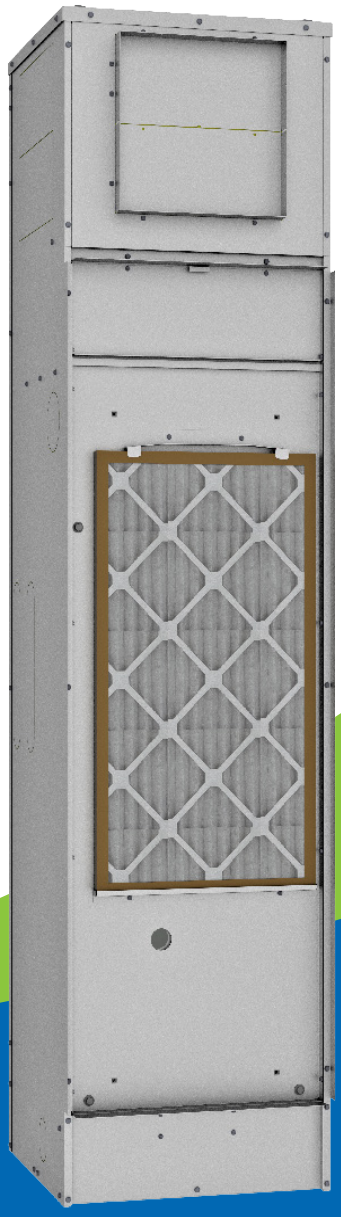
FIRST CO.
P.O. BOX 270969 - DALLAS, TEXAS 75227
PH. (214) 388-5751 | FAX (214) 388-2255
WWW.FIRSTCO.COM

HRC(C/X)-FHR SINGLE-STAGE Series

COMMERCIAL WATER SOURCE HEAT PUMP

VERTICAL HI-RISE · SIZES 009-036 (3/4 - 3 TONS)

HydroTech™
R-410A Water Source Heat Pump



13.0 & 16.0 EER

Available sizes for the vertical high-rise water-source heat pumps are 3/4-ton through 3-ton. Units are floor mounted and designed to be furred in behind dry-wall to blend into space. Units consist of separate components - cabinet behind finished wall and slide in refrigeration chassis.

Hospitality Office · Condominiums
Apartments · Retirement · Educational

- ***Cost Savings Solutions***
- ***Energy Savings***
- ***Quiet Operation***
- ***Versatile Cabinet***

ENERGY STAR
* only applies to HRCX

INTERTEK ETL LISTED C US

AHRI CERTIFIED® www.ahridirectory.org
Unitary Small AC
AHRI Standard 210/240
Certification applies only when the complete system is listed with AHRI.

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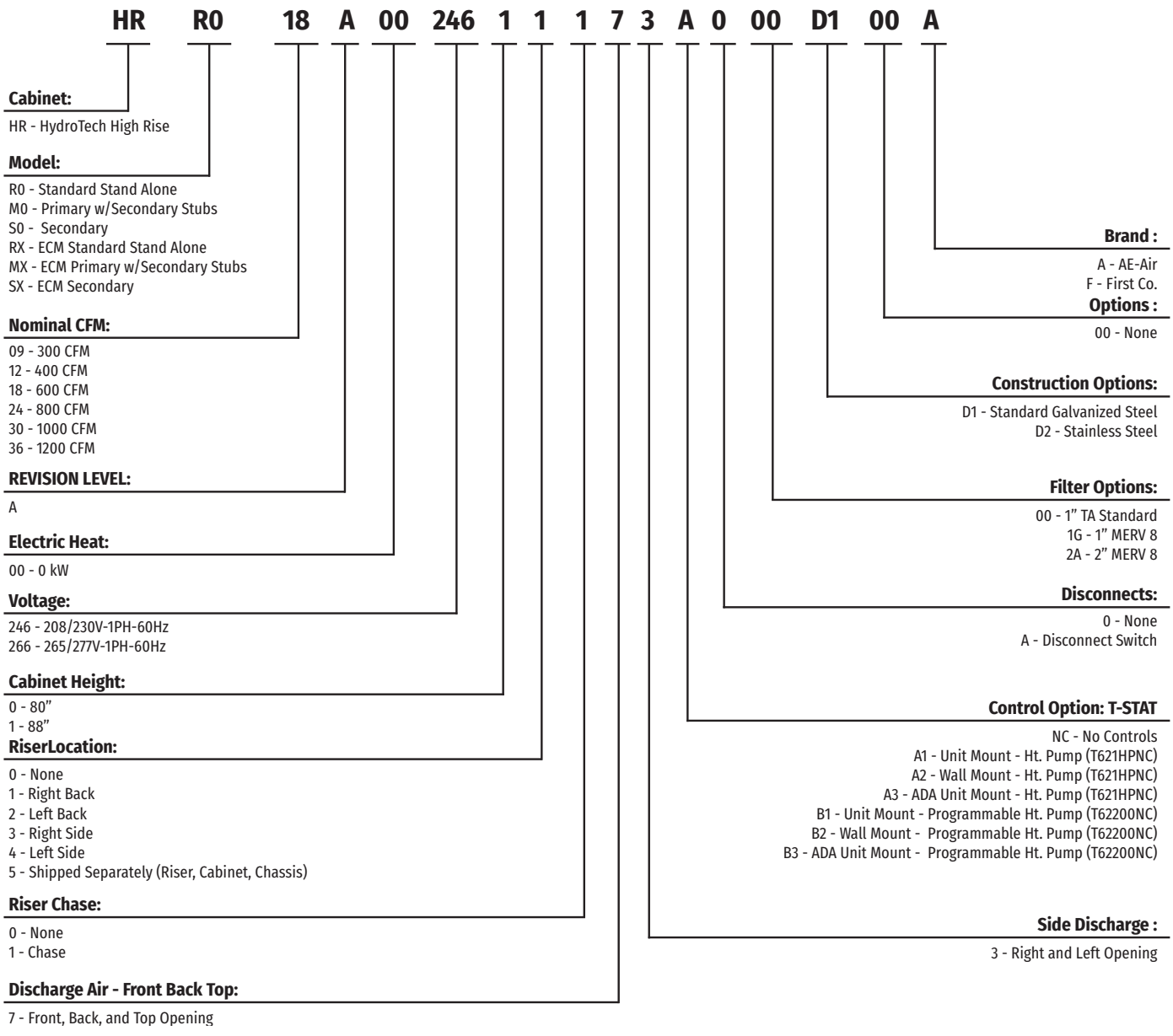
HRC(C,X)-FHR Series

COMMERCIAL WATER SOURCE HEAT PUMP

MODEL NOMENCLATURE

Cabinet – HydroTech High Rise



HRC(C,X)-FHR Series

COMMERCIAL WATER SOURCE HEAT PUMP

MODEL NOMENCLATURE

Chassis – HydroTech High Rise

HRCX 18 C 6 0 A H 0 0 0 00 A A

Model:
HRCC - PSC Chassis
HRCX - ECM Chassis - EnergyStar approved

Capacity:
09 - 300 CFM
12 - 400 CFM
18 - 600 CFM
24 - 800 CFM
30 - 1000 CFM
36 - 1200 CFM

Heat Exchanger Type:
C - Copper
N - Cupro-Nickel

Voltage:
2 - 208/230V-1PH-60Hz PSC
3 - 265/277V-1PH-60Hz PSC
6 - 208/230V-1PH-60Hz PSC
7 - 265/277V-1PH-60Hz PSC

Controls:
0 - Standard

Chassis Options:
0 - Standard Drain Pan
A - Stainless Steel Drain Pan

Autoflow Regulator:
(Refer to Chart Below)

Factory :
A - AE-Air
F - First Co.

