



GreenPac™ & GreenPac HGR™ Heat Pumps & Air Conditioners

Models AVP24-30-36-42-48-60

General Description

The Marvair™ GreenPac™ and GreenPac HGR™ (Hot Gas Reheat) air conditioners and heat pumps are complete, factory assembled wall-mounted systems designed to provide total comfort while meeting ventilation requirements. The GreenPac and GreenPac HGR units are built in cooling capacities of 2 ton to 5 tons (24,000 BTUH to 60,000 BTUH). Optional electric heat is available on all models. The GreenPac and GreenPac HGR units both have the factory installed Marvair GreenWheel® ERV. The GreenWheel ERV is a total energy wheel that can recover both sensible and latent heat with efficiencies of up to 75%. The use of the GreenWheel ERV allows compliance with ASHRAE standard 62-1999 ventilation requirements while keeping operating costs to a minimum.

GreenPac HGR™ Air Conditioners & Heat Pumps - In addition to the factory installed GreenWheel® ERV, the GreenPac HGR A/C and HP have a Hot Gas Reheat coil. The GreenPac HGR unit provides additional dehumidification capability by working in conjunction with the GreenWheel ERV. The HGR coil permits dehumidification of the fresh and return air without overcooling the classroom. The operation of the HGR coil is controlled by a humidity controller or BAS control.

The GreenPac™ and GreenPac HGR™ air conditioners and heat pumps are tested to UL Standard 1995, 2nd Ed. and listed by ETL. Ratings and specifications are in accordance with the applicable standards of the Air Conditioning and Refrigeration Institute Std 210/240.

The most current version of this Product Data Sheet can be downloaded from the Marvair™ website at www.marvair.com.



Standard Features

High Efficiency

- All units exceed current National Appliance Energy Conservation Act (NAECA) energy requirements.
- High efficiency compressor.
- Lanced fins and rifled tubing on many indoor and outdoor coils.
- Two-speed indoor blower motor.

Ease of Installation

- Sloped top with flashing eliminates need of rainhood.
- Built-in full length mounting flanges facilitate installation and minimizes chance of water leaks.
- Factory installed disconnect on many 208/230V units. (Optional disconnects available on 460V units.)

Built-in Reliability

- High pressure and loss of

charge switches with lockout relay protect refrigerant circuit. (Heat pumps only.)

- High and low pressure switches with lockout relay protect refrigerant circuit. (Air conditioners only.)
- Optional time delay/anti-short cycle timer and low ambient control.
- Defrost sensor controls the removal of ice or frost from the outdoor coil on heat pumps.

Rugged Construction

- Copper tube, aluminum fin evaporator and condenser coils.
- Factory-installed heaters on discharge side of evaporator coil. (Optional.)
- Prepainted neutral beige polyester finish over primed G-60 galvanized steel for maximum cabinet life.

(Other finishes are available.)

GreenWheel® ERV Characteristics

- Certified according to ARI Standard 1060.
- Non-migrating dessicant impregnated within structure. (Not coated).
- 4A molecular sieve dessicant.
- Synthetic media resists corrosion.
- Flute geometry reduces cross contamination.
- Transfers both latent and sensible energy.
- UL recognized.
- Full contact brush seal.
- Internal sealed roller bearing.
- 16 ga. galvanized steel frame.
- Variable fan speed control of GreenWheel® ERV blowers.

The Marvair™ GreenWheel® ERV

The Marvair GreenWheel® ERV is a total energy (both sensible and latent) wheel that reduces both construction and operating cost while ventilating the classroom to ASHRAE 62-1999 requirements. The use of the GreenWheel ERV reduces the energy load of the outside air. Exhausting stale, inside air keeps indoor pollutants and harmful gases to a minimum. The energy recovery wheel has been tested and certified according to ARI Standard 1060.

How It Works

During the summer, cool dry air from the classroom is exhausted through the GreenWheel® ERV to the outside. As the air passes through the rotating wheel, the desiccant becomes cooler and drier. Simultaneously, hot humid air is being pulled across the rotating wheel. The cool, dry desiccant absorbs moisture and heat from the incoming air. The cooler, drier air is mixed with the return air from the classroom and distributed throughout the room.

In the winter, warm moist air is exhausted through the GreenWheel® ERV to the outside. As the air passes through the rotating wheel, the desiccant becomes warmer and absorbs moisture. Simultaneously, cold dry air is being pulled across the rotating wheel. The cold, dry air absorbs heat and moisture from the desiccant. The warmed air is mixed with the return air from the classroom and distributed throughout the room.

Quality Components

The GreenWheel® ERV cassette consists of the energy recovery wheel, two blowers and the drive motor and belt. The two blowers simultaneously pull fresh air from outside and exhaust air from the classroom through the rotating wheel. The air streams are separated by an insulated partition so that the incoming fresh air is not mixed with the exhaust air. Two variable speed blowers ensure that up to 450 CFM of outside air can be brought into the room and the indoor air is properly exhausted. Variable speed blowers permit that the desired quantity of outside air is delivered into the room. Optional independent exhaust air blower control allows positive pressurization of the classroom, i.e., more outside air can be introduced through the GreenWheel ERV than is exhausted.

GreenWheel® ERV Performance*

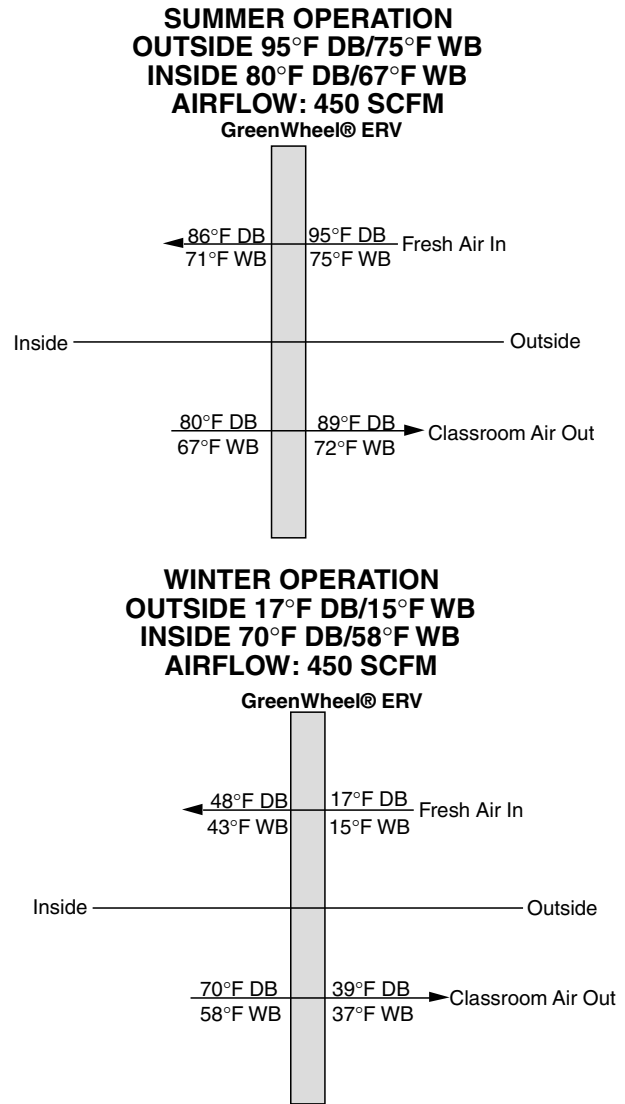
SCFM* of Outside Air	95° DB/73° WB Outside 80° DB/67° WB Inside			95° DB/80° WB Outside 80° DB/67° WB Inside		
	Energy Conserved, BTUH			Energy Conserved, BTUH		
	Sensible	Latent	Total	Sensible	Latent	Total
225	2,900	1,100	4,000	2,900	6,400	9,300
250	3,100	1,200	4,300	3,100	6,900	10,000
325	3,700	1,400	5,100	3,700	8,100	11,800
400	4,200	1,500	5,700	4,200	9,100	13,300
450	4,500	1,600	6,100	4,500	9,700	14,200

