



Marvair[®]
AIRXCEL[™], Inc.

ISO 9001:2008 REGISTERED COMPANY

ModPac™ II 1 to 5-Ton Vertical Wall Mount Air Conditioners

Models AVPA12-20-24-30-36-42-48-60

General Description

The Marvair[®] ModPac[™] II air conditioner is a vertical, wall mounted, cost effective air conditioner designed for a variety of building types and applications. The unit is manufactured in eight sizes from 1 to 5 tons. Electric heat may be field or factory installed. Disconnects are standard on all units including the 460v. models. Accessories include a full range of grilles and thermostats. Cabinet color choices include standard Marvair beige and grey as well as other options. A Marvair first, the built-in mounting flanges simplifies installation. The sloped top, another Marvair original, eliminates the need for a rainhood.



Outside Air for Ventilation or Free Cooling

A full range of accessories and options allows the ModPac air conditioners to be optimized for each application. For classrooms, a complete range of ventilation options are available to meet the fresh air requirements of the ASHRAE 62 standard. To insure proper operation and optimum performance, all outside air ventilation packages are non-removable and factory installed.



**R-410A
Refrigerant**

Dehumidification

The introduction of outside air can cause humidity levels to rise to unacceptable levels. To reduce humidity, ModPac air conditioners can be ordered with electric resistance reheat or a Hot Gas Reheat (HGR) coil. The HGR coil allows the air conditioner to dehumidify without adversely lowering the temperature in the classroom and uses less energy than electric reheat. See page 4 for a detailed description of the operation of the Hot Gas Reheat Coil.

Safety Listed & Energy Certified

All ModPac air conditioners are built to UL standard 1995, 2nd edition and CAN/CSA C22, No. 236-5, 2nd edition. For energy efficiency and performance, the units are tested and rated in accordance to the ANSI/ARI (Air-Conditioning and Refrigeration Institute) Standard 390- 2003 (Single Package Vertical Units). All AVPA units meet or exceed the efficiency requirements of ANSI/ASHRAE/IESNA 90.1.2007. The ModPac air conditioners are commercial units and are not intended for use in residential applications.

Standard Features

Ease of Installation

- Factory installed disconnect may eliminate need of outside disconnect.
- Built-in mounting flanges eliminate need for side brackets.
- Sloped top sheds water and minimizes chance of water leaks.
- Designed for installation in a modular builder's facility.
- Single Point Power Entry complies with latest edition of U.L. Standard 1995.

Attractive and Built for Long Term Operation

- Choice of colors - beige, white, grey, light brown.
- Decorative coil guard.

- High efficiency compressors provide reliable and quiet operation.

Ease of Service

- Service access valves.
- All components accessible for field service.
- Nationwide network of service centers.

Quiet

- Twin blowers sized to accept full duct system.
- High and low refrigerant switches
- High density, foil backed insulation complies with codes that require a cleanable surface for the indoor air path.

M5 Configuration

The M5 configuration of the ModPac II air conditioner features the following as standard.

PC Board

Each ModPac air conditioner has a PC board that controls the operation of the indoor blower and the compressor while providing high refrigerant pressure and low refrigerant protection. User selectable pins and potentiometers permit multi-function control. LED's indicate operational status and fault conditions. A dedicated relay controls allows control of the two position motorized fresh air damper (Ventilation Configurations "B" & "Z").

LED Indicator Lights

COLOR	TYPE	STATUS	DESCRIPTION
Green	Power	Constant On	24 VAC power has been applied
Red	Status	Constant On	Normal Operation
		1 Blink	High pressure switch has opened twice
		2 Blinks	Low pressure switch has opened twice
		3 Blinks	Freeze stat (optional) - indoor coil temperature is below 35°F (1°C)

Modes of Operation

Normal Start-up: On a call for cooling, and the with the high pressure switch closed, the cooling system

(compressor, indoor blower motor and outdoor fan motor) will be energized. (Note: See the Delay on Make feature). The cooling system will remain energized during the three minute low pressure switch bypass cycle. If the low pressure is closed, the cooling system will continue to operate after the three-minute bypass. If the low pressure switch is open after the three-minute bypass, the cooling system will be de-energized.

Lockout Mode: If either the high or low pressure switch opens twice on the same call for cooling, the control board enters into and indicates the lockout mode. In the lockout mode, the compressor is turned off, the alarm output is energized and the status LED's will blink to indicate which fault has occurred. If there is a call for air flow, the indoor blower will remain energized. When the lockout condition has cleared, the unit will reset if the demand of the thermostat is removed or when power is reset. The lockout circuit is factory wired for normally open contacts. The user can select either normally closed or normally open remote alarm dry contacts.

Delay on Make: On initial power up or on resumption of power, the air conditioner will wait .03 to 10 minutes from a call for cooling before allowing the contactor to energize.

In addition to the PC board, the M5 configuration has high and low refrigerant pressure switches and foil backed insulation lines the indoor air path. A low ambient fan cycle control is available as an option.

Grilles & Thermostats

Grilles

Grilles for the AVPA12

Description	Size	Marvair P/N
Double Deflection, Aluminum Supply Grille	17" x 5" (432mm x 127mm)	80682
Aluminum Return Grille	17" x 10" (432mm x 254mm)	92352
Return Filter Grille	17" x 10" (432mm x 254mm)	80683

Grilles for the AVPA20/24

Double Deflection, Aluminum Supply Grille	20" x 8" (509mm x 203mm)	80674
Aluminum Return Grille	20" x 12" (509mm x 305mm)	80677
Return Filter Grille	20" x 12" (509mm x 305mm)	80671

Grilles for AVPA30/36

Double Deflection, Aluminum Supply Grille	28" x 8" (711mm x 203mm)	80675
Aluminum Return Grille	28" x 14" (711mm x 356mm)	80678
Return Filter Grille	28" x 14" (711mm x 356mm)	80672

Grilles for AVPA42/48/60

Double Deflection, Aluminum Supply Grille	30" x 10" (762mm x 254mm)	80676
Aluminum Return Grille	30" x 16" (762mm x 406mm)	80679
Return Filter Grille	30" x 16" (762mm x 406mm)	80673

Note: Return filter grilles should be used when the filter in the ModPac unit is not accessible from the exterior of the building.

