

HEAT CONTROLLER, INC.

**ENGINEERING
DESIGN GUIDE**

**HR Series
1 1/2 to 6 Tons
Geothermal Heat Pumps**

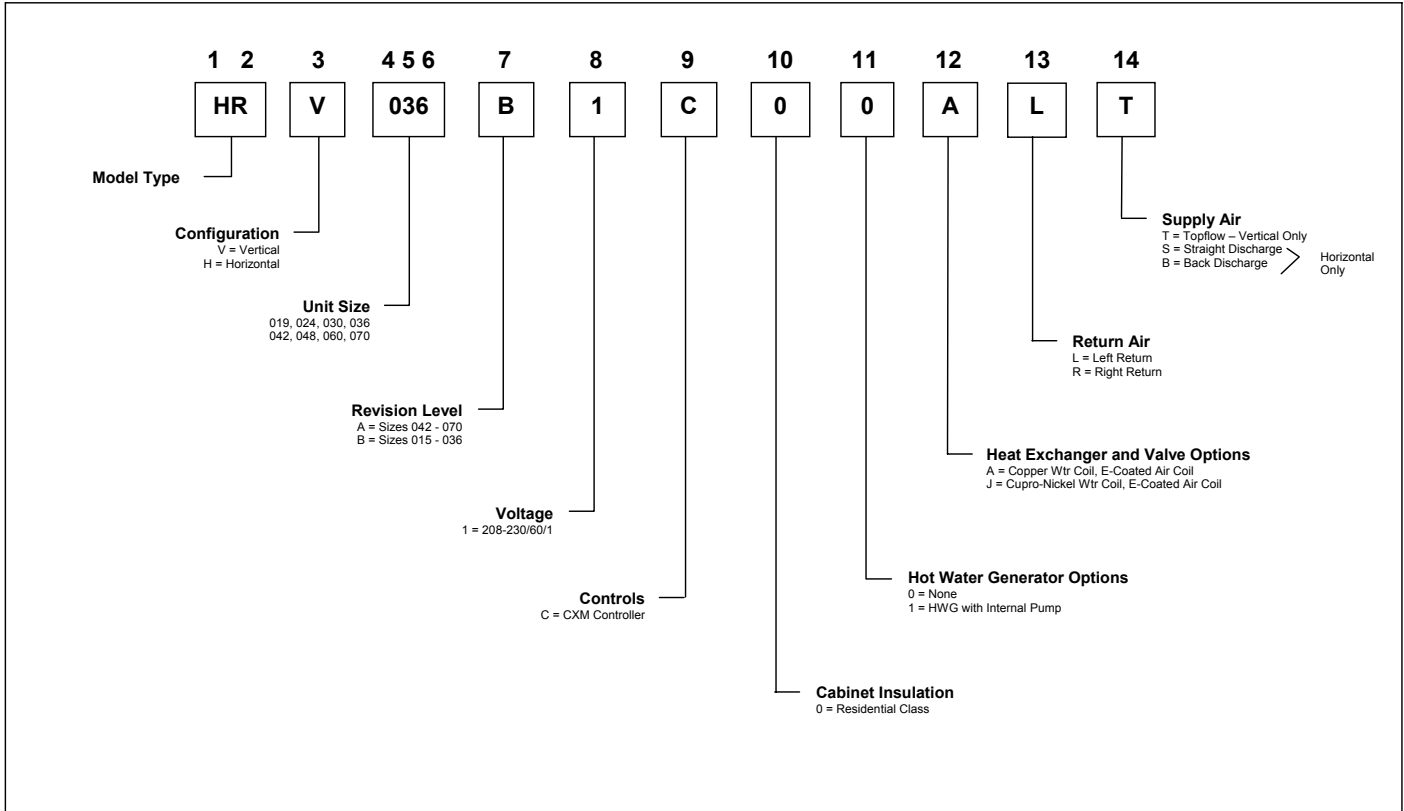
HEAT CONTROLLER, INC.

1900 Wellworth Ave., Jackson, Michigan 49203 • Ph. 517-787-2100 • Fax 517-787-9341 • www.heatcontroller.com

THE QUALITY LEADER IN CONDITIONING AIR

HR Series

MODEL NOMENCLATURE - RESIDENTIAL



Design, Specifications and Performance Data subject to change without notice.

HEAT CONTROLLER, INC.

1900 WELLWORTH AVENUE • JACKSON, MICHIGAN 49203

THE QUALITY LEADER IN CONDITIONING AIR

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HR Series

GEOTHERMAL SYSTEMS

These Heat Pump systems use the natural thermal properties of the Earth to dissipate or capture heat for the water loop. Geothermal Heat Pumps operate in an identical fashion to Water-Source Heat Pump units. However, without the need for a boiler or cooling tower, they save substantial energy costs and space. The water loop system is underground and the units are inside the building. Thus, the environmentally friendly geothermal system preserves the architectural design of a building naturally.

GEOTHERMAL EARTH LOOPS

Geothermal Earth Loops come in several different configurations depending on space availability and soil properties. Chances are at some point you have either stood over, or walked across a geothermal loop field. Loop fields can be located under parking lots, landscaped areas, or any number of other locations. All earth loops use high-density polyethylene pipe to circulate either water or an antifreeze mixture. All joints and connection fittings are thermally fused to prevent leaks and most piping comes with a 25-year or longer warranty.

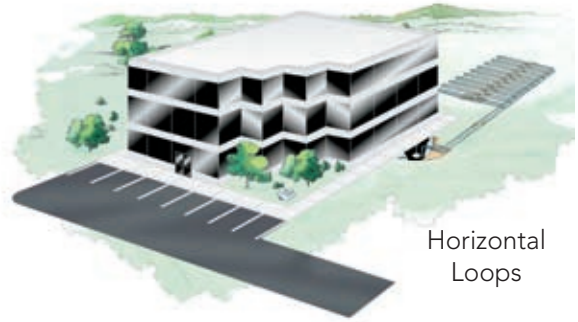
VERTICAL LOOPS

Vertical loops utilize bore holes drilled to an average depth of 250 feet. Once the loop pipe is inserted into the bore, it is grouted using a Bentonite mixture for maximum thermal conductivity. When space is a limited, vertical loops are the most common type of geothermal loop installed.



HORIZONTAL LOOPS

Horizontal loops utilize trenches dug to an average depth of four to six feet. As one of the more cost effective loops to install, horizontal loops are commonly found in open fields, parks or under parking lots.



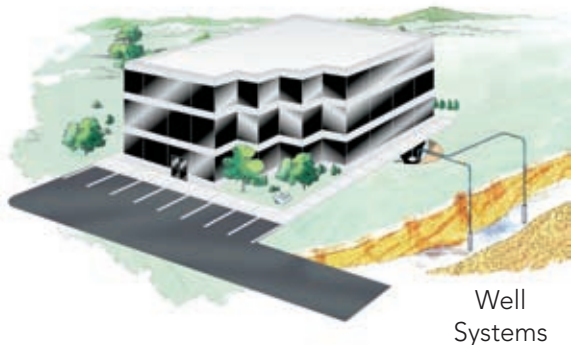
LAKE LOOPS

Lake loops utilize a "slinky" assembly of geothermal loop piping placed at the bottom of a pond, lake, or other large body of water. An extremely cost effective loop system, lake loops are an easy alternative if the option is available.



WELL SYSTEMS

Most commonly known as "Open Loop", well systems pump water out of a nearby body of water or water well, and then discharge the water into another body of water or water well. Well systems usually employ a plate heat exchanger inside the building to keep the building water loop separated from the well water. This prevents any contaminants from affecting unit performance and extends system life. Well systems are often the most efficient as the well water is always at the same temperature year-round.



HR Series

COMPONENT PARTS

To produce a quality unit, you have to start with quality components. We are relentless in our search for the best components for our products - while securing these components at prices that keep costs low. Any new component must go through a grueling testing phase before it ever sees the production line. Working closely with vendors and their engineers, we continually find new ways to not only improve our units, but to ensure component quality as well.



ADVANTAGE EXCLUSIVES

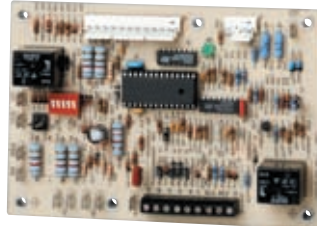
Being a leader in innovation, Heat Controller brings industry firsts, as well as industry exclusives, to our family of products.

CONTROLS

Heat Controller offers solid-state digital controls, the CXM control board.

CXM

Our standard CXM control board comes programmed with our Unit Performance Sentinel (UPS) which monitors unit performance and notifies the owner of potential unit problems before a lockout occurs. Additionally, the CXM's eight standard safeties protect the unit from damage.



- Anti-Short Cycle
- Low Voltage
- High Voltage
- High Refrigerant Pressure
- Low Refrigerant Pressure (Loss of Charge)
- Air Coil Low Temperature Cut-Out
- Water Coil Low Temperature Cut-Out
- Condensate Overflow

SOUND

Our units have been tested for both ducted discharge and free inlet air combined with case radiated tests. Comfort has never been so quiet with our intelligent sound design. Our products use a variety of technologies to maintain our lead as some of the quietest units in the industry.