SCFM* of Outside Air	90° DB/74° WB Outside 75° DB/64° WB Inside			80° DB/70° WB Outside 75° DB/64° WB Inside			60° DB/54° WB Outside 70° DB/58° WB Inside		
	Energy Conserved, BTUH			Energy Conserved, BTUH			Energy Conserved, BTUH		
	Sensible	Latent	Total	Sensible	Latent	Total	Sensible	Latent	Total
225	2800	3600	6400	900	2800	2700	1900	200	2100
250	3000	3800	6800	1000	3000	4000	2000	200	2200
325	3600	4500	8100	1200	3500	4700	2400	200	2600
400	4100	4900	9000	1400	3800	5200	2700	300	3000
450	4300	5200	9500	1400	4000	5400	2900	300	3200

SCFM* of Outside Air	40° DB/36° WB Outside 70° DB/58° WB Inside			20° DB/18° WB Outside 70° DB/58° WB Inside			0° DB/7° WB Outside 70° DB/58° WB Inside		
	Energy Conserved, BTUH			Energy Conserved, BTUH			Energy Conserved, BTUH		
	Sensible	Latent	Total	Sensible	Latent	Total	Sensible	Latent	Total
225	5600	3300	8900	9300	4900	14200	13000	5700	18700
250	6000	3600	9600	10000	5300	15300	14000	6100	20100
325	7200	4200	11400	12000	6200	18200	16700	7100	23800
400	8100	4600	12700	13500	6800	20300	18900	7900	26800
450	8600	4800	13400	14400	7100	21500	20100	8200	28300

*SCFM = Standard Cubic Feet per Minute

*Please contact your Marvair™ representative for performance at other conditions.



GreenPac HGR™ Air Conditioner & Heat Pump Operation

Marvair™ GreenPac HGR™ air conditioners and heat pumps equipped with the Hot Gas Reheat (HGR) to 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. The coil is sized approximately to the sensible capacity of the total tonnage of the machine.

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.

Accessories

Supply Grilles

For AVP24,30,36	28" x 8"	P/N 80675
For AVP42,48,60	30" x 10"	P/N 80676

Return Filter Grilles (Required)

Filter used in Return Filter Grille is 1" thick.

For AVP24,30,36	28" x 14"	P/N 80672
For AVP42,48,60	30" x 16"	P/N 80673

Thermostats for Air Conditioners

Thermostat, PN 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.

Thermostat, P/N 50123

Digital thermostat. 1 stage heat, 1 stage cool. 7 day programmable. Fan switch: Auto & On. Auto-change over. Keypad lockout. Non-volatile program memory.

Thermostat, P/N 50100

Seven day programming. Two occupied and two unoccupied periods per day. Individual heat and cool setpoints. Manual or automatic changeover. System switch: Off, Cool, Heat, Emergency Heat. Fan Switch: Auto & On. Keypad lockout available. Ventilation terminals. No batteries required. Display indicates when Auxiliary Heat or Emergency Heat are activated. Requires a 50101 subbase if used on a heat pump or a 50109 if used on an air conditioner.

Subbase, P/N 50109

Subbase to be used with 50100 thermostat for an air conditioner.

Thermostats for Heat Pumps

One Piece Thermostat, PN 50122

Digital thermostat. 2 stage heat, 2 stage cool. Non-programmable. Fan switch: Auto & On. Manual changeover system switch: Cool-Off-Heat-Emergency Heat. Status LED's. °F or °C.

Deluxe Model Thermostat, P/N 50107

Digital thermostat. 2 stage heat, 2 stage cool. 7 day programmable. Fan switch: Auto & On. Auto-change over. Status LED's. Backlit display. Programmable fan. Non-volatile program memory.

Thermostat, P/N 50100

Seven day programming. Two occupied and two unoccupied periods per day. Individual heat and cool setpoints. Manual or automatic changeover. System switch: Off, Cool, Heat, Emergency Heat. Fan Switch: Auto & On. Keypad lockout available. Ventilation terminals. No batteries required. Display indicates when Auxiliary Heat or Emergency Heat are activated. Requires a 50101 subbase if used on a heat pump or a 50109 if used on an air conditioner.

Subbase, P/N 50101

Subbase to be used with 50100 thermostat for a heat pump.

Humidity Controller (Required for GreenPac HGR™ Air Conditioners and Heat Pumps)

Humidity Controller, PN 50057

Wall mounted type humidity controller controls operation of the hot gas reheat coil for dehumidification. Adjustable dehumidification range.

Thermostats can contain mercury that is hazardous and must be disposed of properly.

GreenPac™ & GreenPac HGR™ Air Conditioners and Heat Pumps Options

Marvair™ options can be used to provide optimum performance over a full range of operating conditions.

Hard Start Kit – Used on single phase equipment to give the compressor higher starting torque under low voltage conditions. Field installed. Available on all units. (Not recommended for use on scroll compressor.)

Adjustable Outdoor Thermostat – Will not allow electric resistance heat to be energized unless the outdoor temperature is below the desired set point. Field or factory installed. Available on all heat pumps.

"S" Circuit – Limits the electric demand by preventing simultaneous operation of the compressor and electric strip heat; requires only one field power circuit in most cases. Factory installed. Available on all heat pump units.

Single Point Feed – When multiple internal disconnects are used, single point feed permits only one field power supply to heat pump. Field installed. Available on all units.

Scroll Compressor – All ratings shown on this product data sheet are for the standard reciprocating compressor. Use of a scroll compressor may change the ratings. Available on most units. (Please contact the factory for specific information.)

Compressor Time Delay – Prevents compressor from short cycling. Field or factory installed. Available on all units.

Evaporator Variable Fan Speed Control – Variable speed control of indoor blower motor provides adjustable air volume. Field or factory installed. Available on all units.

Energy Management System (EMS) Relay Kit – Relay to control the unit. Available in 24, 120 or 240 VAC. Field or factory installed.