Revision:
A - Current

Options:
00 - None

Shipping:
0 - Standard Chassis Shipped Separately

Heat Exchanger Option:
0 - Standard Tubing
E - Extended Range (insulated tubing)

Water and Pump Options:
0 - No Water Valve
S - Strainer w/ Blowdown No Valve
V - Standard Water Valve
W - Strainer w/ Blowdown and Valve

Auto-Flow Regulator (GPM) Code							
Tube		5/8" Sweat		7/8" Sweat			
Unit		09	12	18	24	30	36
0	0	No Flow Regulator					
C	1.5	1.5					
D	2.0	2.0	2.0				
E	2.5	2.5	2.5				
F	3.0	3.0	3.0	3.0			
G	3.5		3.5	3.5			
H	4.0			4.0	4.0		
I	4.5			4.5	4.5		
J	5.0			5.0	5.0	5.0	
K	5.5				5.5	5.5	
L	6.0				6.0	6.0	6.0
M	6.5				6.5	6.5	6.5
N	7.0				7.0	7.0	7.0
P	7.5					7.5	7.5
Q	8.0					8.0	8.0
T	9.0						9.0
V	10.0						10.0

HRC(C,X)-FHR Series

COMMERCIAL WATER SOURCE HEAT PUMP

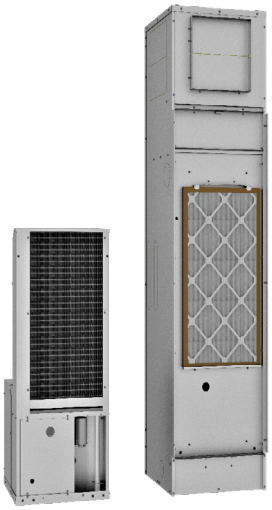
Vertical Hi-Rise

Available sizes for the vertical high-rise water-source heat pumps are 3/4-ton through 3- ton. Units are floor mounted and designed to be furred in behind drywall to blend into the space. Units' consist of separate components - cabinet behind finished wall and slide in refrigeration chassis.

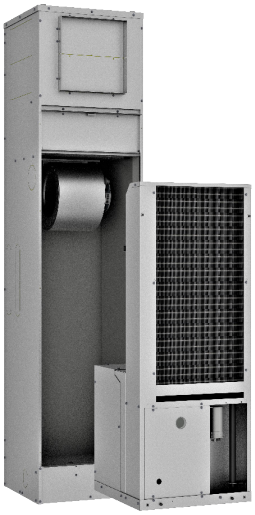
For multi-story building applications, the units may be stacked above each other by floor to minimize piping and electrical cost. Copper piping risers can be factory mounted to the rear or sides of the cabinet or can be fabricated and shipped in advance so the riser columns can be completely assembled, pressured tested, filled, and water circulated. This allows floor by floor completion and occupancy before the building is complete.

The high-rise configuration is often used in hotels, dorms and assisted living facilities where a single unit could provide comfort to a single or multiple room dwelling. Because the units are mounted directly in the space, ductwork is optional.

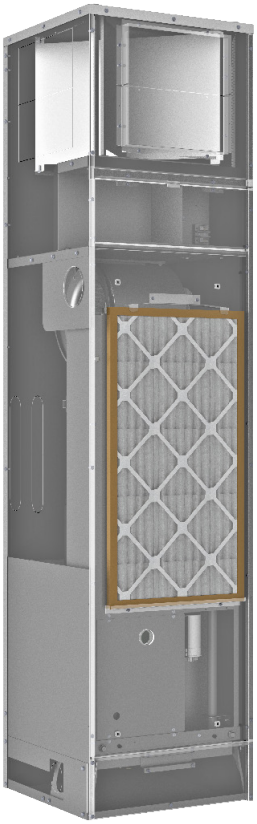
All water-source heat pumps are run tested with water and quality certified prior to leaving the factory. This assures quality standards from controls, water, refrigeration, and aesthetics to the building owner and installing contractor.

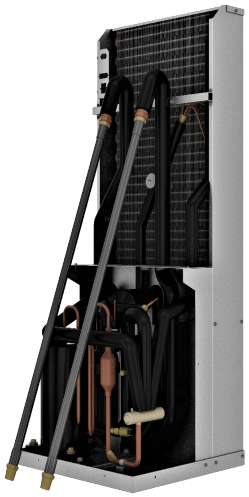


HRCX CHASSIS AND HR CABINET

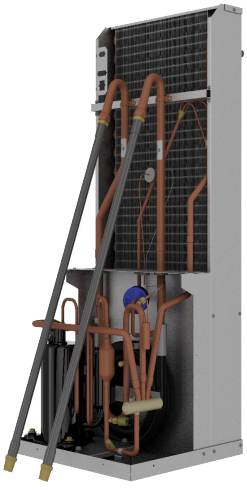


SLIDE IN HRCX CHASSIS TO HR CABINET





HRCX CHASSIS FULLY INSULATED PIPING FOR GROUND LOOP APPLICATIONS



HRCX CHASSIS UN-INSULATED PIPING FOR STANDARD WATER CONDITIONS

HRC(C,X)-FHR Series

COMMERCIAL WATER SOURCE HEAT PUMP

STANDARD FEATURES

Discharge arrangements - Field selectable discharge air arrangements with knockout on all 4 sides of unit cabinet.

Filter Section - Includes 1" disposable type fiberglass filters and premium extruded rubber gasket on panel.

Digital Control Module (DCM) - Controls unit operation and monitors all safety controls. (Patent Pending)

50 VA Transformer - Assists in accommodating accessory loads.

Unit Cabinet - Fabricated from a minimum of 18 gauge galvanized steel. Construction allows for large access panels to permit full access to internal components.

Cabinet Insulation - The cabinets are insulated with 3/4" FSK, 1.8 scf density, Temperature Limit 350° (177°C) (unfaced), meets requirements of ASTM C1071, type 1 rolls. Fire hazard: 25/50 Flame/ Smoke Developed Ratings (per ASTM E84, UL723, and CAN/ULC S102-M88.

Evaporative Coils, R-410A Refrigerant with TXV metering device - 3/8" inch staggered tube type construction with seamless copper tubes, and deep corrugated aluminum fins with straight edges. Fins are manufactured with full depth collars, drawn in the fin stock to provide accurate control of fin spacing and completely cover the copper tubes to lengthen coil life. The tubes are mechanically expanded into the fins for a permanent primary to secondary surface bond, assuring maximum heat transfer efficiency. Coil includes moisture carryover diffuser.

Condensate overflow lockout consist of an electronic sensor mounted to the drain pan. When condensate pan liquid reaches an unacceptable level, the unit is automatically deactivated and placed in a lockout condition.

Drain pans - The condensate pan is constructed of corrosion resistant material. The bottom of the drain pan is sloped on two planes which pitches the condensate to the drain connection. Each drain pan includes an electronic condensate overflow switch.

Unit provided with a random re-start timer to ensure a random delay in energizing each different HRC unit to minimize peak electrical demand during start-up from different operating modes or after building power outages.

Nuisance Trip Protection - Unit shall attempt to start up to three times with a fault signal. If the fault continues, the unit locks out.

The refrigerant circuit contains a thermal expansion device (TXV). Service pressure ports are factory supplied on the high and low pressure sides for easy refrigerant pressure or temperature testing.

Anti-short Cycle Timer, Alarm Relay - Activated if the unit locks out.

Field selectable settings:

5 Second Compressor Delay - Blower starts before the compressor, attenuates compressor start up sound.

45 Second Blower-off Delay - Increases cooling efficiency.

Continuous Dehumidification Mode - Selects continuous low speed fan operation for increased humidity removal.

STANDARD FEATURES (CONT.)

COPPER COAXIAL HEAT EXCHANGER

Features a tube in tube coaxial water-to-refrigerant heat exchanger and constructed of a convoluted copper (optional Cupro-Nickel) inner tube and steel outer tube with a designed refrigerant working pressure of 450 PSIG (3100 kPa) and designed water side working pressure of no less than 400 PSIG (2750 kPa)

COMPRESSOR

Units contain a high efficiency rotary, scroll compressor. External vibration isolation is provided by rubber mounting devices located underneath the mounting base of the compressor. Internal thermal overload protection is provided. Protection against excessive discharge pressure is provided by means of a high pressure switch. A loss of charge is provided by a low pressure safety switch.

REVERSING VALVE

A system reversing valve (4-way valve) is included with all heating/cooling units. This valve is piped to be energized in the cooling mode to allow the system to provide heat if valve failure were to occur. Once the valve is energized for cooling, it will remain energized until the control system is turned to the OFF position, or a heating cycle is initiated.

PSC MOTORS

Units come from the factory set to deliver rated airflow at nominal static pressure (0.30 in. wg.). The heat pump has a built in dehumidification function that runs the lower fan speed for 10 minutes, then increases the blower speed to the nominal CFM output until the thermostat is satisfied. All units have a 3 or 4 speed motor so the blower can be field adjusted to a higher speed tap when the system application has higher static requirements. Refer to the unit specification sheet and wiring diagram for speed selections. Motor leads should be changed on the Fan Speed Relay.

DC MOTORS (ECM)

Same dehumidification function as PSC, but no fan speed relays are used. Three motor leads connect directly to the control board. Gray is a 50% speed used when only “fan” is selected. Violet and White are the ramp up speeds used when in normal heating or cooling modes. See wiring diagram for proper speed tap selection.

