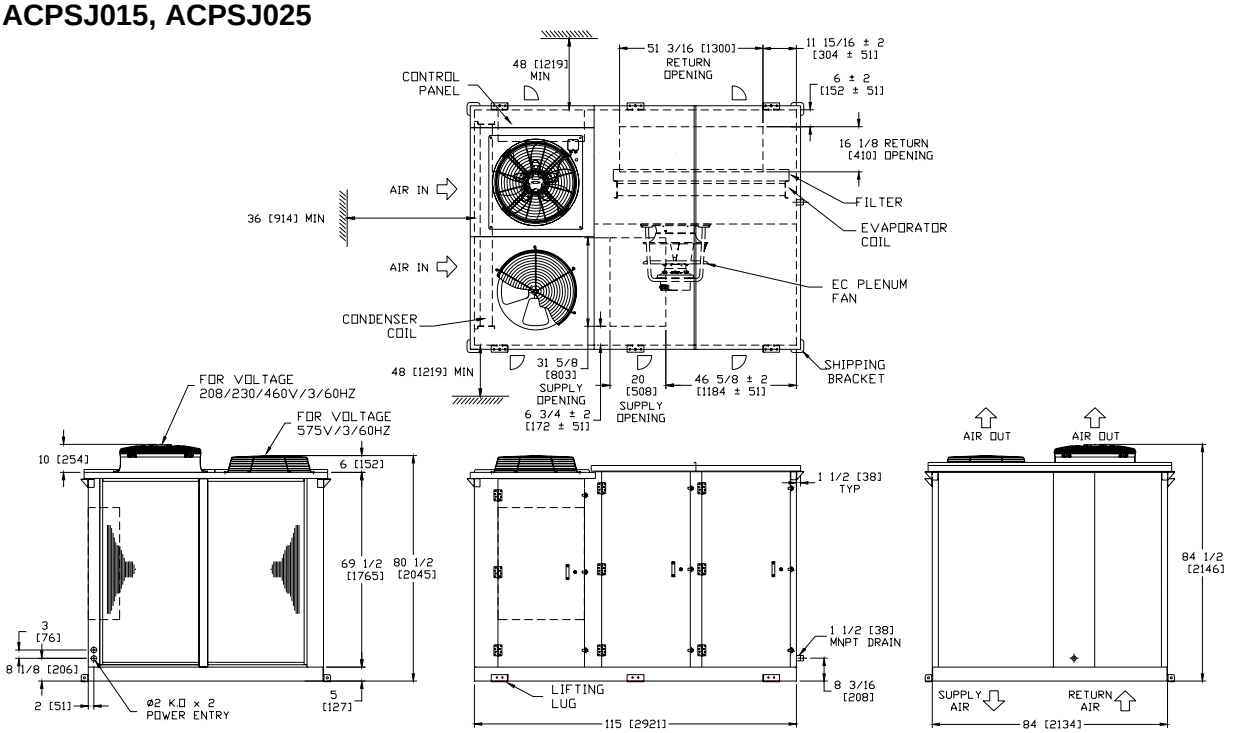
575V/3PH/60Hz

Model	Sys	Compressor		Compressor Rating			Condenser Fan			Evaporator Blower (Std.)				Unit Rating (Std.)		
		Qty	Power Supply	MRA (Each)	NRA (Each)	LRA (Each)	Qty	Mtr. HP (Each)	FLA (Each)	Qty	Mtr. HP (Each)	FLA (Each)	LRA (Each)	FLA	MCA	MFS
ACPSJ015	1	1	575V/3PH/60Hz	1x27.0	1x21.5	1x132.0	2	1.5	2.2	1	7.6	7.2	-	33.0	38.4	60.0
ACPSJ025	1	1	575V/3PH/60Hz	1x19.0	1x15.1	1x100.0	2	1.5	2.2	1	7.6	7.2	-	41.7	45.5	60.0
	2	1	575V/3PH/60Hz	1x19.0	1x15.1	1x100.0										
ACPSJ035	1	2	575V/3PH/60Hz	1x19.0	1x15.1	1x100.0	2	2.0	2.7	1	7.5	7.1	50.8	57.9	61.6	80.0
	2	1	575V/3PH/60Hz	1x19.0	1x15.1	1x100.0										
ACPSJ045	1	2	575V/3PH/60Hz	1x27.0	1x21.5	1x132.0	4	1.5	2.2	1	10.0	9.3	64.8	82.4	87.8	110.0
	2	1	575V/3PH/60Hz	1x27.0	1x21.5	1x132.0										
ACPSJ055	1	2	575V/3PH/60Hz	1x24.0	1x18.6	1x109.0	4	2.0	2.7	1	10.0	9.3	64.8	94.6	99.2	125.0
	2	2	575V/3PH/60Hz	1x24.0	1x18.6	1x109.0										
ACPSJ080	1	2	575V/3PH/60Hz	1x27.0	1x21.5	1x132.0	4	2.0	2.7	1	15.0	13.8	92.8	132.2	137.6	150.0
	2	2	575V/3PH/60Hz	1x27.0	1x21.5	1x132.0										
	3	1	575V/3PH/60Hz	1x27.0	1x21.5	1x132.0										
ACPSJ100	1	2	575V/3PH/60Hz	1x27.0	1x21.5	1x132.0	6	2.0	2.7	1	20.0	18.6	116.0	164.0	169.3	200.0
	2	2	575V/3PH/60Hz	1x27.0	1x21.5	1x132.0										
	3	2	575V/3PH/60Hz	1x27.0	1x21.5	1x132.0										
ACPSJ115	1	2	575V/3PH/60Hz	1x27.0	1x21.5	1x132.0	2	1.5	2.2	1	25.0	23.1	146.0	194.3	199.6	225.0
	2	2	575V/3PH/60Hz	1x27.0	1x21.5	1x132.0										
	3	2	575V/3PH/60Hz	1x27.0	1x21.5	1x132.0	6	2.0	2.7							
	4	1	575V/3PH/60Hz	1x27.0	1x21.5	1x132.0										
ACPSJ130	1	2	575V/3PH/60Hz	1x27.0	1x21.5	1x132.0	8	2.0	2.7	1	40.0	35.8	232.0	229.5	234.9	250.0
	2	2	575V/3PH/60Hz	1x27.0	1x21.5	1x132.0										
	3	2	575V/3PH/60Hz	1x27.0	1x21.5	1x132.0										
	4	2	575V/3PH/60Hz	1x27.0	1x21.5	1x132.0										

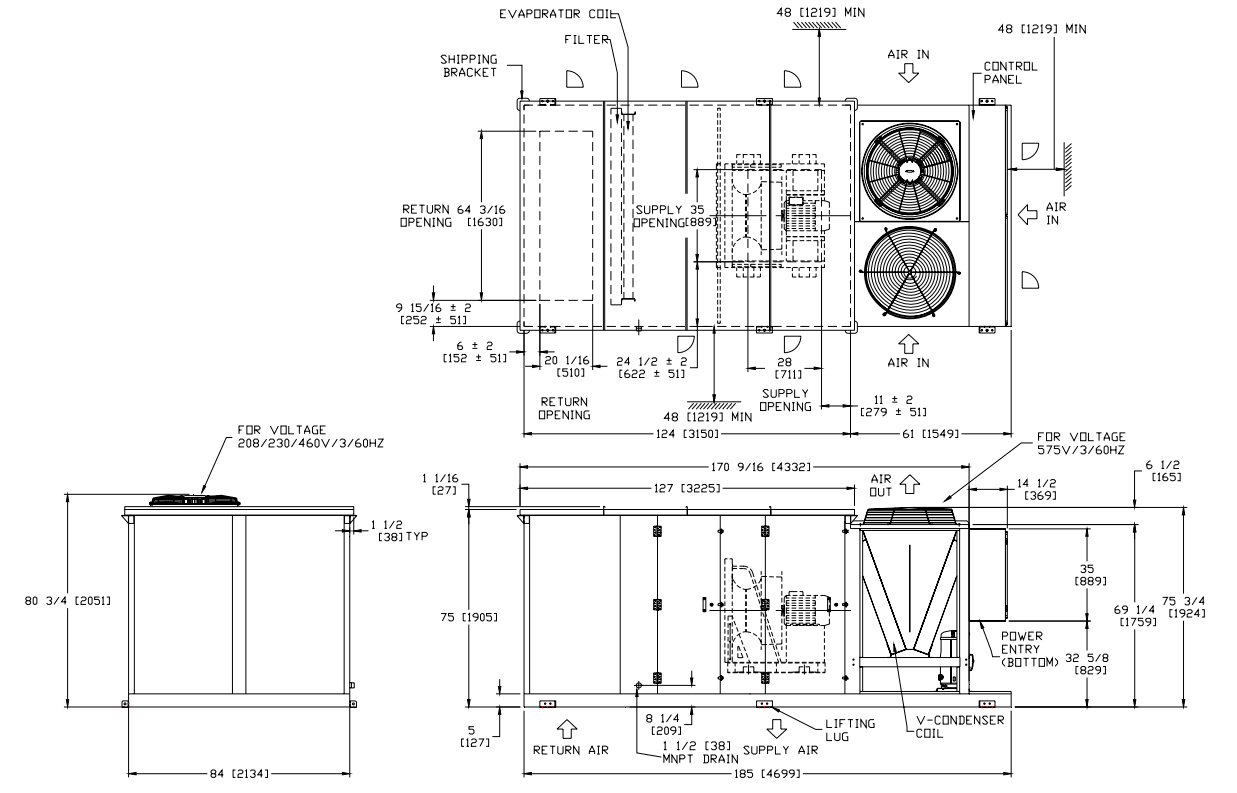
DIMENSIONAL DATA

1. STANDARD COOLING ONLY/HEAT PUMP MODELS

ACPSJ015, ACPSJ025



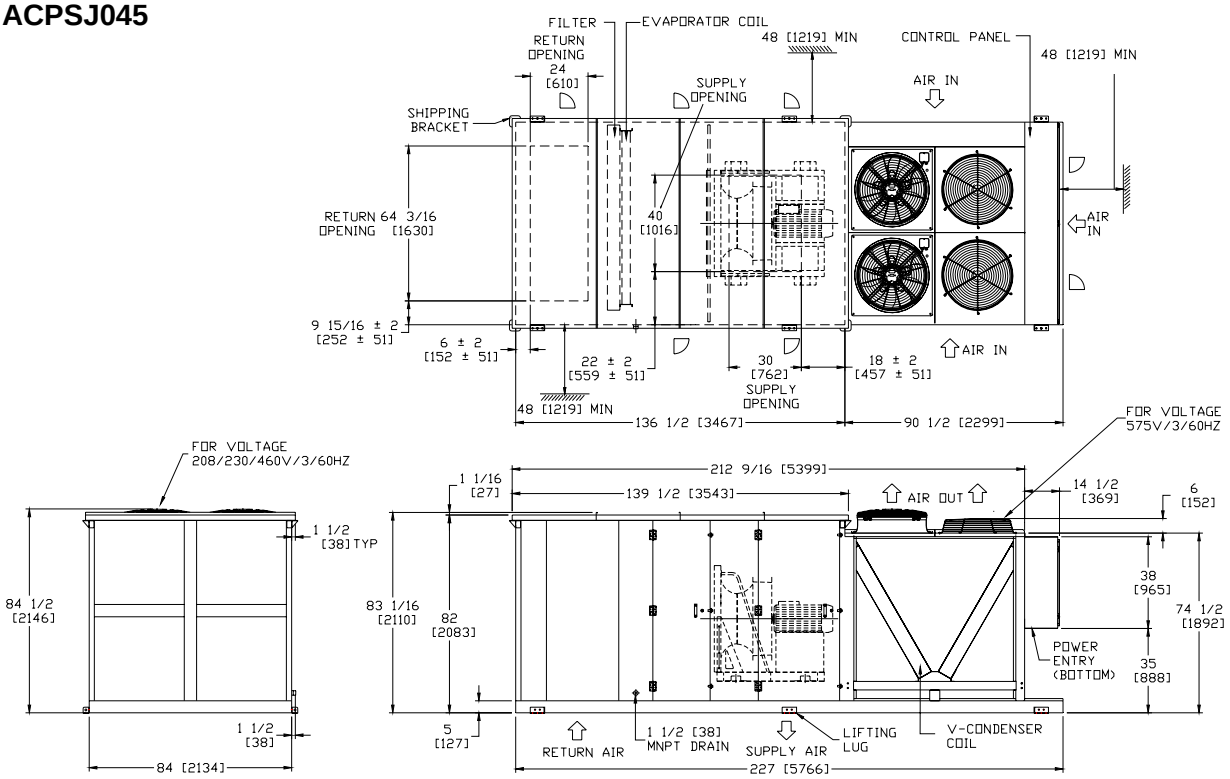
ACPSJ035



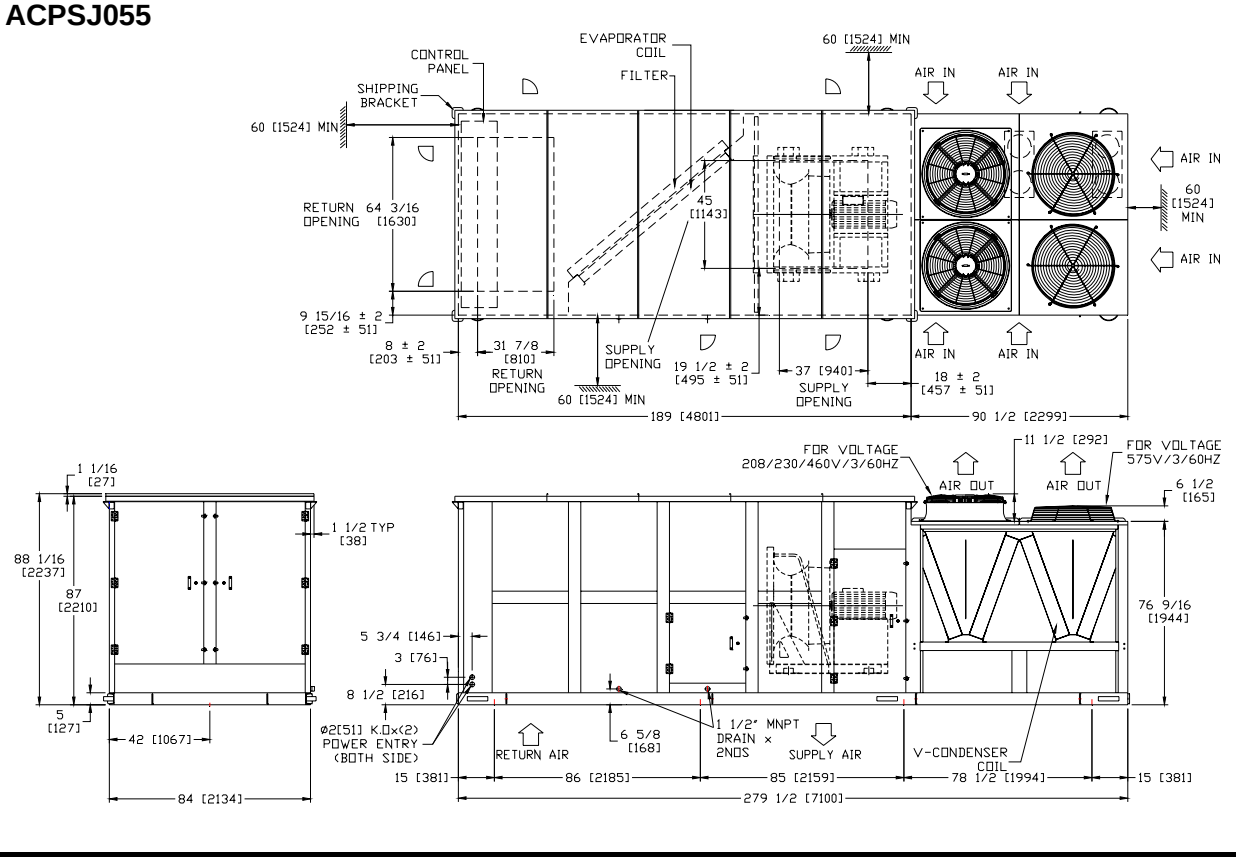
Note: All dimensions are in inches [mm].

