RH SERIES AIR COOLED HEAT PUMP UNITS

SPECIFICATIONS Rated in Accordance with ARI Standard 210/240			RH104F		
PERFORMANCE					
		Rated with Optional Air Handler Model	VCH/HCH104		
		Rated CFM	3,400		
	COOLING	Total BTUH	99,000		
		Sensible BTUH	73,400		
		EER	9.3		
	HEATING	Total BTUH	101,700		
		COP	3.2		
ELECTRICAL	SERVICE	Voltage-Phase-Hz	208/230-3-60	460-3-60	380/415-3-50
	COMPRESSOR	(Qty) Type — Nom. Tons	(2) Hermetic — 4		
		RLA (ea)	15.1	7.4	7.4
		LRA (ea)	84	42	42
		IPLV	9.5		
	Standard Capacity Reduction % Full load — (Optional)		100-50-0 — (NA)		
	CONDENSER FAN MOTOR(S)	Horse Power — (Qty)	1 — (1)		
		FLA	6.2	3.1	2.2
		Total CFM	5,800		
	UNIT	RLA	36.4	17.9	17.0
		Unit Minimum Circuit Ampacity	41	20	19
		Max. Time Delay Fuse or HACR Breaker	50	25	25
PHYSICAL DATA	CONDENSER COIL Alum. Fins on Copper Tubes	Face Area (sq.ft.)	16.7		
		Rows Deep — Fins per Inch	4 — 12		
		(Qty) — Suction Line OD In.	(2) — 7/8		
		(Qty) — Liquid Line OD In.	(2) — 3/8		
	WEIGHTS	Unit (lbs)	640		
		Shipping Weight (lbs)	715		

Cooling Rating

95°F Air on Outdoor Coil

Rated With Air Handler Model	CFM		Entering Air to Indoor Coil								
			75°F DB			80°F DB			85°F DB		
			63°F WB	67°F WB	71°F WB	63°F WB	67°F WB	71°F WB	63°F WB	67°F WB	71°F WB
VCH104 or HCH104	3200	TOTAL BTUH	94,300	101,500	108,600	96,500	101,800	109,200	102,200	103,500	109,500
		SENS BTUH	72,900	59,400	46,400	88,200	75,800	62,400	97,400	92,100	78,800
		WATTS INPUT	9,200	9,490	9,770	9,300	9,520	9,820	9,540	9,600	9,840
		LVG DB/WB	54.3/53.0	58.1/57.1	61.8/61.4	54.9/52.7	58.5/57.1	62.3/61.3	57.3/52.1	58.8/56.9	62.6/61.3
	3400	TOTAL BTUH	95,400	102,400	109,600	97,900	102,900	110,200	104,300	105,000	110,500
		SENS BTUH	75,200	61,000	47,200	90,900	78,600	64,100	99,300	95,000	81,900
		WATTS INPUT	9,250	9,530	9,810	9,360	9,560	9,860	9,620	9,660	9,890
		LVG DB/WB	54.9/53.5	58.7/57.7	62.4/61.9	55.7/53.3	59.0/57.6	62.9/61.9	58.5/52.5	59.6/57.4	63.1/61.8
	3600	TOTAL BTUH	96,500	103,300	110,400	99,600	103,900	111,100	106,200	106,400	111,600
		SENS BTUH	77,400	62,500	48,000	94,900	81,000	65,900	101,100	97,900	84,500
		WATTS INPUT	9,290	9,570	9,850	9,420	9,600	9,900	9,700	9,700	9,930
		LVG DB/WB	55.5/54.0	59.2/58.2	62.9/62.4	56.0/53.7	59.5/58.1	63.5/62.3	59.5/.53.0	60.3/57.9	63.7/62.3

Note: Above performance data gives gross evaporator capacity with 25' refrigerant lines and full condenser operation at 60 HZ.

Correction Factor Multiplier for Other Ambients					
Temperature	95°F	100°F	105°F	110°F	115°F
Total Capacity	1.00	.98	.95	.91	.87
Sensible Capacity	1.00	.99	.97	.95	.93
Watts	1.00	1.03	1.05	1.08	1.11
Gross EER	1.00	.95	.90	.84	.78

50 HZ Application and Performance Multipliers		
Capacity	At 60 HZ Evaporator CFM	At 50HZ Evaporator CFM
Total	0.91	0.88
Sensible	0.95	.086
Watts	0.85	.083

Notes: 50HZ evaporator CFM is 0.83 times full rated CFM shown above.

Applied Research Laboratories, Inc.