BLOWER ASSEMBLIES

Wheels are double width, double inlet (DWDI), forward curved, centrifugal type. They are statically and dynamically balanced for a smooth, quiet operation. The Class I housing is constructed of heavy gauge steel with die-formed inlet cones.

OPTIONS

Cabinet Construction for surface-mounted thermostat: Cabinet has pre-wired 2 x 4 x 1 7/8 deep electric box mounted for horizontal thermostat. Contractor must turn prior to dry walling if field-supplied vertical thermostat is used. Wire harness ends with 9-Pin Molex quick connector for easy connection to factory provied thermostats or can be cut off. See Cabinet decoder.

Optional Thermostat Wiring Harness (WHIP) Low voltage wire harness 15, 25, or 35 foot ending with 9-Pin Molex quick connector. Exits cabinet on top, left front corner. Thermostat cable is rated CL-2. See Cabinet decoder. Can be encased in BX conduit as special, contact factory.

Vacated Premises Control (VPC) The vacated premises operation is designed for extended periods of non- occupancy when the occupant desires the heat pump to operate in the cooling mode for a predetermined cycle time to help control indoor air conditions.

See Dip 1.7 for time selection of 1 or 2 hours per day.

The control kit consist of a rocker switch, wiring and a programmed chip that is installed on the control module by the licensed contractor.

HOME selection - if the switch is in the HOME position the heat pump will operate in its normal mode.

AWAY selection - if the switch is in the AWAY position and the thermostat is set to the "COOL" mode the heat pump will operate in accordance to the thermostat setting.

Additionally the heat pump will cycle on in the cooling mode for 15 minute run times either 4 or 8 times per day depending on Dip 1.7 selection. (See Installation Instructions). This option also includes an automatic reset feature. If a fault occurs, the system will shut down, but then automatically reset every 24 hours. If the same fault exists each day, the unit will lockout on the fourth day and have to be manually reset.

Optional Cabinet Stand

Heavy gauge galvanized sheet metal stand field-attached to bottom of cabinet, Contact factory.

Optional 2" Filter

2" filter improves air filtration and reduces maintenance.

Accessory filters (Not available for every application - check blower table for ESP)

1" thick, MERV 8, and MERV 11

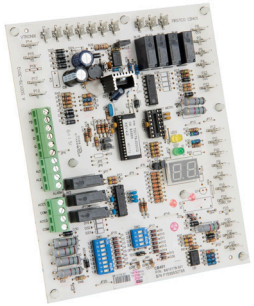
2" thick, MERV 8, MERV 11, MERV 13

AUTOMATIC FLOW DEVICES (OPTION): The automatic flow kit shall contain a Hays Mesurflo® automatic flow control valve. The automatic flow control valve shall be factory set to a rated flow, and shall automatically control the flow to within 10% of the rated value over a 40 to 1 differential pressure, operating range (2 to 80 PSID). Hays Automatic Balance Assembly shall include one or more precision sculptured brass or polyphenylsulfone orifi with an elastomeric diaphragm. Each automatic balancing valve will automatically control the flow rate to within ±10% of its rated flow, over a temperature range of 32 to 225°F, and a pressure differential range of 2 to 80 PSID. The valve body shall be constructed from hot forged brass UNS C37700 per ASTM B-283 latest revision.

OPTION (CONT.)

FLEXIBLE HOSES: Two flexible stainless-steel hoses are standard. Hoses consist of a stainless-steel outer braid with an inner core of tube made of a nontoxic synthetic polymer material. Fire rated materials per ASTM E84-00 (NFPA 255, ANSI/UL 723 & UBC 8-1). MPT (External Pipe Thread) fitting at one end; swivel with NPSH thread connector (Internal Thread) at the other end (seals via fiber or EPDM washer, shipped inside connection). Swivel connection provides union between chassis and risers. Temperature range of 15°F to 180°F. (Operation below 32°F requires antifreeze). Max working pressure of 400 PSID, min burst pressure of four times working pressure.

STRAINER WITH BLOWDOWN (OPTION):



Nexus UltraYTM Strainer with blowdown with valve body shall be constructed from DZR Brass (dezincification resistant), 600 WOG, 325°F. Strainer cap shall be constructed from DZR Brass (dezincification resistant), 600 WOG, 325°F with ¼" or ½" FNPT Port. Cap seal utilizing FKM O-Ring. Filter screen shall be constructed of 304 stainless steel and removable.

BALL VALVES (OPTION): Ball valves mounted between the unit and the supply and return lines of the loop to stop water flow to the unit in a maintenance or service situation.

Digital Control Module Features - Controls unit operation and monitors all safety controls.

Digital Diagnostic Display A two-digit display indicates either the current operational mode or a fault code.

24V Status LED - Green light indicates 24V power to the control module.

VPC (Vacated Premises Control) - Allows the unit to operate for either 1 or 2 hours per day (total) during extended periods of non-occupancy (requires optional kit).

Nuisance Trip Protection - Unit will attempt to start up to three times with a fault signal. If the fault continues, the unit locks out.

Primary Condensate overflow lockout, an electronic sensor mounted to the drain pan. When condensate pan liquid reaches an unacceptable level, the unit is automatically deactivated and placed in a lockout condition.

Secondary Condensate Overflow Lockout is standard.

High and Low Pressure Controls.

Water Coil Low Temperature Protection.

Over / Under Voltage Protection.

Random Re-start Timer.

Anti-short Cycle Timer.

Test Mode With LED Indicator - Speeds up control timers for service personnel.

Conformal Coating (both sides) for humidity and condensation protection.

Alarm Relay - Activated if the unit locks out.

50VA Transformer - Assists in accommodating accessory loads.

100% Factory performed run test. Every unit is run test prior to packaging.

DIP SWITCHES (FIELD SELECTABLE SETTINGS)

- 5 Second Compressor Delay - Blower starts before the compressor, which helps attenuate compressor
- 45 Second Blower-off Delay-Increases cooling efficiency.
- Accessory Relays (2)-Relays can be selected to cycle with either the fan or compressor. Relay "1" can be configured for use with slow opening water valves (60 second pre-compressor initialization) and relay "2" can be configured for a 30 second post fan delay.

HRC(C,X) Series

STANDARD FEATURES

MODEL - SIZE	HRCC	9	12	18	24	30	36
Compressor (1 Each)	1 Each	Rotary			Scroll		
Refrigerant Type		**R410A**					
Factory	(Lb.) [oz.]	1.7 [27]	2.7 [43]	2.7 [43]	3.7 [59]	3.7 [59]	3.6 [57]
Motor	Type	PSC					
	Speeds	3					
	HP [kw]	1/12 [0.06]	1/10 [0.07]	1/4 [.18]	1/6 [.12]	1/2 [.37]	1/2 [.37]
Blower Wheel (Dia. x W)	(Dia x W) [cm]	6.75 x 7 [17.15 x 17.78]		9 x 7 [22.86 x 17.78]			10 x 8 [25.4 x 20.32]
COAX Volume	(US Gallons)	0.116	0.116	0.144	0.544	0.544	0.544
Condenser Water Connections	(in)	1/2	1/2	3/4	1	1	1
Condensate Connection	I.D. (in) / O.D. (in)	7/8 / 1-1/8					
Air Coil Dimension	(W x H) in. [cm]	14 x 28 [5.5 x 11.0]			18 x 30 [7.1 x 11.8]		
Standard TA Filter 1"	Size in. [cm]	16 x 30 [6.3 x 11.8]			20 x 32 [7.9 x 12.6]		
Operating Weight	Lb. [kg]	Weight					
Chassis		125 [57]	128 [58]	131 [59]	182 [83]	185 [84]	188 [85]
80" Cabinet		128 [58]			173 [78]		175 [79]
88" Cabinet		143 [65]			188 [85]		190 [86]

MODEL - SIZE	HRCX	9	12	18	24	30	36
Compressor (1 Each)	1 Each	Rotary			Scroll		
Refrigerant Type		**R410A**					
Factory	(Lb.) [oz.]	1.7 [27]	2.7 [43]	2.7 [43]	3.7 [59]	3.7 [59]	3.6 [57]
Motor	Type	ECM					
	Speeds	Multiple					
	HP [kw]	1/4 [.18]	1/4 [.18]	1/3 [.24]	1/3 [.24]	1/2 [.37]	1/2 [.37]
Blower Wheel (Dia. x W)	(Dia x W) in. [cm]	6.75 x 7 [17.15 x 17.78]		9 x 7 [22.86 x 17.78]			10 x 8 [25.4 x 20.32]
COAX Volume	(US Gallons)	0.116	0.116	0.144	0.544	0.544	0.544
Condenser Water Connections	(in)	1/2	1/2	3/4	1	1	1
Condensate Connection	I.D.(in) / O.D.(in)	7/8 / 1-1/8					
Air Coil Dimension	(W x H) in. [cm]	14 x 28 [5.5 x 11.0]			18 x 30 [7.1 x 11.8]		
Standard TA Filter 1"	(W x H) in. [cm]	16 x 30 [6.3 x 11.8]			20 x 32 [7.9 x 12.6]		
Operating Weight	Lb. [kg]	Weight					
Chassis		125 [57]	128 [58]	131 [59]	182 [83]	185 [84]	188 [85]
80" Cabinet		128 [58]			173 [78]		175 [79]
88" Cabinet		143 [65]			188 [85]		190 [86]