DIMENSIONAL DATA

ACPSJ045



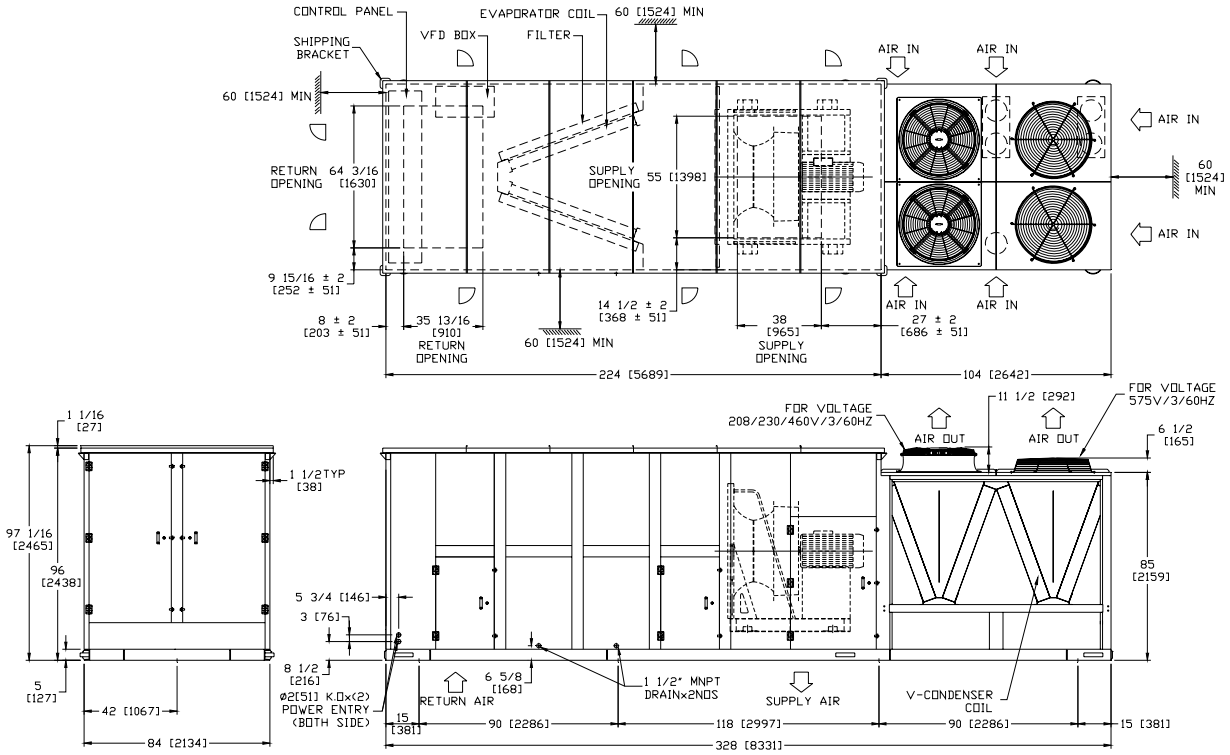
ACPSJ055



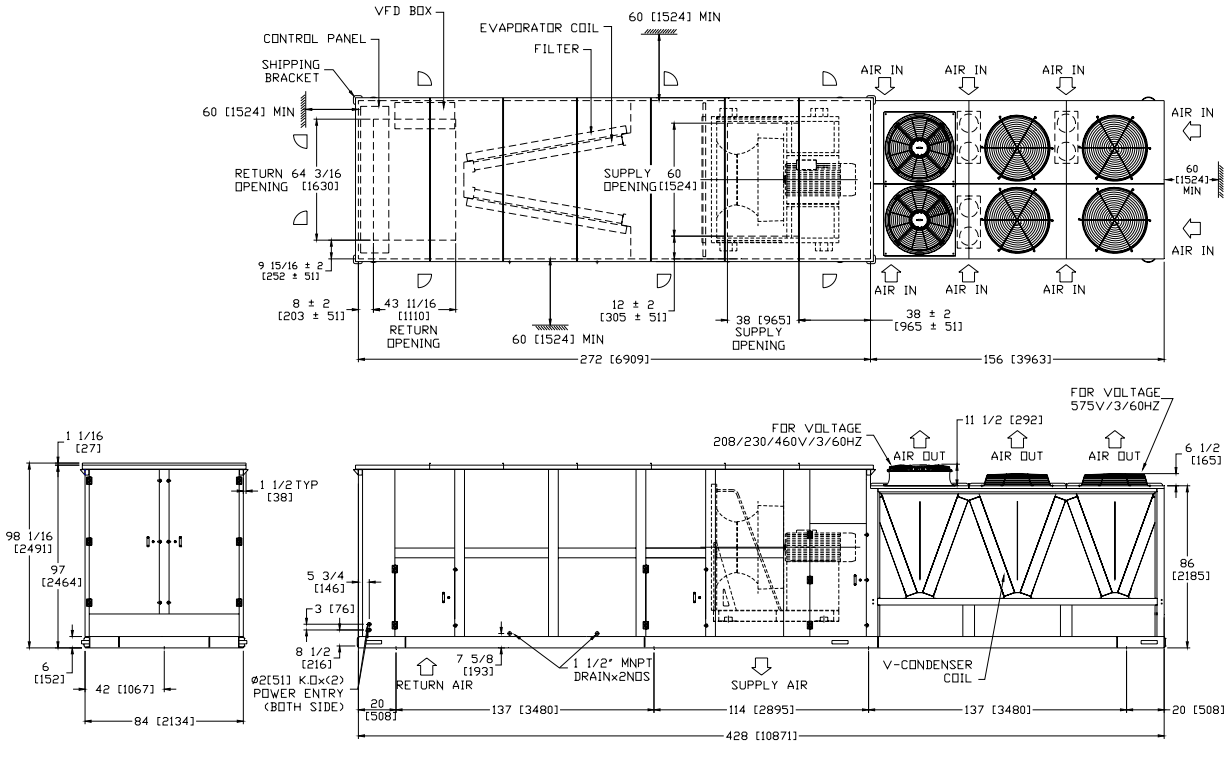
Note: All dimensions are in inches [mm].

DIMENSIONAL DATA

ACPSJ080



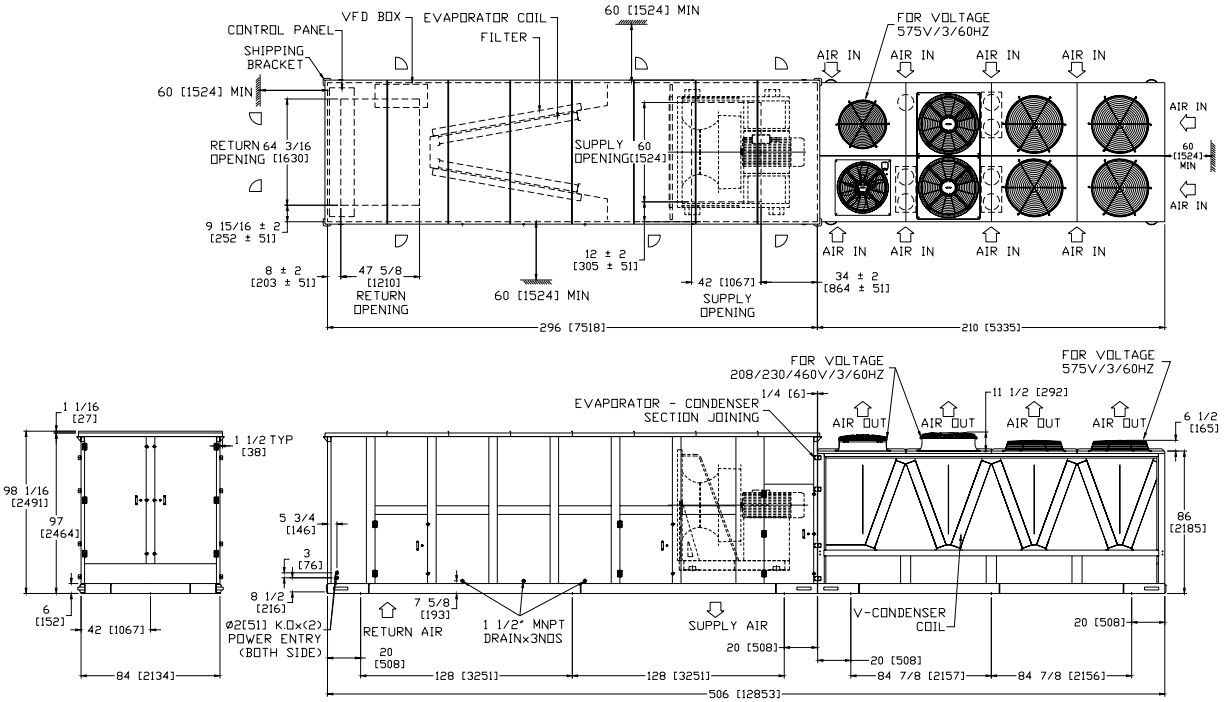
ACPSJ100



Note: All dimensions are in inches [mm].

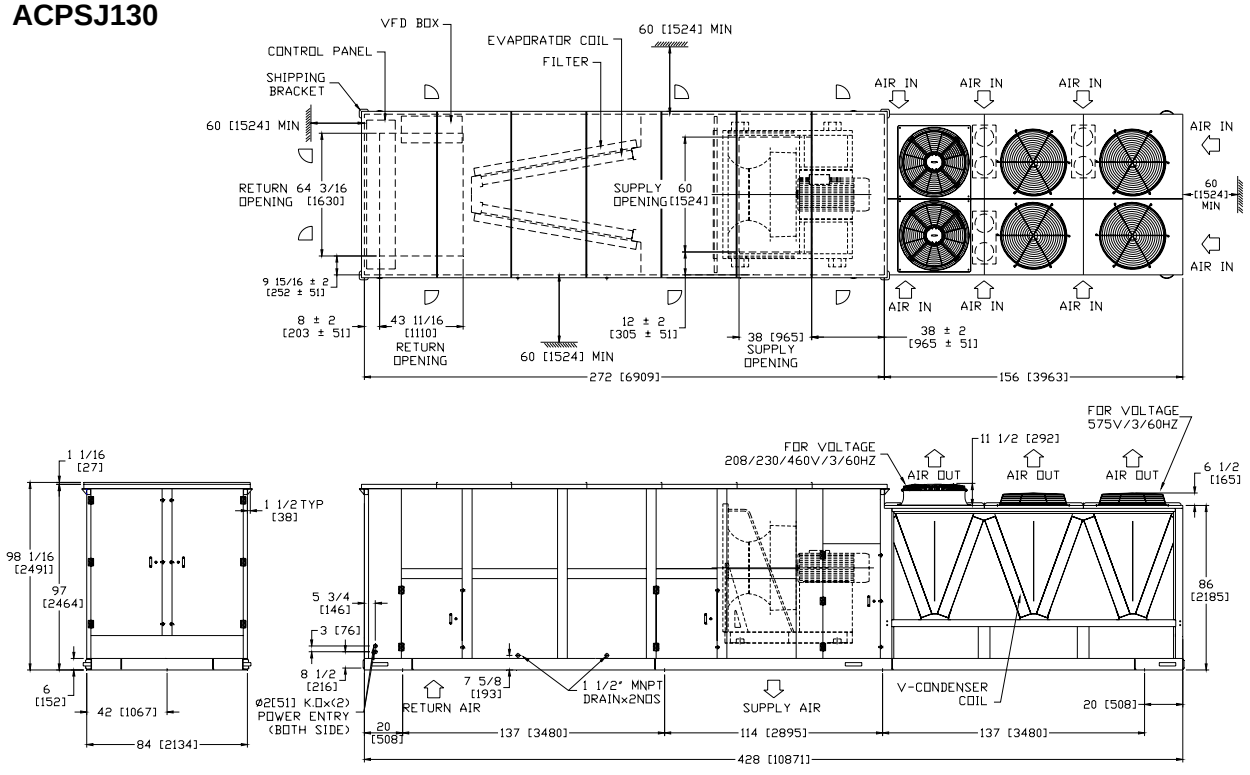
DIMENSIONAL DATA

ACPSJ115



Note: Evaporator and condenser section is shipped out separately and joined at field.

ACPSJ130



Note: Evaporator and condenser section is shipped out separately and joined at field.

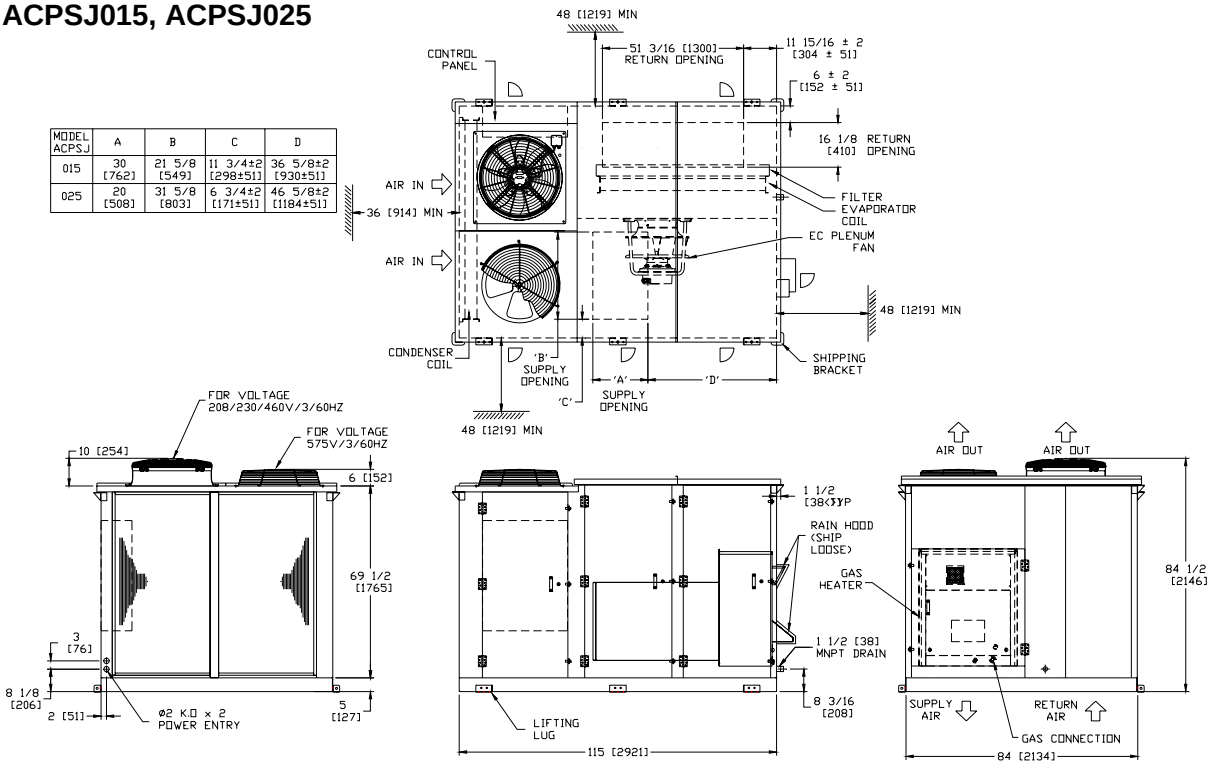
Note: All dimensions are in inches [mm].