DUAL LEVEL VIBRATION ISOLATION

Heat Controller units use an exclusive double isolation compressor mounting system. This dual level isolation deadens vibration and provides quiet operation.



TORSION-FLEX BLOWERS

Blower motors are mounted with a unique torsion-flex mounting system which not only allows for easy service, but also reduces vibration from the blower motor during operation.



E-COATED AIR COILS

All HR Series Water-Source heating and cooling systems are provided with an E-Coated air-coil. This process provides years of protection against coil corrosion from airborne chemicals resulting from modern building material outgassing and most airborne environmental chemicals. In fact, our exclusive E-Coated air-coils enhance corrosion protection to nearly 20 times that of a traditional uncoated coil.*



* Test based upon ASTM B117 Salt Spray test hours.

HEAT CONTROLLER, INC.

HR Series

THE HR SERIES

The HR series offers high efficiency, quiet operation with advanced features and application flexibility. HR series exceeds ASHRAE 90.1 efficiencies, yet maintains small cabinet dimensions.

Available in sizes 1.5 ton through 6 tons the HR series offers a wide range of units for most any installation. The HR has an extended range refrigerant circuit, capable of ground loop (geothermal) applications as well as water loop (boiler-tower) applications. Standard features are many. Microprocessor controls, G90 galvanized steel cabinet, epoxy powder coat paint (vertical units) and TXV refrigerant metering device are just some of the features of the flexible HR series.

Our innovative exclusive double isolation compressor mounting system makes the HR series one of the quietest units on the market. Compressors are mounted on vibration isolation springs to a heavy gauge mounting plate, which is then isolated from the cabinet base with rubber grommets for maximized vibration/sound attenuation.

The HR Series water-source heat pumps are designed to meet the challenges of today's HVAC demands with a low cost/high value solution.

UNIT FEATURES

- Sizes 019 through 070
- Reciprocating and scroll compressors
- Exceeds ASHRAE 90.1 efficiencies
- G90 galvanized steel construction with epoxy powder coat paint (vertical units)
- Unique double isolation compressor mounting with vibration isolation springs for quiet operation
- Insulated divider and separate compressor/air handler compartments
- TXV metering device
- Extended range (20 to 120°F, -6.7 to 48.9°C) operation
- Microprocessor controls standard
- Field convertible discharge air arrangement for horizontal units
- Factory-mounted hanger brackets for horizontal units
- Internally trapped condensate drain line (vertical units only)
- Swivel water connections (no backup wrench required)
- Unit Performance Sentinel performance monitoring system
- Eight Safeties Standard
- Wide variety of options including desuperheater hot water generator with built in pump.
- Stainless steel drain pan
- Condensate overflow sensor

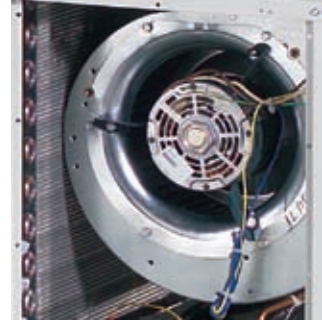
HR Series



Advanced digital controls

Easy Service Access from multiple sides

Easy to remove blower inlet ring for quick service. Torsion-flex motor mounting for quiet operation.



Insulated Stainless Steel Drain Pan with condensate overflow protection



Factory installed hanger brackets

Double spring and grommet compressor isolation



HEAT CONTROLLER, INC.

HR Series 60Hz - R22 Submittal Data Eng/I-P

Performance Data ARI/ASHRAE/ISO 13256-1

ASHRAE/ARI/ISO 13256-1. English (IP) Units

Model	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
	Cooling 86°F		Heating 68°F		Cooling 59°F		Heating 50°F		Cooling 77°F		Heating 32°F	
	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP
HRH/V019	18,900	12.5	22,500	4.2	20,100	17.6	16,700	3.6	19,100	13.4	11,800	3.2
HRH/V024	23,000	12.3	27,600	4.2	26,100	18.2	21,300	3.7	23,000	13.3	16,700	3.3
HRH/V030	28,500	13.2	33,300	4.4	31,100	18.3	27,000	3.9	28,700	14.4	20,100	3.4
HRH/V036	34,000	13.0	41,700	4.2	37,500	18.2	33,400	3.9	35,200	14.7	25,500	3.4
HRH/V042	40,000	13.0	46,700	4.3	46,500	18.6	38,300	3.9	42,000	15.0	29,400	3.4
HRH/V048	47,000	12.8	58,000	4.2	54,000	18.1	46,000	3.8	48,500	14.3	35,300	3.3
HRH/V060	59,000	12.8	68,000	4.2	64,500	16.8	56,000	3.8	60,600	14.1	44,000	3.2
HRH/V 070	63,700	12.4	78,300	4.5	70,000	16.8	62,900	3.8	67,100	13.4	53,400	3.6

Cooling capacities based upon 80.6°F DB, 66.2°F WB entering air temperature
 Heating capacities based upon 68°F DB, 59°F WB entering air temperature
 All air flow is rated on high speed
 All ratings based upon operation at lower voltage of dual voltage rated models

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HR Series 60Hz - R22 Submittal Data Eng/I-P

Performance Data HR H/V 019

600 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btu/h

EWT °F	GPM	WPD		Cooling - EAT 80/67°F						Heating - EAT 70°F				
		PSI	FT	TC	SC	Sens/Tot Ratio	kW	HR	EER	HC	kW	HE	LAT	COP
20	4.5	5.6	12.9	Operation Not Recommended						11.7	1.14	7.9	88.1	3.02
30	2.3	1.7	3.9	24.3	15.7	0.64	1.01	27.7	24.0	13.1	1.18	9.1	90.3	3.25
	3.4	3.3	7.7	25.1	15.9	0.63	0.98	28.5	25.7	13.8	1.22	9.6	91.3	3.32
	4.5	5.4	12.5	26.0	16.2	0.62	0.94	29.2	27.6	14.5	1.25	10.2	92.3	3.38
40	2.3	1.6	3.8	24.1	15.4	0.64	1.14	27.9	21.2	15.6	1.29	11.2	94.1	3.54
	3.4	3.2	7.4	24.9	15.6	0.63	1.10	28.6	22.7	16.4	1.33	11.8	95.3	3.61
	4.5	5.3	12.1	25.8	15.9	0.62	1.05	29.4	24.4	17.2	1.37	12.5	96.5	3.68
50	2.3	1.6	3.7	23.3	15.0	0.65	1.26	27.5	18.5	18.1	1.40	13.3	97.9	3.78
	3.4	3.1	7.2	24.1	15.3	0.63	1.21	28.2	19.8	19.0	1.44	14.1	99.3	3.86
	4.5	5.1	11.8	24.9	15.5	0.62	1.17	28.9	21.3	19.9	1.48	14.8	100.7	3.93
60	2.3	1.5	3.5	22.0	14.6	0.66	1.38	26.7	15.9	20.5	1.51	15.4	101.7	3.99
	3.4	3.0	7.0	22.8	14.8	0.65	1.33	27.3	17.1	21.6	1.55	16.3	103.3	4.07
	4.5	4.9	11.4	23.6	15.1	0.64	1.28	28.0	18.4	22.6	1.60	17.2	104.9	4.15
70	2.3	1.5	3.4	20.5	14.1	0.69	1.50	25.7	13.7	23.0	1.61	17.5	105.5	4.17
	3.4	2.9	6.8	21.3	14.4	0.68	1.45	26.2	14.7	24.2	1.66	18.5	107.3	4.26
	4.5	4.8	11.0	22.0	14.6	0.66	1.40	26.8	15.8	25.3	1.71	19.5	109.1	4.34
80	2.3	1.4	3.3	19.0	13.6	0.72	1.63	24.5	11.7	25.5	1.72	19.6	109.3	4.33
	3.4	2.8	6.5	19.6	13.8	0.70	1.57	25.0	12.5	26.8	1.77	20.7	111.3	4.42
	4.5	4.6	10.6	20.3	14.1	0.69	1.51	25.5	13.5	28.1	1.83	21.8	113.3	4.50
90	2.3	1.4	3.2	17.5	13.0	0.74	1.75	23.4	10.0	27.9	1.83	21.7	113.1	4.47
	3.4	2.7	6.3	18.1	13.2	0.73	1.69	23.9	10.7	29.4	1.88	22.9	115.3	4.56
	4.5	4.4	10.3	18.7	13.4	0.72	1.62	24.3	11.5	30.8	1.94	24.2	117.5	4.65
100	2.3	1.3	3.1	16.2	12.4	0.76	1.87	22.6	8.7	Operation Not Recommended				
	3.4	2.6	6.1	16.8	12.6	0.75	1.80	23.0	9.3					
	4.5	4.3	9.9	17.4	12.8	0.74	1.74	23.3	10.0					
110	2.3	1.3	3.0	15.4	11.7	0.76	1.99	22.2	7.7					
	3.4	2.5	5.8	15.9	11.8	0.74	1.92	22.5	8.3					
	4.5	4.1	9.5	16.5	12.0	0.73	1.85	22.8	8.9					

Interpolation is permissible; extrapolation is not.