Variable Fan Speed Control for GreenWheel® ERV

Exhaust Blower – For separate control of the exhaust blower. When used, the standard speed controller control the intake blower and the optional, second controller operates the exhaust blower. Individual blower control allows positive pressurization of the classroom. Field installed, P/N S/03335. Can be factory installed.

Factory Installed Disconnects – Available for all 460V, 3Ø units.

Low Ambient Cooling Control – Cycles the condenser fan on/off to allow operation in the cooling mode down to 20°F.

Model Identification

AVP

Air Source
Vertical
Package

Nominal Cooling

24 = 24,000 BTUH
30 = 30,000 BTUH
36 = 35,600 BTUH
42 = 42,500 BTUH
48 = 50,000 BTUH
60 = 56,500 BTUH

Power Supply

A = 208/230V, 1Ø, 60Hz
C = 208/230V, 3Ø, 60Hz
D = 460V, 1Ø, 60Hz

System Type

AC = Air Conditioner
HP = Heat Pump

Electric Heat

00 (None)
4 kW
5 kW
6 kW
8 kW
9 kW
10 kW
15 kW

Configuration

H = GreenPac® ERV

Special Option Code

G = HGR (Hot Gas Reheat)

GreenPac™ & GreenPac HGR™ Air Conditioners

Summary Ratings (Wire Sizing) - GreenPac™ & GreenPac HGR™ Air Conditioners

	00 = None		04 = 4 kW		05 = 5 kW		06 = 6 kW		08 = 8 kW		09 = 9 kW		10 = 10 kW		15 = 15 kW			
BASIC MODEL	Circuit #1		Circuit #1		Circuit #1		Circuit #1		Circuit #1		Circuit #1		Circuit #1		Circuit #1		Circuit #2	
	MCA	MFS	MCA	MFS	MCA	MFS	MCA	MFS	MCA	MFS	MCA	MFS	MCA	MFS	MCA	MFS	MCA	MFS
AVP24ACA	19	30	25	30	---	---	36	40	46	50	---	---	57	60	---	---	---	---
AVP30ACA	25	35	---	---	32	35	37	40	---	---	---	---	58	60	32	35	52	60
AVP36ACA	26	40	---	---	32	35	37	40	---	---	---	---	58	60	32	40	52	60
AVP42ACA	32	50	---	---	33	50	38	50	---	---	---	---	59	60	33	50	52	60
AVP48ACA	35	50	---	---	35	50	---	---	---	---	---	---	59	60	35	50	52	60
AVP60ACA	41	60	---	---	41	60	---	---	---	---	---	---	61	80	41	60	52	60
AVP24ACC	16	20	---	---	---	---	23	25	---	---	32	35	---	---	---	---	---	---
AVP30ACC	18	25	---	---	---	---	24	25	---	---	33	35	---	---	51	60	---	---
AVP36ACC	20	30	---	---	---	---	24	30	---	---	33	35	---	---	51	60	---	---
AVP42ACC	26	35	---	---	---	---	26	35	---	---	34	35	---	---	52	60	---	---
AVP48ACC	26	35	---	---	---	---	---	---	---	---	34	35	---	---	52	60	---	---
AVP60ACC	30	45	---	---	---	---	---	---	---	---	36	45	---	---	54	60	---	---
AVP24ACD	7	15	---	---	---	---	11	15	---	---	16	20	---	---	---	---	---	---
AVP30ACD	10	15	---	---	---	---	12	15	---	---	17	20	---	---	26	30	---	---
AVP36ACD	11	15	---	---	---	---	12	15	---	---	17	20	---	---	26	30	---	---
AVP42ACD	13	15	---	---	---	---	13	20	---	---	17	20	---	---	26	30	---	---
AVP48ACD	13	20	---	---	---	---	---	---	---	---	17	20	---	---	26	30	---	---
AVP60ACD	16	20	---	---	---	---	---	---	---	---	18	20	---	---	27	30	---	---

The above chart should be used as a general guideline for estimating conductor size and overcurrent protection for the unit models listed. For specific requirements, refer to the data label attached to the unit cabinet.

*Denotes all electric heat on circuit #2. For 15 kW units maximum allowable electric heat to operate simultaneously with compressor is 10 kW located on the second circuit.

MCA = Minimum Circuit Ampacity (Wiring Size Amps)

MFS = Maximum External Fuse or External HACR Circuit Breaker Size.

Cooling Performance Chart (BTUH) - GreenPac™ & GreenPac HGR™ Air Conditioners

MODEL	OUTDOOR AMBIENT DRY BULB TEMPERATURES								
	75°F	80°F	85°F	90°F	95°F	100°F	105°F	110°F	115°F
24	25,900	25,600	24,900	24,400	24,000	23,000	22,500	21,900	21,100
30	33,000	32,300	31,200	30,300	29,400	28,500	28,000	27,100	26,200
36	38,700	38,200	37,200	36,100	35,600	34,300	33,400	32,400	31,200
42	46,200	45,600	44,600	43,000	41,500	39,900	37,900	35,200	33,000
48	51,900	50,700	49,700	48,900	48,000	45,500	42,800	40,500	38,600
60	61,600	60,200	59,000	58,100	57,000	53,600	50,700	47,900	45,600

Rated indoor air flow at 80°F DB/67°F WB indoor.