Listed

Form # 0527S-0995 Rev. B ((0408)
Supersedes Form # 0527S-0995 A (0701)

Heating Ratings

70°F Air on Coil of Indoor Air Handler Model VCH104 or HCH104

CFM	Capacity	Ambient Air on Outdoor Coil °F							
		10	17	20	30	40	47	50	60
3,400	BTUH	45,200	54,000	57,900	71,100	85,600	96,000	100,500	119,100
	Watts	6,230	6,550	6,690	7,220	7,810	8,290	8,480	9,320

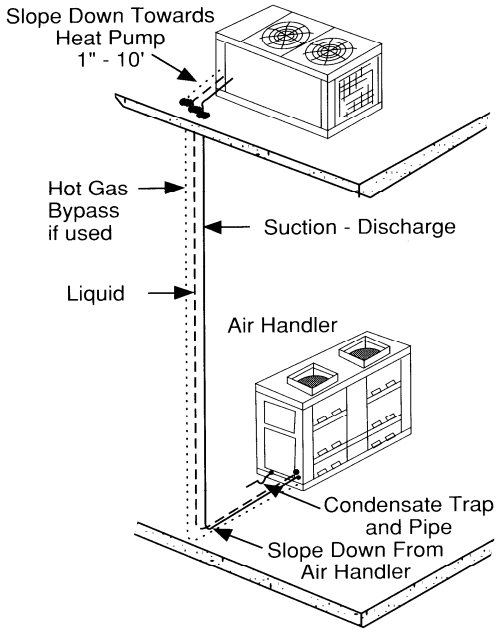
Note: Heating capacities are gross capacities. For net capacities, multiply blower BHP required times 2545 BTU per BHP and add to BTUH in table. Add blower BHP times 746 Watts per BHP to Watts for total power consumption. Refer to Air Handler specification for blower BHP.

Heating Capacity Correction Multiplier To be applied to rated heating capacity to determine capacity at other than rated CFM.	CFM	Multiplier
	- 10%	0.985
	Rated	1.00
	+ 10%	1.015

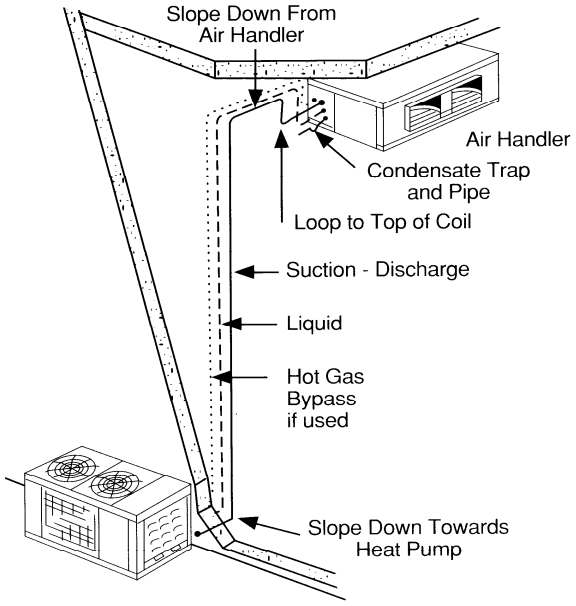
Recommended Refrigerant Line Sizes — Inches O.D.						
Equivalent Line Length – Feet						
0 to 25			26 to 50		51 to 75	
Suction	Liquid	Hot Gas Bypass	Suction	Liquid	Suction	Liquid
7/8 7/8	3/8 3/8	1/2 NA	7/8 7/8	3/8 3/8	1 1/8 1 1/8	1/2 1/2

Notes:
1. Line lengths are equivalent, including all fittings. Use long radius ells only.
2. Line sizes are for both vertical and horizontal runs.
3. Over 75 equivalent feet, **consult factory** for sizing recommendations.
4. Liquid line sizes are designed to minimize system refrigerant charge.
5. Hot gas bypass is typically used with the welded hermetic compressor only with an equivalent line length of 25 feet or less.
6. When condensing unit is above air handler, trap suction line at base and every 20 feet of vertical rise. Consult ASHRAE Refrigeration Handbook.

Heat Pump Above Air Handler



Heat Pump Below Air Handler

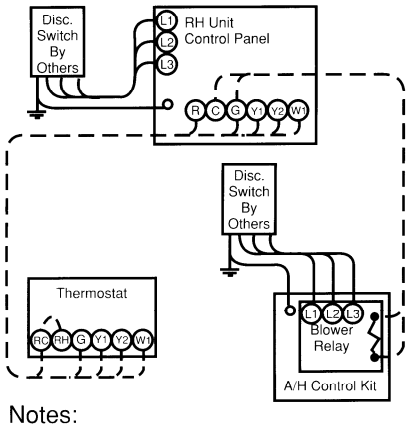


Field Piping: One of the most critical considerations in the installation of a split system heat pump is the proper sizing of piping so that oil will freely circulate with the refrigerant and not be trapped. In order to assure oil being carried upward in a vertical riser along with the refrigerant vapor, a velocity of 1,000 FPM must be maintained. Proper sizing is particularly important in a heat pump system because the discharge pipe on the heating cycle becomes the suction pipe in cooling and line velocities will be different in each cycle. Experience indicated 75 **equivalent** feet of pipe as the maximum practical length on heat pump installations. Pump down solenoids can not be used with heat pumps. When the air handler is installed above the compressor the vertical line must be properly sized to carry oil. The above tabulation indicates proper sizing.