Thermostats

Thermostat, P/N 50121

Digital thermostat. 1 stage heat, 1 stage cool. Non-programmable. Fan switch: Auto & On. Manual changeover system switch: Cool-Off-Heat. Low temperature protection. °F or °C selectable.

Thermostat, P/N 50123

Digital thermostat. 1 stage heat, 1 stage cool. 7 day programmable. Fan switch: Auto & On. Auto-changeover. Keypad lockout. Non-volatile program memory. Title 24 compliant - no batteries needed.

Thermostat, P/N 50218

Digital, non-programmable thermostat. One stage cool/One stage heat. Manual or auto changeover. Fan mode: Auto or On. Permanent retention of settings upon power loss. Field adjustable temperature calibration. Max heat and minimum cool set points. Adjustable temperature differential. Remote sensor capable. Keypad lock out. Status LED. °F or °C selectable.

Thermostat, P/N 50246

Non-programmable, single stage heat, single stage cool. Manual changeover. Fan: Auto & On. 60 minute power back-up.

Thermostat, P/N 50289

Programmable 2-stage heat, 2-stage cool. System settings: Heat, Cool, Off, Auto-changeover. Fan Auto & ON. 3-hour override and button lockout to prevent tampering.

Thermostat Guard, P/N 50092

For use with 50121, 50123 thermostats.

Digital humidity controller. P/N 50254

To be used with units with Hot Gas or Electric reheat. Programmable dehumidistat, humidistat and ventilation control. Time of day can be set for dehumidifier, humidifier or ventilation to run. Auto-changeover for humidification or dehumidification. Permanent memory retention of set points. Humidity sensor can be field calibrated. High & low dehumidification set points. Outdoor temperature and humidity sensor included. °F or °C selectable.

Choice of Colors

Beige is standard color with grey, white and light brown available.

Outside Air for Ventilation

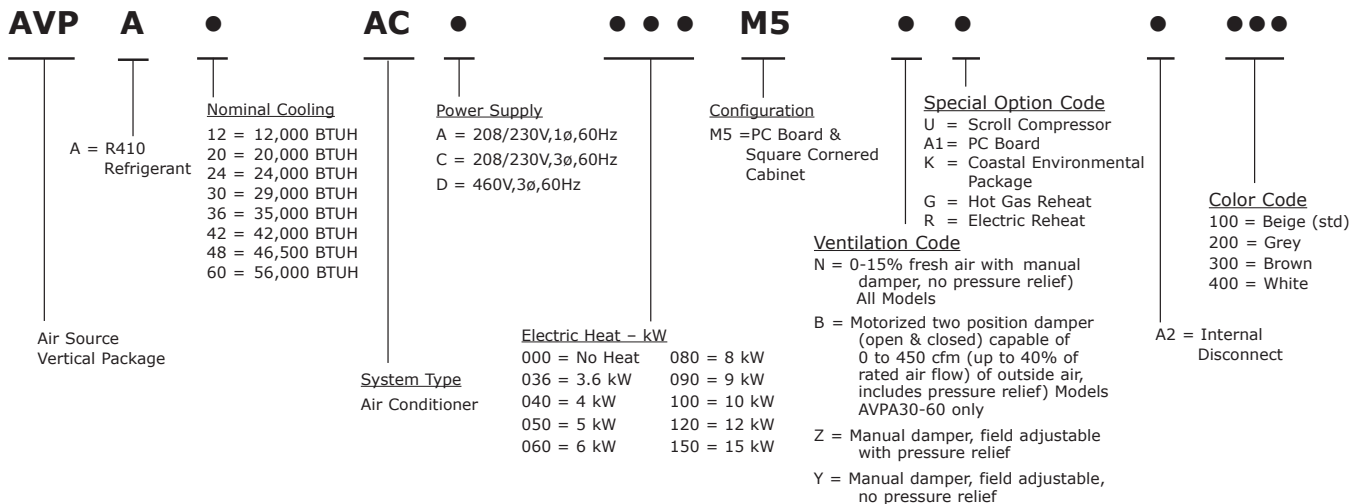
ASHRAE standard 62 requires 30 cfm of outside air per occupant of a classroom. To meet this requirement, Marvair offers a variety of ventilation packages for every budget and requirement. Note: if an air conditioner with an energy recovery ventilator (ERV) is desired, please see the GreenPac Product Data Sheet. If an air conditioner with an economizer is desired, please see the ComPac Product Data Sheet.

Outside Air Ventilation Schedule

Ventilation Package Designator*	Description	Outside Air Capability	Pressure Relief	Models
B	Motorized, two position damper (open and closed) includes pressure relief. A 24-volt actuated motor controls the damper from an external input such as a time clock, CO2 sensor, energy management system or a manual switch	Up to 450 cfm, but not to exceed 40% of the rated air flow of the air conditioner.	Yes	AVPA30-60
Z	Manual damper, field adjustable	Up to 450 cfm, but not to exceed 40% of the rated air flow of the air conditioner.	Yes	AVPA30-60
Y	Manual damper, field adjustable.	Up to 450 cfm, but not to exceed 40% of the rated air flow of the air conditioner	No	AVPA30-60
N	Manual, fixed position damper	0-15% of rated air flow	No	All Models

*See Model Identification Chart

Model Identification



Dehumidification

Two dehumidification configurations – Hot Gas Reheat and Electric Reheat - are available. Both Hot gas Reheat and Electric Reheat require a humidity controller in addition to a thermostat for proper operation.

Hot Gas Reheat

Marvair® air conditioners equipped with Hot Gas Reheat (HGR) allow the indoor humidity of the controlled environment to be maintained at or below a certain humidity set point. These units do not have the ability to add humidity to the classroom. Dehumidification is achieved by operating mechanical cooling in conjunction with a hot gas reheat coil.

Operation - If the humidity rises above the set point on the humidity controller and the temperature in the classroom is satisfied, both mechanical cooling and the HGR coil operate to temper the air and lower the humidity. If the temperature in the classroom rises above (or falls below) the set point of the thermostat and the unit is operating in the dehumidification mode, the call for cooling (or heating) will override the call for dehumidification and the coil is disengaged until the thermostat is satisfied. This assures the environment temperature is maintained as first priority and humidity control is second.