All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating. ARI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Table does not reflect fan or pump power corrections for ARI/ISO conditions.

All performance is based upon the lower voltage of dual voltage rated units.

Operation below 40°F EWT is based upon a 15% antifreeze solution.

See performance correction tables for operating conditions other than those listed above.

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HR Series 60Hz - R22 Submittal Data Eng/I-P

Performance Data HR H/V 024

900 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btu/h

EWT °F	GPM	WPD		Cooling - EAT 80/67°F						Heating - EAT 70°F				
		PSI	FT	TC	SC	Sens/Tot Ratio	kW	HR	EER	HC	kW	HE	LAT	COP
20	6.0	9.2	21.3	Operation Not Recommended						13.4	1.34	8.9	85.5	2.94
30	3.0	2.7	6.2	29.8	19.3	0.65	1.12	33.6	26.5	13.6	1.37	8.9	85.7	2.91
	4.5	5.4	12.5	30.2	19.4	0.64	1.08	33.9	28.1	14.0	1.39	9.2	86.2	2.94
	6.0	8.9	20.6	30.7	19.6	0.64	1.03	34.2	29.9	14.4	1.42	9.5	86.7	2.97
40	3.0	2.6	6.0	28.3	19.5	0.69	1.34	32.9	21.1	16.2	1.50	11.1	88.7	3.16
	4.5	5.3	12.1	28.8	19.6	0.68	1.28	33.2	22.4	16.7	1.53	11.5	89.3	3.19
	6.0	8.7	20.0	29.2	19.8	0.68	1.23	33.4	23.8	17.2	1.56	11.8	89.9	3.22
50	3.0	2.5	5.8	27.0	18.9	0.70	1.49	32.1	18.2	19.7	1.66	14.1	92.8	3.47
	4.5	5.1	11.8	27.5	19.0	0.69	1.42	32.3	19.3	20.3	1.70	14.5	93.5	3.51
	6.0	8.4	19.4	27.9	19.2	0.69	1.36	32.5	20.5	20.9	1.73	15.0	94.2	3.55
60	3.0	2.4	5.6	25.7	18.0	0.70	1.62	31.3	15.9	23.4	1.83	17.2	97.1	3.76
	4.5	4.9	11.4	26.1	18.2	0.69	1.55	31.4	16.9	24.1	1.86	17.8	97.9	3.80
	6.0	8.1	18.8	26.5	18.3	0.69	1.48	31.6	17.9	24.9	1.90	18.4	98.8	3.84
70	3.0	2.4	5.4	24.4	17.3	0.71	1.77	30.4	13.8	26.5	1.96	19.8	100.7	3.96
	4.5	4.8	11.0	24.8	17.4	0.70	1.69	30.5	14.6	27.3	2.00	20.5	101.6	4.01
	6.0	7.9	18.2	25.1	17.5	0.70	1.62	30.7	15.5	28.1	2.03	21.2	102.6	4.05
80	3.0	2.3	5.2	23.0	16.8	0.73	1.95	29.6	11.8	28.2	2.04	21.3	102.7	4.05
	4.5	4.6	10.6	23.3	16.9	0.73	1.87	29.7	12.5	29.1	2.08	22.0	103.6	4.10
	6.0	7.6	17.5	23.7	17.1	0.72	1.78	29.8	13.3	29.9	2.12	22.7	104.6	4.14
90	3.0	2.2	5.1	21.6	16.6	0.77	2.15	28.9	10.1	27.7	2.03	20.8	102.1	4.00
	4.5	4.4	10.3	21.9	16.7	0.76	2.06	29.0	10.7	28.6	2.07	21.5	103.1	4.04
	6.0	7.3	16.9	22.3	16.8	0.76	1.97	29.0	11.3	29.4	2.11	22.2	104.0	4.08
100	3.0	2.1	4.9	20.4	16.4	0.80	2.33	28.4	8.7	Operation Not Recommended				
	4.5	4.3	9.9	20.7	16.5	0.80	2.24	28.3	9.3					
	6.0	7.1	16.3	21.0	16.6	0.79	2.14	28.3	9.8					
110	3.0	2.0	4.7	19.6	15.7	0.80	2.45	27.9	8.0					
	4.5	4.1	9.5	19.9	15.9	0.80	2.35	27.9	8.5					
	6.0	6.8	15.7	20.2	16.0	0.79	2.24	27.8	9.0					

Interpolation is permissible; extrapolation is not.
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HR Series 60Hz - R22 Submittal Data Eng/I-P

Performance Data HR H/V 030

1000 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F						Heating - EAT 70°F				
		PSI	FT	TC	SC	Sens/Tot Ratio	kW	HR	EER	HC	kW	HE	LAT	COP
20	7.5	4.5	10.3	Operation Not Recommended						17.2	1.69	11.5	86.0	2.98
30	3.8	1.3	3.0	39.6	28.7	0.72	1.46	44.6	27.1	18.9	1.77	12.8	87.5	3.13
	5.5	2.5	5.8	40.9	29.2	0.71	1.41	45.7	29.0	19.5	1.80	13.4	88.1	3.18
	7.5	4.3	10.0	42.2	29.8	0.71	1.36	46.9	31.1	20.2	1.83	14.0	88.7	3.24
40	3.8	1.3	2.9	34.6	25.5	0.74	1.59	40.1	21.8	21.9	1.90	15.5	90.3	3.38
	5.5	2.4	5.6	35.8	26.0	0.73	1.53	41.0	23.4	22.7	1.93	16.1	91.0	3.44
	7.5	4.2	9.7	37.0	26.5	0.72	1.48	42.0	25.0	23.5	1.96	16.8	91.8	3.50
50	3.8	1.2	2.8	31.5	23.6	0.75	1.75	37.4	18.0	25.2	2.03	18.3	93.4	3.64
	5.5	2.4	5.4	32.5	24.1	0.74	1.68	38.3	19.3	26.1	2.07	19.1	94.2	3.70
	7.5	4.1	9.4	33.6	24.5	0.73	1.62	39.1	20.7	27.0	2.10	19.8	95.0	3.77
60	3.8	1.2	2.7	29.6	22.5	0.76	1.92	36.1	15.4	28.6	2.16	21.2	96.4	3.88
	5.5	2.3	5.3	30.5	23.0	0.75	1.86	36.9	16.4	29.6	2.20	22.1	97.4	3.95
	7.5	3.9	9.1	31.5	23.4	0.74	1.79	37.6	17.6	30.6	2.23	23.0	98.3	4.01
70	3.8	1.1	2.7	28.4	22.0	0.77	2.11	35.6	13.4	31.9	2.28	24.1	99.5	4.10
	5.5	2.2	5.1	29.4	22.4	0.76	2.04	36.3	14.4	33.0	2.32	25.1	100.5	4.17
	7.5	3.8	8.8	30.3	22.9	0.75	1.97	37.0	15.4	34.1	2.36	26.1	101.6	4.24
80	3.8	1.1	2.6	27.6	21.7	0.78	2.31	35.5	12.0	35.0	2.39	26.9	102.4	4.30
	5.5	2.1	4.9	28.5	22.1	0.77	2.23	36.1	12.8	36.2	2.43	27.9	103.5	4.37
	7.5	3.7	8.5	29.5	22.5	0.76	2.15	36.8	13.7	37.5	2.47	29.0	104.7	4.45
90	3.8	1.1	2.5	26.6	21.2	0.80	2.50	35.1	10.6	37.9	2.48	29.4	105.0	4.47
	5.5	2.1	4.7	27.5	21.6	0.79	2.41	35.7	11.4	39.2	2.52	30.6	106.3	4.55
	7.5	3.6	8.2	28.4	22.0	0.78	2.32	36.3	12.2	40.5	2.56	31.8	107.5	4.63
100	3.8	1.0	2.4	24.8	20.4	0.82	2.69	34.0	9.2	Operation Not Recommended				
	5.5	2.0	4.6	25.7	20.8	0.81	2.60	34.5	9.9					
	7.5	3.4	7.9	26.5	21.2	0.80	2.50	35.0	10.6					
110	3.8	1.0	2.3	21.9	18.9	0.87	2.88	31.7	7.6					
	5.5	1.9	4.4	22.6	19.3	0.85	2.77	32.1	8.1					
	7.5	3.3	7.6	23.3	19.7	0.84	2.67	32.4	8.7					

Interpolation is permissible; extrapolation is not.

All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating. ARI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Table does not reflect fan or pump power corrections for ARI/ISO conditions.

All performance is based upon the lower voltage of dual voltage rated units.

Operation below 40°F EWT is based upon a 15% antifreeze solution.

See performance correction tables for operating conditions other than those listed above.

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HEAT CONTROLLER, INC.