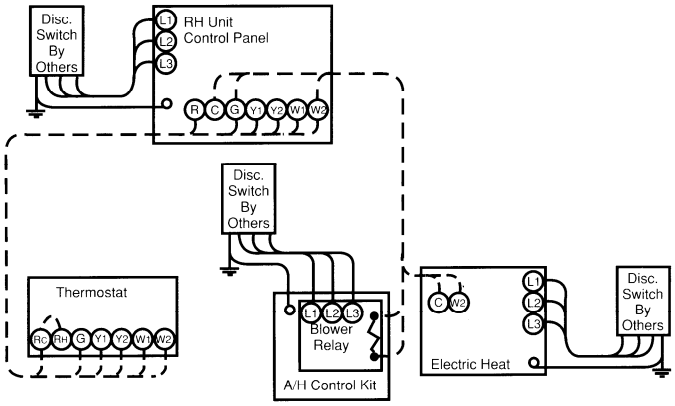
Each refrigerant line run underground in a chase should be insulated with ¾" minimum thickness closed cell foamed plastic insulation. Each line must be insulated separately.

Typical Field Wiring

without Electric Heat



with Electric Heat



Notes:

All field wiring shall conform to N.E.C. and local codes

Line voltage power source ————————

24 volt control circuit – – – – – – –

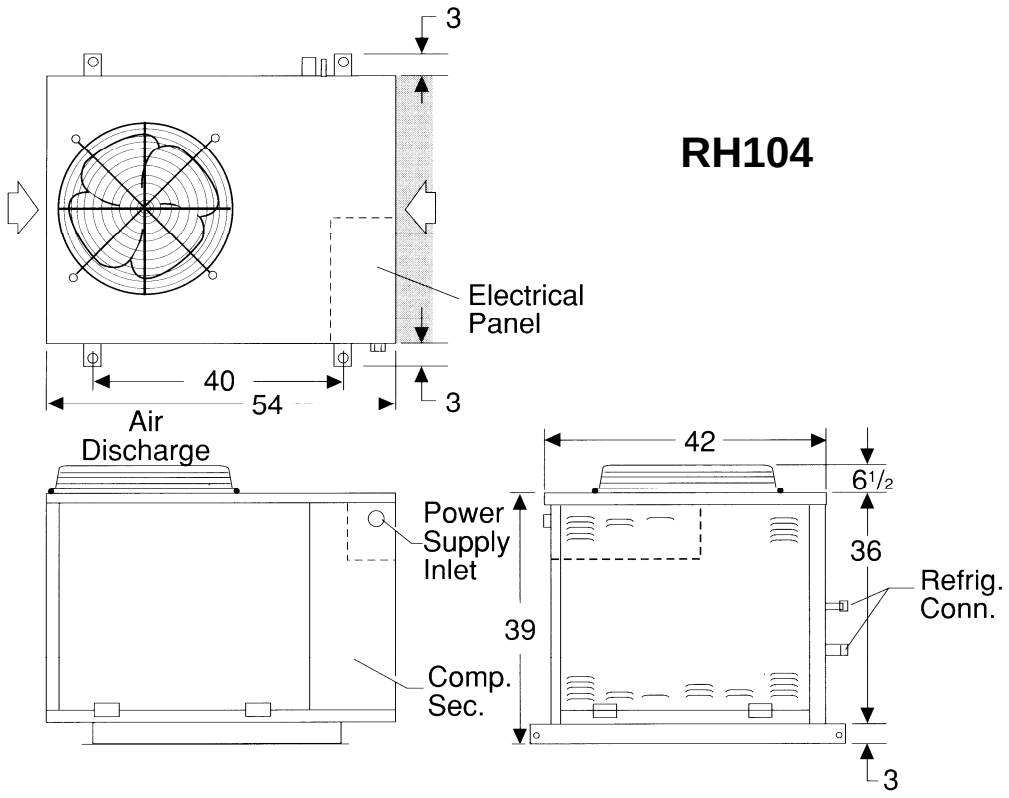
Field Wiring

The power distribution system should be sized based on the minimum circuit ampacities in this specification sheet. The heat pumps and air handlers should be fused in accordance with the maximum fuse sizes.

Disconnects may be optionally mounted by the factory or may be furnished and installed by the contractor. Time delay fuses should be used.

All field installed control wiring must be adequate to assure 24 volts to all controls.

Dimensions



Indicates air inlet to condenser (leave minimum 2' free clearance).

Shaded area indicates 3' clearance must be left for access to compressor and electrical panel.

Specifications subject to change without notice.

Installation Code and Annual Inspections:
All installations and service of ADDISON equipment must be performed by a contractor qualified in the installation and service of equipment sold and supplied by Addison and conform to all requirements set forth in the ADDISON manuals and all applicable governmental authorities pertaining to the installation, service and operation of the equipment. To help facilitate optimum performance and safety, Addison recommends that a qualified contractor annually inspect your ADDISON equipment and perform service where necessary, using only replacement parts sold and supplied by ADDISON.

Further Information: Applications, engineering and detailed guidance on systems design, installation and equipment performance is available through ADDISON representatives. Please contact us for any further information you may require, including the Installation, Operation and Service Manual.

These products are not for residential use.

This document is intended to assist licensed professionals in the exercise of their professional judgment.

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