Electric Reheat

Allows the electric heat to operate simultaneously with cooling. See Dehumidification Application Bulletin for details. Note: The electrical characteristics and requirements of air conditioners with the dehumidification option are different from standard air conditioners. Refer to the appropriate Summary Rating Charts for the electrical characteristics of units with Electric Reheat.

Accessories

- *Phase Monitor* - Monitors 3Ø power supply and will turn the air conditioner off if power supply is not phased properly. Not required on 1Ø units.
- *Thermal Expansion Valve* - Available on all ModPac air conditioners. Improves operation in high ambient temperatures, >110°F (43°C).
- *Compressor sound jackets* - Reduces sound of compressor
- *Dirty Filter Indicator* - Measures the pressure across the internal filter and illuminates a LED when the pressure exceeds the specified difference. Not available on the AVPA12.
- *Security Cages* - Deters theft of the air conditioner and components. Constructed of 1" by 11 gauge square tube and 3/4", #9 expanded metal. Hinges and latches are constructed from steel plate. The complete cage is powdered coated for longevity and to match the color of the air conditioners cabinet. Field installed. Color is designated by the xxx suffix. See Model ID for color code.

Model	Part Number
AVPA12	01633-xxx
AVPA20/24	01634-xxx
AVPA30/36	01649-xxx
AVPA42/48/60	01669-xxx

- *Low ambient cooling (field installed)* - Allows the ModPac unit to operate in the cooling mode down to 20°F (-7°C).
- *Wall mount adapter for the AVPA24* - To be used when upgrading from the old AVP24 or AVPA24 cabinet with the chamfered corners to the new AVPA24 M5 cabinet. p/n K/03955

Special Application Packages and Coil Coatings

Coastal Environmental Package - Recommended for units to be installed near an ocean. Includes corrosion resistant fasteners, sealed or partially sealed condenser fan motor, protective coating applied to all exposed internal copper and metal in the condenser section and a protective coating on the condenser coil. See Coastal Environmental Technical Bulletin for more details.

Protective Coil Coatings - Either the condenser or evaporator coil can be coated; however, coating of the evaporator coil is not common. For harsh conditions, e.g., power plants, paper mills or sites where the unit will be exposed to salt water; the coil should be coated with an impregnated polyurethane coating. The coatings are sprayed on and pass 3,000 hours of B117 salt fog test. Note: Cooling capacity may be reduced by up to 5% on units with coated coils.

Certified Efficiency and Capacity Ratings at ANSI/AHRI Standard 390 - AVPA Air Conditioners



Model Number	AVPA12	AVPA20	AVPA24			AVPA30			AVPA36			AVPA42			AVPA48			AVPA60		
	ACA	ACA	ACA	ACC	ACD	ACA	ACC	ACD	ACA	ACC	ACD	ACA	ACC	ACD	ACA	ACC	ACD	ACA	ACC	ACD
Cooling BTUH ¹	10,800	19,600	24,000			29,000			35,000			42,000			46,000			54,500		
EER ²	9.00	9.00	9.25			9.25			9.25			9.25			9.50			9.25		
Rated Air Flow (CFM ³)	400	735	840			1,000			1,100			1,575			1,725			1,850		

¹Cooling rated at 95°F (35°C) outdoor and 80°F DB/67° WB (26.5°C DB/19.5°C WB) return air.
²EER=Energy Efficiency Ratio ³CFM=Cubic Feet per Minute
Ratings are with no outside air. Performance will be affected by altitude.
Ratings are at 230 volts for 208/230 volt units ("A" & "C" models) and 460 volts for "D" models. Operation of units at a different voltage from that of the rating point will affect performance and air flow.

Sensible Total Heat Ratio @ 95°F (35°C) Outside Air Dry Bulb - AVPA Air Conditioners

Model Number	AVPA12	AVPA20	AVPA24			AVPA30			AVPA36			AVPA42			AVPA48			AVPA60		
	ACA	ACA	ACA	ACC	ACD	ACA	ACC	ACD	ACA	ACC	ACD	ACA	ACC	ACD	ACA	ACC	ACD	ACA	ACC	ACD
Total Capacity	10,800	19,600	24,000			29,000			35,000			42,000			46,000			54,500		
Sensible Heat Ratio	0.74	0.76	0.71			0.75			0.69			0.75			0.76			0.72		
Sensible Capacity	7,982	14,837	16,950			21,740			24,155			31,640			34,940			39,000		
Rated Air Flow (CFM ¹)	400	735	840			1,000			1,100			1,575			1,725			1,850		

¹CFM=Cubic Feet per Minute. Sensible heat ratios based upon ANSI/AHRI std. 390 outdoor air conditions of 95°F (35°C) and 80°F DB/67° WB (26.5°C DB/19.5°C WB) return air.

Cooling Performance (BTUH) at Various Outdoor Temperatures - AVPA Air Conditioners

Model Number	Outdoor Temperature									
	75°F / 24°C	80°F / 26.5°C	85°F / 29°C	90°F / 32°C	95°F / 35°C	100°F / 38°C	105°F / 40.5°C	110°F / 43.3°C	115°F / 46°C	
AVPA12AC	12,530	12,100	11,660	11,230	10,800	10,370	9,940	9,500	9,290	
AVPA20AC	22,740	21,950	21,170	20,380	19,600	18,820	18,030	17,250	16,860	
AVPA24AC	27,840	26,880	25,920	24,960	24,000	23,040	22,080	21,120	20,640	
AVPA30AC	33,640	32,480	31,320	30,160	29,000	27,840	26,680	25,520	24,940	
AVPA36AC	40,600	39,200	37,800	36,400	35,000	33,600	32,200	30,800	30,100	
AVPA42AC	48,720	47,040	45,360	43,680	42,000	40,320	38,640	36,960	36,120	
AVPA48AC	53,360	51,520	49,680	47,840	46,000	44,160	42,320	40,480	39,560	
AVPA60AC	63,220	61,040	58,860	56,680	54,500	52,320	50,140	47,960	46,870	

Based upon ANSI/AHRI std. 390 return air conditions of 80°F DB/67° WB (26.5°C DB/19.5°C WB) at various outdoor temperatures.