HRC(C,X) Series

ELECTRICAL DATA

PSC - ELECTRICAL DATA 208/230V-1-60							
MODEL NUMBER	VOLTAGE	COMPRESSOR		BLOWER		MIN. CIRCUIT AMPACITY	MAX. CIRCUIT PROTECTION
		RLA	LRA	FLA	HP		
HRCC09	208/230V-1-60	3.7	22	0.6	1/12	6	15
HRCC12	208/230V-1-60	4.7	25	0.65	1/10	7	15
HRCC18	208/230V-1-60	7.0	38	1.4	1/4	11	15
HRCC24	208/230V-1-60	10.9	62.9	1.6	1/6	16	25
HRCC30	208/230V-1-60	12.8	67.8	3.1	1/2	20	30
HRCC36	208/230V-1-60	15.4	82.6	3.1	1/2	23	35

PSC - ELECTRICAL DATA 265V-1-60							
MODEL NUMBER	VOLTAGE	COMPRESSOR		BLOWER		MIN. CIRCUIT AMPACITY	MAX. CIRCUIT PROTECTION
		RLA	LRA	FLA	HP		
HRCC09	265V-1-60	3.5	22	0.7	1/15	6	15
HRCC12	265V-1-60	4.2	22	0.65	1/10	6	15
HRCC18	265V-1-60	6.0	30	1.4	1/4	9	15
HRCC24	265V-1-60	9.0	54	1.4	1/6	13	20
HRCC30	265V-1-60	11.2	60	2.7	1/2	17	25
HRCC36	265V-1-60	12.2	72	2.7	1/2	18	30

ECM - ELECTRICAL DATA 208/230V-1-60							
MODEL NUMBER	VOLTAGE	COMPRESSOR		BLOWER		MIN. CIRCUIT AMPACITY	MAX. CIRCUIT PROTECTION
		RLA	LRA	FLA	HP		
HRCX09	208/230V-1-60	3.7	22	2.3	1/4	7	15
HRCX12	208/230V-1-60	4.7	25	2.3	1/4	9	15
HRCX18	208/230V-1-60	7.0	38	2.8	1/3	12	15
HRCX24	208/230V-1-60	10.9	62.9	2.8	1/3	17	25
HRCX30	208/230V-1-60	12.8	67.8	4.1	1/2	21	30
HRCX36	208/230V-1-60	15.4	82.6	4.1	1/2	24	35

ECM - ELECTRICAL DATA 265V-1-60							
MODEL NUMBER	VOLTAGE	COMPRESSOR		BLOWER		MIN. CIRCUIT AMPACITY	MAX. CIRCUIT PROTECTION
		RLA	LRA	FLA	HP		
HRCX09	265V-1-60	3.5	22	2.3	1/4	7	15
HRCX12	265V-1-60	4.2	22	2.3	1/4	8	15
HRCX18	265V-1-60	6.0	30	2.6	1/3	11	15
HRCX24	265V-1-60	9.0	54	2.6	1/3	14	20
HRCX30	265V-1-60	11.2	60	3.6	1/2	18	25
HRCX36	265V-1-60	12.2	72	3.6	1/2	19	30

HRC(C,X) Series

CAPACITY DATA

PERFORMANCE DATA - CERTIFIED AT AHRI/ISO 13256-1 CONDITIONS										
MODEL NUMBER	NOM. CFM (PSC)	GPM	WATER LOOP (EWT)				Ground Water (EWT)			
			86 deg. F		68 deg. F		59 Deg.F		50 Deg.F	
			COOLING	EER	HEATING	COP	COOLING	EER	HEATING	COP
HRCC09	300	2.3	9,300	14.5	11,000	4.5	10,900	22.5	9,000	3.8
HRCC12	365	2.6	11,200	13.5	13,600	4.3	13,100	20.5	11,100	3.6
HRCC18	650	5.1	18,100	13.5	20,300	4.3	20,800	20.0	16,500	3.6
HRCC24	790	6.0	23,100	13.4	30,400	4.5	27,100	20.3	21,200	3.6
HRCC30	900	7.5	27,500	15.0	32,500	4.5	31,000	20.0	26,000	3.6
HRCC36	1135	9.0	33,500	14.5	38,000	4.5	35,000	20.3	32,000	4.0

AHRI/ISO 13256-1 Conditions DATA AT 208V-230V/1/60

Cooling Entering Air temperature = 80.6ºF WB / 66.2ºF DB
Cooling Entering Fluid Temperature = 86ºF

Heating: Entering air = 68ºF DBº / 59º F WB
Heating Entering Air Temperature = 68ºF

PERFORMANCE DATA - CERTIFIED AT AHRI/ISO 13256-1 CONDITIONS													
MODEL NUMBER	NOM. CFM (ECM)	GPM	WATER LOOP (EWT)				Ground Water (EWT)				Ground Water (EWT)			
			86 deg. F		68 deg. F		59 deg. F		50 deg. F		77 deg. F		32 deg. F	
			COOLING	EER	HEATING	COP	COOLING	EER	HEATING	COP	COOLING	EER	HEATING	COP
HRCX09	350	2.3	9,600	15.5	9,300	5.0	11,400	25.5	8,000	4.1	9,800	17.1	6,500	3.6
HRCX12	400	2.6	11,800	15.0	12,400	4.6	14,000	25.0	9,800	4.1	12,400	18.0	7,900	3.6
HRCX18	600	4.5	18,200	14.5	20,500	5.0	21,000	23.0	17,000	4.1	19,000	17.1	13,500	3.6
HRCX24	800	6.0	24,200	16.5	28,000	5.0	27,000	26.5	22,000	4.4	25,000	20.0	17,500	3.6
HRCX30	900	7.5	27,000	16.0	33,800	5.0	31,500	24.5	26,000	4.1	29,000	18.0	21,000	3.6
HRCX36	1125	9.0	34,000	14.5	38,000	4.7	35,500	21.6	31,500	4.1	34,100	17.1	25,000	3.6

AHRI/ISO 13256-1 Conditions DATA AT 208V-230V/1/60

Cooling Entering Air temperature = 80.6ºF WB / 66.2ºF DB
Cooling Entering Fluid Temperature = 86ºF

Heating: Entering air = 68ºF DBº / 59º F WB
Heating Entering Air Temperature = 68ºF

HRC(C,X) Series

BLOWER PERFORMANCE

PSC BLOWER DATA						
MODEL NUMBER	FAN SPEED	CFM vs EXTERNAL STATIC PRESSURE				
		0.1	0.2	0.3	0.4	0.5
HRCC09	High			430	400	370
	Medium	360	340	310	280	250
	Low	280	250	220		
HRCC12	High	480	460	430	400	370
	Medium	360	340	310	280	
	Low	280	250			
HRCC18	High	810	760	710	650	600
	Medium	740	690	640	590	540
	Low	680	640	600	550	490
HRCC24	High	900	860	810	740	660
	Medium	760	740	700	660	590
	Low	590	570	550		
HRCC30	High	1170	1110	1050	970	890
	Medium	1080	1030	970	900	820
	Low	970	930	880	810	730
HRCC36	High	1230	1170	1090	1010	910
	Medium	1170	1110	1050	970	890
	Low	1080	1030	970	900	850
CFM rated at 208V for 208-230V units						