1900 WELLWORTH AVENUE • JACKSON, MICHIGAN 49203

THE QUALITY LEADER IN CONDITIONING AIR

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HR Series 60Hz - R22 Submittal Data Eng/I-P

Performance Data HR H/V 036

1200 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btu/h

EWT °F	GPM	WPD		Cooling - EAT 80/67°F						Heating - EAT 70°F				
		PSI	FT	TC	SC	Sens/Tot Ratio	kW	HR	EER	HC	kW	HE	LAT	COP
20	9.0	3.9	8.9	Operation Not Recommended						20.2	2.09	13.1	85.6	2.84
30	4.5	0.9	2.1	41.1	28.2	0.69	1.94	47.7	21.2	22.9	2.20	15.4	87.7	3.05
	6.8	2.1	4.9	41.8	28.4	0.68	1.89	48.3	22.2	23.6	2.24	16.0	88.2	3.09
	9.0	3.7	8.6	42.6	28.6	0.67	1.83	48.8	23.3	24.3	2.28	16.5	88.8	3.12
40	4.5	0.9	2.1	39.2	28.5	0.73	2.05	46.2	19.1	27.0	2.39	18.9	90.9	3.32
	6.8	2.1	4.8	39.9	28.7	0.72	1.99	46.6	20.0	27.9	2.44	19.6	91.5	3.36
	9.0	3.6	8.4	40.5	28.9	0.71	1.93	47.1	21.0	28.7	2.48	20.3	92.2	3.39
50	4.5	0.9	2.0	38.0	28.1	0.74	2.23	45.6	17.1	31.4	2.58	22.5	94.2	3.56
	6.8	2.0	4.6	38.7	28.3	0.73	2.16	46.1	17.9	32.4	2.64	23.4	95.0	3.60
	9.0	3.5	8.1	39.4	28.5	0.72	2.10	46.5	18.7	33.3	2.69	24.2	95.7	3.64
60	4.5	0.8	1.9	37.0	27.3	0.74	2.43	45.3	15.2	35.7	2.78	26.3	97.6	3.76
	6.8	1.9	4.5	37.7	27.5	0.73	2.36	45.7	16.0	36.9	2.84	27.2	98.4	3.81
	9.0	3.4	7.9	38.3	27.7	0.72	2.29	46.1	16.8	38.0	2.89	28.1	99.3	3.85
70	4.5	0.8	1.9	35.8	26.4	0.74	2.62	44.7	13.7	40.1	2.98	29.9	100.9	3.94
	6.8	1.9	4.3	36.4	26.6	0.73	2.54	45.1	14.3	41.4	3.04	31.0	101.9	3.99
	9.0	3.3	7.6	37.0	26.8	0.72	2.46	45.4	15.0	42.6	3.10	32.1	102.9	4.03
80	4.5	0.8	1.8	34.1	25.5	0.75	2.78	43.6	12.2	44.4	3.17	33.5	104.2	4.10
	6.8	1.8	4.2	34.7	25.7	0.74	2.70	43.9	12.8	45.8	3.23	34.7	105.3	4.15
	9.0	3.2	7.3	35.3	25.9	0.73	2.62	44.2	13.5	47.2	3.30	35.9	106.4	4.19
90	4.5	0.8	1.7	32.0	24.7	0.77	2.96	42.1	10.8	48.6	3.36	37.1	107.5	4.24
	6.8	1.7	4.0	32.6	24.9	0.76	2.87	42.4	11.4	50.1	3.43	38.4	108.7	4.28
	9.0	3.1	7.1	33.1	25.1	0.76	2.78	42.6	11.9	51.6	3.49	39.7	109.8	4.33
100	4.5	0.7	1.7	29.9	23.9	0.80	3.17	40.7	9.4	Operation Not Recommended				
	6.8	1.7	3.9	30.4	24.1	0.79	3.08	41.0	9.9					
	9.0	3.0	6.8	31.0	24.3	0.78	2.99	41.2	10.4					
110	4.5	0.7	1.6	28.3	23.1	0.82	3.51	40.3	8.1					
	6.8	1.6	3.7	28.8	23.3	0.81	3.40	40.5	8.5					
	9.0	2.8	6.6	29.3	23.4	0.80	3.30	40.6	8.9					

Interpolation is permissible; extrapolation is not.

All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating. ARI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Table does not reflect fan or pump power corrections for ARI/ISO conditions.

All performance is based upon the lower voltage of dual voltage rated units.

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HR Series 60Hz - R22 Submittal Data Eng/I-P

Performance Data HR H/V 042

1400 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btu/h

EWT °F	GPM	WPD		Cooling - EAT 80/67°F						Heating - EAT 70°F				
		PSI	FT	TC	SC	Sens/Tot Ratio	kW	HR	EER	HC	kW	HE	LAT	COP
20	10.5	5.3	12.2	Operation Not Recommended						24.4	2.37	16.3	86.1	3.02
30	5.3	1.3	3.0	47.6	33.2	0.70	2.10	54.8	22.7	28.5	2.54	19.8	88.8	3.29
	7.9	2.9	6.6	48.1	33.4	0.69	2.03	55.0	23.7	29.2	2.57	20.5	89.3	3.33
	10.5	5.1	11.8	48.6	33.6	0.69	1.97	55.3	24.7	30.0	2.61	21.1	89.8	3.37
40	5.3	1.2	2.9	48.0	33.6	0.70	2.35	56.0	20.4	33.5	2.75	24.1	92.1	3.56
	7.9	2.8	6.4	48.5	33.8	0.70	2.27	56.2	21.3	34.4	2.79	24.8	92.7	3.61
	10.5	5.0	11.4	49.0	34.1	0.70	2.20	56.5	22.2	35.3	2.83	25.6	93.3	3.65
50	5.3	1.2	2.8	47.3	33.4	0.71	2.56	56.0	18.5	38.1	2.95	28.1	95.2	3.79
	7.9	2.7	6.2	47.8	33.7	0.70	2.48	56.3	19.3	39.1	2.99	28.9	95.9	3.84
	10.5	4.8	11.1	48.3	33.9	0.70	2.40	56.5	20.1	40.2	3.03	29.8	96.6	3.88
60	5.3	1.2	2.7	45.8	32.7	0.72	2.77	55.2	16.5	42.4	3.12	31.8	98.1	3.98
	7.9	2.6	6.0	46.2	33.0	0.71	2.69	55.4	17.2	43.6	3.16	32.8	98.8	4.03
	10.5	4.6	10.7	46.7	33.2	0.71	2.60	55.6	18.0	44.7	3.21	33.8	99.6	4.08
70	5.3	1.1	2.6	43.6	31.7	0.73	3.00	53.8	14.5	46.4	3.27	35.2	100.7	4.15
	7.9	2.5	5.8	44.0	31.9	0.72	2.91	54.0	15.1	47.6	3.32	36.3	101.5	4.21
	10.5	4.5	10.4	44.5	32.1	0.72	2.82	54.1	15.8	48.9	3.36	37.4	102.3	4.26
80	5.3	1.1	2.5	41.0	30.4	0.74	3.26	52.1	12.6	50.0	3.40	38.4	103.1	4.30
	7.9	2.4	5.6	41.4	30.6	0.74	3.16	52.2	13.1	51.4	3.45	39.6	104.0	4.36
	10.5	4.3	10.0	41.8	30.8	0.74	3.06	52.2	13.7	52.7	3.50	40.8	104.9	4.41
90	5.3	1.1	2.4	38.2	29.0	0.76	3.52	50.2	10.8	53.3	3.52	41.3	105.3	4.44
	7.9	2.4	5.4	38.5	29.2	0.76	3.42	50.2	11.3	54.8	3.57	42.6	106.2	4.50
	10.5	4.2	9.7	38.9	29.4	0.75	3.31	50.2	11.8	56.2	3.61	43.9	107.2	4.56
100	5.3	1.0	2.3	35.4	27.7	0.78	3.78	48.2	9.4	Operation Not Recommended				
	7.9	2.3	5.3	35.7	27.9	0.78	3.66	48.2	9.8					
	10.5	4.0	9.3	36.1	28.1	0.78	3.55	48.2	10.2					
110	5.3	1.0	2.3	32.8	26.8	0.82	3.98	46.4	8.3					
	7.9	2.2	5.1	33.2	27.0	0.81	3.86	46.3	8.6					
	10.5	3.9	9.0	33.5	27.2	0.81	3.73	46.2	9.0					

Interpolation is permissible; extrapolation is not.

All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating. ARI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Table does not reflect fan or pump power corrections for ARI/ISO conditions.

All performance is based upon the lower voltage of dual voltage rated units.