Electrical Characteristics - GreenPac™ & GreenPac HGR™ Air Conditioners

BASIC MODEL	COMPRESSOR				OUTDOOR FAN MOTOR					INDOOR FAN MOTOR					GREENWHEEL		
	VOLTS	Hz/Ph	RLA	LRA	VOLTS	Hz/Ph	RPM	FLA	HP	VOLTS	Hz/Ph	RPM	FLA	HP	VOLTS	Hz/Ph	RLA
AVP24ACA	208/230	60/1	11.6	60.0	208/230	60/1	1075	1.5	1¼/5	208/230	60/1	1075	1.4	1¼/5	208/230	60/1	2.2
AVP30ACA	208/230	60/1	14.7	73.0	208/230	60/1	1075	1.8	1¼/4	208/230	60/1	1100	2.5	1¼/4	208/230	60/1	2.2
AVP36ACA	208/230	60/1	15.6	78.8	208/230	60/1	1075	1.8	1¼/4	208/230	60/1	1100	2.5	1¼/4	208/230	60/1	2.2
AVP42ACA	208/230	60/1	19.2	87.0	208/230	60/1	825	2.8	1¼/3	208/230	60/1	1075	3.1	1¼/2	208/230	60/1	2.2
AVP48ACA	208/230	60/1	21.8	105.0	208/230	60/1	825	2.8	1¼/3	208/230	60/1	1075	3.1	1¼/2	208/230	60/1	2.2
AVP60ACA	208/230	60/1	24.5	135.0	208/230	60/1	825	2.8	1¼/3	208/230	60/1	1075	5.2	3/4	208/230	60/1	2.2
AVP24ACC	208/230	60/3	8.7	58.0	208/230	60/1	1075	1.5	1¼/5	208/230	60/1	1075	1.4	1¼/5	208/230	60/1	2.2
AVP30ACC	208/230	60/3	9.3	68.0	208/230	60/1	1075	1.8	1¼/4	208/230	60/1	1100	2.5	1¼/4	208/230	60/1	2.2
AVP36ACC	208/230	60/3	10.9	78.0	208/230	60/1	1075	1.8	1¼/4	208/230	60/1	1100	2.5	1¼/4	208/230	60/1	2.2
AVP42ACC	208/230	60/3	14.1	110.0	208/230	60/1	825	2.8	1¼/3	208/230	60/1	1075	3.1	1¼/2	208/230	60/1	2.2
AVP48ACC	208/230	60/3	14.1	130.0	208/230	60/1	825	2.8	1¼/3	208/230	60/1	1075	3.1	1¼/2	208/230	60/1	2.2
AVP60ACC	208/230	60/3	16.0	137.0	208/230	60/1	825	2.8	1¼/3	208/230	60/1	1075	5.2	3/4	208/230	60/1	2.2
AVP24ACD	460	60/3	3.2	30.0	208/230	60/1	1075	1.5	1¼/5	208/230	60/1	1075	1.4	1¼/5	208/230	60/1	2.2
AVP30ACD	460	60/3	5.0	36.0	208/230	60/1	1075	1.8	1¼/4	208/230	60/1	1100	2.5	1¼/4	208/230	60/1	2.2
AVP36ACD	460	60/3	5.8	40.0	208/230	60/1	1075	1.8	1¼/4	208/230	60/1	1100	2.5	1¼/4	208/230	60/1	2.2
AVP42ACD	460	60/3	7.0	32.8	208/230	60/1	825	2.8	1¼/3	208/230	60/1	1075	3.1	1¼/2	208/230	60/1	2.2
AVP48ACD	460	60/3	7.1	54.0	208/230	60/1	825	2.8	1¼/3	208/230	60/1	1075	3.1	1¼/2	208/230	60/1	2.2
AVP60ACD	460	60/3	8.4	69.0	208/230	60/1	825	2.8	1¼/3	208/230	60/1	1075	5.2	3/4	208/230	60/1	2.2

RLA = Rated Load Amps

LRA = Locked Rotor Amps

FLA = Full Load Amps

RPM = Revolutions Per Minute

HP = Horsepower

Unit Load Amps - GreenPac™ & GreenPac™ HGR Air Conditioners

BASIC MODEL	AIR COND. AMPS (MAX.)	LOAD OF RESISTIVE HEATING ELEMENTS ONLY (IN AMPS)							TOTAL HEATING AMPS (MAX.)						
		04 kW	05 kW	06 kW	08 kW	09 kW	10 kW	15 kW	04 kW	05 kW	06 kW	08 kW	09 kW	10 kW	15 kW
AVP24ACA	16.7	16.67		25.00	33.33		41.67		20.27		28.60	36.93		45.27	
AVP30ACA	21.2		20.83	25.00			41.67	62.50		25.53	29.70			46.37	67.20
AVP36ACA	22.1		20.83	25.00			41.67	62.50		25.53	29.70			46.37	67.20
AVP42ACA	27.3		20.83	25.00			41.67	62.50		26.13	30.30			46.97	67.80
AVP48ACA	29.9		20.83				41.67	62.50		26.13				46.97	67.80
AVP60ACA	35.7		20.83				41.67	62.50		28.23				49.07	69.90
AVP24ACC	13.8			14.43		21.65					18.03		25.25		
AVP30ACC	15.8			14.43		21.65		36.08			19.13		26.35		40.78
AVP36ACC	17.4			14.43		21.65		36.08			19.13		26.35		40.78
AVP42ACC	22.2			14.43		21.65		36.08			19.73		26.95		41.38
AVP48ACC	22.2					21.65		36.08					26.95		41.38
AVP60ACC	27.2					21.65		36.08					29.05		43.48
AVP24ACD	8.3			7.22		10.83					10.82		14.43		
AVP30ACD	11.5			7.22		10.83		18.04			11.92		15.53		22.74
AVP36ACD	12.3			7.22		10.83		18.04			11.92		15.53		22.74
AVP42ACD	15.1			7.22		10.83		18.04			12.52		16.13		23.34
AVP48ACD	15.2					10.83		18.04					16.13		23.34
AVP60ACD	19.6					10.83		18.04					18.23		25.44

Efficiency & Capacity Ratings for GreenPac™ & GreenPac HGR™ Air Conditioners

MODEL	AVP24	AVP30	AVP36	AVP42	AVP48	AVP60
COOLING BTUH	24,000	29,400	35,600	41,500	48,000	57,000
DESIGNATOR	C1	C1	C1	B1	B1	D1
SEER	10.10	10.20	10.00	10.20	10.20	10.00
RATED CFM	840	1,000	1,220	1,520	1,760	1,850
ESP	0.10	0.15	0.15	0.15	0.20	0.20

Note: Based upon ARI Standard 210 conditions. All performance and capacity ratings are for a 60 Hz power supply. Ratings are also affected by altitude.

Sensible to Total Ratio @ 95°F Dry Bulb Outside Air for GreenPac™ Air Conditioners

MODEL	24	30	36	42	48	60
TOTAL CAPACITY (BTUH)	24,000	29,400	35,600	41,500	48,000	57,000
SENSIBLE HEAT RATIO	0.76	0.78	0.76	0.80	0.80	0.80
SENSIBLE CAPACITY (BTUH)	18,240	22,930	27,060	33,200	38,400	45,600

Sensible ratios based on ARI Standard 210 Indoor Conditions of 80°F DB/67°F WB.

Sensible to Total Ratio @ 95°F Dry Bulb Outside Air for GreenPac HGR™ Air Conditioners

	MODEL	24	30	36	42	48	60
Non-Active HGR	TOTAL CAPACITY (BTUH)	24,000	29,400	35,600	41,500	48,000	57,000
	SENSIBLE HEAT RATIO	0.76	0.78	0.76	0.80	0.80	0.80
	SENSIBLE CAPACITY (BTUH)	18,240	22,930	27,060	33,200	38,400	45,600
Active HGR (Dehumidification)	TOTAL CAPACITY (BTUH)	11,400	13,800	16,800	19,600	22,600	26,800
	SENSIBLE HEAT RATIO	0.55	0.565	0.55	0.58	0.58	0.58
	SENSIBLE CAPACITY (BTUH)	6,270	7,800	9,240	11,370	13,110	15,540
	LATENT CAPACITY	5,130	6,000	7,560	8,230	9,490	11,260

Sensible ratios based on ARI Standard 240 Indoor Conditions of 80°F DB/67°F WB.