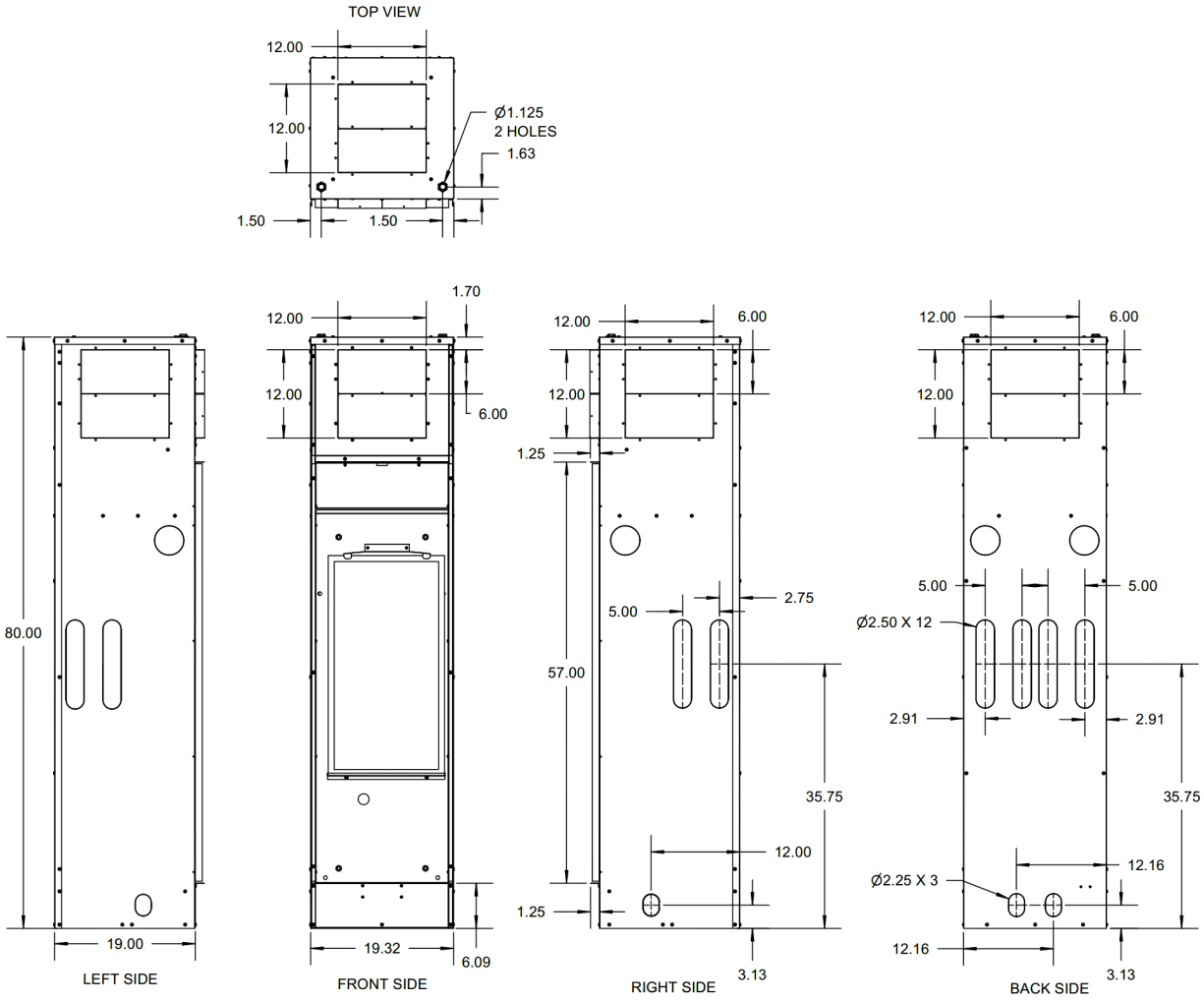
ECM BLOWER DATA						
MODEL NUMBER	FAN SPEED	CFM vs EXTERNAL STATIC PRESSURE				
		0.1	0.2	0.3	0.4	0.5
HRCX09	T3	430	410	380	360	340
	T2	360	330	300	280	250
	T1	290	260	230		
HRCX12	T3	490	460	440	420	410
	T2	390	360	340	310	290
	T1	310	280			
HRCX18	T3	770	740	700	660	610
	T2	650	620	590	560	530
	T1	550	520	490	450	
HRCX24	T3	940	910	870	840	800
	T2	840	810	770	740	700
	T1	720	690	650	610	
HRCX30	T3	1260	1210	1140	1060	990
	T2	1080	1050	1020	980	940
	T1	990	960	930	900	870
HRCX36	T3	1300	1230	1150	1080	990
	T2	1260	1210	1140	1060	970
	T1	1080	1050	1020	980	940
CFM rated at 208V for 208-230V units						

HRC(C,X) Series

DIMENSIONAL DATA

Unit Size: 09, 12 and 18

80” TALL CABINET



HT Vertical High Rise Heat Pump Cabinet

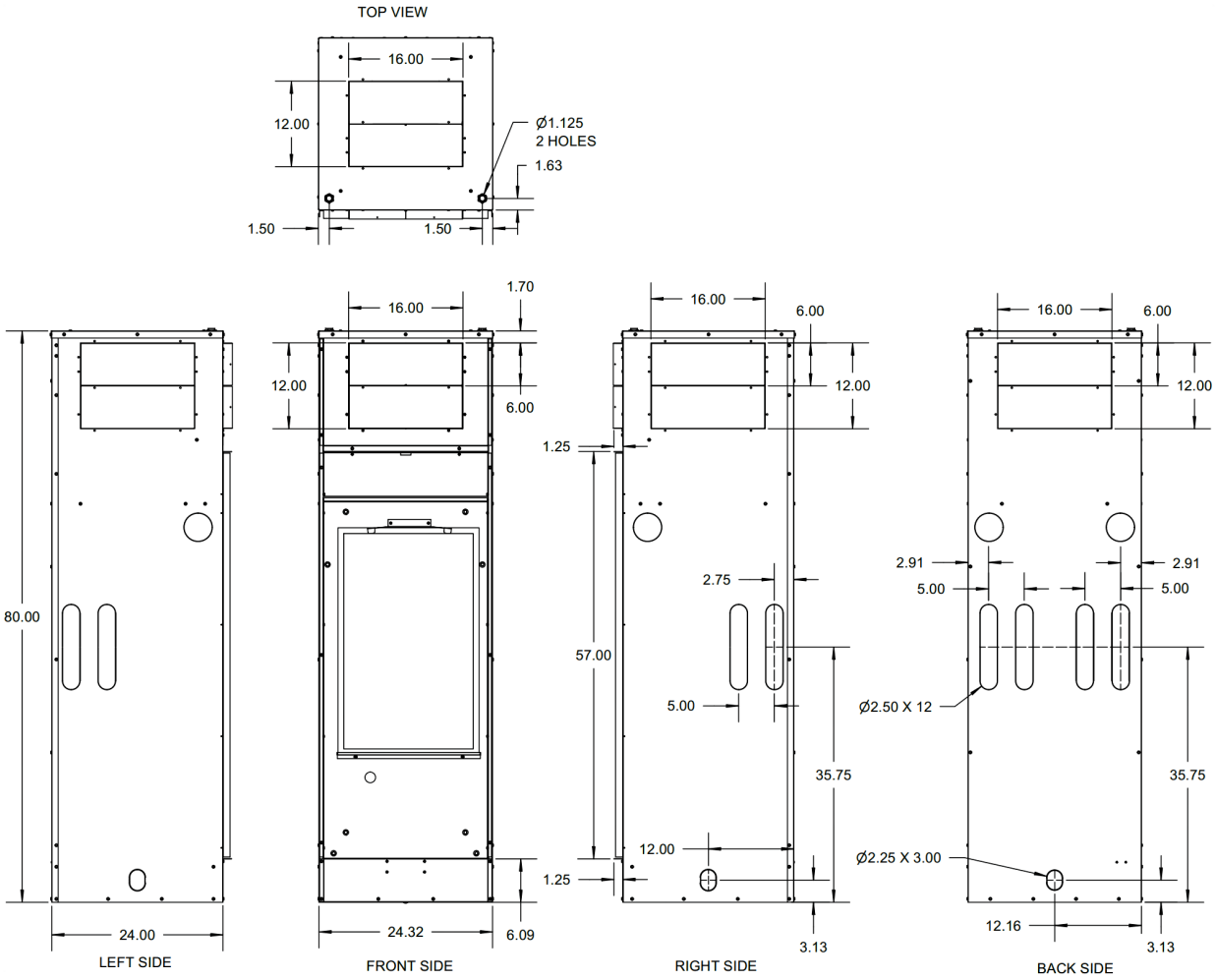
NOTES:

1. All dimensions are in inches.
2. The return air/control box side is defined as front of cabinet. Supply air K.O.’s and riser K.O.’s are on all panels. Supply air grilles can be on any side except riser side.
3. Units with 24v surface mount T/stat option have 2x4 box factory installed in horizontal position. Contractor must turn box before dry walling if customer is using vertical thermostat type.
4. Cabinet shown is Style 3, risers back right.
5. Supply air K.O.’s have to be field removed.
6. Supply air angles are shipped loose. Break off for 6” or 8”. Position inside and attach with screws.
7. Service clearances: Front requires 24” from finished wall plus 4” added to cabinet width.