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HR Series 60Hz - R22 Submittal Data Eng/I-P

Performance Data HR H/V 048

1600 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F						Heating - EAT 70°F				
		PSI	FT	TC	SC	Sens/Tot Ratio	kW	HR	EER	HC	kW	HE	LAT	COP
20	12.0	7.6	17.6	Operation Not Recommended						29.6	2.96	19.5	87.1	2.93
30	6.0	2.5	5.8	51.6	35.5	0.69	2.49	60.1	20.7	33.5	3.01	23.2	89.4	3.26
	9.0	4.7	10.9	52.5	35.0	0.67	2.42	60.8	21.7	34.4	3.07	23.9	89.9	3.28
	12.0	7.4	17.1	53.4	34.6	0.65	2.35	61.4	22.8	35.2	3.14	24.5	90.4	3.29
40	6.0	2.4	5.6	55.4	38.6	0.70	2.76	64.8	20.1	38.7	3.23	27.7	92.4	3.51
	9.0	4.6	10.6	56.3	38.1	0.68	2.68	65.5	21.0	39.7	3.30	28.5	93.0	3.53
	12.0	7.2	16.6	57.3	37.6	0.66	2.60	66.1	22.1	40.7	3.37	29.2	93.6	3.54
50	6.0	2.3	5.4	55.0	39.3	0.71	3.01	65.2	18.2	44.4	3.48	32.6	95.7	3.74
	9.0	4.4	10.2	55.9	38.8	0.69	2.92	65.9	19.1	45.6	3.56	33.5	96.4	3.76
	12.0	7.0	16.1	56.8	38.2	0.67	2.83	66.5	20.1	46.8	3.63	34.4	97.1	3.77
60	6.0	2.3	5.2	52.6	38.5	0.73	3.27	63.8	16.1	50.9	3.75	38.1	99.4	3.97
	9.0	4.3	9.9	53.5	38.0	0.71	3.17	64.3	16.9	52.2	3.83	39.1	100.2	3.99
	12.0	6.7	15.6	54.4	37.5	0.69	3.08	64.9	17.7	53.6	3.91	40.2	101.0	4.01
70	6.0	2.2	5.1	49.8	37.2	0.75	3.53	61.9	14.1	57.6	4.03	43.9	103.4	4.19
	9.0	4.1	9.6	50.7	36.7	0.72	3.43	62.4	14.8	59.2	4.12	45.1	104.2	4.21
	12.0	6.5	15.1	51.5	36.2	0.70	3.32	62.9	15.5	60.7	4.20	46.3	105.1	4.23
80	6.0	2.1	4.9	47.4	35.8	0.76	3.81	60.4	12.4	63.8	4.31	49.1	106.9	4.34
	9.0	4.0	9.3	48.2	35.3	0.73	3.70	60.8	13.0	65.5	4.41	50.5	107.9	4.36
	12.0	6.3	14.6	49.0	34.8	0.71	3.59	61.3	13.7	67.2	4.50	51.8	108.9	4.38
90	6.0	2.0	4.7	45.5	34.5	0.76	4.10	59.4	11.1	68.0	4.60	52.3	109.4	4.33
	9.0	3.9	8.9	46.2	34.0	0.74	3.98	59.8	11.6	69.8	4.70	53.8	110.4	4.35
	12.0	6.1	14.0	47.0	33.5	0.71	3.86	60.2	12.2	71.6	4.80	55.2	111.4	4.37
100	6.0	2.0	4.5	43.3	33.1	0.76	4.39	58.3	9.9	Operation Not Recommended				
	9.0	3.7	8.6	44.1	32.6	0.74	4.26	58.6	10.3					
	12.0	5.9	13.5	44.8	32.2	0.72	4.13	58.9	10.8					
110	6.0	1.9	4.4	39.6	31.3	0.79	4.68	55.6	8.5					
	9.0	3.6	8.3	40.3	30.9	0.77	4.54	55.8	8.9					
	12.0	5.6	13.0	41.0	30.4	0.74	4.40	56.0	9.3					

Interpolation is permissible; extrapolation is not.

All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating. ARI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Table does not reflect fan or pump power corrections for ARI/ISO conditions.

All performance is based upon the lower voltage of dual voltage rated units.

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HR Series 60Hz - R22 Submittal Data Eng/I-P

Performance Data HR H/V 060

2000 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F						Heating - EAT 70°F				
		PSI	FT	TC	SC	Sens/Tot Ratio	kW	HR	EER	HC	kW	HE	LAT	COP
20	15.0	10.8	25.0	Operation Not Recommended						38.5	3.91	25.1	87.8	2.88
30	7.5	3.5	8.2	54.2	37.6	0.69	3.29	65.4	16.5	43.1	3.97	29.6	90.0	3.18
	11.3	6.7	15.6	54.3	37.7	0.69	3.18	65.2	17.1	43.8	4.01	30.1	90.3	3.20
	15.0	10.5	24.3	54.5	37.8	0.69	3.08	65.0	17.7	44.5	4.04	30.7	90.6	3.22
40	7.5	3.4	7.9	62.6	44.3	0.71	3.64	75.0	17.2	49.3	4.12	35.2	92.8	3.51
	11.3	6.5	15.1	62.7	44.5	0.71	3.52	74.7	17.8	50.1	4.15	35.9	93.2	3.53
	15.0	10.2	23.6	62.9	44.6	0.71	3.40	74.5	18.5	50.8	4.19	36.5	93.5	3.55
50	7.5	3.3	7.7	65.3	47.0	0.72	3.93	78.7	16.6	55.8	4.28	41.2	95.8	3.82
	11.3	6.3	14.6	65.5	47.2	0.72	3.80	78.4	17.2	56.7	4.32	41.9	96.2	3.84
	15.0	9.9	22.9	65.6	47.3	0.72	3.68	78.2	17.8	57.6	4.36	42.7	96.7	3.87
60	7.5	3.2	7.4	64.8	47.3	0.73	4.21	79.2	15.4	62.4	4.46	47.2	98.9	4.10
	11.3	6.1	14.2	65.0	47.5	0.73	4.07	78.9	16.0	63.4	4.50	48.1	99.4	4.13
	15.0	9.6	22.1	65.2	47.6	0.73	3.94	78.6	16.6	64.4	4.54	48.9	99.8	4.16
70	7.5	3.1	7.2	63.0	46.5	0.74	4.50	78.3	14.0	68.6	4.63	52.8	101.7	4.34
	11.3	5.9	13.7	63.1	46.7	0.74	4.36	78.0	14.5	69.6	4.67	53.7	102.2	4.37
	15.0	9.3	21.4	63.3	46.8	0.74	4.21	77.6	15.0	70.7	4.72	54.6	102.7	4.39
80	7.5	3.0	6.9	60.7	45.4	0.75	4.83	77.2	12.6	73.3	4.77	57.1	104.0	4.51
	11.3	5.7	13.2	60.9	45.5	0.75	4.67	76.8	13.0	74.5	4.81	58.1	104.5	4.54
	15.0	8.9	20.7	61.0	45.6	0.75	4.52	76.5	13.5	75.7	4.85	59.1	105.0	4.57
90	7.5	2.9	6.7	58.6	44.3	0.76	5.22	76.4	11.2	75.6	4.82	59.1	105.0	4.59
	11.3	5.5	12.8	58.7	44.4	0.76	5.05	76.0	11.6	76.8	4.87	60.2	105.6	4.62
	15.0	8.6	19.9	58.9	44.5	0.76	4.88	75.5	12.1	78.0	4.91	61.2	106.1	4.65
100	7.5	2.8	6.5	56.3	43.1	0.77	5.67	75.6	9.9	Operation Not Recommended				
	11.3	5.3	12.3	56.4	43.3	0.77	5.49	75.2	10.3					
	15.0	8.3	19.2	56.6	43.4	0.77	5.30	74.7	10.7					
110	7.5	2.7	6.2	52.9	41.4	0.78	6.21	74.1	8.5					
	11.3	5.1	11.8	53.0	41.5	0.78	6.00	73.5	8.8					
	15.0	8.0	18.5	53.2	41.7	0.78	5.80	73.0	9.2					

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HR Series 60Hz - R22 Submittal Data Eng/I-P