DIMENSIONAL DATA

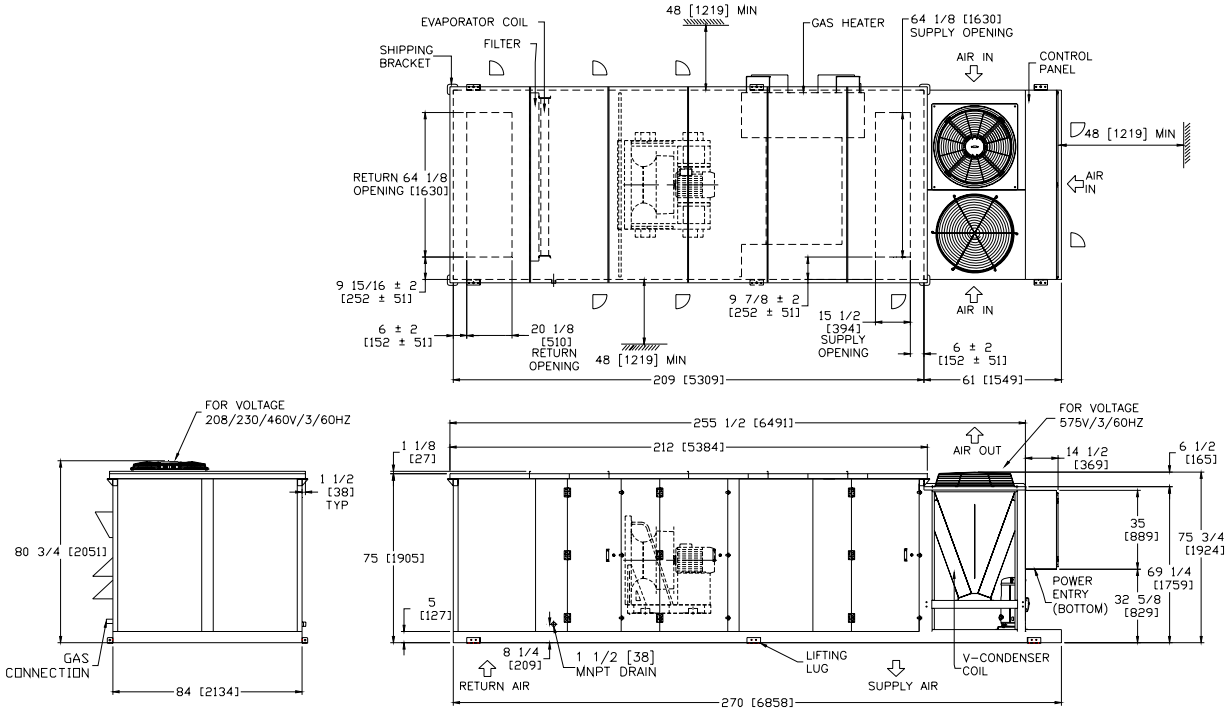
2. STANDARD COOLING ONLY WITH GAS HEATING MODELS

ACPSJ015, ACPSJ025

MODEL ACPSJ	A	B	C	D
015	30 [762]	21 5/8 [549]	11 3/4±2 [298±51]	36 5/8±2 [930±51]
025	20 [508]	31 5/8 [803]	6 3/4±2 [171±51]	46 5/8±2 [1184±51]



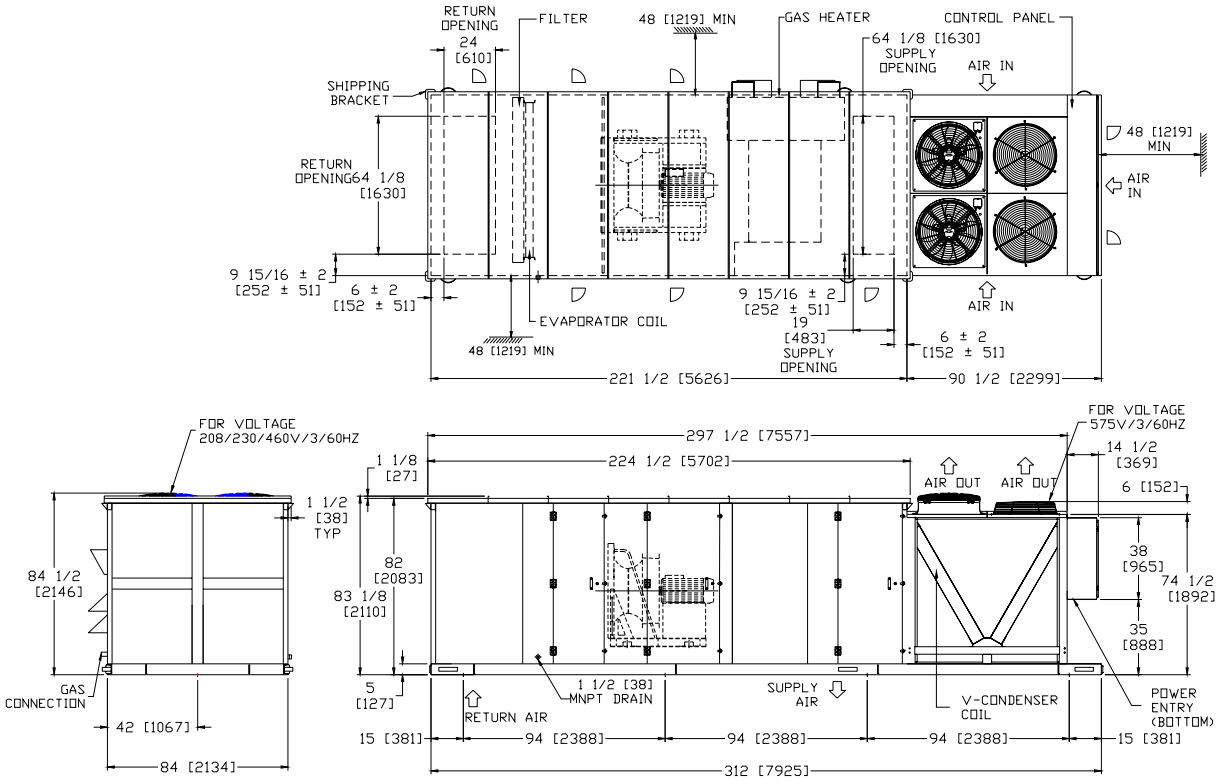
ACPSJ035



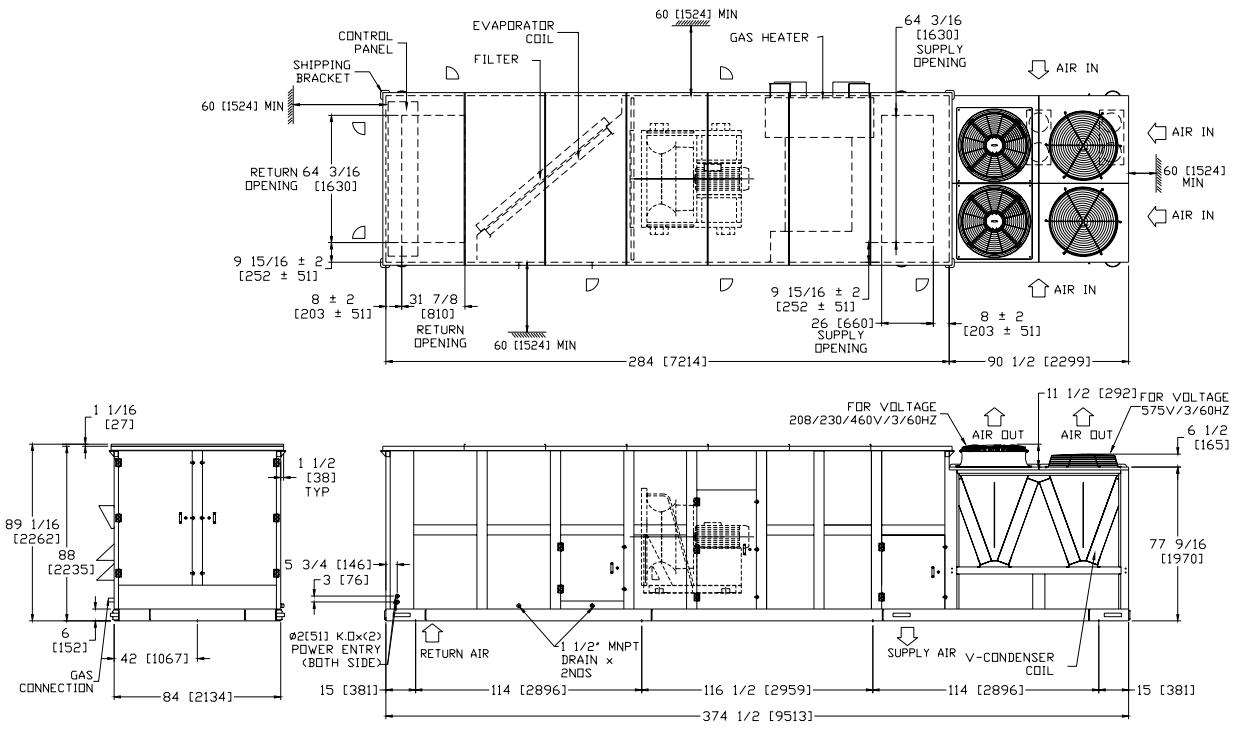
Note: All dimensions are in inches [mm].

DIMENSIONAL DATA

ACPSJ045



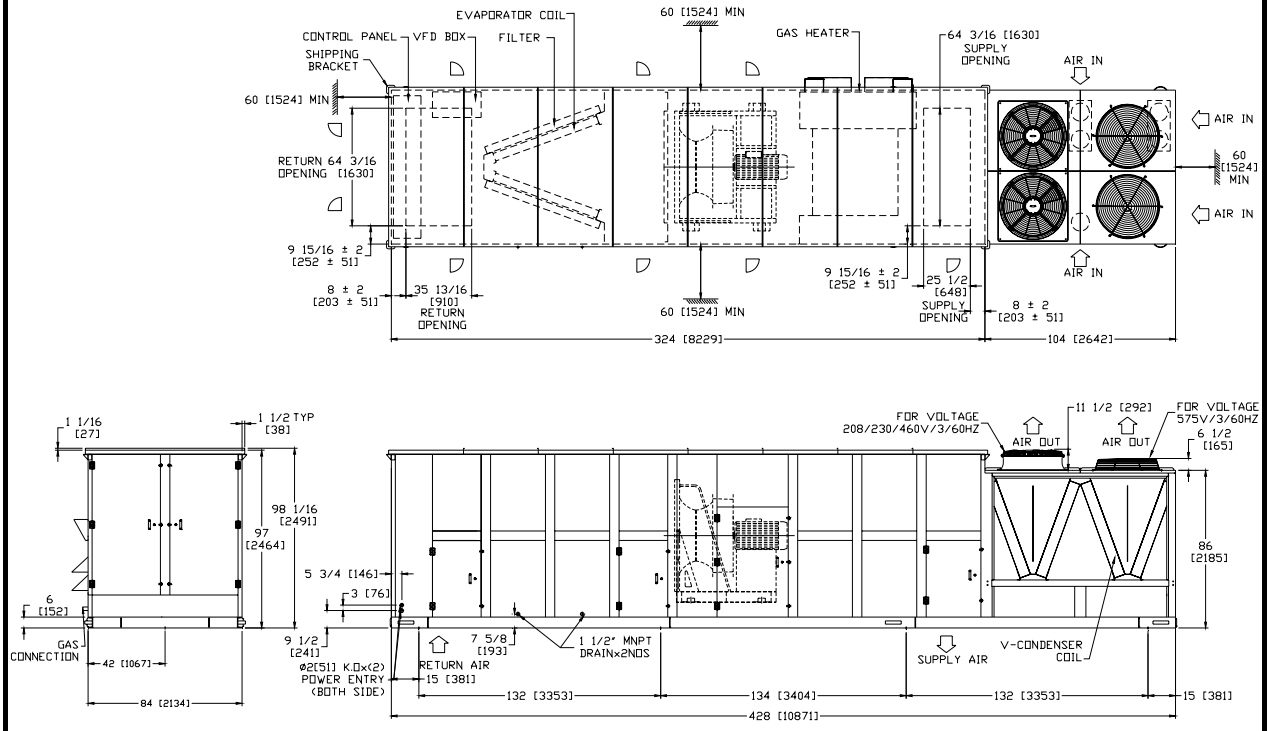
ACPSJ055



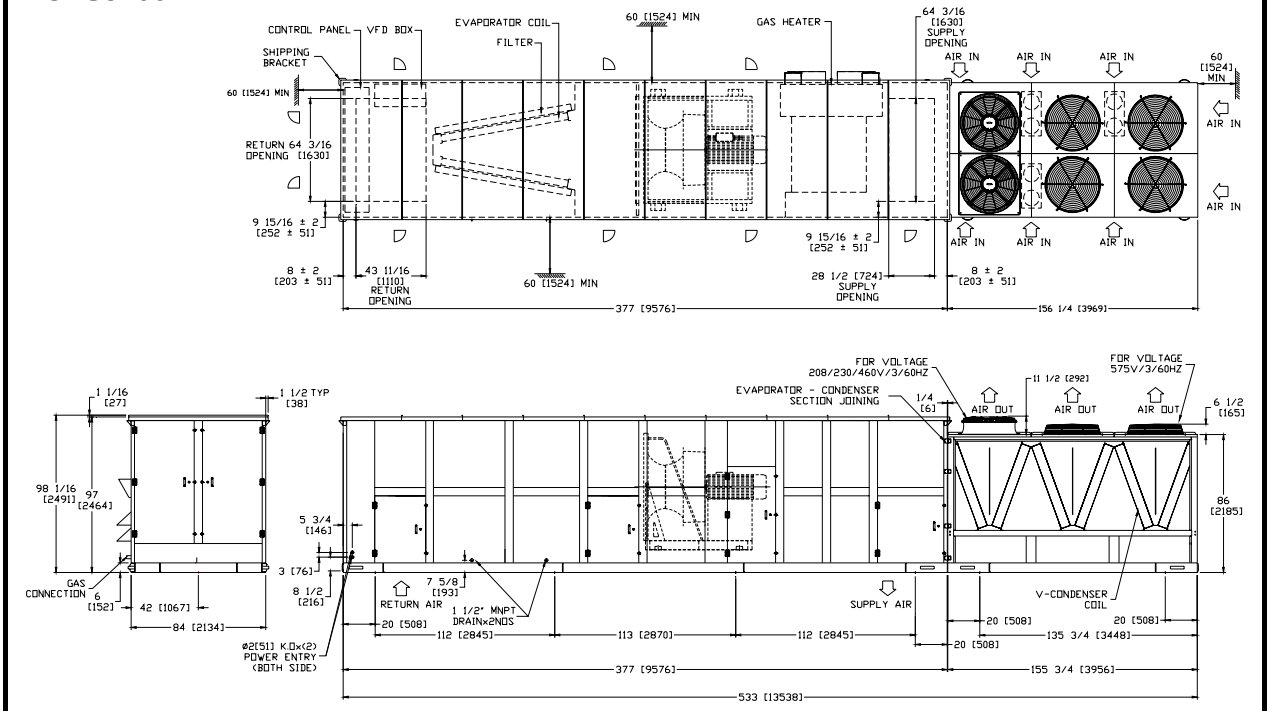
Note: All dimensions are in inches [mm].

DIMENSIONAL DATA

ACPSJ080



ACPSJ100

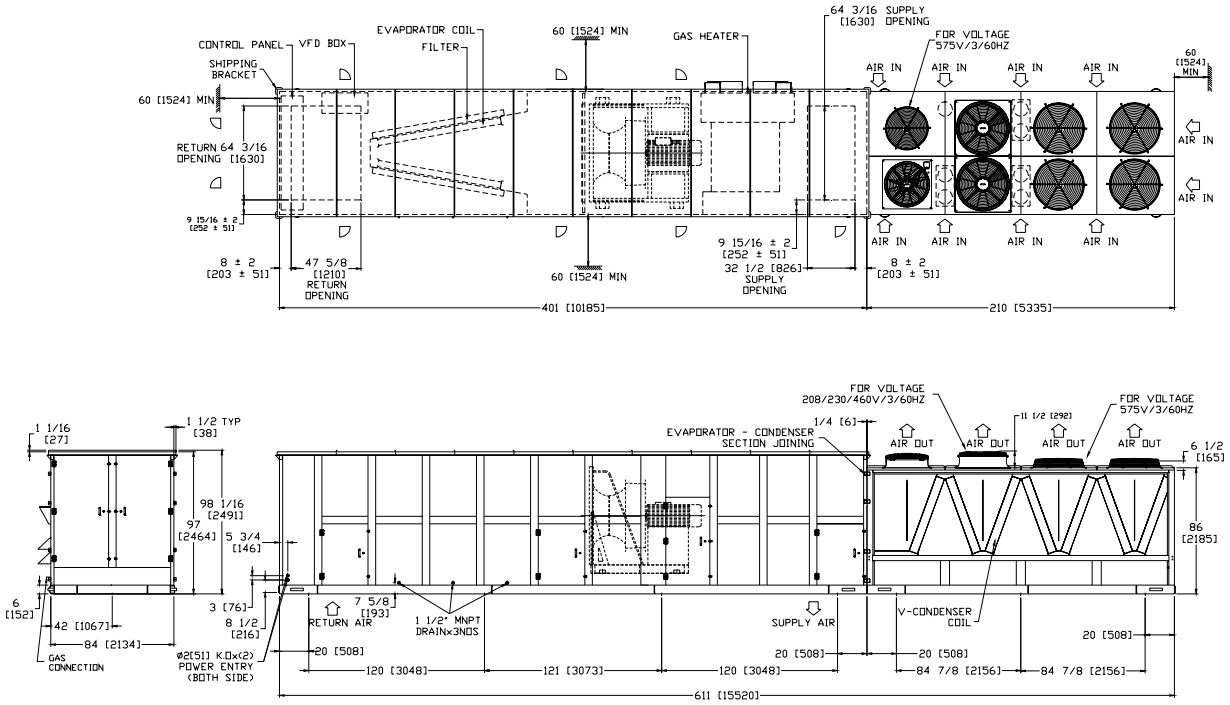


Note: Evaporator and condenser section is shipped out separately and joined at field.