DIMENSIONAL DATA

Unit Size: 24, 30 and 36

80” TALL CABINET



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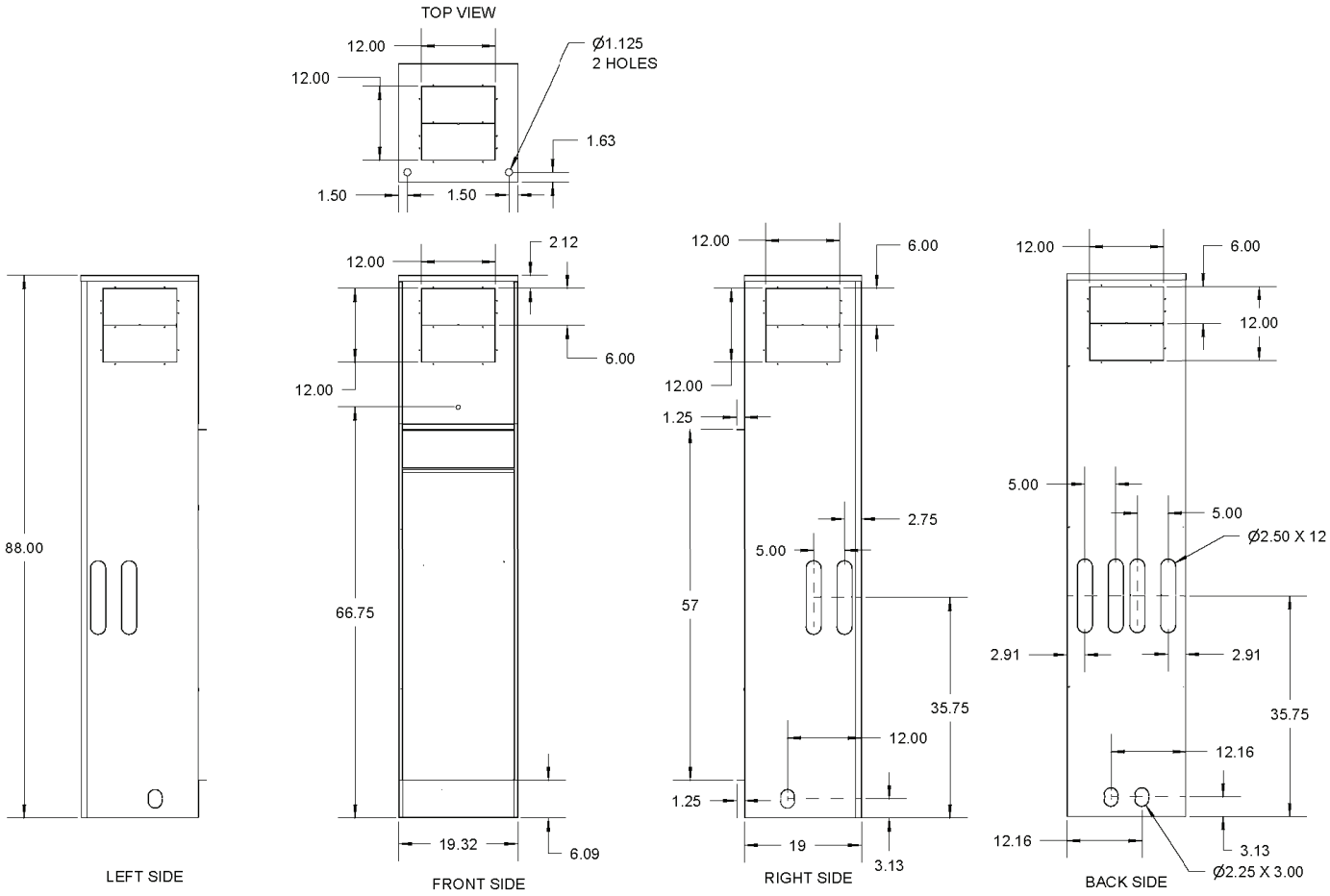
HRC(C,X) Series

DIMENSIONAL DATA

Unit Size: 09, 12 and 18

88” TALL CABINET



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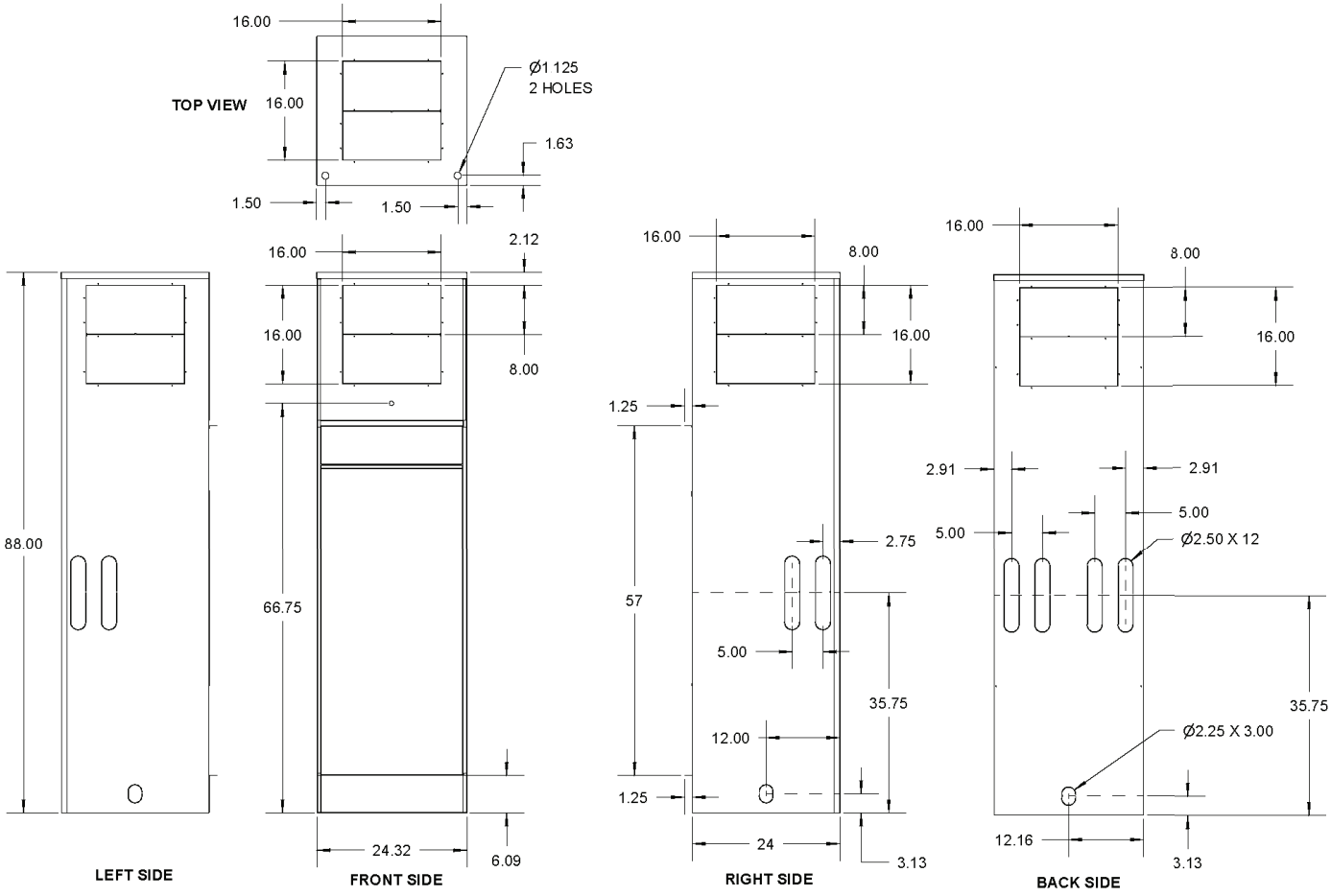
88” TALL CABINET