GreenPac™ & GreenPac HGR™ Air Conditioners Air Volume (CFM) at Various Static Pressures

MODEL	Cubic Feet/Minute		
	.10 IWG	.20 IWG	.30 IWG
24	860	810	670
30	1,100	1,000	920
36	1,310	1,220	1,150
42	—	1,650	1,520
48	—	1,900	1,760
60	—	1,900	1,760

IWG = Inches Water Gauge CFM = Cubic Feet/Minute

GreenPac™ & GreenPac HGR™ Heat Pumps

Summary Ratings (Wire Sizing) - GreenPac™ & GreenPac™ HGR Heat Pumps

	00 = None		04 = 4 kW		05 = 5 kW		06 = 6 kW		08 = 8 kW		09 = 9 kW		10 = 10 kW		15 = 15 kW		15 = 15 kW	
BASIC MODEL	Circuit #1		Circuit #1		Circuit #1		Circuit #2		Circuit #1		Circuit #1		Circuit #2		Circuit #1		Circuit #1	
	MCA	MFS	MCA	MFS	MCA	MFS	MCA	MFS	MCA	MFS	MCA	MFS	MCA	MFS	MCA	MFS	MCA	MFS
AVP24HPA	21	30	42	50	---	---	---	---	42	50	21	25	---	---	---	---	---	---
AVP30HPA	25	35	---	---	51	60	---	---	---	---	---	---	51	60	26	30	---	---
AVP36HPA	29	45	---	---	55	60	---	---	---	---	---	---	55	60	26	30	---	---
AVP42HPA	35	50	---	---	35	50	26	30	---	---	---	---	35	50	52	60	---	---
AVP48HPA	39	60	---	---	39	60	26	30	---	---	---	---	39	60	52	60	---	---
AVP60HPA	43	60	---	---	43	60	26	30	---	---	---	---	43	60	52	60	---	---
AVP24HPC	16	25	---	---	---	---	---	---	34	35	---	---	---	---	---	---	---	---
AVP30HPC	19	25	---	---	---	---	---	---	37	40	---	---	---	---	---	---	19	25
AVP36HPC	23	35	---	---	---	---	---	---	41	50	---	---	---	---	---	---	23	35
AVP42HPC	26	35	---	---	---	---	---	---	44	50	---	---	---	---	---	---	26	35
AVP48HPC	28	40	---	---	---	---	---	---	---	---	---	---	---	---	---	---	28	40
AVP60HPC	30	45	---	---	---	---	---	---	---	---	---	---	---	---	---	---	30	45
AVP24HPD	8	15	---	---	---	---	---	---	21	25	---	---	---	---	---	---	---	---
AVP30HPD	10	15	---	---	---	---	---	---	19	20	---	---	---	---	---	---	33	35
AVP36HPD	11	15	---	---	---	---	---	---	20	25	---	---	---	---	---	---	34	35
AVP42HPD	13	20	---	---	---	---	---	---	22	25	---	---	---	---	---	---	36	40
AVP48HPD	14	20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	37	40
AVP60HPD	16	25	---	---	---	---	---	---	---	---	---	---	---	---	---	---	39	40

The above chart should be used as a general guideline for estimating conductor size and overcurrent protection for the unit models listed. For specific requirements, refer to the data label attached to the unit cabinet. Heat kW shown at 220V for HPA and HPC models. Heat kW shown at 480V for HPD models. MCA and MFS calculated at 240V for HPA and HPC models and at 480V for HPD models.

*Denotes all electric heat on circuit #2. For 15 kW units maximum allowable electric heat to operate simultaneously with compressor is 10 kW located on the second circuit.

MCA = Minimum Circuit Ampacity (Wiring Size Amps)

MFS = Maximum External Fuse or External HACR Circuit Breaker Size.

Efficiency and Capacity Ratings for GreenPac™ & GreenPac HGR™ Heat Pumps

MODEL	AVP24	AVP30	AVP36	AVP42	AVP48	AVP60
COOLING BTUH	24,000	30,000	35,600	42,500	50,000	56,500
DESIGNATOR	B1	B1	C1	B1	C1	C1
SEER	10.00	10.00	10.00	10.20	10.20	10.00
HTG HI TEMP BTUH	23,600	30,800	36,000	42,500	49,500	57,500
HTG HI TEMP COP	2.70	2.80	2.70	2.80	2.80	2.80
HTG LO TEMP BTUH	13,600	18,200	21,000	23,800	28,000	34,000
HTG LO TEMP COP	1.90	2.00	2.00	1.90	1.90	2.00
HSPF REGION IV	6.60	6.70	6.90	6.60	6.70	6.60
RATED CFM	800	1,000	1,200	1,520	1,760	1,875
ESP	0.10	0.15	0.15	0.15	0.20	0.20

Note: Based upon ARI Standard 240 conditions. Ratings are also affected by altitude.

GreenPac™ & GreenPac HGR™ Heat Pumps Air Volume (CFM) at Various Static Pressures

MODEL	Cubic Feet/Minute		
	.10 IWG	.20 IWG	.30 IWG
24	860	810	670
30	1,100	1,000	920
36	1,310	1,220	1,150
42	---	1,650	1,520
48	---	1,875	1,760
60	---	1,875	1,760