Note: All dimensions are in inches [mm].

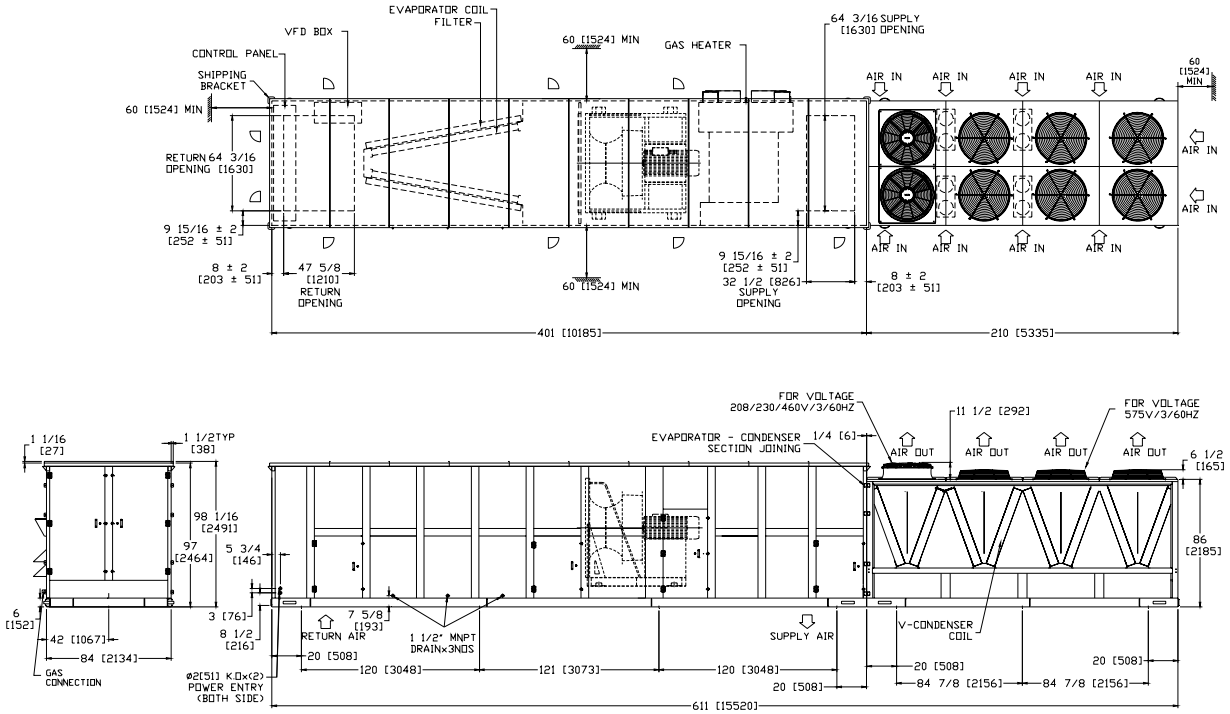
DIMENSIONAL DATA

ACPSJ115



Note: Evaporator and condenser section is shipped out separately and joined at field.

ACPSJ130



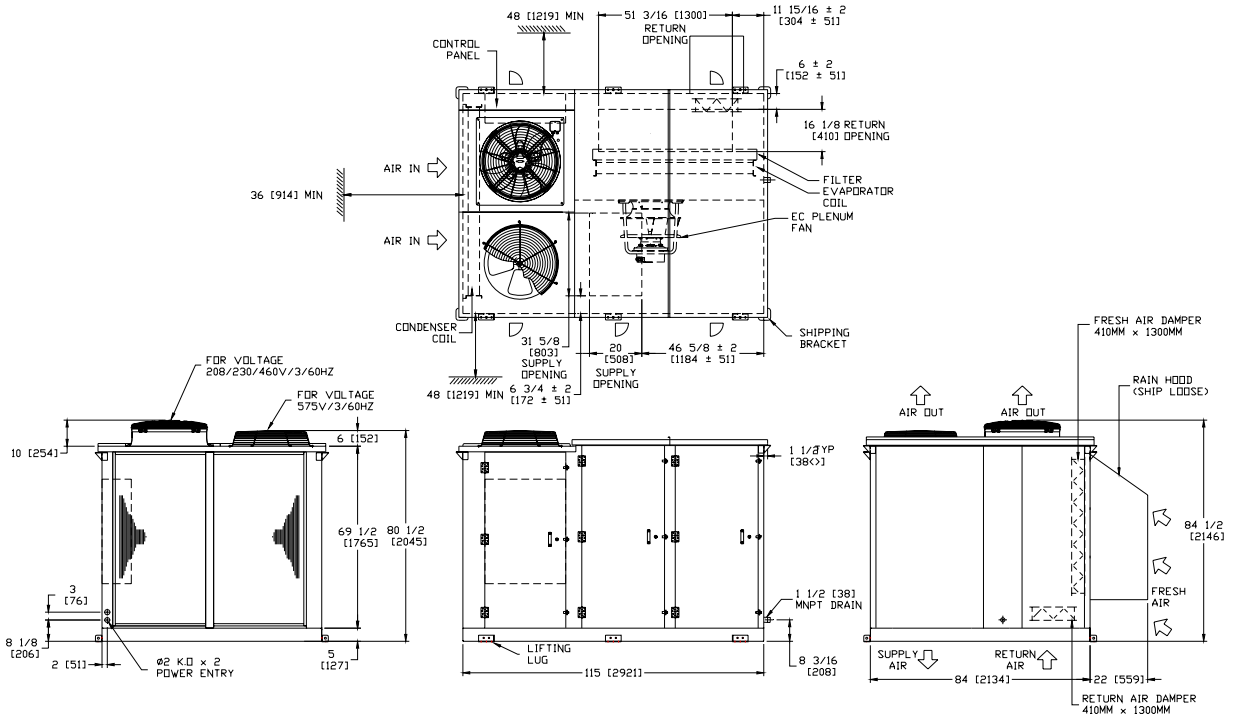
Note: Evaporator and condenser section is shipped out separately and joined at field.

Note: All dimensions are in inches [mm].

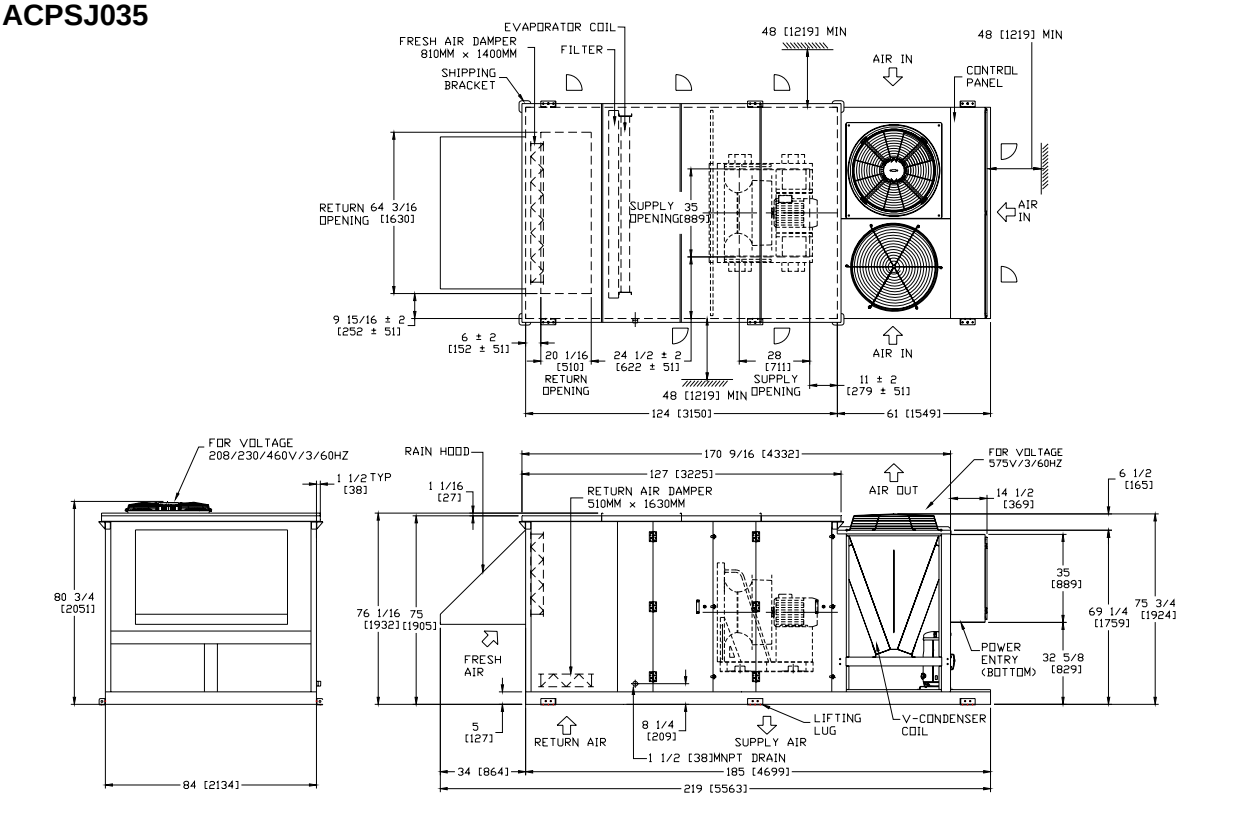
DIMENSIONAL DATA

3. STANDARD COOLING ONLY/HEAT PUMP WITH ECONOMIZER MODELS

ACPSJ015, ACPSJ025



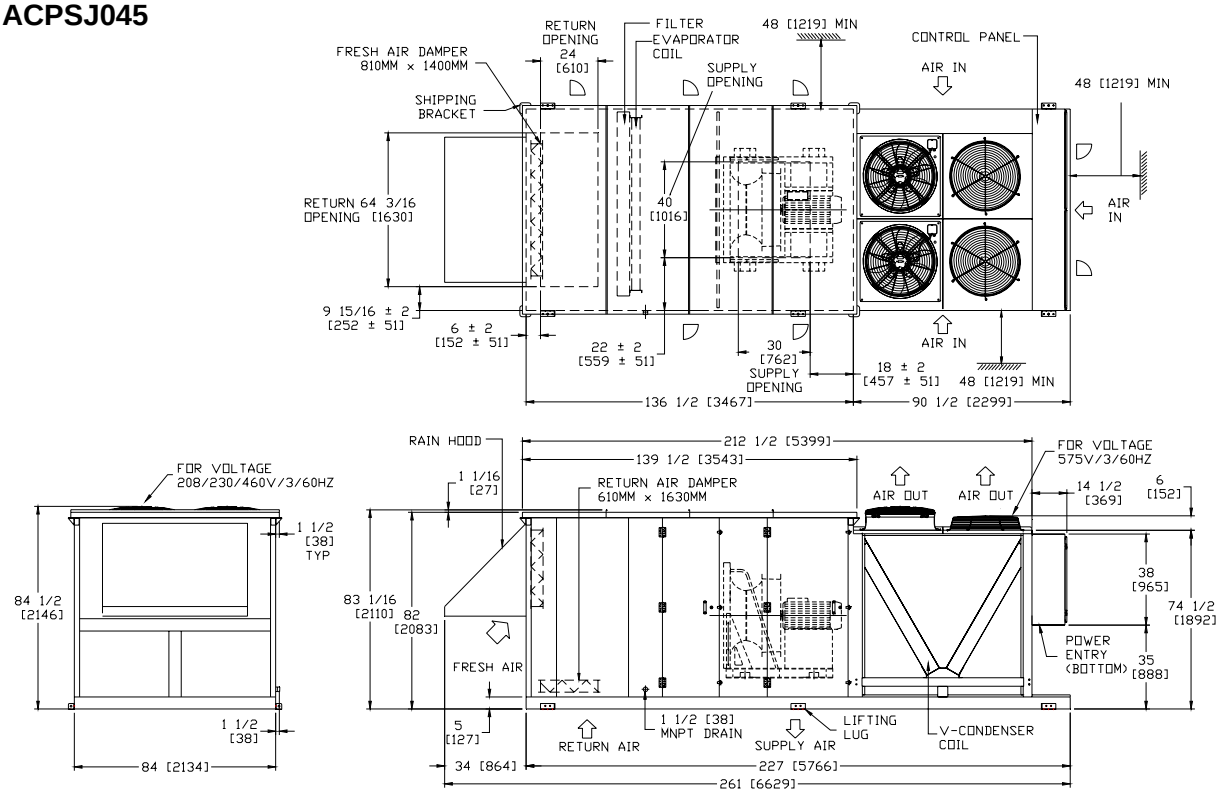
ACPSJ035



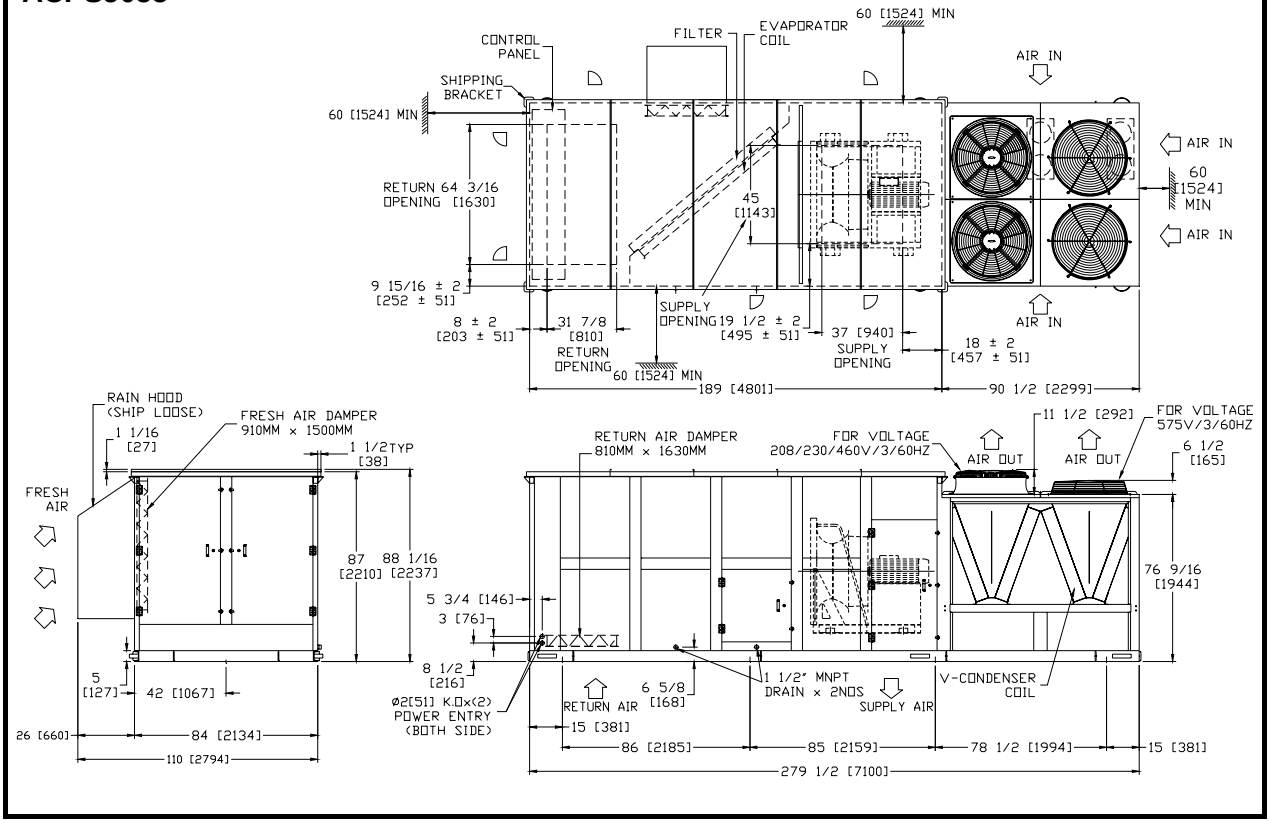
Note: All dimensions are in inches [mm].