CFM¹ vs. External Static Pressure (Wet Coil) - AVPA Air Conditioners

MODEL	0.10	0.20	0.25	0.3	0.4	0.5
AVPA12	500	460	430	400	n/a	n/a
AVPA20	860	810	740	670	n/a	n/a
AVPA24	860	810	740	670	n/a	n/a
AVPA30	1,100	1,000	960	920	810	n/a
AVPA36	1,310	1,220	1,185	1,150	1,060	n/a
AVPA42	n/a	1,650	1,585	1,520	1,450	1,360
AVPA48	n/a	1,900	1,830	1,760	1,700	1,620
AVPA60	n/a	1,900	1,830	1,760	1,700	1,620

¹CFM=Cubic Feet per Minute. Air flow ratings are at 230 volts. Operation of units at a different voltage will affect air flow.

Electrical Characteristics - Compressor, Fan & Blower Motors - AVPA Air Conditioner

BASIC MODEL	COMPRESSOR				OUTDOOR FAN MOTOR				INDOOR FAN MOTOR			
	Type	VOLTS-HZ-PH	RLA ¹	LRA ²	VOLTS-HZ-PH	RPM ³	FLA ⁴	HP ⁵	VOLTS-HZ-PH	RPM ³	FLA ⁴	HP ⁵
AVPA12ACA	ROTARY	208/230-60-1	4.7	25.0	208/230-60-1	1630	0.65	1/6	208/230-60-1	1650	0.85	1/5
AVPA20ACA	RECIPROCATING	208/230-60-1	8.3	43.0	208/230-60-1	1075	1.5	1/5	208/230-60-1	1075	1.5	1/5
AVPA24ACA		208/230-60-1	10.6	54.0	208/230-60-1	1075	1.5	1/5	208/230-60-1	1075	1.5	1/5
AVPA30ACA		208/230-60-1	13.1	74.0	208/230-60-1	1075	1.8	1/4	208/230-60-1	1075	2.5	1/4
AVPA36ACA		208/230-60-1	14.7	84.0	208/230-60-1	1075	1.8	1/4	208/230-60-1	1075	2.5	1/4
AVPA42ACA		208/230-60-1	15.7	84.0	208/230-60-1	825	2.8	1/3	208/230-60-1	1075	3.1	1/2
AVPA48ACA		208/230-60-1	18.6	102.0	208/230-60-1	825	2.8	1/3	208/230-60-1	1075	3.1	1/2
AVPA60ACA		208/230-60-1	23.0	130.0	208/230-60-1	825	2.8	1/3	208/230-60-1	1075	5.2	3/4
AVPA24ACA	SCROLL	208/230-60-1	12.8	64.0	208/230-60-1	1075	1.5	1/5	208/230-60-1	1075	1.5	1/5
AVPA30ACA		208/230-60-1	14.1	77.0	208/230-60-1	1075	1.8	1/4	208/230-60-1	1075	2.5	1/4
AVPA36ACA		208/230-60-1	17.9	112.0	208/230-60-1	1075	1.8	1/4	208/230-60-1	1075	2.5	1/4
AVPA42ACA		208/230-60-1	19.8	109.0	208/230-60-1	825	2.8	1/3	208/230-60-1	1075	3.1	1/2
AVPA48ACA		208/230-60-1	21.8	117.0	208/230-60-1	825	2.8	1/3	208/230-60-1	1075	3.1	1/2
AVPA60ACA		208/230-60-1	26.2	134.0	208/230-60-1	825	2.8	1/3	208/230-60-1	1075	5.2	3/4
AVPA24ACC		SCROLL	208/230-60-3	8.3	61.0	208/230-60-1	1075	1.5	1/5	208/230-60-1	1075	1.5
AVPA30ACC	208/230-60-3		9.0	71.0	208/230-60-1	1075	1.8	1/4	208/230-60-1	1075	2.5	1/4
AVPA36ACC	208/230-60-3		13.2	88.0	208/230-60-1	1075	1.8	1/4	208/230-60-1	1075	2.5	1/4
AVPA42ACC	208/230-60-3		13.6	83.1	208/230-60-1	825	2.8	1/3	208/230-60-1	1075	3.1	1/2
AVPA48ACC	208/230-60-3		13.7	83.1	208/230-60-1	825	2.8	1/3	208/230-60-1	1075	3.1	1/2
AVPA60ACC	208/230-60-3		15.6	111.0	208/230-60-1	825	2.8	1/3	208/230-60-1	1075	5.2	3/4
AVPA24ACD	SCROLL		460-60-3	5.1	28.0	208/230-60-1	1075	1.5	1/5	208/230-60-1	1075	1.5
AVPA30ACD		460-60-3	5.6	38.0	208/230-60-1	1075	1.8	1/4	208/230-60-1	1075	2.5	1/4
AVPA36ACD		460-60-3	6.0	44.0	208/230-60-1	1075	1.8	1/4	208/230-60-1	1075	2.5	1/4
AVPA42ACD		460-60-3	6.1	41.0	208/230-60-1	825	2.8	1/3	208/230-60-1	1075	3.1	1/2
AVPA48ACD		460-60-3	6.2	41.0	208/230-60-1	825	2.8	1/3	208/230-60-1	1075	3.1	1/2
AVPA60ACD		460-60-3	7.7	52.0	208/230-60-1	825	2.8	1/3	208/230-60-1	1075	5.2	3/4

¹RLA = Rated Load Amps ²LRA = Locked Rotor Amps ³RPM = Revolutions per Minute ⁴FLA = Full Load Amps ⁵HP = Horsepower
The 460 volt units have a step down transformer for the 230 volt motors.