IWG = Inches Water Gauge CFM = Cubic Feet/Minute

Electrical Characteristics - GreenPac™ & GreenPac™ HGR Heat Pumps

BASIC MODEL	COMPRESSOR				OUTDOOR FAN MOTOR					INDOOR FAN MOTOR					GREENWHEEL® ERV		
	VOLTS	Hz/Ph	RLA	LRA	VOLTS	Hz/Ph	RPM	FLA	HP	VOLTS	Hz/Ph	RPM	FLA	HP	VOLTS	Hz/Ph	RLA
AVP24HPA	208/230	60/1	12.8	61.0	208/230	60/1	1075	1.5	1¼5	208/230	60/1	1075	1.4	1¼5	208/230	60/1	2.2
AVP30HPA	208/230	60/1	14.8	73.0	208/230	60/1	1075	1.8	1¼4	208/230	60/1	1100	2.5	1¼4	208/230	60/1	2.2
AVP36HPA	208/230	60/1	18.0	87.0	208/230	60/1	1075	1.8	1¼4	208/230	60/1	1100	2.5	1¼4	208/230	60/1	2.2
AVP42HPA	208/230	60/1	21.8	105.0	208/230	60/1	825	2.8	1¼3	208/230	60/1	1075	3.1	1¼2	208/230	60/1	2.2
AVP48HPA	208/230	60/1	24.4	135.0	208/230	60/1	825	2.8	1¼3	208/230	60/1	1075	3.1	1¼2	208/230	60/1	2.2
AVP60HPA	208/230	60/1	28.2	135.0	208/230	60/1	825	2.8	1¼3	208/230	60/1	1075	3.1	1/2	208/230	60/1	2.2
AVP24HPC	208/230	60/3	9.0	58.0	208/230	60/1	1075	1.5	1¼5	208/230	60/1	1075	1.4	1¼5	208/230	60/1	2.2
AVP30HPC	208/230	60/3	9.6	68.0	208/230	60/1	1075	1.8	1¼4	208/230	60/1	1100	2.5	1¼4	208/230	60/1	2.2
AVP36HPC	208/230	60/3	13.5	110.0	208/230	60/1	1075	1.8	1¼4	208/230	60/1	1100	2.5	1¼4	208/230	60/1	2.2
AVP42HPC	208/230	60/3	14.1	130.0	208/230	60/1	825	2.8	1¼3	208/230	60/1	1075	3.1	1¼2	208/230	60/1	2.2
AVP48HPC	208/230	60/3	16.0	137.0	208/230	60/1	825	2.8	1¼3	208/230	60/1	1075	3.1	1¼2	208/230	60/1	2.2
AVP60HPC	208/230	60/3	17.8	150.0	208/230	60/1	825	2.8	1¼3	208/230	60/1	1075	3.1	1/2	208/230	60/1	2.2
AVP24HPD	460	60/3	4.2	30.0	208/230	60/1	1075	1.5	1¼5	208/230	60/1	1075	1.4	1¼5	208/230	60/1	2.2
AVP30HPD	460	60/3	5.5	36.0	208/230	60/1	1075	1.8	1¼4	208/230	60/1	1100	2.5	1¼4	208/230	60/1	2.2
AVP36HPD	460	60/3	6.4	54.0	208/230	60/1	1075	1.8	1¼4	208/230	60/1	1100	2.5	1¼4	208/230	60/1	2.2
AVP42HPD	460	60/3	7.1	64.0	208/230	60/1	825	2.8	1¼3	208/230	60/1	1075	3.1	1¼2	208/230	60/1	2.2
AVP48HPD	460	60/3	8.3	69.0	208/230	60/1	825	2.8	1¼3	208/230	60/1	1075	3.1	1¼2	208/230	60/1	2.2
AVP60HPD	460	60/3	9.6	75.0	208/230	60/1	825	2.8	1¼3	208/230	60/1	1075	3.1	1¼2	208/230	60/1	2.2

RLA = Rated Load Amps LRA = Locked Rotor Amps FLA = Full Load Amps RPM = Revolutions Per Minute HP = Horsepower

Cooling Performance Chart (BTUH) - GreenPac™ & GreenPac HGR™ Heat Pumps

MODEL	OUTDOOR AMBIENT DRY BULB TEMPERATURES								
	75°F	80°F	85°F	90°F	95°F	100°F	105°F	110°F	115°F
24	27,100	26,500	25,600	24,700	24,000	23,400	21,800	20,700	19,500
30	33,500	32,600	31,700	30,800	30,000	28,600	26,200	24,800	23,200
36	38,300	37,400	37,000	36,200	35,600	33,900	32,200	30,500	29,100
42	45,900	45,400	43,800	43,000	42,500	39,500	37,600	35,700	34,100
48	54,900	54,200	53,100	51,800	50,000	47,900	44,900	42,700	40,800
60	63,800	63,000	61,300	58,300	56,500	54,800	53,600	51,600	48,500

Rated indoor air flow at 80°F DB/67°F WB indoor.

Heating Performance Chart (BTUH) - GreenPac™ & GreenPac HGR™ Heat Pumps

MODEL	OUTDOOR AMBIENT DRY BULB TEMPERATURES							
	10°F	20°F	30°F	40°F	47°F	50°F	60°F	70°F
24	12,000	14,500	16,700	20,100	23,600	24,500	26,000	27,600
30	17,600	20,000	22,000	27,100	30,800	31,100	32,000	34,300
36	18,900	22,100	26,000	31,100	36,000	37,000	38,400	39,900
42	21,300	24,900	30,100	36,500	42,500	43,300	45,300	47,500
48	25,000	29,100	35,800	42,200	49,500	50,200	51,500	56,200
60	29,500	33,600	41,000	49,800	57,500	58,600	61,500	63,700

Rated indoor air flow at 70°F DB indoor.

Unit Load Amps - GreenPac™ & GreenPac HGR™ Heat Pumps

BASIC MODEL	HEAT PUMP AMPS (MAX.)	LOAD OF RESISTIVE HEATING ELEMENTS ONLY (IN AMPS)							TOTAL HEATING AMPS (MAX.)						
		04 kW	05 kW	06 kW	08 kW	09 kW	10 kW	15 kW	04 kW	05 kW	06 kW	08 kW	09 kW	10 kW	15 kW
AVP24HPA	17.9	16.67			33.33				34.60			51.23			
AVP30HPA	21.3		20.83				41.67	62.50		42.13				62.97	83.80
AVP36HPA	24.5		20.83				41.67	62.50		45.33				66.17	87.00
AVP42HPA	29.9		20.83				41.67	62.50		50.73				71.57	71.57
AVP48HPA	32.5		20.83				41.67	62.50		53.33				74.17	74.17
AVP60HPA	36.3		20.83				41.67	62.50		57.13				77.97	77.97
AVP24HPC	14.1			14.43							28.53				
AVP30HPC	16.1			14.43		21.65		36.08			30.53		37.75		52.18
AVP36HPC	20.0			14.43		21.65		36.08			34.43		41.65		56.08
AVP42HPC	22.2			14.43		21.65		36.08			36.63		43.85		58.28
AVP48HPC	24.1					21.65		36.08					45.75		60.18
AVP60HPC	25.9					21.65		36.08					47.55		61.98
AVP24HPD	9.3			7.22							16.52				
AVP30HPD	12.0			7.22		10.83		18.04			19.22		22.83		30.04
AVP36HPD	12.9			7.22		10.83		18.04			20.12		23.73		30.94
AVP42HPD	15.2			7.22		10.83		18.04			22.42		26.03		33.24
AVP48HPD	16.4					10.83		18.04					27.23		34.44
AVP60HPD	17.7					10.83		18.04					28.53		35.74

Sensible to Total Ratio @ 95°F Dry Bulb Outside Air for GreenPac™ Heat Pumps

MODEL	24	30	36	42	48	60
TOTAL CAPACITY (BTUH)	24,000	30,000	35,600	42,500	50,000	56,500
SENSIBLE HEAT RATIO	0.755	0.775	0.76	0.80	0.80	0.795
SENSIBLE CAPACITY (BTUH)	18,120	23,250	27,060	34,000	40,000	44,920

Sensible ratios based on ARI Standard 240 Indoor Conditions of 80°F DB/67°F WB.

Sensible to Total Ratio @ 95°F Dry Bulb Outside Air for GreenPac HGR™ Heat Pumps

	MODEL	24	30	36	42	48	60
Non-Active HGR	TOTAL CAPACITY (BTUH)	24,000	30,000	35,600	42,500	50,000	56,500
	SENSIBLE HEAT RATIO	0.755	0.775	0.76	0.80	0.80	0.795
	SENSIBLE CAPACITY (BTUH)	18,120	23,250	27,060	34,000	40,000	44,920
Active HGR (Dehumidification)	TOTAL CAPACITY (BTUH)	11,200	14,200	16,800	20,000	23,600	26,600
	SENSIBLE HEAT RATIO	0.545	0.56	0.55	0.58	0.58	0.575
	SENSIBLE CAPACITY (BTUH)	6,100	7,950	9,240	11,600	13,690	15,300
	LATENT CAPACITY (BTUH)	5,100	6,250	7,560	8,400	9,910	11,300

Sensible ratios based on ARI Standard 240 Indoor Conditions of 80°F DB/67°F WB.