DIMENSIONAL DATA

ACPSJ045



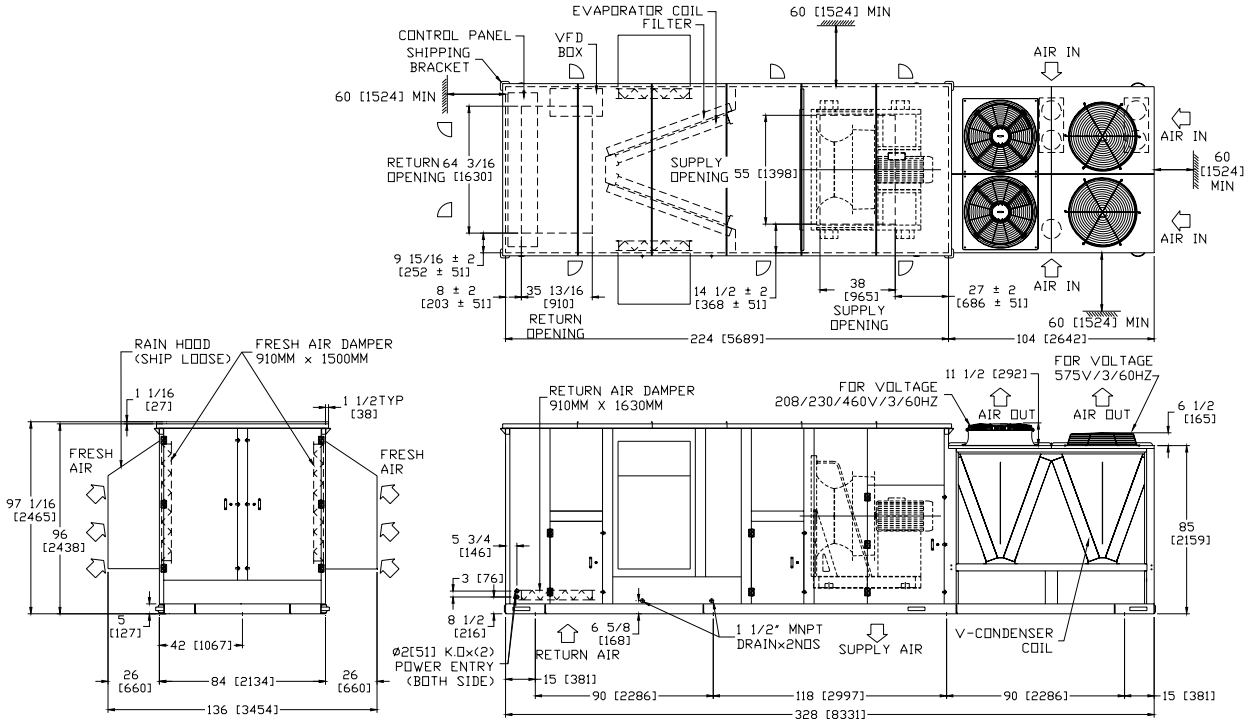
ACPSJ055



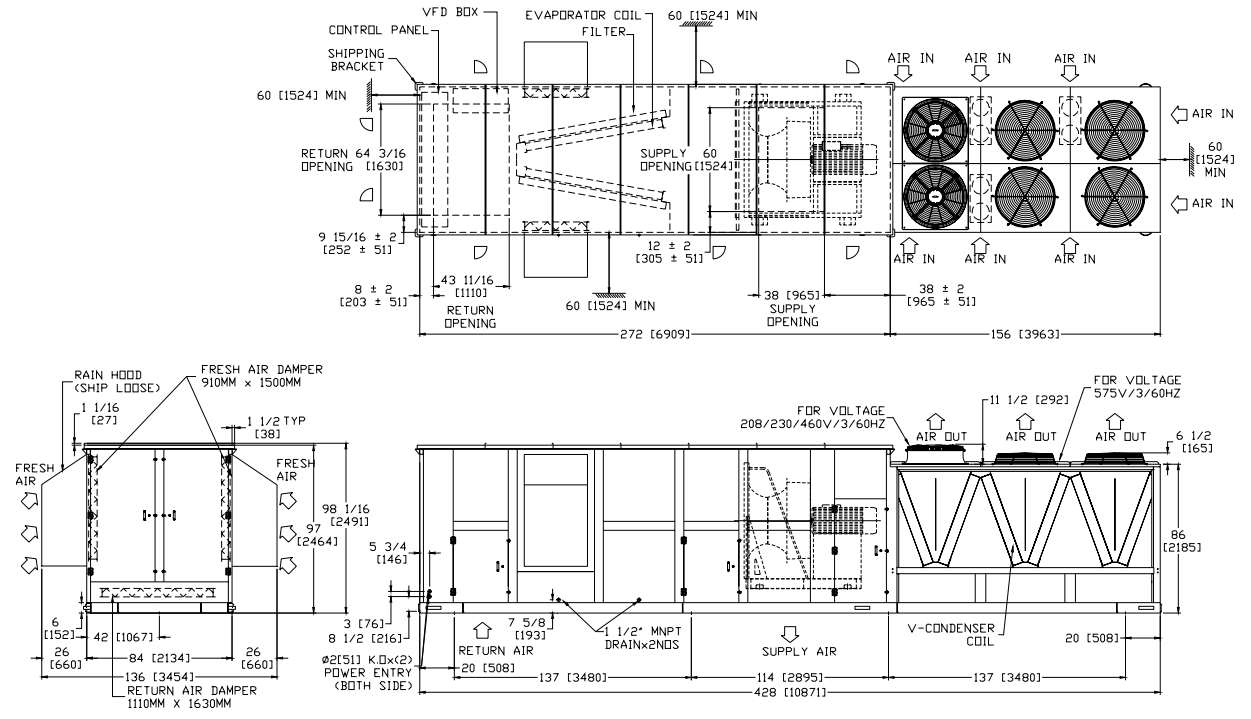
Note: All dimensions are in inches [mm].

DIMENSIONAL DATA

ACPSJ080



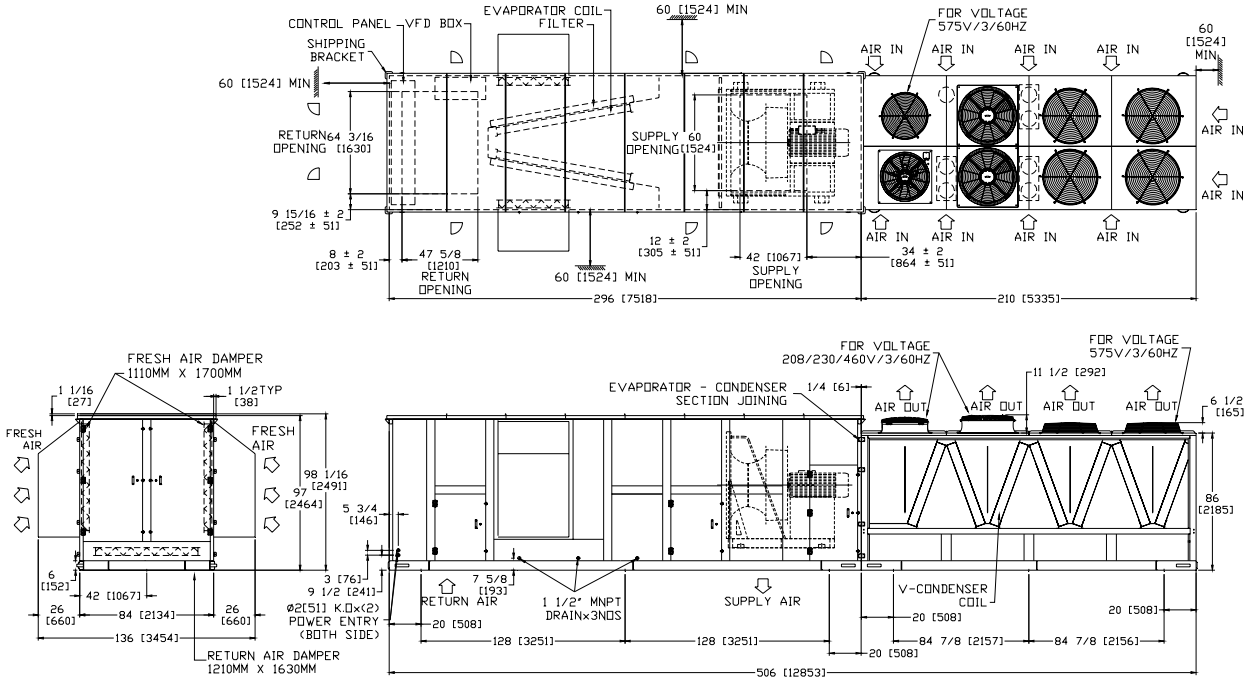
ACPSJ100



Note: All dimensions are in inches [mm].

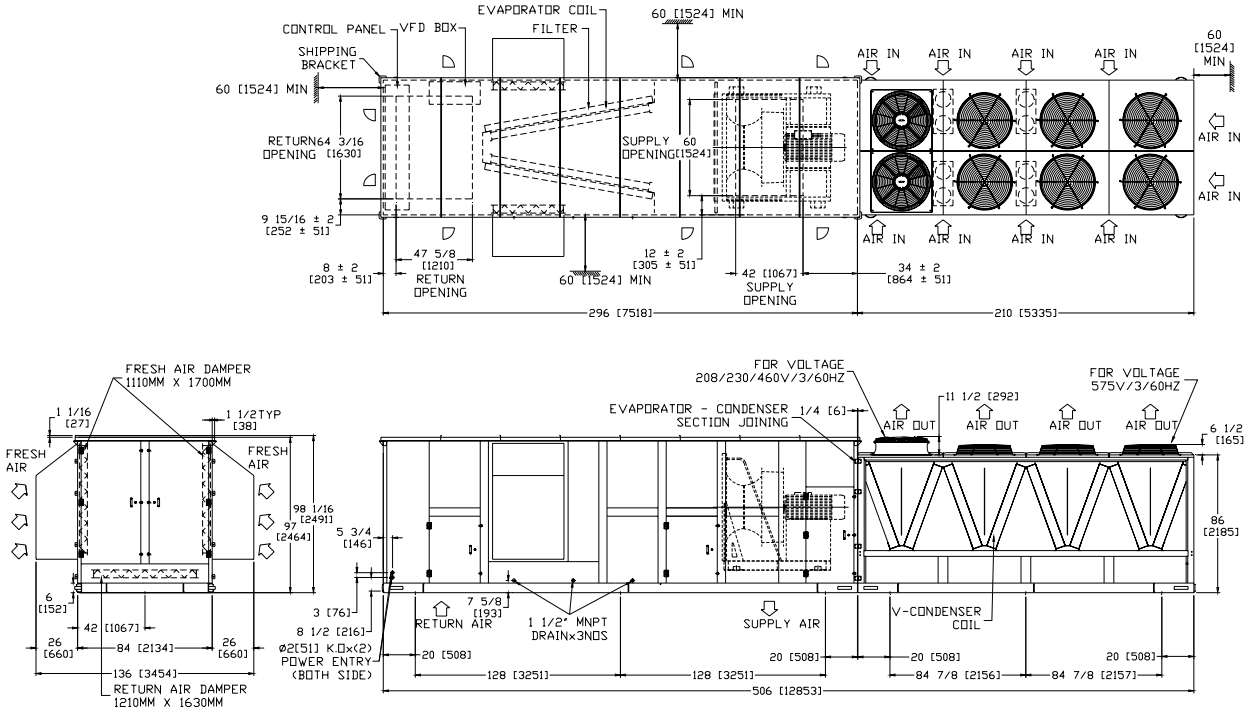
DIMENSIONAL DATA

ACPSJ115



Note: Evaporator and condenser section is shipped out separately and joined at field.

ACPSJ130



Note: Evaporator and condenser section is shipped out separately and joined at field.

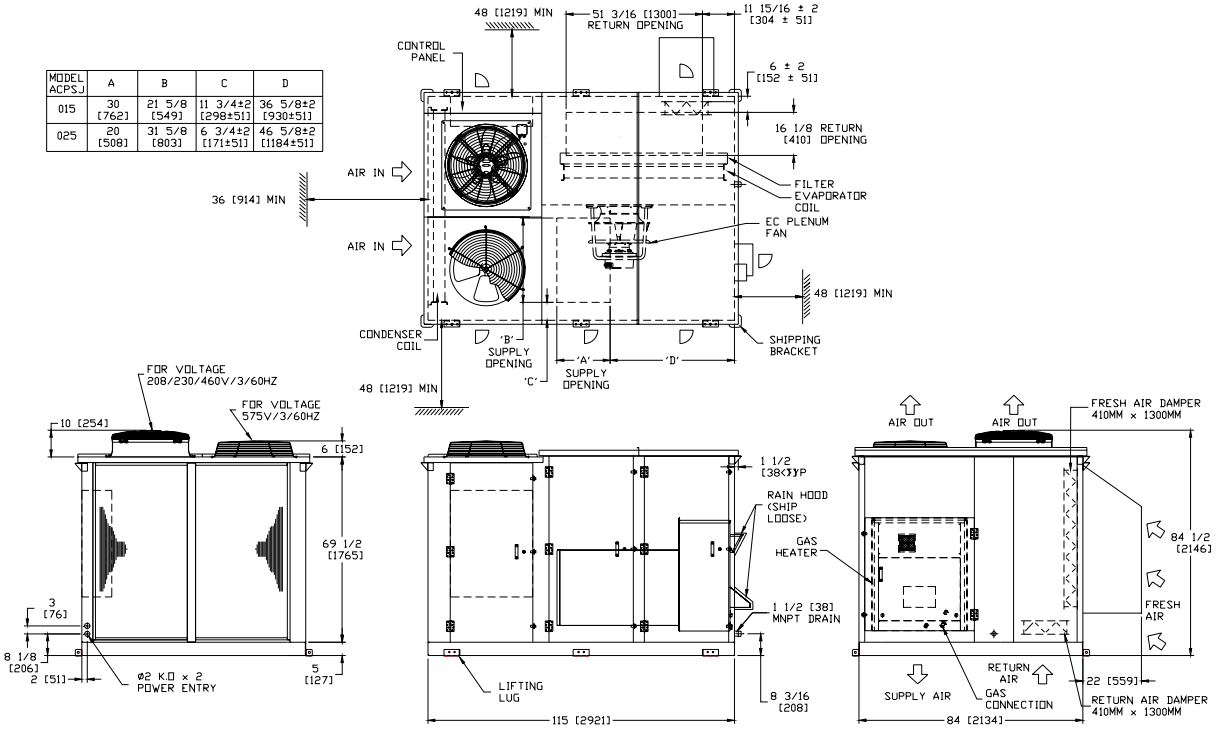
Note: All dimensions are in inches [mm].