Summary Electrical Ratings (Wire and Circuit Breaker Sizing) AVPA Air Conditioners with Ventilation Configurations: Manual Damper, up to 15% Outside Air ("N") Motorized Damper, up to 450 CFM of Outside Air with Pressure Relief ("B") Manual Damper, up to 450 CFM of Outside Air ("Y") Manual Damper, up to 450 CFM of Outside Air with Pressure Relief ("Z")

ELECTRIC HEAT		000 = None		036 = 3.6 kw		040 = 4 kw		050 = 5 kw		060 = 6 kw		080 = 8 kw		090 = 9 kw		100 = 10 kw		120 = 12 kw		150 = 15 kw			
BASIC MODEL	VOLTAGE PHASE / HZ	SPPE ³		SPPE ³		SPPE ³		SPPE ³		SPPE ³		SPPE ³		SPPE ³		SPPE ³		SPPE ³		SPPE ³			
		MCA ¹	MFS ²	MCA ¹	MFS ²	MCA ¹	MFS ²	MCA ¹	MFS ²	MCA ¹	MFS ²	MCA ¹	MFS ²	MCA ¹	MFS ²	MCA ¹	MFS ²	MCA ¹	MFS ²	MCA ¹	MFS ²		
AVPA12ACA	208/230-1-60	7.4	15	19.7	20			26.9	30														
AVPA20ACA	208/230-1-60	13.4	20			22.4	25	27.5	30	32.8	35	43.1	45			53.6	60						
AVPA24ACA	208/230-1-60	19.0	30			22.4	30	27.5	30	32.8	35	43.1	45			53.6	60						
AVPA30ACA	208/230-1-60	21.9	35			23.4	35	28.5	35	33.8	35	44.1	45			54.6	60	65.0	70	80.6	90		
AVPA36ACA	208/230-1-60	26.7	40			26.7	40	28.5	40	33.8	40	44.1	45			54.6	60	65.0	70	80.6	90		
AVPA42ACA	208/230-1-60	30.7	50					30.7	50							55.1	60	65.5	70	81.1	90		
AVPA48ACA	208/230-1-60	33.2	50					33.2	50							55.1	60	65.5	70	81.1	90		
AVPA60ACA	208/230-1-60	40.8	60					40.8	60							57.3	60	67.6	70	83.2	90		
AVPA24ACC	208/230-3-60	13.4	20							19.5	20			28.6	30					37.6	40		
AVPA30ACC	208/230-3-60	15.6	20							20.5	20			29.6	30					38.6	40	47.6	50
AVPA36ACC	208/230-3-60	20.8	30							20.8	30			29.6	30					38.6	40	47.6	50
AVPA42ACC	208/230-3-60	22.9	35							22.9	35			30.1	35					39.1	40	48.1	50
AVPA48ACC	208/230-3-60	23.0	35							23.0	35			30.1	35					39.1	40	48.1	50
AVPA60ACC	208/230-3-60	27.5	40							27.5	40			32.2	40					41.3	50	50.2	60
AVPA24ACD	460-3-60	7.9	15							9.8	15			14.3	15					18.8	20	23.3	25
AVPA30ACD	460-3-60	9.2	15							10.3	15			14.8	15					19.3	20	23.8	25
AVPA36ACD	460-3-60	9.7	15							10.3	15			14.8	15					19.3	20	23.8	25
AVPA42ACD	460-3-60	10.6	15							10.9	15			15.1	20					19.6	20	24.1	25
AVPA48ACD	460-3-60	10.7	15							10.9	15			15.1	20					19.6	20	24.1	25
AVPA60ACD	460-3-60	13.6	20							13.6	20			16.1	20					20.6	25	25.1	30

¹MCA = Minimum Circuit Ampacity (Wiring Size Amps) ²MFS = Maximum Fuse Size ³SPPE = Single Point Power Entry
MCA & MFS are calculated at 230 volts on the ACA & ACC models. The 460 volts ACD models are calculated at 460 volts. This chart should only be used as a guideline for estimating conductor size and overcurrent protection. For the requirements of specific units, always refer to the data label on the unit.

Summary Electrical Ratings (Wire and Circuit Breaker Sizing)

**AVPA Air Conditioners with Electric Reheat ("R") and Ventilation Configurations:
 Manual Damper, up to 15% Outside Air ("N")
 Motorized Damper, up to 450 CFM of Outside Air with Pressure Relief ("B")
 Manual Damper, up to 450 CFM of Outside Air ("Y")
 Manual Damper, up to 450 CFM of Outside Air with Pressure Relief ("Z")**

ELECTRIC HEAT		000 = None		036 = 3.6 kw		040 = 4 kw		050 = 5 kw		060 = 6 kw		080 = 8 kw		090 = 9 kw		100 = 10 kw		120 = 12 kw		150 = 15 kw		
		SPPE ³		SPPE ³		SPPE ³		SPPE ³		SPPE ³		SPPE ³		SPPE ³		SPPE ³		SPPE ³		SPPE ³		
		BASIC MODEL	VOLTAGE PHASE / HZ	MCA ¹	MFS ²	MCA ¹	MFS ²	MCA ¹	MFS ²	MCA ¹	MFS ²	MCA ¹	MFS ²	MCA ¹	MFS ²	MCA ¹	MFS ²	MCA ¹	MFS ²	MCA ¹	MFS ²	MCA ¹
AVPA12ACA	208/230-1-60	7.4	15	26.2	30			33.4	35													
AVPA20ACA	208/230-1-60	13.4	20			34.3	35	39.4	40	44.7	45					65.5	70					
AVPA24ACA	208/230-1-60	19.0	30			39.9	40	45.0	45	50.3	60					71.1	80					
AVPA30ACA	208/230-1-60	21.9	35			42.8	45	47.9	50	53.2	60					74.0	80	84.8	90	100.0	100	
AVPA36ACA	208/230-1-60	26.7	40			47.6	50	52.7	60	58.0	60					78.8	80	89.2	90	104.8	110	
AVPA42ACA	208/230-1-60	30.7	50					56.7	60							82.8	90	93.2	100	108.8	110	
AVPA48ACA	208/230-1-60	33.2	50					59.2	60							85.3	90	95.7	100	111.3	120	
AVPA60ACA	208/230-1-60	40.8	60					66.8	70							92.9	100	103.3	110	118.9	120	
AVPA24ACC	208/230-3-60	13.4	20							31.4	35			40.5	45			49.5	50	58.5	60	
AVPA30ACC	208/230-3-60	15.6	20							33.6	35			42.7	45			51.7	60	60.7	70	
AVPA36ACC	208/230-3-60	20.8	30							38.8	40			47.9	50			56.9	60	65.9	70	
AVPA42ACC	208/230-3-60	22.9	35							40.9	45			50.0	50			59.0	60	68.0	70	
AVPA48ACC	208/230-3-60	23.0	35							41.0	45			50.1	60			59.1	60	68.1	70	
AVPA60ACC	208/230-3-60	27.5	40							45.5	50			54.6	60			63.6	70	72.6	80	
AVPA24ACD	460-3-60	7.9	15							16.0	20			21.4	25			25.9	30	30.4	35	
AVPA30ACD	460-3-60	9.2	15							18.2	20			22.7	25			27.2	30	31.7	35	
AVPA36ACD	460-3-60	9.7	15							18.7	20			23.2	25			27.7	30	32.2	35	
AVPA42ACD	460-3-60	10.6	15							19.6	20			24.1	25			28.6	30	33.1	35	
AVPA48ACD	460-3-60	10.7	15							19.7	20			24.2	25			28.7	30	33.2	35	
AVPA60ACD	460-3-60	13.6	20							22.6	25			27.1	30			31.6	35	36.1	40	