Summary Ratings (Wire Sizing) - GreenPac™ & GreenPac HGR™ Heat Pumps "S" Circuit

	00 = None		04s = 4 kW		05s = 5 kW		08s = 8 kW		09s = 9 kW		10s = 10 kW		15s = 15 kW			
BASIC MODEL	Circuit #1 MCA MFS		Circuit #1 MCA MFS		Circuit #1 MCA MFS		Circuit #1 MCA MFS		Circuit #1 MCA MFS		Circuit #1 MCA MFS		Circuit #1 MCA MFS		Circuit #2 MCA MFS	
AVP24HPA	21	30	25	30	---	---	46	50	---	---	57	60	---	---	---	---
AVP30HPA	25	35	---	---	32	35	---	---	---	---	58	60	32	35	52	60
AVP36HPA	29	45	---	---	32	45	---	---	---	---	58	60	32	45	52	60
AVP42HPA	35	50	---	---	35	50	48	50	---	---	59	60	35	50	52	60
AVP48HPA	39	60	---	---	39	60	---	---	---	---	59	60	39	60	52	60
AVP60HPA	43	60	---	---	43	60	---	---	---	---	59	60	43	60	52	60
AVP24HPC	16	25	---	---	---	---	---	---	32	35	---	---	---	---	---	---
AVP30HPC	19	25	---	---	---	---	---	---	33	35	---	---	51	60	---	---
AVP36HPC	23	35	---	---	---	---	---	---	33	35	---	---	51	60	---	---
AVP42HPC	26	35	---	---	---	---	---	---	34	35	---	---	52	60	---	---
AVP48HPC	28	40	---	---	---	---	---	---	34	40	---	---	52	60	---	---
AVP60HPC	30	45	---	---	---	---	---	---	34	45	---	---	52	60	---	---
AVP24HPD	8	15	---	---	---	---	---	---	16	20	---	---	---	---	---	---
AVP30HPD	10	15	---	---	---	---	---	---	17	20	---	---	26	30	---	---
AVP36HPD	11	15	---	---	---	---	---	---	17	20	---	---	26	30	---	---
AVP42HPD	13	20	---	---	---	---	---	---	17	20	---	---	26	30	---	---
AVP48HPD	14	20	---	---	---	---	---	---	17	20	---	---	26	30	---	---
AVP60HPD	16	25	---	---	---	---	---	---	17	25	---	---	26	30	---	---

The above chart should be used as a general guideline for estimating conductor size and overcurrent protection for the unit models listed. For specific requirements, refer to the data label attached to the unit cabinet. Heat kW shown at 220V for HPA and HPC models. Heat kW shown at 480V for HPD models. MCA and MFS calculated at 240V for HPA and HPC models and at 480V for HPD models.

*Denotes all electric heat on circuit #2. For 15 kW units maximum allowable electric heat to operate simultaneously with compressor is 10 kW located on the second circuit.

MCA = Minimum Circuit Ampacity (Wiring Size Amps)

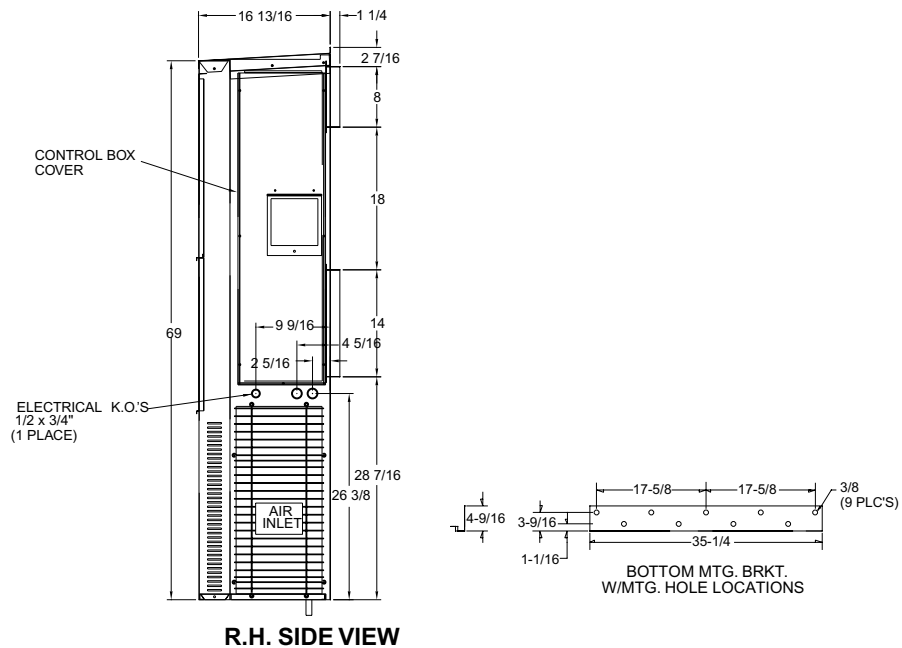
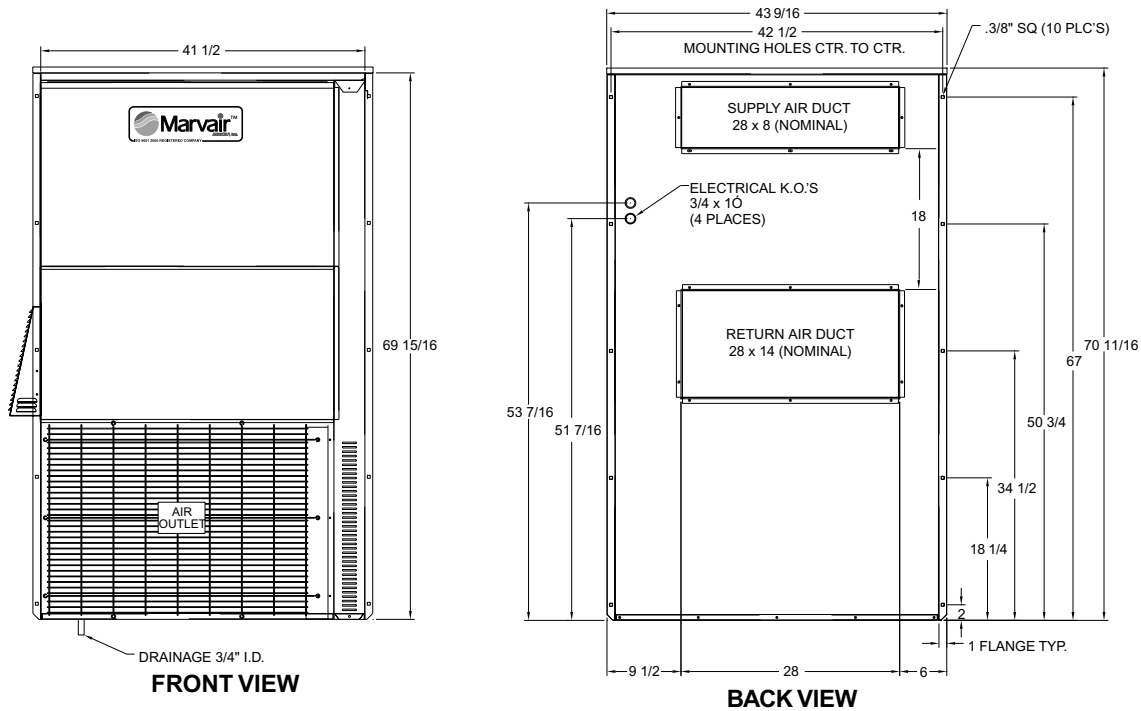
MFS = Maximum External Fuse or External HACR Circuit Breaker Size.