DIMENSIONAL DATA

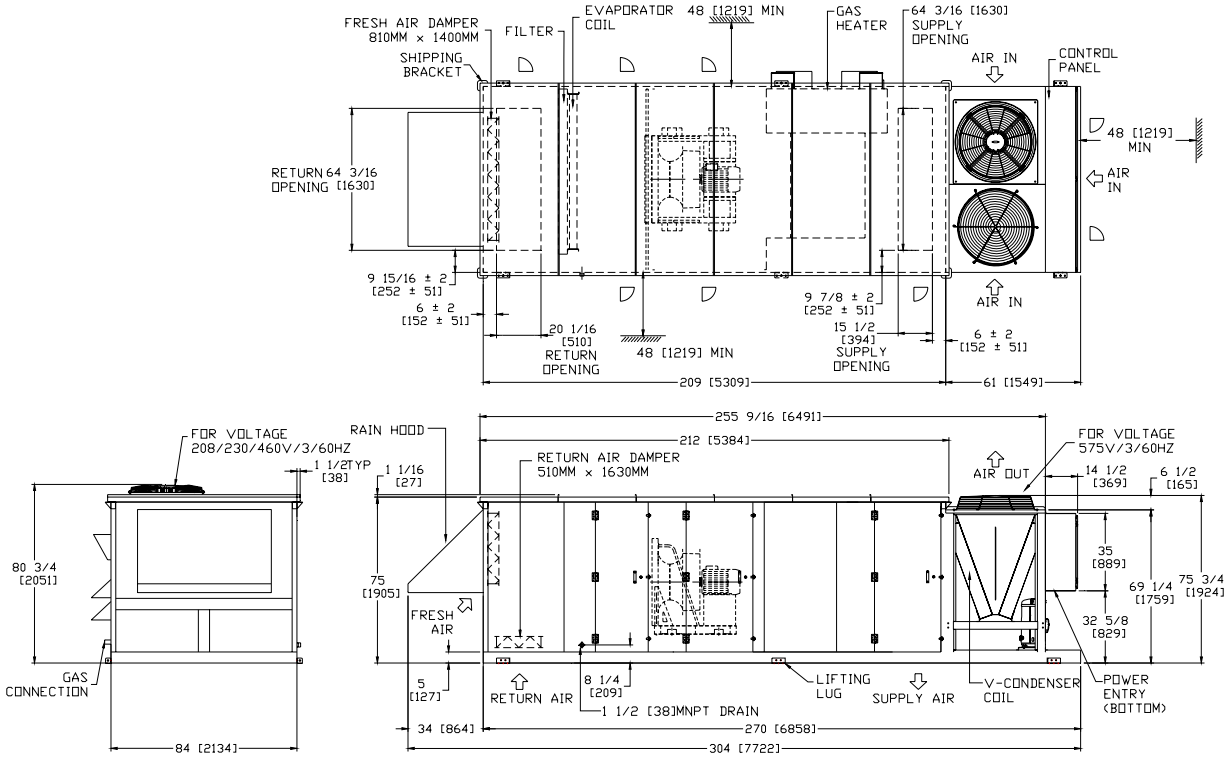
4. STANDARD COOLING ONLY WITH ECONOMIZER AND GAS HEATING MODELS

ACPSJ015, ACPSJ025

MODEL ACPSJ	A	B	C	D
015	30 [762]	21 5/8 [549]	11 3/4±2 [298±51]	36 5/8±2 [930±51]
025	20 [508]	31 5/8 [803]	6 3/4±2 [171±51]	46 5/8±2 [1184±51]



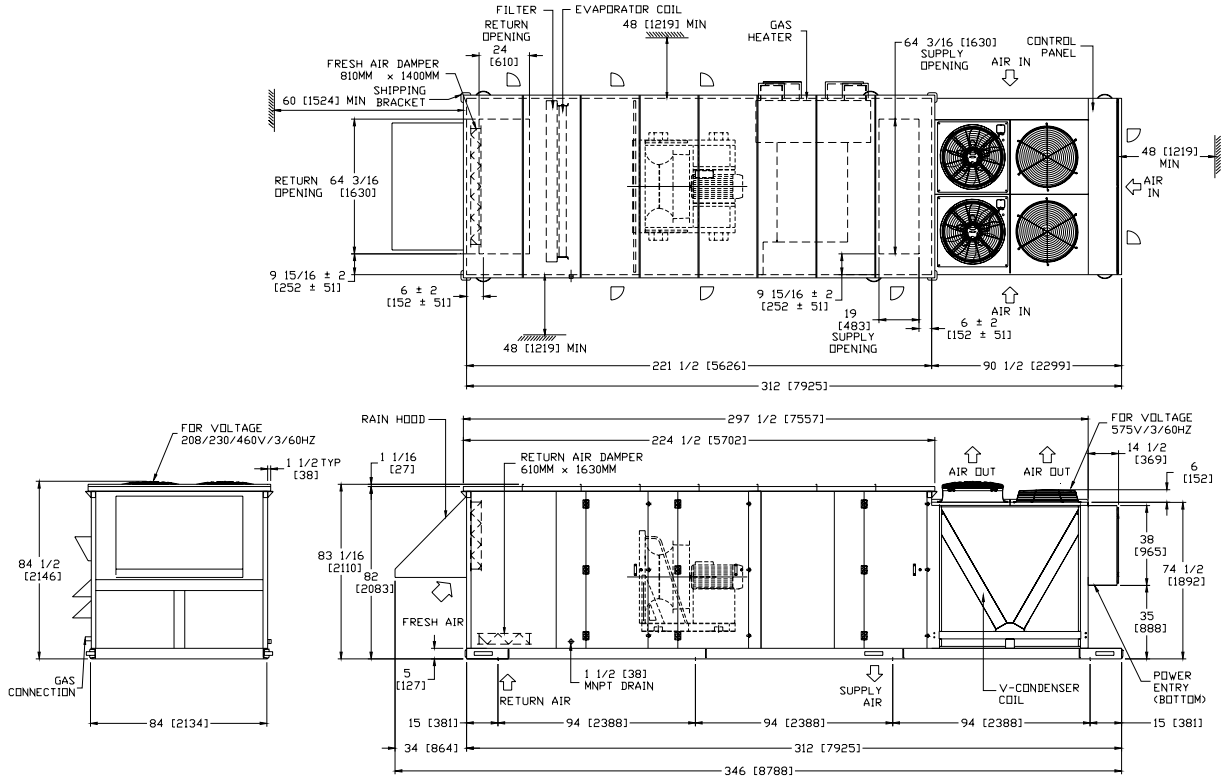
ACPSJ035



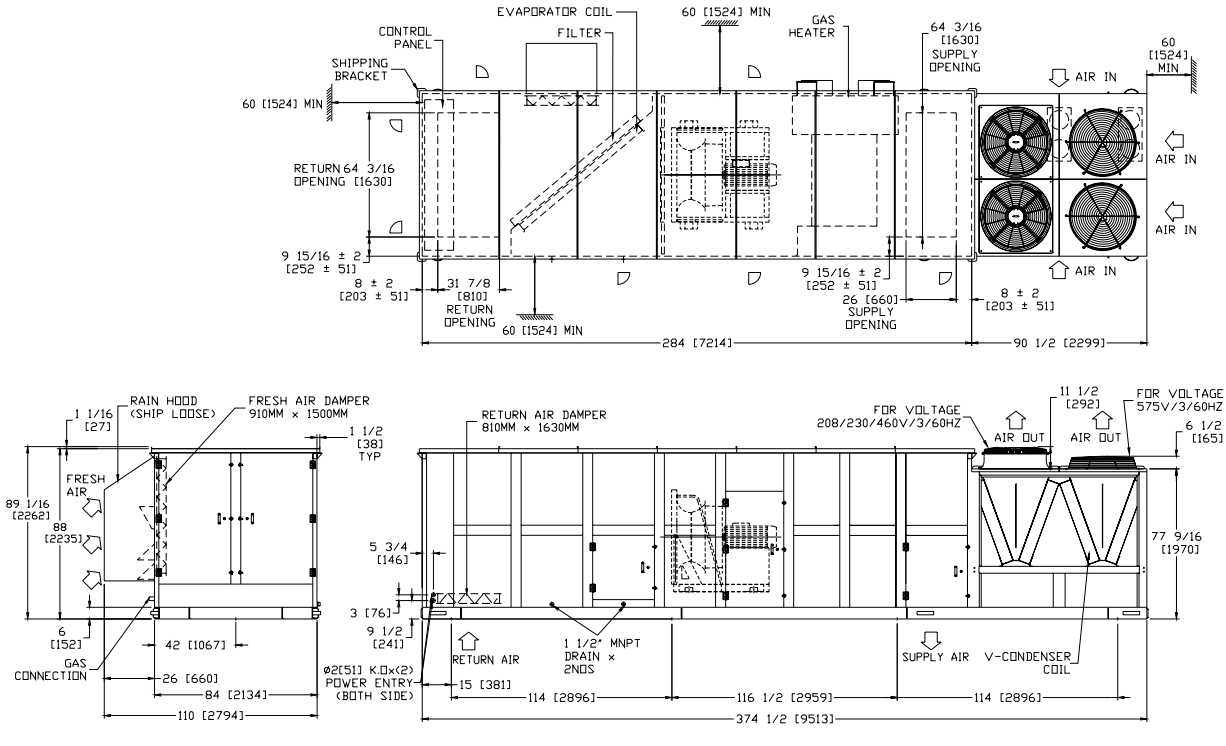
Note: All dimensions are in inches [mm].

DIMENSIONAL DATA

ACPSJ045



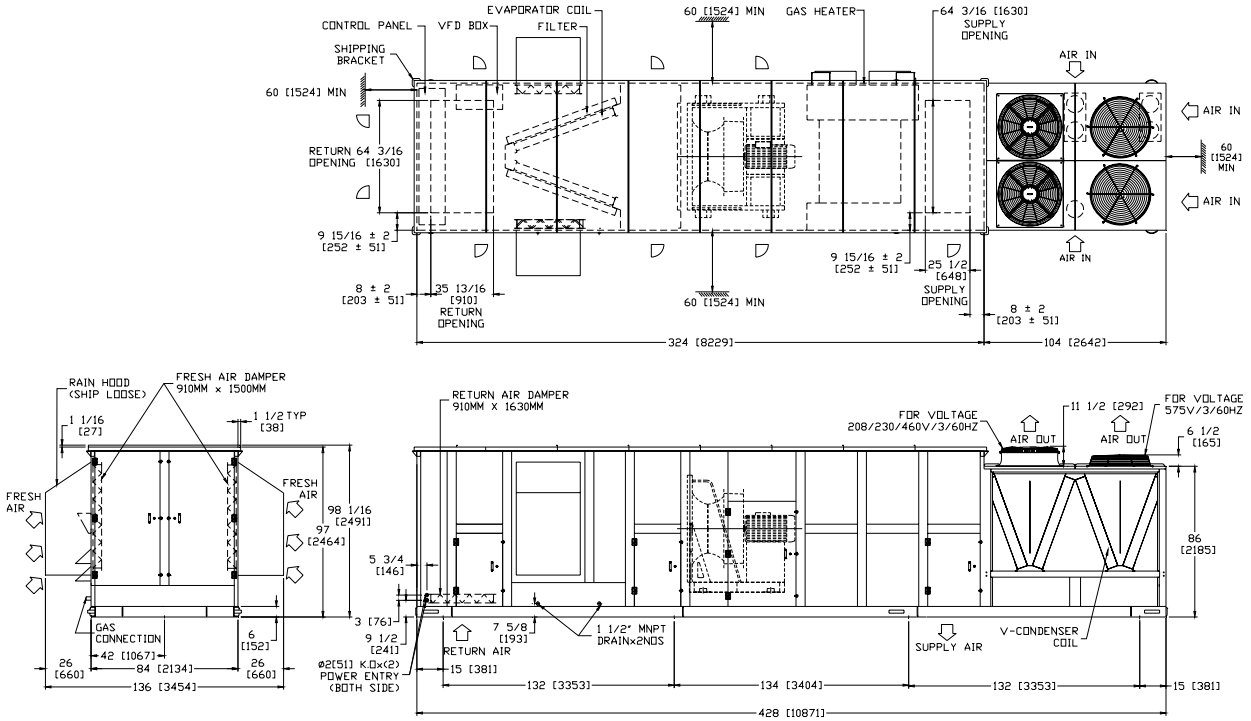
ACPSJ055



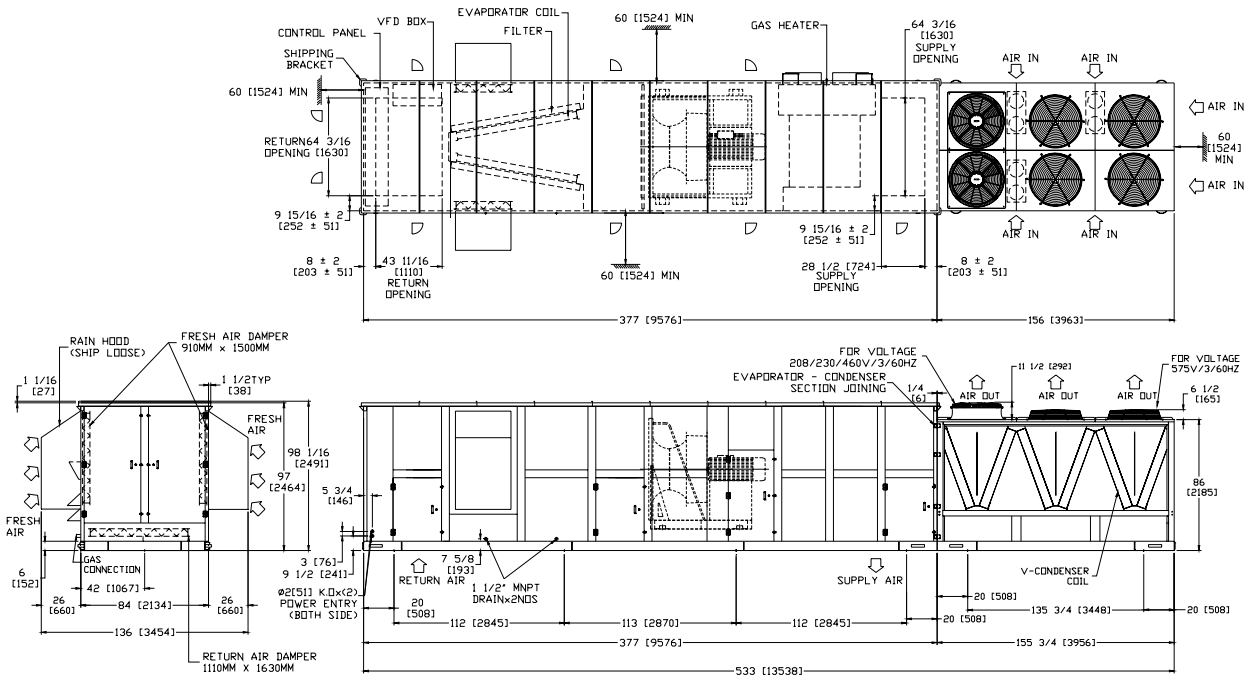
Note: All dimensions are in inches [mm].