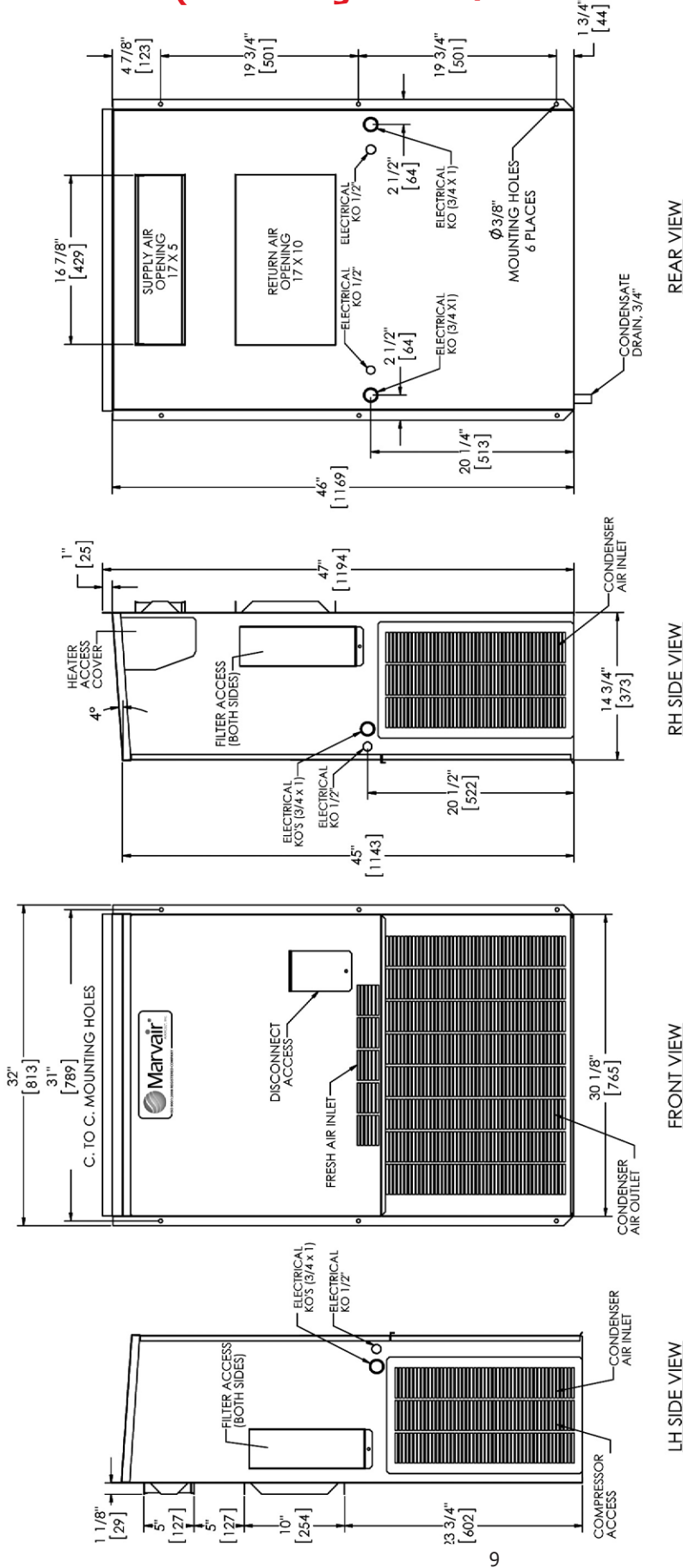
¹MCA = Minimum Circuit Ampacity (Wiring Size Amps) ²MFS = Maximum Fuse Size ³SPPE = Single Point Power Entry
 MCA & MFS are calculated at 230 volts on the ACA & ACC models. The 460 volts ACD models are calculated at 460 volts. This chart should only be used as a guideline for estimating conductor size and overcurrent protection. For the requirements of specific units, always refer to the data label on the unit.

Unit Load Amps - AVPA Air Conditioners with Ventilation Configurations: Manual Damper, up to 15% Outside Air ("N") Motorized Damper, up to 450 CFM of Outside Air with Pressure Relief ("B") Manual Damper, up to 450 CFM of Outside Air ("Y") Manual Damper, up to 450 CFM of Outside Air with Pressure Relief ("Z")