Performance Data HR H/V 070

2300 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btu/h

EWT °F	GPM	WPD		Cooling - EAT 80/67°F						Heating - EAT 70°F				
		PSI	FT	TC	SC	Sens/Tot Ratio	kW	HR	EER	HC	kW	HE	LAT	COP
20	18.0	6.9	15.9	Operation Not Recommended						45.7	4.51	30.3	88.4	2.97
30	9.0	2.1	4.9	75.8	55.5	0.73	3.30	87.1	22.9	48.3	4.47	33.1	89.5	3.17
	13.5	4.2	9.6	76.2	54.8	0.72	3.17	87.0	24.0	50.8	4.52	35.4	90.5	3.30
	18.0	6.7	15.4	76.6	54.1	0.71	3.04	86.9	25.2	53.3	4.58	37.7	91.5	3.42
40	9.0	2.1	4.8	73.4	54.2	0.74	3.76	86.3	19.5	56.0	4.64	40.2	92.5	3.54
	13.5	4.0	9.3	73.8	53.5	0.73	3.61	86.1	20.4	58.1	4.67	42.2	93.4	3.64
	18.0	6.5	15.0	74.2	52.9	0.71	3.46	86.0	21.4	60.3	4.71	44.2	94.3	3.75
50	9.0	2.0	4.6	71.1	52.9	0.74	4.23	85.5	16.8	63.6	4.81	47.3	95.6	3.88
	13.5	3.9	9.0	71.4	52.3	0.73	4.06	85.3	17.6	65.4	4.83	49.0	96.3	3.97
	18.0	6.3	14.5	71.8	51.7	0.72	3.89	85.1	18.5	67.2	4.85	50.7	97.1	4.06
60	9.0	1.9	4.5	70.2	52.1	0.74	4.62	86.0	15.2	71.3	4.98	54.3	98.7	4.20
	13.5	3.8	8.7	70.7	51.9	0.73	4.43	85.8	15.9	73.2	5.02	56.0	99.5	4.27
	18.0	6.1	14.0	71.2	51.6	0.72	4.25	85.7	16.8	75.0	5.07	57.7	100.2	4.34
70	9.0	1.9	4.3	69.3	51.3	0.74	5.02	86.4	13.8	79.0	5.15	61.4	101.8	4.50
	13.5	3.7	8.4	70.0	51.4	0.73	4.81	86.4	14.5	80.9	5.22	63.1	102.6	4.55
	18.0	5.9	13.6	70.7	51.6	0.73	4.61	86.4	15.3	82.8	5.29	64.8	103.3	4.59
80	9.0	1.8	4.2	66.2	49.6	0.75	5.51	85.0	12.0	86.4	5.40	68.0	104.8	4.69
	13.5	3.5	8.2	66.9	49.8	0.74	5.28	84.9	12.7	87.6	5.42	69.1	105.3	4.74
	18.0	5.7	13.1	67.6	50.0	0.74	5.06	84.8	13.4	88.8	5.45	70.2	105.7	4.78
90	9.0	1.7	4.0	63.2	48.0	0.76	6.00	83.6	10.5	93.9	5.65	74.6	107.8	4.87
	13.5	3.4	7.9	63.8	48.2	0.76	5.76	83.4	11.1	94.3	5.63	75.1	108.0	4.91
	18.0	5.5	12.7	64.4	48.3	0.75	5.51	83.2	11.7	94.8	5.61	75.6	108.1	4.95
100	9.0	1.7	3.9	60.4	47.4	0.78	6.68	83.2	9.1	Operation Not Recommended				
	13.5	3.3	7.6	61.0	47.6	0.78	6.40	82.9	9.5					
	18.0	5.3	12.2	61.6	47.7	0.77	6.13	82.6	10.1					
110	9.0	1.6	3.7	57.7	46.8	0.81	7.35	82.8	7.9					
	13.5	3.2	7.3	58.3	46.9	0.81	7.05	82.3	8.3					
	18.0	5.1	11.7	58.9	47.1	0.80	6.75	81.9	8.7					

Interpolation is permissible; extrapolation is not.

All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating. ARI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.

Table does not reflect fan or pump power corrections for ARI/ISO conditions.

All performance is based upon the lower voltage of dual voltage rated units.

Operation below 40°F EWT is based upon a 15% antifreeze solution.

See performance correction tables for operating conditions other than those listed above.

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Air Flow Correction Table

Airflow	Cooling				Heating		
	Total Capacity	Sensible Capacity	Power	Heat of Rejection	Heating Capacity	Power	Heat of Extraction
75%	0.962	0.873	0.962	0.961	0.957	1.061	0.922
81%	0.974	0.906	0.971	0.972	0.968	1.040	0.946
88%	0.985	0.938	0.980	0.983	0.979	1.020	0.970
94%	0.993	0.969	0.990	0.992	0.989	1.010	0.985
100%	1.000	1.000	1.000	1.000	1.000	1.000	1.000
106%	1.007	1.034	1.010	1.008	1.011	0.997	1.015
113%	1.014	1.068	1.019	1.016	1.021	0.994	1.030

Entering Air Correction Table

Heating				Cooling										
Entering Air DB°F	Heating Capacity	Power	Heat of Extraction	Entering Air WB°F	Total Capacity	Sensible Cooling Capacity Multiplier - Entering DB °F						Power	Heat of Rejection	
						70	75	80	80.6	85	90			95
60	1.065	0.937	1.112	60	0.848	0.882	1.044	1.169	1.203	*	*	*	0.994	0.869
65	1.024	0.971	1.044	65	0.971	0.633	0.861	1.070	1.083	1.272	*	*	0.996	0.969
68	1.005	0.990	1.011	66.2	0.996	0.574	0.817	1.030	1.065	1.228	*	*	0.998	0.990
70	1.000	1.000	1.000	67	1.000	0.534	0.788	1.000	1.017	1.198	1.314	1.360	1.000	1.000
75	0.985	1.026	0.970	70	1.030		0.678	0.863	0.900	1.082	1.210	1.300	1.003	1.019
80	0.972	1.052	0.944	75	1.065			0.548	0.653	0.880	1.036	1.201	1.008	1.047

* = Sensible capacity equals total capacity
 ARI/ISO/ASHRAE 13256-1 uses entering air conditions of Cooling - 80.6°F DB/66.2°F WB, 1 and Heating - 68°F DB/59°F WB entering air temperature

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HR Series 60Hz - R22 Submittal Data Eng/I-P

Blower Performance Data

Model	Rated Airflow	Min CFM	Fan Speed	Airflow (cfm) at External Static Pressure (in. wg)															
				0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.60	0.70	0.80	0.90	1.00
HRH/V 019	HI	600	450	850	820	790	765	740	705	670	635	600	560	520	450				
	MED	600	450	700	680	660	640	620	590	560	530	500	470	440					
	LOW	600	450	600	580	560	535	510	485	460	440								
HRH/V 024	HI	800	600					860	825	790	755	720	680	640	540				
	MED	800	600	850	825	800	770	740	715	690	655	620	580	540	460				
	LOW	800	600	700	680	660	645	630	610	590	560	530	500	470					
HRH/V 030	HI	1000	750	1330	1295	1260	1225	1190	1145	1100	1050	1000	960	920	830				
	MED	1000	750	1210	1185	1160	1130	1100	1050	1000	965	930	880	830	720				
	LOW	1000	750	1050	1030	1010	980	950	920	890	850	810	770	730					
HRH/V 036	HI	1200	900			1418	1365	1312	1272	1231	1198	1165	1120	1074					
	MED	1200	900			1307	1272	1237	1205	1172	1133	1094	1047	999					
	LOW	1200	900	1152	1131	1110	1086	1062	1034	1005	979	952	916						
HRH/V 042	HI	1400	1050			1683	1641	1598	1541	1484	1436	1387	1334	1281	1175	1061			
	MED	1400	1050	1425	1415	1396	1369	1341	1296	1251	1207	1163	1131	1099					
	LOW	1400	1050																
HRH/V 048	HI	1600	1200			1850	1785	1719	1642	1564	1501	1437	1385	1333	1243				
	MED	1600	1200	1815	1775	1725	1680	1635	1576	1517	1463	1409	1353	1296	1200				
	LOW	1600	1200	1662	1633	1604	1578	1552	1493	1434	1379	1324	1275	1226					
HRH/V 060	HI	2000	1500	2230	2215	2200	2160	2120	2090	2060	2035	2010	1985	1960	1880	1790	1660		
	MED	2000	1500	2040	2015	1990	1965	1940	1915	1890	1860	1830	1805	1780	1710	1620			
	LOW	2000	1500	1840	1825	1810	1795	1780	1755	1730	1700	1670	1635	1600	1510				
HRH/V 070	HI	2300	1725						2460	2430	2390	2340	2310	2280	2230	2180	1990	1860	1740
	MED	2300	1725	2530	2500	2470	2450	2420	2400	2370	2340	2310	2280	2260	2200	2100	1890	1740	1640
	LOW	2300	1725	2270	2260	2250	2240	2230	2210	2180	2160	2140	2120	2100	2040	1900	1790	1690	1570

Shaded areas denote ESP where operation is not recommended
 Units factory shipped on medium speed, other speeds require field selection
 All airflow is rated at lowest Voltage if unit is dual Voltage rated, e.g. 208V for 208-230V units
 All units ARI/ISO/ASHRAE 13256-1 rated on high fan speed