DIMENSIONAL DATA

ACPSJ080



ACPSJ100

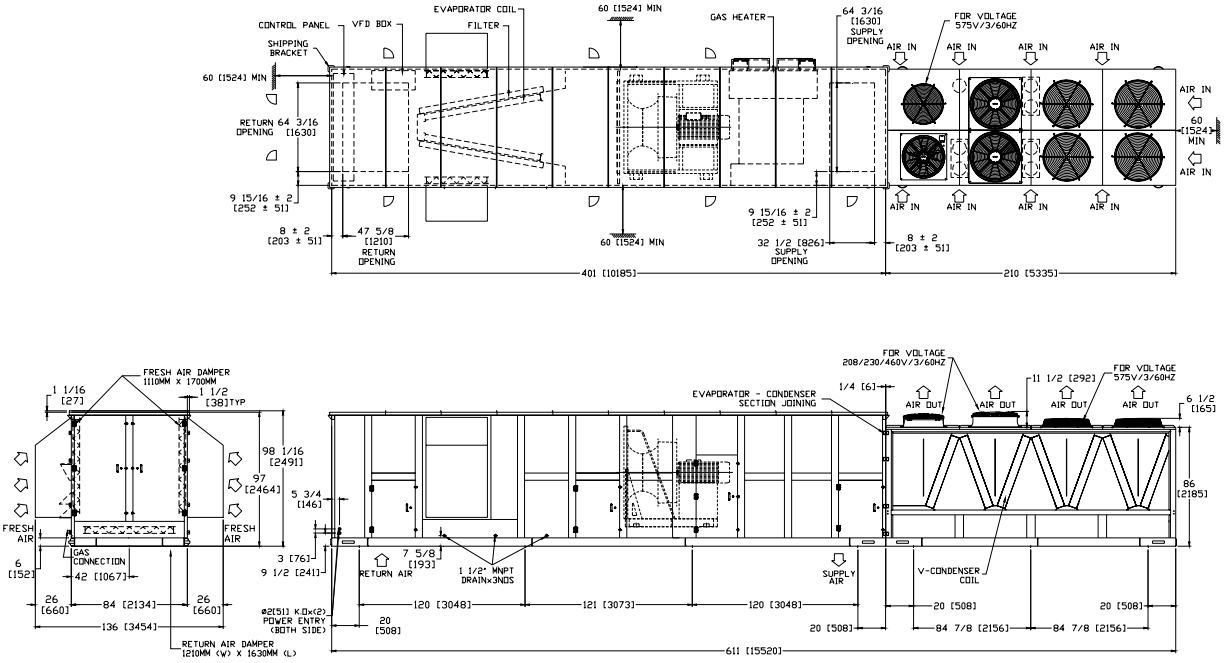


Note: Evaporator and condenser section is shipped out separately and joined at field.

Note: All dimensions are in inches [mm].

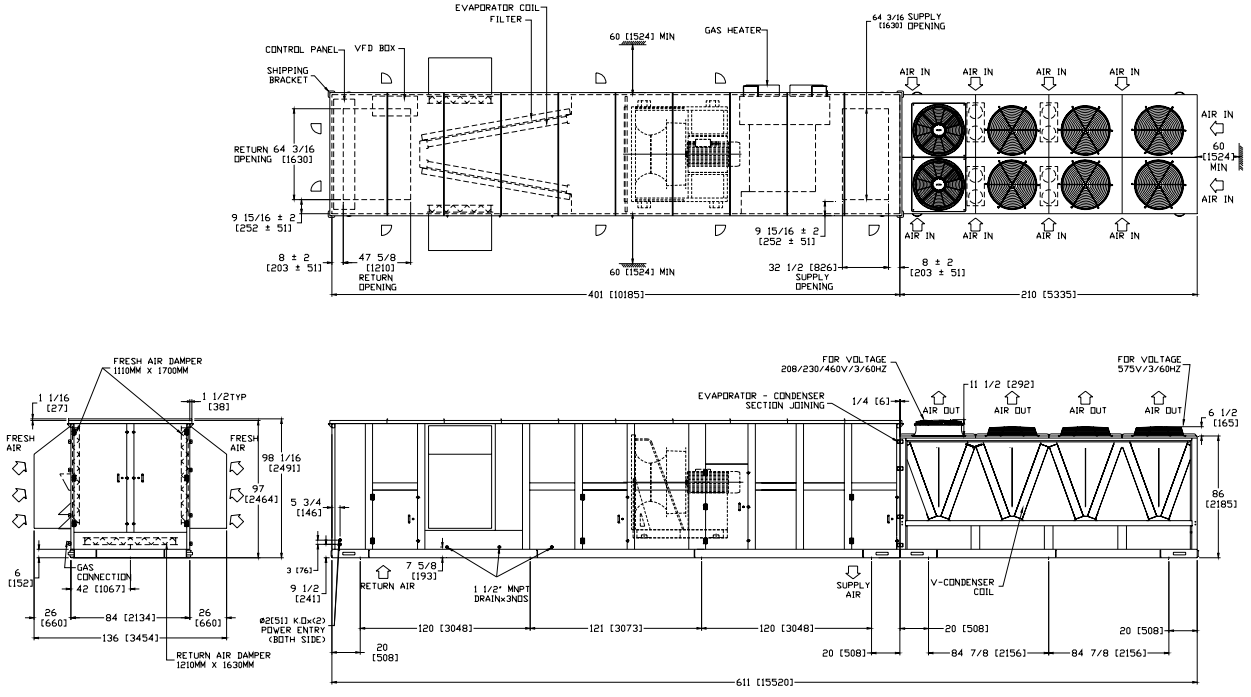
DIMENSIONAL DATA

ACPSJ115



Note: Evaporator and condenser section is shipped out separately and joined at field.

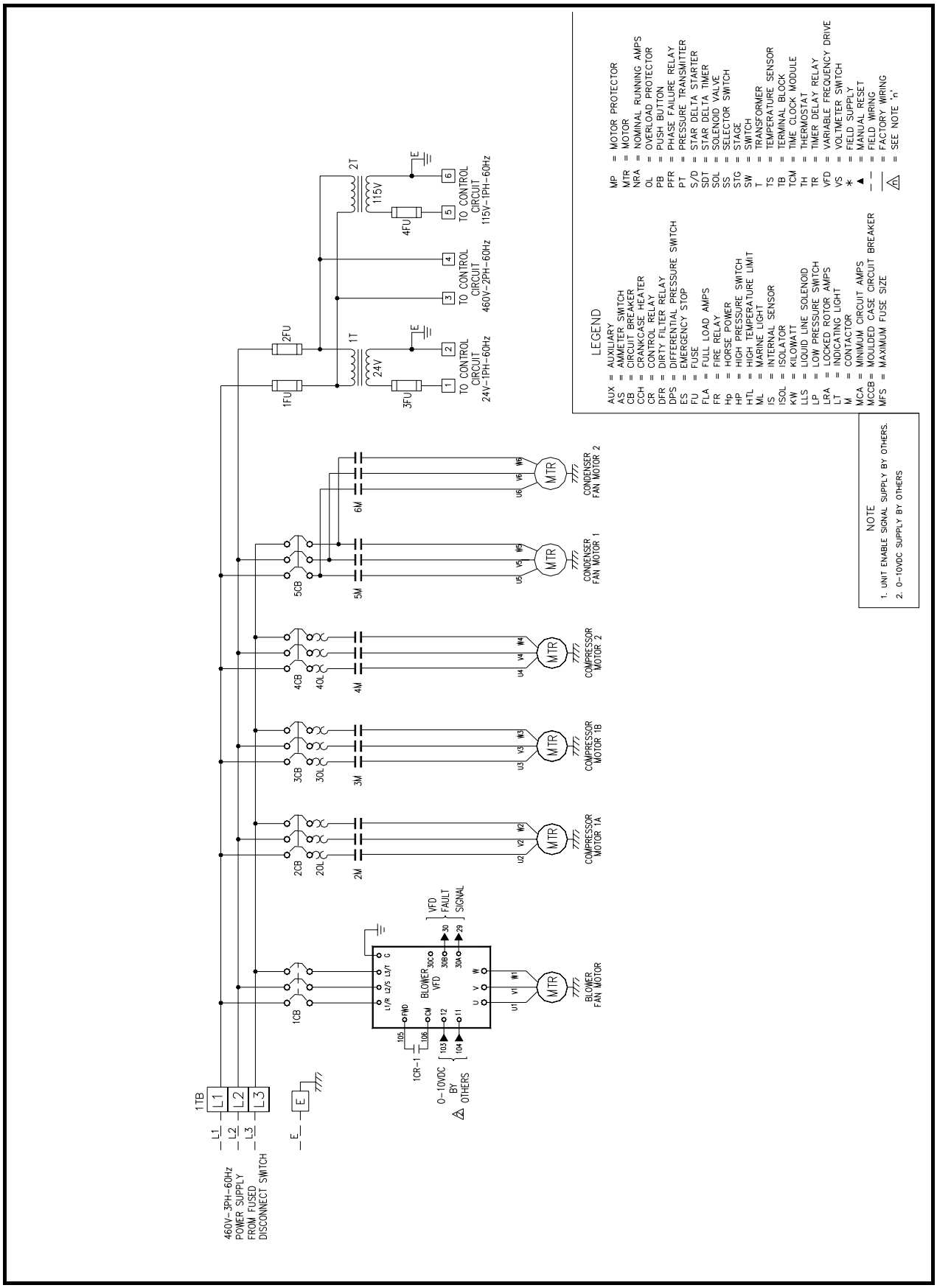
ACPSJ130



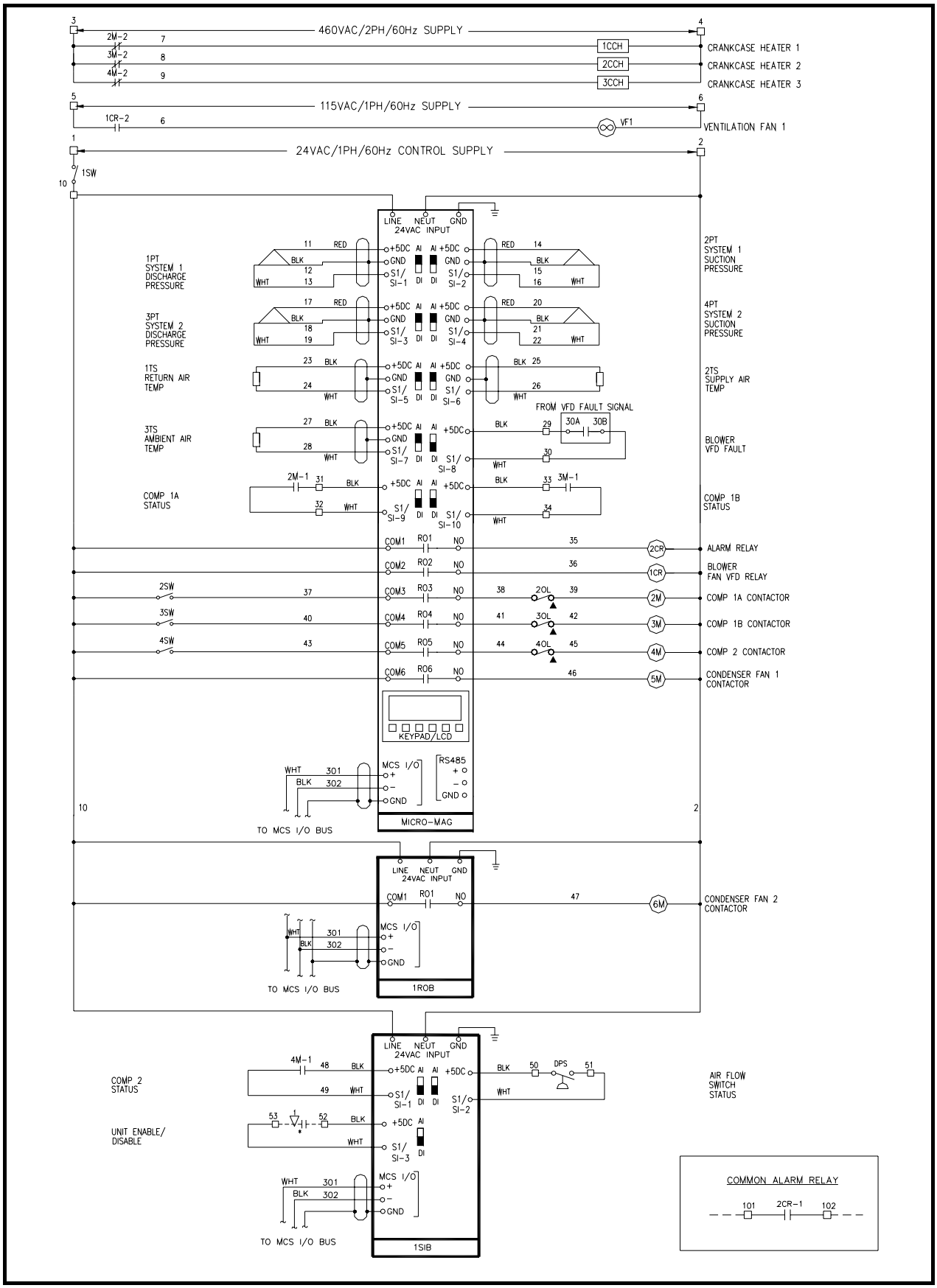
Note: Evaporator and condenser section is shipped out separately and joined at field.

Note: All dimensions are in inches [mm].

TYPICAL WIRING SCHEMATIC



TYPICAL WIRING SCHEMATIC



GUIDE SPECIFICATIONS

1. GENERAL

Air cooled packaged rooftop unit shall include compressor(s), evaporator and condenser coils with fan(s), refrigeration piping, electrical components and enclosing cabinet. The units shall be factory assembled, internally wired, fully refrigerant charged with R410A (except for unit which evaporator section and condenser section are shipped loosely and combined at field – refrigerant charge will be field supplied and charged) and are designed for outdoor rooftop installation on a roof curb. The units shall be capable to operate up to 115°F (46°C) ambient temperature without failure.

2. CABINET

The unit cabinet shall be constructed from heavy gauge galvanized steel with epoxy painted for excellent finished, weatherability and corrosion resistance up to 1000 hours salt spray test according to ASTM B-117. Evaporator section shall be of 1 inch thick double skin panels with injected polyurethane foam insulation with density 2.5lbs/ft^3, sandwiched between galvanized steel. Hinged access doors shall be provided for easy service and maintenance of unit internal parts. Unit base shall be watertight with heavy gauge sheet metal or formed channels for recess and curb overhang. Unit lifting lugs shall accept chains or cables for rigging. Lifting lugs shall also serve as unit tie down points.

3. COMPRESSOR & REFRIGERATION PIPING

Compressor(s) shall be scroll, refrigerant gas cooled and mounted on the base via vibration isolators. 1, 2, 3 or 4 refrigeration circuits shall be piped with copper tubing and include expansion valve with external equalizer, filter dryer, sight glass, suction accumulator (standard for heat pump models), pressure fittings of manual reset high pressure control and auto reset low pressure safety cutouts as well as charging/access ports in each circuit. The compressors shall comply with the internationally recognized standards CE and UL.

4. CRANKCASE HEATERS

Each compressor shall have a crankcase heater installed, properly sized to minimize the amount of liquid refrigerant present in the oil sump during off cycles.

5. EVAPORATOR COIL

Evaporator coil shall be of draw through air design for uniform air distribution. The evaporator coil shall be quality construction of staggered row of 3/8" or ½" OD inner grooved seamless copper tube, mechanically bonded to aluminium fins (except for model 015 and 025 are using hydrophilic fin as standard) with galvanized coil plates. The coil shall be factory leak and pressure tested to 650psig (45 bar) under water. A galvanized and painted drain pan shall be provided to cover the entire coil area. The drain pan shall be designed to incorporate sloped gutter for complete condensate removal.

6. EVAPORATOR FAN AND MOTOR WITH VARIABLE SPEED

Model 015 and 025 with EC Evaporator Fan

High efficiency direct driven backward curved plenum fan shall be provided. The backward curved plenum fan shall be driven with electronically commutated (EC) motor. Fan speed can be stepped to requirements or continuously variable using a 0–10V DC control signal.

Model 035 to 130 with Direct Driven Plenum Supply Fan

Supply fan shall be single width single inlet plenum fan. Fan blades shall be backward curved manufactured in mild steel with polyester powder coating finish. Supply fan's shaft shall be made from C45 carbon steel material and coated with anti-corrosion varnish. Supply fan's bearing shall use either deep groove ball bearings with an adapter sleeve, or spherical roller bearings sealed at both sides for different duty application. Bearings shall be permanently lubricated and maintenance free. Supply fan wheel shall be statically and dynamically balanced to ISO1940 and AMCA 204 – G2.5 standard. Supply fan shall be direct driven. Entire fan assembly shall be completely isolated from unit via spring isolation. Supply fan motor shall be of totally enclosed fan cooled (TEFC) with IP55 enclosure rating with class F insulation. The supply fan motor speed modulation shall be provided via factory installed variable frequency drive (VFD).