BASIC MODEL NUMBER	VOLTAGE PHASE / HZ	CURRENT AMPS		LOAD OF RESISTIVE HEATING - ELEMENTS ONLY (AMPS)										TOTAL MAXIMUM HEATING AMPS																									
				(1) ALL HEATING ELEMENTS ARE ON A SEPARATE CIRCUIT (2) SHADED VALUES (12 & 15 kW) UTILIZE TWO CIRCUITS										INCLUDES AMPS FROM MOTOR(S) THAT ARE LOCATED ON AN ELECTRICAL CIRCUIT THAT DOES NOT HAVE HEATERS																									
				AC ¹	IBM ²	3.6 kW	04 kW	05 kW	06 kW	08 kW	09 kW	10 kW	12 kW	15 kW	3.6 Kw	04 Kw	05 Kw	06 Kw	08 Kw	09 Kw	10 Kw	12 Kw	15 Kw																
AVPA12ACA	208/230-1-60	6.1	0.85	15.0		20.8																15.9		21.7															
AVPA20ACA	208/230-1-60	11.3	1.5		16.7	20.8	25.0	33.3		41.7														18.2	22.3	26.5	34.8					43.2							
AVPA24ACA	208/230-1-60	15.8	1.5		16.7	20.8	25.0	33.3		41.7														18.2	22.3	26.5	34.8					43.2							
AVPA30ACA	208/230-1-60	18.4	2.5		16.7	20.8	25.0	33.3		41.7			50.0	62.5										19.2	23.3	27.5	35.8					44.2	52.5	65.0					
AVPA36ACA	208/230-1-60	22.2	2.5		16.7	20.8	25.0	33.3		41.7			50.0	62.5										19.2	23.3	27.5	35.8					44.2	52.5	65.0					
AVPA42ACA	208/230-1-60	25.7	3.1			20.8				41.7			50.0	62.5											23.9						44.8	53.1	65.6						
AVPA48ACA	208/230-1-60	27.7	3.1			20.8				41.7			50.0	62.5											23.9					44.8	53.1	65.6							
AVPA60ACA	208/230-1-60	34.2	5.2			20.8				41.7			50.0	62.5											26.0					46.9	55.2	67.7							
AVPA24ACC	208/230-3-60	11.2	1.5				14.4		21.7			28.9	36.1					15.9		23.2									30.4	37.6									
AVPA30ACC	208/230-3-60	13.3	2.5				14.4		21.7			28.9	36.1					16.9		24.2									31.4	38.6									
AVPA36ACC	208/230-3-60	17.5	2.5				14.4		21.7			28.9	36.1					16.9		24.2									31.4	38.6									
AVPA42ACC	208/230-3-60	19.5	3.1				14.4		21.7			28.9	36.1					17.5		24.8									32.0	39.2									
AVPA48ACC	208/230-3-60	19.6	3.1				14.4		21.7			28.9	36.1					17.5		24.8									32.0	39.2									
AVPA60ACC	208/230-3-60	23.6	5.2				14.4		21.7			28.9	36.1					19.6		26.9									34.1	41.3									
AVPA24ACD	460-3-60	6.6	0.8				7.2		10.8			14.4	18.0					8.0		11.6									15.2	18.8									
AVPA30ACD	460-3-60	7.8	1.3				7.2		10.8			14.4	18.0					8.5		12.1									15.7	19.3									
AVPA36ACD	460-3-60	8.2	1.3				7.2		10.8			14.4	18.0					8.5		12.1									15.7	19.3									
AVPA42ACD	460-3-60	9.1	1.6				7.2		10.8			14.4	18.0					8.8		12.4									16.0	19.6									
AVPA48ACD	460-3-60	9.2	1.6				7.2		10.8			14.4	18.0					8.8		12.4									16.0	19.6									
AVPA60ACD	460-3-60	11.7	2.6				7.2		10.8			14.4	18.0					9.8		13.4									17.0	20.6									

¹AC = Air conditioner ²IBM= Indoor Blower Motor
 Heating kW is rated at 240 volts on the ACA & ACC models. Derate heater output by 25% for operation at 208 volts.
 Heating kW is rated at 480 volts on the ACD models. Total heating and cooling amps includes all motors.
 Three phase models contain single phase motor loads. Loads are not equally balanced on each phase and values shown are maximum phase loads.

Dimensional Data – AVPA12 ModPac™ II Air Conditioner (M5 Configuration)