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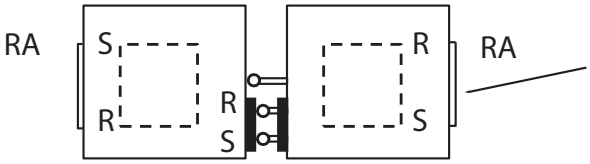
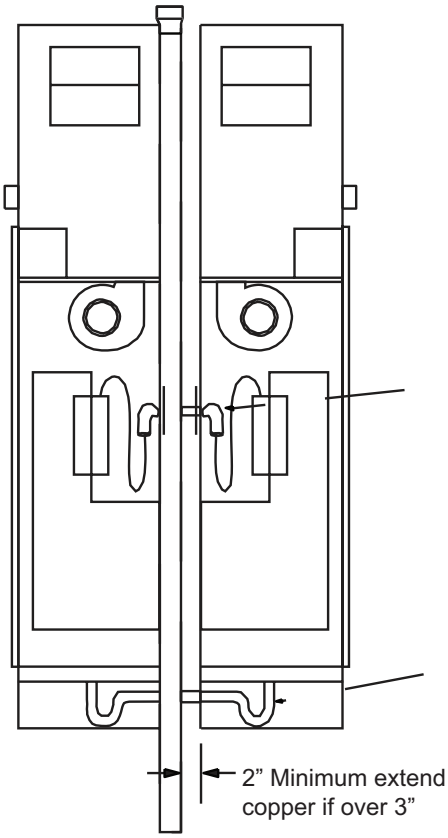
PRIMARY/SECONDARY CABINET INSTALLATION

TOP VIEW



Field connect hoses in both cabinets supply to supply and return to return (Cabinet supply is closest to corner, chassis supply is on left facing air coil)

SIDE VIEW

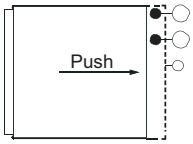


Field braze valve package (shut off with tubing)

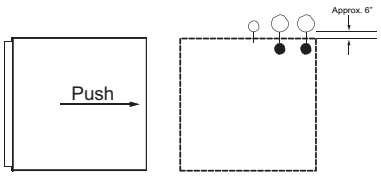
Field install P-Trap and Clamp both ends

When cabinets are pushed up to risers allow sufficient clearance. Shutoffs should be inside cabinet.

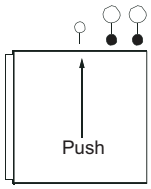
TOP VIEW



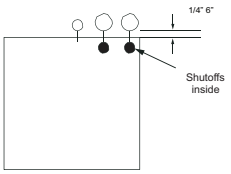
Step 1
Risers Opposite Return Air Opening



Step 1
Risers Adjacent to Return Air Opening



Step 2

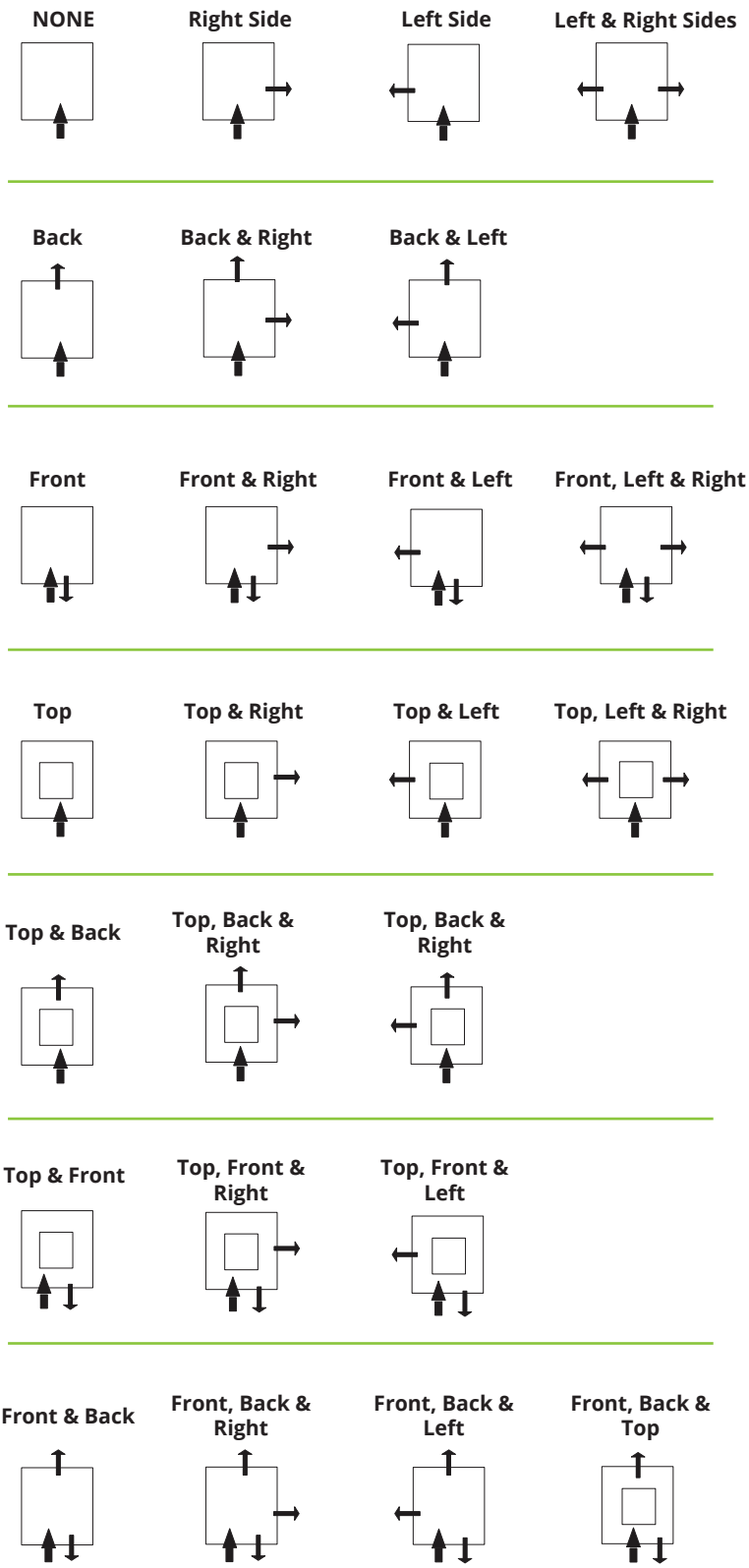


Final Cabinet Position

VALVE PACKAGES AND ACCESSORIES

CABINET CONFIGURATIONS

Air Flow Configuration



= RETURN AIR (AIR ENTERING CABINET)

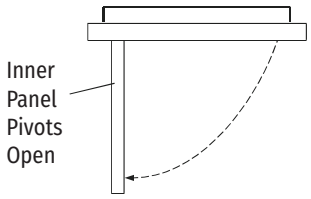
= SUPPLY AIR (AIR LEAVING CABINET)

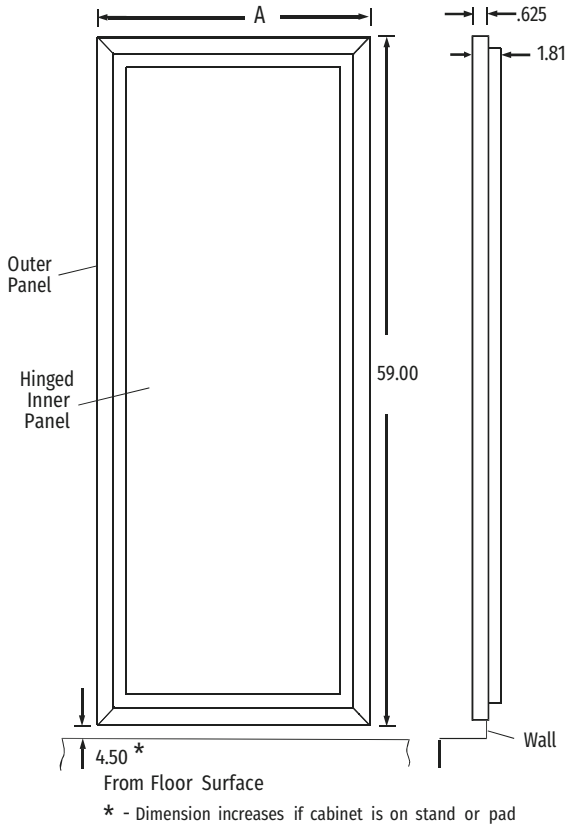
NOTES:
1. Front is return air side and control box location.
2. Risers can be on any side without return or supply air openings.
3. All sides and top have KO's.