7. CONDENSER COIL

Condenser coil shall be air cooled with integral sub-cooling circuit, constructed from staggered row of 3/8"OD inner grooved seamless copper tube, mechanically bonded to aluminum fins (aluminum coated fin/hydrophilic fin for heat pump models) with galvanized coil plates. The coil shall be factory leak and pressure tested to 650psig (45 bar) under water.

GUIDE SPECIFICATIONS

8. CONDENSER FAN AND MOTOR

Condenser fan shall be direct driven propeller type discharging air vertically upward. Condenser fans shall be constructed of corrosion resistant blades and are statically and dynamically balanced. Condenser fan motors shall be of open air over (OPAO) enclosure, 6-poles with class H insulation and wired to unit control panel. The condenser fan assembly shall be provided with heavy gauge and rust resistant steel wire fan guard.

9. FILTERS, HIGH EFFICIENCY MERV 8

Units shall be provided with 2" thick disposable high efficiency pleated filters having average dust spot efficiency of 25-35% in accordance with ASHRAE52-76.

10. ELECTRICAL CONTROL PANEL

The unit mounted control panel enclosure shall be constructed from heavy gauge galvanized steel with epoxy painted for excellent finished, weatherability and corrosion resistance. The enclosure shall conform to IP54. Hinged and lock type access door shall be provided for easy access and security.

The control panel shall be completely factory wired and shall include standard IEC DOL (non UL) with fixed speed compressor, evaporator fan motor and condenser fan motor circuit breaker and contactors, compressor and evaporator fan motor thermal overload relays, anti-recycling time delay, fuse, power and control circuit terminal blocks and features 115V or 24V controls with 460V/3Ph/60Hz, 208V/3Ph/60Hz, 230V/3Ph/60Hz or 575V/3Ph/60Hz power supply with earth. The units control panel is fully wired ready to accept the main power supply (except for unit whereby evaporator and condenser section is shipped loosely, simple wiring connection shall be fulfilled at field).

11. DB Director / Micro DB Director Control

The unit shall be provided with DB Director / Micro DB Director control system with the following features,

- The control algorithm and parameters shall be stored in flash memory and EPROM of the controller and shall retain even in the event of power failures, without requiring external backup battery
- User Interface with Display
- Temperature controlled
- Configurable by user
- Alarm status/display
- Analog input/output display
- Digital input/output status
- Remote start/stop input
- General alarm output
- Self-diagnostics
- Security password access with multiple access level for advanced settings
- Unit status display

Defrost Controls

Adaptive demand defrost shall be provided to permit defrost wherever coil icing conditions begin to significantly reduce unit capacity

Built-in BMS Communication

Modbus RTU / Bacnet MSTP communication protocol is built-in to the main controller and comes as a standard feature for Micro DB Director. For DB Director controller, Bacnet IP, Modbus IP or Modbus RTU comes as a standard in built feature.

Pressure Transducers on Suction & Discharge line

Pressure transducers are provided as standard in suction and discharge lines of each system. The operating pressure reading will be displayed on the controller user interface.

12. OPTIONS

12.1 Inverter Compressor

Unit's 1st system shall be equipped with the high efficiency inverter compressor whilst fixed speed compressor(s) for the rest of the system(s). All compressors shall be scroll, hermetically sealed, refrigerant gas cooled, quiet running and supported on rubber mounts to minimize vibration.

The inverter compressor motor shall be a permanent magnet type and matched with a specially designed, variable frequency drive which modulates the speed of the compressor motor and provides several compressor protection functions.

The inverter compressor shall include electronic expansion valve (EEV) while thermal expansion valve with external equalizer for other fixed speed compressor(s). The compressors shall comply with the internationally recognized standards CE and UL.

The variable speed compressor shall be capable of speed modulation from 25Hz to a maximum of 100Hz. The unit minimum capacity shall be 25% of full load. The resident control algorithms shall make all heating, cooling, and/or ventilating decisions in response to electronic signals from sensors measuring indoor and outdoor temperatures.

The control algorithm maintains accurate temperature control, minimizes drift from set point, and provides better building comfort. A centralized control shall provide anti-short cycle timing and time delay between compressors to provide a higher level of machine protection.

12.2 Gas Heating (consult factory for unit layout)

Gas heat unit (natural gas) shall be a completely assembled system integral within unit. Gas heat unit shall be cETLus approved specifically for outdoor applications and located downstream of cooling coil. Gas heat unit shall have a tubular heat exchanger constructed of stainless steel. Heat exchanger tubes shall have integral formed dimpled restrictors to provide for an unobstructed drainage path and tubes shall be formed to provide a positive pitch to promote condensate drainage. Drainage shall be configured so that burners and burner surfaces are not exposed to condensate. Incoming gas supply connection shall be threaded NPT connection with pipe cap provided. The gas-fired unit shall be equipped for operation on a 115V/1ph/60Hz power supply. A circulation air flow switch shall be installed upstream of heating unit to prove that sufficient airflow is present. Heater high limit switch shall also be install in the gas heat section as a safety to cut off if temperature reaches unsafe point.

12.3 Hot Gas Bypass

The refrigerant circuit (applicable to 'first in last out' refrigeration system only) shall be provided with a hot gas bypass system for low room/building load application and evaporator coil freeze prevention.

12.4 Hot Water Heating Coil

Hot water coil shall be provided for heating purpose (hot water shall be field supplied).

12.5 Discharge / Suction / Liquid Line Service Valves

Service valves shall be provided at each refrigerant lines for service convenience.

12.6 Evaporator Coil Fin Materials

In lieu of standard aluminium fin, alternative fin material and/or protective coating include,

- Hydrophilic coated aluminium fin (Only applicable to model 035 and above)
- Copper Fin
- Aluminium fin with DB-Coat (pass 1000 hour ASTM B-117 Salt Spray Test)

12.7 Condenser Coil Fin Materials

In lieu of standard aluminium fin, alternative fin material and/or protective coating include,

Hydrophilic coated aluminium fin (only applicable for Cooling Only models)

- Copper Fin
- Aluminium fin with DB-Coat (pass 1000 hour ASTM B-117 Salt Spray Test)

12.8 Stainless Steel Drain Pan

A stainless steel condensate drain pan shall be provided for the evaporator section in lieu of standard galvanized and painted drain pan.

12.9 Replaceable Core Filter Drier

Replaceable filter core drier shall be provided in lieu of standard filter drier for the convenience of filter drier's core replacement.

12.10 Electronic Expansion Valve (EEV)

In lieu of standard thermal expansion valve equipped on fixed speed compressor's system, electronic expansion valve (EEV) shall be provided for precise superheat control.

12.11 Liquid Line Solenoid Valve (LLSV)

Factory fitted liquid line solenoid valve shall be provided for each refrigeration circuit.

12.12 Condenser Coil Guard

Powder coated wire mesh guard shall be provided for condenser coil protection.

12.13 Suction accumulator (only applicable for cooling only models)

Suction accumulator shall be provided to prevent liquid refrigerant migration to compressor during system off-cycle.

12.14 High and Low Pressure Gauges

Each compressor shall be provided with unit mounted pressure gauges to monitor discharge and suction line pressure.

12.15 4-Inch Filters on top of standard 2-Inch Filters (2+4" Filter)

Optional 4 inches thick MERV14 disposable pleated filters shall be supplied on top of the standard 2 inches MERV8 filter.

12.16 Outside Air (consult factory for unit layout)

0 to 30% Outside Air Intaken

This option shall include a low leak outside air damper (manual/hand operated - without actuator) which help to provide outside air quantities from 0% to 30% of the total system airflow (depending on the damper setting). Option is come with rain hood with moisture eliminator filters for protection against rain and external elements.

Economizer

The economizer brings in cold outside air for ventilation and provides “free” cooling to the building. It substantially reduces the need for mechanical cooling (cooling by running system’s compressors) thus saving tremendous amount of energy.

The economizer option shall include rain hood with moisture eliminator filters for protection against rain and external elements, low leak outside air and return air damper, 0 to 100% fully modulating damper actuator (spring return type) on outside air and return air damper and dry bulb sensors.

The outside air damper (controlled via actuator) will start to operate when the dry-bulb sensor senses that the ambient/outside air temperature drop beyond a certain setpoint. The outside air damper will modulate open from 0% to 100% to maintain room temperature setpoint. In case the cooling setpoint can’t be achieved by modulating the outside air damper alone, compressors will be staged on. In another word, during time when ambient temperature is low, the outside air damper will act as the first stage of cooling for energy saving.

Return air damper will be in open position as long as the outside air damper is closed. Return air damper will modulate close in correspondence to of outside air damper opening.

12.17 Barometric Relief (consult factory for unit layout) (Economizer option must be selected)

Barometric relief option shall include aluminum louver(s) with bird screen at rear (for protection against rain and external elements) and barometric relief damper(s) to relieve positive pressure in the return air plenum of the packaged rooftop unit. The relief process is done mechanically to prevent building over pressurization (when there is excess static pressure after deducting return duct pressure drop). Model 015-025 is capable of relieving up to 100% return air while model 035-130 is capable of relieving up to 50% return air.

12.18 Exhaust/Return Fan System (consult factory for unit layout)

Exhaust Fan System (Economizer option must be selected

Exhaust fan option shall include belt driven DIDW (Double Inlet Double Width) forward curved fan as the exhaust fan. The exhaust fan shall be supplied together with TEFC exhaust fan motor, belts and pulleys and VFD. Low leak return air damper and its corresponding 0 to 100% fully modulating damper actuator (spring return type) shall be supplied. The exhaust shall include a backdraft damper and aluminum louver with bird screen at rear (for protection against rain and external elements). A building pressurization sensor shall be used to sense the pressure difference between indoor and outdoor ambient atmospheric pressure. The exhaust fan will automatically turn on and regulate the VFD fan speed to reduce the indoor pressure whenever necessary.

Return Fan System (Economizer option must be selected

Return fan option shall include direct driven SISW (Single Inlet Single Width) backward curved plenum fan as the return fan. The return fan shall be supplied together with TEFC return fan motor and VFD. Low leak exhaust and return air damper and their corresponding 0 to 100% fully modulating damper actuator (spring return type) shall be supplied. The exhaust shall include an aluminum louver with bird screen at rear (for protection against rain and external elements). Return fan shall operate whenever supply fan is in operation. A building pressurization sensor shall be used to sense the pressure difference between indoor and outdoor ambient atmospheric pressure. The unit exhaust damper shall modulate to reduce the indoor pressure whenever necessary. When economizer option is selected, the return air damper shall modulate based on the economizer cooling demand. Return fan speed shall modulate accordance to duct static pressure.

12.19 EC Evaporator Fan (applicable for model 035 to 130 only)

In lieu of standard direct driven plenum evaporator fan, motor and VFD, high efficiency direct driven backward curved plenum fan shall be provided. The backward curved plenum fan shall be driven with electronically commutated (EC) motor. Fan speed can be stepped to requirements or continuously variable using a 0–10V DC control signal. The EC backward curved plenum fan is best applicable for precise air flow control, building pressure control and energy saving purpose.

12.20 EC Condenser Axial Fan

In lieu of standard direct driven axial condenser fan with AC motor, a direct driven axial condenser fan with electronically commutated (EC) motor shall be provided. Fan speed can be stepped to requirements or continuously variable using a 0–10V DC

control signal. The EC axial fan is best applicable for precise head pressure / low ambient control and energy saving purpose. The fan also featured a low noise behaviour.

12.21 Modulating Hot Gas Reheat (applicable for model 015 to 080 only)

Hot gas reheat coil (aluminum fin copper tube) shall be provided downstream of indoor evaporator coil for dehumidification purpose. The hot gas reheat modulating valve will control the refrigerant flow between the indoor reheat coil and the outdoor condenser coil in corresponds to the outside air temperature, humidity and supply air temperature for space dehumidification. The modulating valve is only applied to system 1 (lead system).

12.22 Door Interlock Main Incoming Isolator

Incoming Isolator shall be provided to isolate the main incoming power supply to the unit.

12.23 Indicating Lights

Indication shall be provided for Supply fan run, overload trip, compressor run high pressure trip and overload trip.

12.24 UVR/Phase Failure Protect

Phase Failure Relay shall be provided for over voltage, under voltage and phase loss protection.

12.25 Interface Module

Bacnet IP, Bacnet MSTP / Lonworks communication protocol comes as an add on option apart from the standard available features shall be provided.

12.26 Lock Out Stop

Emergency stop switch shall be provided for Blower Fan.

12.27 Differential Pressure Switch for Evaporator Blower

Differential pressure switch shall be provided to interlock with the control circuit. It is used to sense air flow and feedback to the controller.

12.28 Voltmeter

Voltmeter and selector switch shall be provided for voltage display

12.29 Ammeter

Ammeter and selector switch provided for current display.

12.30 Electric Heater

Electric heater shall be provided for heating purpose. Electric heater is interlock with supply fan and will turn off if supply fan fails. Heater high temperature limit switch acts as a safety switch to cut off the heater in case of sensing high temperature.

12.31 Electric Heater Starter

Contactor and circuit breaker shall be provided for electric heater.

12.32 Compressor Soft Start

Soft-Starter shall be provided for fixed speed compressors to reduce the starting current.

12.33 VFD for Base Condenser Motor

Variable Frequency Drive (VFD) on base condenser fan motor(s) shall be provided with pressure transducer added for more accurate control at ambient down to 40^0F.

12.34 CO_2 Sensor

The CO_2 sensor shall have the ability to monitor the concentration (parts per million, ppm) of CO_2 (Carbon Dioxide) in the air. As the CO_2 concentration changes, the outside air damper modulates. The sensor shall be duct mounted and field wired back to the unit.

12.35 24VAC fire relay with transformer

A 24VAC fire relay shall be installed together with an isolation transformer to lock out the unit when this signal is activated.

12.36 Supply Duct Static Pressure Sensor

Duct static pressure sensor shall be supplied to be installed in the supply duct to monitor the static pressure. This sensor shall be supplied to control the supply fan vfd speed.

12.37 Building Pressurization Sensor

Building pressurization sensor shall be supplied to be installed in cooling space to monitor the room pressurization level. This sensor shall be used to on / off the exhaust fan and modulate the speed when necessary to maintain standard room pressurization level.

12.38 Convenience Outlet

Malaysia

Lot 5755-6,
Kidamai Industrial Park,
Bukit Angkat,
43000 Kajang,
Selangor, Malaysia

Tel: +603-8924 9000
Fax: +603-8739 5020

China

No. 1 Dunham-Bush Road,
Laishan District,
Yantai,
Shandong Province,
China 264003

Tel: +86-535-739 7888
Fax: +86-535-739 7999

United Kingdom

8 Downley Road,
Havant,
Hampshire,
England PO9 2JD

Tel : +44-23-9247 7700
Fax: +44-23-9245 0396

United States of America

11948 Miramar Parkway
Miramar, Florida 33025
United States of America

Tel: +305-883 0655
Fax: +305-883 4467

United Arab Emirates

Office # 2606,
Fortune Executive Towers,
Cluster T1, Jumeirah Lake Tower
Dubai, UAE

Tel: +971-4-443 9207
Fax: +971-4-443 9208

South Africa

No. 57 Sovereign Drive
Route 21 Corporate Park
Irene, Pretoria
South Africa

Tel: +27-12-345 4202
Fax: +27-12-345 4203

Singapore

2 Kallang Pudding Road
#07-07 Mactech Building
Singapore 349307

Tel: +65-6842 2012
Fax: +65-6842 2013

Indonesia

The Vida Building 7th Floor
Jl. Raya Pejuangan
No. 8 Kebon Jeruk
Jakarta 11530, Indonesia

Tel: +62-21-2977 8100
Fax: +62-21-2977 8001

Thailand

1 QHouse Lumpini,
27th Floor, South Sathorn Road,
Tungmahamek, Sathorn,
Bangkok Thailand 10120

Tel: +66-0-2610 3749
Fax: +66-0-2610 3601

Vietnam

10th Floor, Nam A Bank Tower,
201-203 Cach Mang Thang 8 Street,
District 3, Ho Chi Minh City,
Vietnam

Tel: +84-8-6290 3108
Fax: +84-8-6290 3109

DUNHAM-BUSH®

info@dunham-bush.com
www.dunham-bush.com

Products that perform...By people who care

M-S-0234A-0417