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Physical Data

Model	019	024	030	036	042	048	060	070
Compressor [1 Each]	Reciprocating						Scroll	Scroll
Factory Charge R22 (oz) [kg]	30 [.85]	30 [.85]	41 [1.16]	44 [1.25]	46 [1.30]	54 [1.53]	80 [2.26]	104 [2.95]
PSC Fan Motor & Blower (3 Speeds)								
Fan Motor (hp) [W]	1/5 [150]	1/3 [250]	1/2 [373]	3/4 [560]	3/4 [560]	3/4 [560]	1 [746]	1 [746]
Blower Wheel Size (dia x w) - (in) [mm]	9 x 7 [229 x 178]	9 x 7 [229 x 178]	9 x 7 [229 x 178]	10 x 10 [254 x 254]	10 x 10 [254 x 254]	10 x 10 [254 x 254]	11 x 10 [279 x 254]	11 x 10 [279 x 254]
Water Connection Size								
IPT (in) Swivel	1	1	1	1	1	1	1	1
Vertical Upflow								
Air Coil Dimensions (h x w) - (in) [mm]	16 x 16 [406 x 406]	16 x 16 [406 x 406]	20 x 20 [508 x 508]	20 x 20 [508 x 508]	28 x 20 [711 x 508]	28 x 20 [711 x 508]	28 x 25 [711 x 635]	36 x 25 [914 x 635]
Standard Filter - 1" [25.4mm] Throwaway, qty (in) [mm]	16 x 20 [406 x 508]	16 x 20 [406 x 508]	20 x 24 [508 x 610]	20 x 24 [508 x 610]	28 x 24 [711 x 610]	28 x 24 [711 x 610]	28 x 30 [711 x 762]	3- 12 x 30 [356 x 762]
Horizontal								
Air Coil Dimensions (h x w) - (in) [mm]	16 x 16 [406 x 406]	16 x 16 [406 x 406]	18 x 22 [457 x 559]	18 x 22 [457 x 559]	18 x 31 [457 x 787]	18 x 31 [457 x 787]	20 x 35 [508 x 889]	20 x 45 [508 x 1143]
Standard Filter - 1" [25.4mm] Throwaway, qty (in) [mm]	16 x 20 [406 x 508]	16 x 20 [406 x 508]	18 x 24 [457 x 610]	18 x 24 [457 x 610]	(2) 18 x 18 [457 x 457]	(2) 18 x 18 [457 x 457]	1 - 12 x 20, 1 - 25 x 20 [305 x 508], [635 x 508]	2 - 24 x 20 [610 x 508]
Weight - Operating, (lbs) [kg]	169 [77]	193 [88]	219 [100]	229 [104]	257 [117]	267 [121]	323 [147]	443 [201.4]
Weight - Packaged, (lbs) [kg]	179 [82]	203 [93]	231 [105]	241 [110]	269 [124]	279 [127]	338 [254]	453 [205.9]

All units have spring compressor mountings, and 1/2" [12.2mm] & 3/4" [19mm] electrical knockouts.

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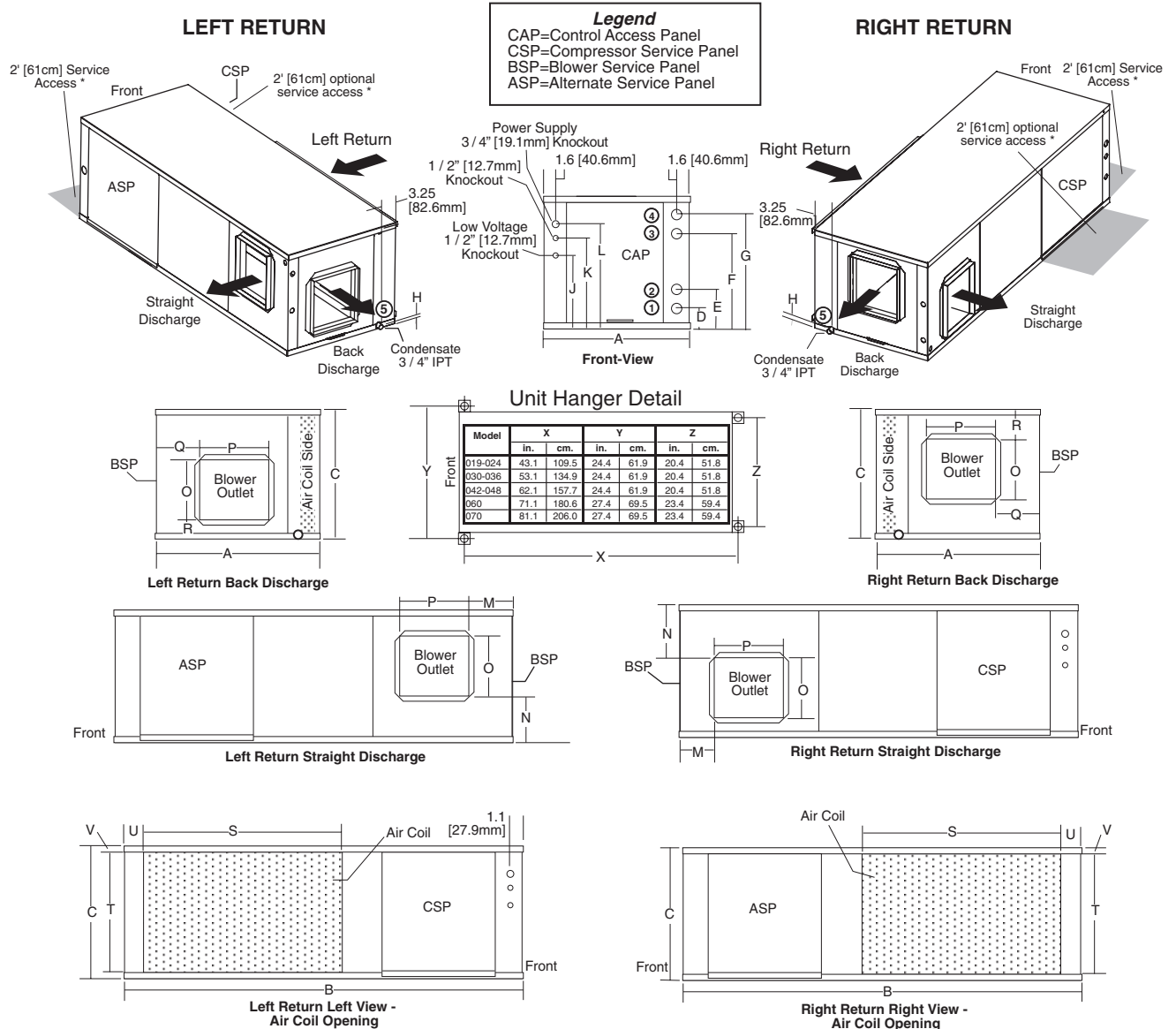
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HR Series 60Hz - R22 Submittal Data Eng/I-P

Horizontal Dimensional Data

Horizontal Model HRH	Overall Cabinet			Water Connections				Electrical Knockouts			Discharge Connection duct flange installed (± 0.10 in)					Return Connection using return air opening				
	A	B	C	1	2	3	Loop Water Swivel	J	K	L	M	N	O	P	Q	R	S	T	U	V
	Width	Depth	Height	In	Out	Condensate		1/2" cond Low Voltage	1/2" cond Ext Pump	3/4" cond Power Supply	Supply Height	Supply Depth				Return Depth	Return Height			
019-024	in. 22.4 cm. 56.8	43.1 109.5	17.3 43.9	2.4 6.1	4.9 12.4	0.6 1.5	1"	3.5 8.9	7.5 19.1	10.2 25.9	5.0 12.7	5.6 14.2	10.4 26.4	9.3 23.6	5.0 12.7	1.5 3.8	17.1 43.4	15.3 38.9	2.2 5.6	1.0 2.5
030	in. 22.4 cm. 56.8	53.2 135.1	19.3 49.0	2.4 6.1	5.4 13.7	0.6 1.5	1"	5.7 14.5	9.7 24.6	12.2 31.0	5.0 12.7	6.8 17.3	10.4 26.4	9.3 23.6	5.0 12.7	2.1 5.3	23.1 58.7	17.3 43.9	2.2 5.6	1.0 2.5
036	in. 22.4 cm. 56.8	53.2 135.1	19.3 49.0	2.4 6.1	5.4 13.7	0.6 1.5	1"	5.7 14.5	9.7 24.6	12.2 31.0	6.7 17.0	6.9 17.5	10.4 26.4	9.3 23.6	6.7 17.0	5.0 12.7	23.1 58.7	17.3 43.9	2.2 5.6	1.0 2.5
042-048	in. 22.4 cm. 56.8	62.2 158.0	19.3 49.0	2.4 6.1	5.4 13.7	0.6 1.5	1"	5.7 14.5	9.7 24.6	12.2 31.0	2.7 6.9	3.7 9.4	13.6 34.5	13.3 33.8	2.7 6.9	1.8 4.6	32.1 81.5	17.3 43.9	2.2 5.6	1.0 2.5
060	in. 25.4 cm. 64.5	71.2 180.8	21.3 54.1	2.4 6.1	5.4 13.7	0.6 1.5	1"	8.1 20.6	11.7 29.7	14.2 36.1	5.8 14.7	5.0 12.7	13.6 34.5	13.3 33.8	5.8 14.7	2.9 7.4	36.1 91.7	19.3 49.0	2.2 5.6	1.0 2.5
070	in. 25.4 cm. 64.5	81.2 206.2	21.3 54.1	2.4 6.1	5.4 13.7	0.6 1.5	1"	8.1 20.6	11.7 29.7	14.2 36.1	5.8 14.7	5.0 12.7	13.6 34.5	13.3 33.8	5.8 14.7	2.9 7.4	46.1 117.7	19.3 49.0	2.2 5.6	1.0 2.5

Condensate is 3/4" IPT copper.
Horizontal unit shipped with filter bracket only. This bracket should be removed for return duct connection.
Hanger bracket is factory installed.