Unit Load Amps - GreenPac™ & GreenPac HGR™ Heat Pumps - "S" Circuit

BASIC MODEL	HEAT PUMP AMPS (MAX.)	LOAD OF RESISTIVE HEATING ELEMENTS ONLY (IN AMPS)							TOTAL HEATING AMPS (MAX.)						
		04 kW	05 kW	06 kW	08 kW	09 kW	10 kW	15 kW	04 kW	05 kW	06 kW	08 kW	09 kW	10 kW	15 kW
AVP24HPA	17.9	16.67			33.33		41.67		20.27			36.93		45.27	
AVP30HPA	21.3		20.83				41.67	62.50		25.53				46.37	67.20
AVP36HPA	24.5		20.83				41.67	62.50		25.53				46.37	67.20
AVP42HPA	29.9		20.83		33.33		41.67	62.50		26.13		38.63		46.97	67.80
AVP48HPA	32.5		20.83				41.67	62.50		26.13				46.97	67.80
AVP60HPA	36.3		20.83				41.67	62.50		26.13				46.97	67.80
AVP24HPC	14.1					21.65							25.25		
AVP30HPC	16.1					21.65		36.08					26.35		40.78
AVP36HPC	20.0					21.65		36.08					26.35		40.78
AVP42HPC	22.2					21.65		36.08					26.95		41.38
AVP48HPC	24.1					21.65		36.08					26.95		41.38
AVP60HPC	25.9					21.65		36.08					26.95		41.38
AVP24HPD	9.3					10.83							14.43		
AVP30HPD	12.0					10.83		18.04					15.53		22.74
AVP36HPD	12.9					10.83		18.04					15.53		22.74
AVP42HPD	15.2					10.83		18.04					16.13		23.34
AVP48HPD	16.4					10.83		18.04					16.13		23.34
AVP60HPD	17.7					10.83		18.04					16.13		23.34

Dimensional Data – AVP24-36 GreenPac™ & GreenPac HGR™ A/C or HP (in inches)

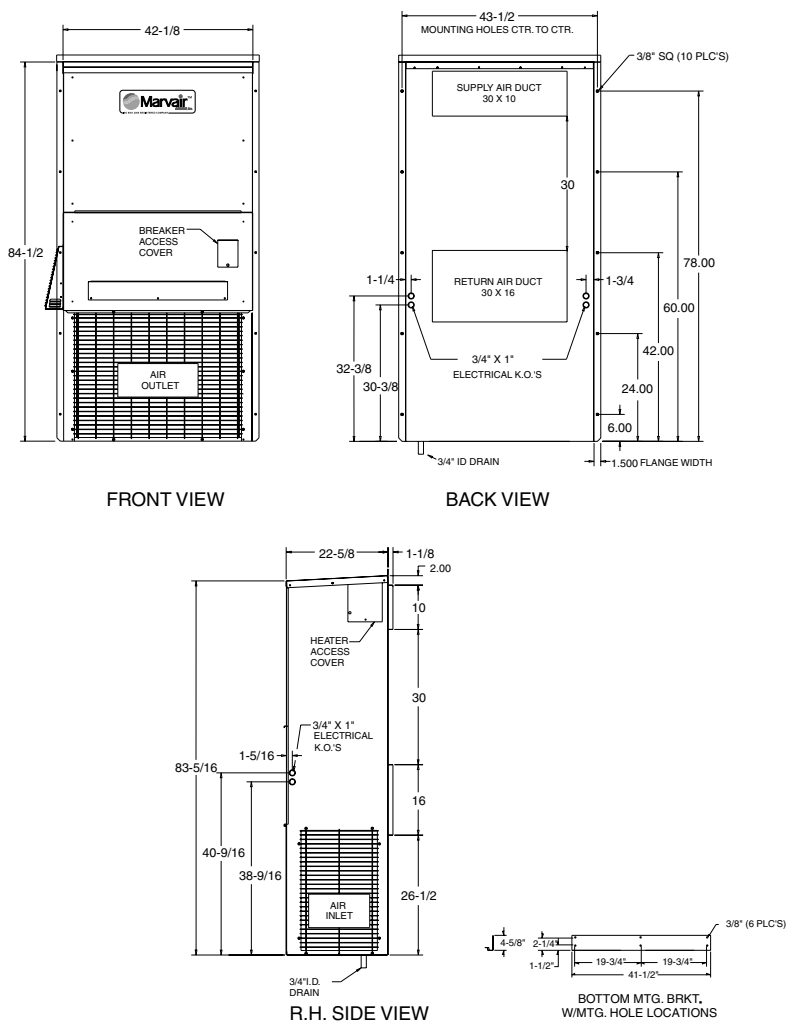
NOTE: Dimensional tolerance $\pm 1/16"$





Dimensional Data – AVP42-60 GreenPac™ & GreenPac HGR™ A/C or HP (in inches)

NOTE: Dimensional tolerance $\pm 1/16"$



Filter Size

MODEL	INDOOR RETURN FILTER SIZE	
24/30/36	27-1/2" x 13-1/2" x 1"	Filament Spun Glass
42/48/60	15-1/2" x 29-1/2" x 1"	Filament Spun Glass

MODEL	FRESH AIR FILTER SIZE	
24/30/36	14" x 14" x 1"	Washable Organic Media
42/48/60	114" x 14" x 1"	Washable Organic Media

Ship Weight (Lbs.)

MODEL	Air Conditioners		Heat Pumps	
	GreenPac™	GreenPac HGR™	GreenPac™	GreenPac HGR™
24	405	425	430	450
30	410	430	435	455
36	410	430	435	455
42	545	570	575	600
48	570	595	605	630
60	585	610	620	645

Complete installation instructions are in the GreenPac™ I&O Manual. Detailed dimensional data available upon request. A complete warranty statement can be found in each product's Installation/Operation Manual, on our website at www.marvair.com 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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