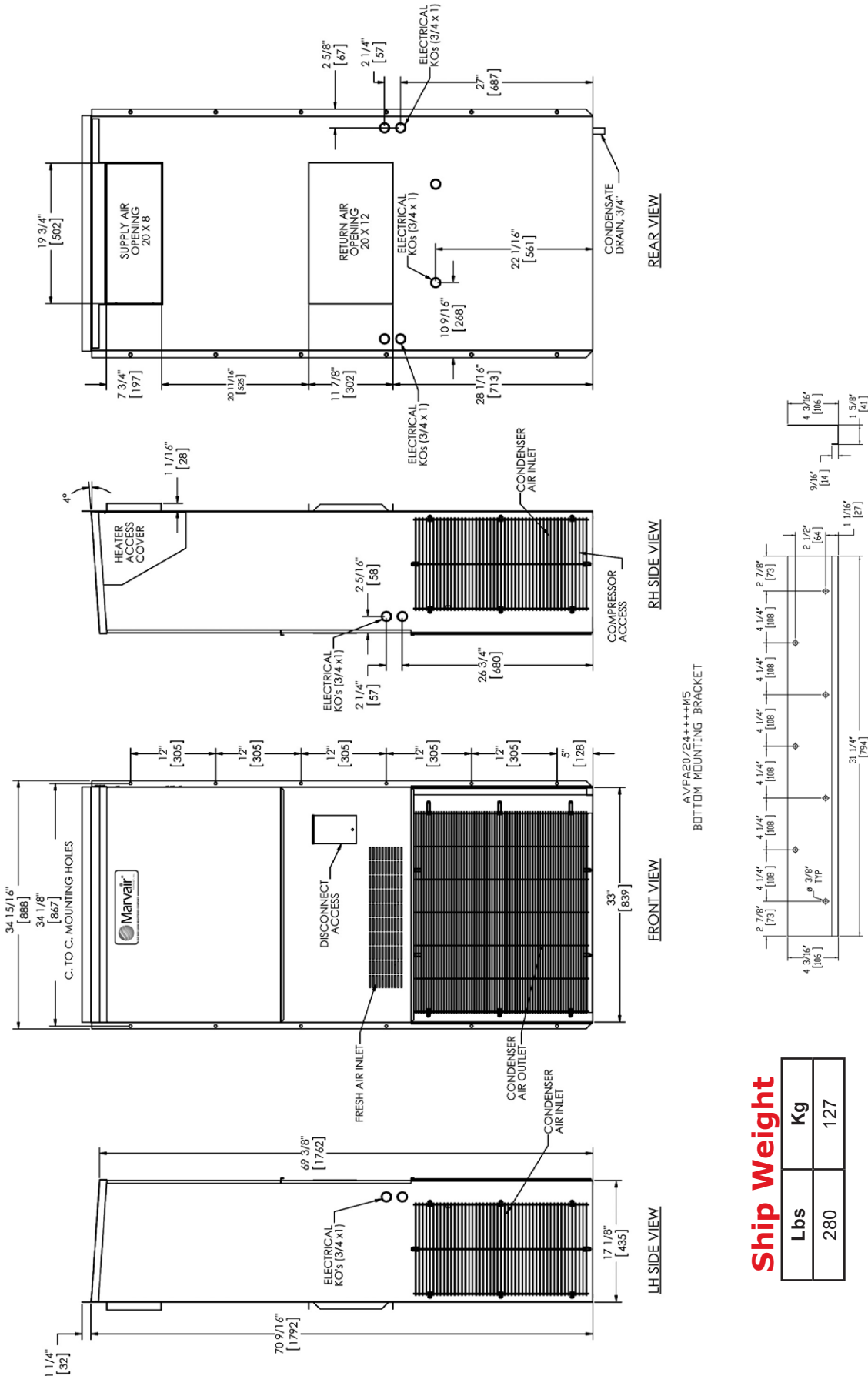
Ship Weight

Lbs	180
Kg	82

Filter Size

RETURN AIR FILTER	INCHES	MILLIMETERS	PART NUMBER	FILTERS PER UNIT	MERV RATING
	20 x 10 x 1	508 x 254 x 25	91913	1	7

Dimensional Data – AVPA20-24 ModPac™ II Air Conditioner (M5 Configuration)



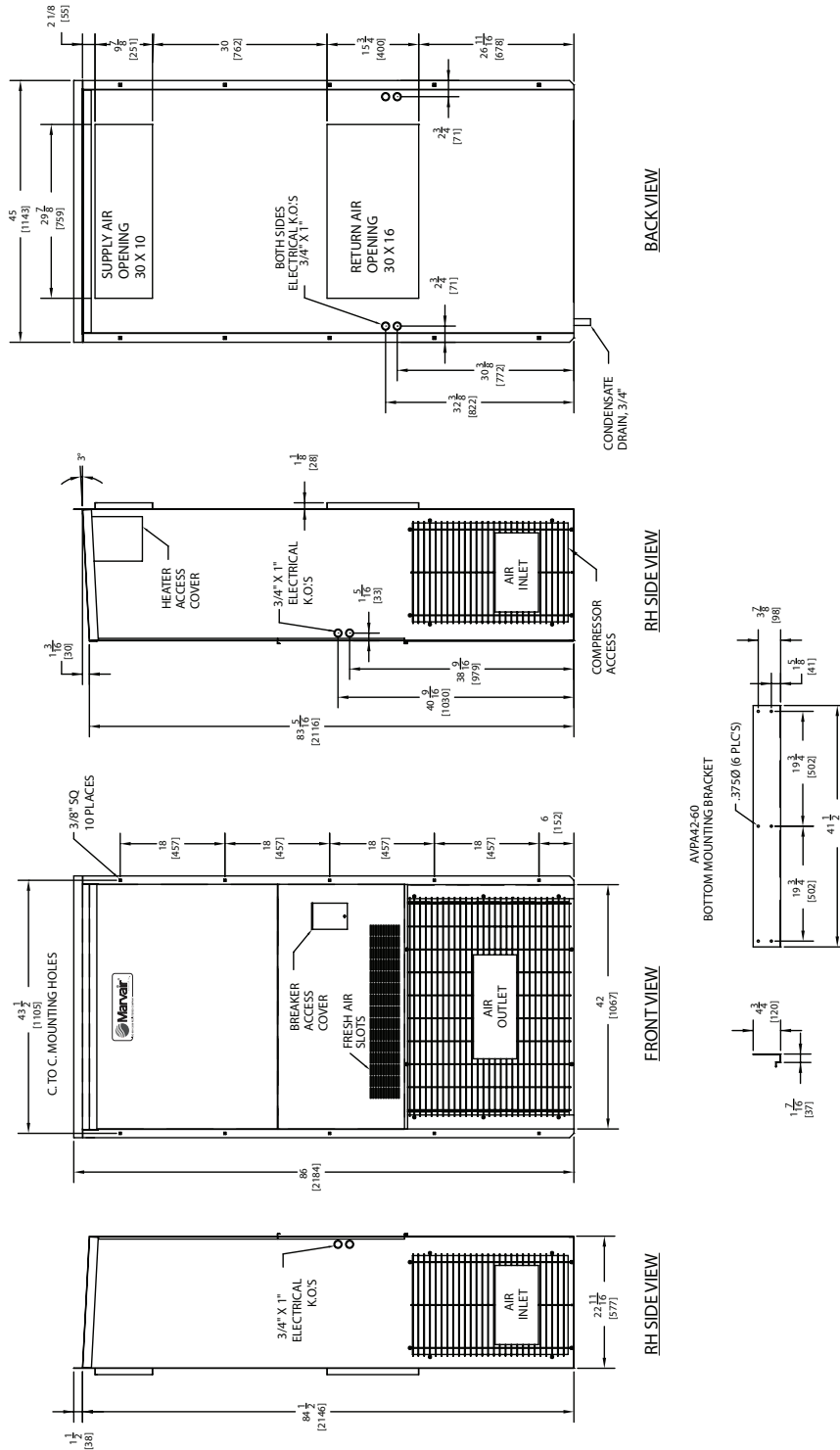
Ship Weight

Lbs	280
Kg	127

Filter Size

	INCHES	MILLIMETERS	PART NUMBER	FILTERS PER UNIT	MERV RATING
RETURN AIR FILTER	25 x 16 x 1	635 x 406 x 25	80135	1	7

Dimensional Data – AVPA42-60 ModPac™ II Air Conditioner



Ship Weight

VENTILATION CONFIGURATION	Lbs	Kg
N	525	239
B, Y & Z	565	257

Filter Size

RETURN AIR FILTER	INCHES	MILLIMETERS	PART NUMBER	FILTERS PER UNIT	MERV RATING
	36 1/2 x 22 x 1	927 x 559 x 25	80139	1	7



Please consult the Marvair® website at www.marvair.com for the latest product literature. Detailed dimensional data is available upon request. A complete warranty statement can be found in each product's Installation/Operation Manual, on our website or by contacting Marvair at 229-273-3636. As part of the Marvair continuous improvement program, specifications are subject to change without notice.



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