* Note: Shaded areas are recommended service areas, not required.

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HR Series 60Hz - R22 Submittal Data Eng/I-P

Vertical Upflow Dimensional Data

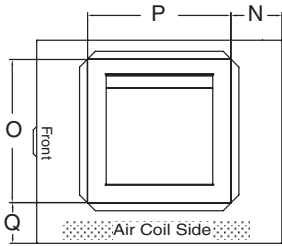
Vertical Upflow Model HRV	Overall Cabinet			Water Connections				Electrical Knockouts			Discharge Connection duct flange installed (±0.10 in)					Return Connection using return air opening				
	A	B	C	1	2	3	Loop Water Swivel	J	K	L	M	N	O	P	Q	R	S	T	U	
	Width	Depth	Height	D	E	H		1/2" cond	1/2" cond	3/4" cond	Supply Width	Supply Depth	Return Depth	Return Height	Return Height	Return Height	Return Height	Return Height		
	in.	cm.	in.	cm.	in.	cm.	in.	cm.	cm.	cm.	cm.	cm.	cm.	cm.	cm.	cm.	cm.	cm.	cm.	
019-024	in.	22.4	21.6	34.6	2.4	4.8	8.5	1"	3.5	7.5	10.2	10.8	8.5	10.4	9.3	7.3	2.2	17.1	15.3	1.0
	cm.	56.8	54.9	87.9	6.1	12.2	21.6		8.9	19.1	25.9	27.4	21.6	26.4	23.6	20.1	5.6	43.4	38.9	2.5
030	in.	22.4	25.6	40.6	2.4	5.4	9.7	1"	5.7	9.7	12.2	10.8	10.5	10.4	9.3	7.3	2.2	21.1	19.2	1.0
	cm.	56.8	65.1	103.1	6.1	13.7	24.6		14.5	24.6	31.0	27.4	26.7	26.4	23.6	20.1	5.6	53.6	48.8	2.5
036	in.	22.4	25.6	40.6	2.4	5.4	9.7	1"	5.7	9.7	12.2	10.8	10.5	10.4	9.3	7.3	2.2	21.1	19.2	1.0
	cm.	56.8	65.1	103.1	6.1	13.7	24.6		14.5	24.6	31.0	27.4	26.7	26.4	23.6	20.1	5.6	53.6	48.8	2.5
042-048	in.	22.4	25.6	48.6	2.4	5.4	9.7	1"	5.7	9.7	12.2	7.6	6.5	13.6	13.3	4.7	2.2	21.1	27.2	1.0
	cm.	56.8	65.1	123.4	6.1	13.7	24.6		14.5	24.6	31.0	19.3	16.5	34.5	33.8	11.9	5.6	53.6	69.1	2.5
060	in.	25.4	30.6	50.6	2.4	5.4	10.7	1"	8.1	11.7	14.2	10.6	11.0	13.6	13.3	9.5	2.2	26.1	27.2	1.0
	cm.	64.5	77.8	128.5	6.1	13.7	27.2		20.6	29.7	36.1	26.9	27.9	34.5	33.8	24.1	5.6	66.3	69.1	2.5
070	in.	25.4	30.6	58.6	2.4	5.4	10.7	1"	8.1	11.7	14.2	10.6	11.0	13.6	13.3	9.5	2.2	26.1	35.2	1.0
	cm.	64.5	77.8	148.8	6.1	13.7	27.2		20.6	29.7	36.1	26.9	27.9	34.5	33.8	24.1	5.6	66.3	89.4	2.5

Condensate is 3/4" IPT and is switchable from side to front.
 Filter bracket only extends from unit 2.75" [7.0cm].
 Discharge flange field installed.

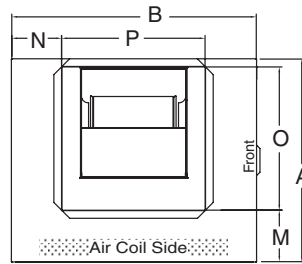
Notes:

1. Front & Side access is preferred for service access.
 However, all components may be serviced from the front access panel if side access is not available.
2. While clear access to all removable panels is not required, installer should take care to comply with all building codes and allow adequate clearance for future field service.

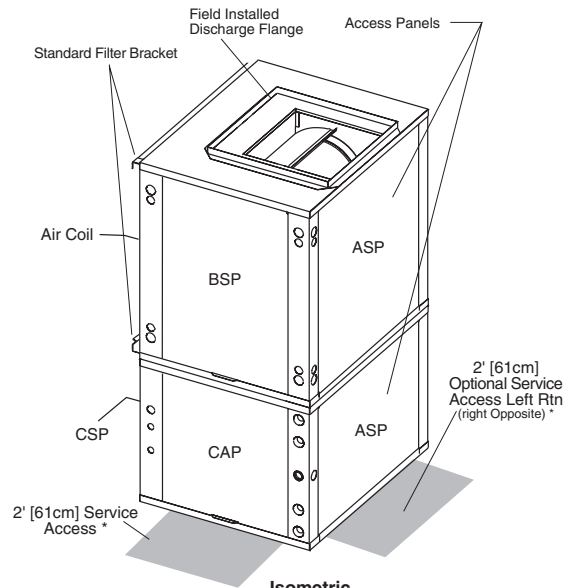
Legend
 CAP=Control Access Panel
 CSP=Compressor Service Panel
 BSP=Blower Service Panel
 ASP=Alternate Service Panel



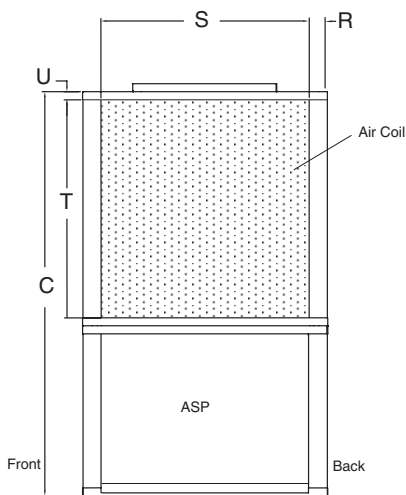
Top View-Right Return



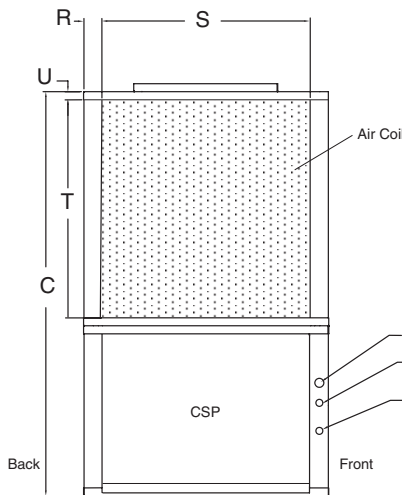
Top View-Left Return



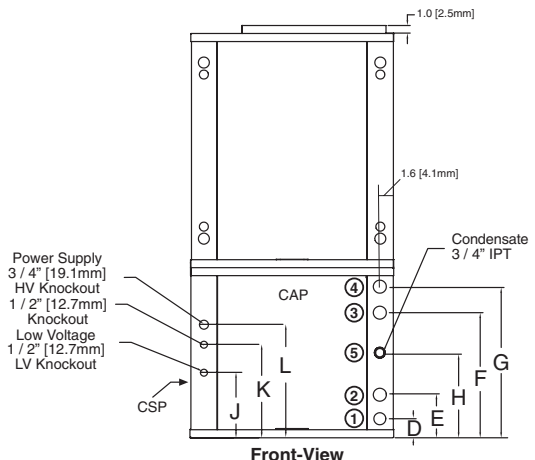
Isometric View



Right Return Right View - Air Coil Opening



Left Return Left View - Air Coil Opening



Front-View

* Note: Shaded areas are recommended service areas, not required.

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HR Series 60Hz - R22 Submittal Data Eng/I-P

Electrical Data

Model	Voltage	Min/Max Voltage	Compressor			Fan Motor FLA	Total Unit FLA	Min Circuit Amps	Max Fuse/HACR
			QTY	RLA	LRA				
HRH/V 019	208-230/60/1	197/254	1	8.6	49.0	1.10	9.7	11.8	20
HRH/V 024	208-230/60/1	197/254	1	9.8	56.0	1.30	11.1	13.6	20
HRH/V 030	208-230/60/1	197/254	1	11.2	61.0	1.90	13.1	15.8	25
HRH/V 036	208-230/60/1	197/254	1	14.4	82.0	3.00	17.4	20.9	35
HRH/V 042	208-230/60/1	197/254	1	16.2	96.0	3.00	19.2	23.3	35
HRH/V 048	208-230/60/1	197/254	1	18.3	102.0	3.40	21.7	26.3	40
HRH/V 060	208-230/60/1	197/254	1	25.6	170.0	4.30	29.9	36.3	60
HRH/V 070	208-230/60/1	197/254	1	28.9	148.0	4.30	33.2	40.4	60

HACR circuit breaker in USA only
All fuses Class RK-5

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