HRC(C,X)-FHR Series

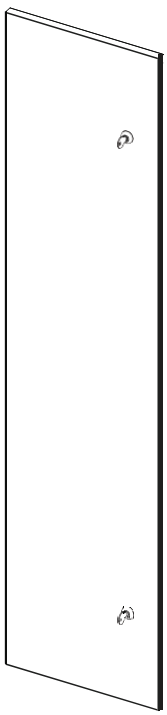
COMMERCIAL WATER SOURCE HEAT PUMP

ACCESS RETURN PANEL

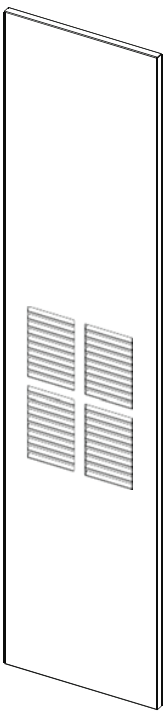




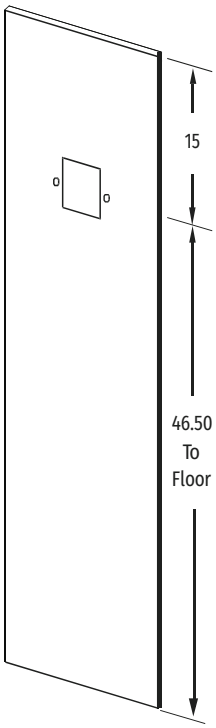
Front View
Standard Panel



Optional
Inner
solid panel



Optional
Inner panel
with Grille
(Stamped Louvers)



Optional
Inner Panel with
holes to mount
ADA Thermostat

Unit	A
09-18	21.50
24-36	25.50

PANEL PART NUMBERS	
09-18 SIZE	9PWHR01
24-36 SIZE	9PWHR02

NOTES:
1. Dimensions are in inches.
2. Panel powder coated ceiling white.
3. Inner panel pivots open 90°, for filter replacement without removing panel.
4. Shipped as left-hand pivot.

HRC(C,X)-FHR Series

COMMERCIAL WATER SOURCE HEAT PUMP

HOSE SPECIFICATION

STAINLESS STEEL HOSE

- Designed for water-source heat pump applications.
- Kevlar® reinforced EPDM core with ANSI 302/304 stainless steel outer braid.
- Fire rated materials per ASTM E 84-00 (NFPA 255, ANSI/UL 723 & UBC 8-1).
- MPT (External Pipe Thread) fitting at one end; swivel with NPSH thread connector (Internal Thread) at the other end (seals via fiber or EPDM washer, shipped inside connection).
- Swivel connection provides union between chassis and risers.
- Brass fittings, stainless steel ferrules.
- Temperature range of 15°F [9°C] to 180°F [82°C]. (Operation below 32°F requires antifreeze)
- Max. working pressure of 400 psi [2756 kPa].
- Min. burst pressure of four times working pressure

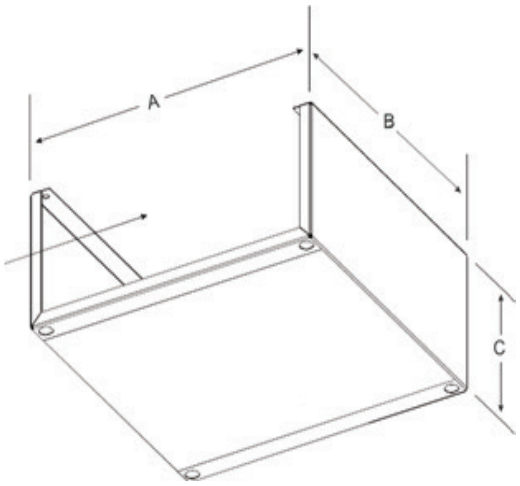
PHYSICAL DATA						
Unit	**Part #**	**Inside Diameter inches**	**Length feet (cm)**	**Working Pressure psi (kPa)**	**Min. Burst Pressure psi (kPa)**	**Min. Bend Radius inches (mm)**
09, 12		0.50	3 (91)	400 (2756)	1600 (11024)	2.5 (63.5)
15, 18		0.75	3 (91)	400 (2756)	1600 (11024)	4.5 (114.3)
24-36		1.00	3 (91)	400 (2756)	1600 (11024)	5.5 (139.7)

CABINET PLATFORMS SPECIFICATIONS

- 12” tall
- 16 Gauge galvanized steel
- Attached to cabinet with 4 screws
- Field installed

Unit	A	B	C
09-18	18.86	18.25	12
24-36	23.86	23.25	

Top, front and Back are open



DISCHARGE AIR OPENINGS

DISCHARGE AIR OPENINGS (Any Combination, Top and Sides, Grilles or Ductwork)				
Unit Size	**1 Opening**	**2 Openings**	**3 Openings**	**4 or more Openings**
9FHR,12FHR	12" x 12"	12" x 6"		
18FHR		12" x 12"	12" x 6"	
24FHR		16" x *	16" x **	
30FHR		16" x *	16" x **	
36FHR		16" x *	16" x **	

* - 88" CABINET = 16"
** - 88" CABINET = 8"

Standard cabinet openings and grille sizes. (W x H)

88" cabinet models 09-18

front, back, or sides 12 x 12 or 12 x 6 and top 12 x 12.

88" cabinet models 24-36

front, back, or sides 16 x 16 or 16 x 8 and top 16 x 16.

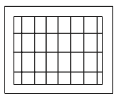
NOTES:
1. When selecting supply air openings/grilles consider CFM, velocity (throw), added static pressure and sound.
2. If custom grille sizes are used - area should be greater or equal to above.
3. If using more than recommended number of opening, total CFM may be reduced or be unstable (PSC or ECM Motor).

Important!

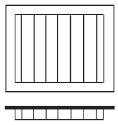
Top air discharge units will require turning vanes and/or a volume damper for proper air flow and balancing, to minimize turbulence. These components must be field furnished and installed in accordance with SMACNA guidelines.

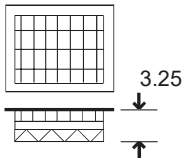
GRILLES

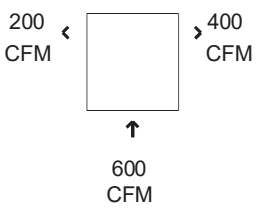
Grilles are shipped loose for field installation after drywall has been finished.
Grilles are brushed aluminum or painted (White).
Overall dimensions - add 1.25 to nominal dimensions.



1.88







Single Deflection- Adjustable vertical blades for controlling horizontal path of discharge air (Left/Right).

Double Deflection- Adjustable vertical and horizontal blades for controlling horizontal and vertical path of discharge air. (Left/Right and Up/Down) Recommended for all standard applications.

Double Deflection with Opposed Blade Damper- Addition of opposed blade damper to grille allows control of air volume (CFM) and path of discharge air. Recommended for applications requiring unequal air flow or side discharge grille(s) with additional top discharge air opening.

Unequal Air Flow - Air discharges requiring different air volumes (CFM).Use double deflecton with opposed blade damper grills.

Nominal Grille Size	Double Deflection Free Area (Sq. Ft)		
	Deflection 0º	**Deflection 22 1/2º**	**Deflection 45º**
12 x 6	0.30	0.28	0.22
12 x 12	0.65	0.59	0.48
16 x 8	0.61	0.55	0.44
16 x 12	0.93	0.85	0.68
16 x 16	1.25	1.12	0.90

HRC(C,X)-FHR Series

COMMERCIAL WATER SOURCE HEAT PUMP

GUIDE SPECIFICATIONS

General
Equipment shall be completely assembled, piped, internally wired, fully charged with R-410A refrigerant and test operated at the factor y. Filters, thermostat field inter face terminal strip, and all safety controls are furnished and factory installed. The 3-ton and below equipment shall contain ETL, CETL and ISO -ARI 13256-1 listings and labels prior to leaving the factory.

Air to Air Refrigerant Coil
Internally finned, 3/8-inch copper tubes mechanically bonded to a configured aluminum plate fin shall be standard. Coils shall be leak tested at the factory to ensure the pressure integrity. The coil shall be leak tested to 450 psig and operating pressure tested to 650 psig. The tubes are to be completely evacuated of air and correctly charged with proper volume of refrigerant prior to shipment. The refrigerant coil distributor assembly shall be of orifice style with round copper distributor tubes. The tubes shall be sized consistently with the capacity of the coil. Suction header shall be fabricated from rounded copper pipe. A thermostatic expansion valve shall be factory selected and installed for a wide range of control.

Reversing Valve
A system reversing valve (4-way valve) is included with all heating/cooling units. This valve is piped to be energized in the cooling mode to allow the system to provide heat if valve failure were to occur. Once the valve is energized for cooling, it will remain energized until the control system is turned to the OFF position, or a heating cycle is initiated. Units with the cooling only option will not receive a reversing valve.

Automatic Flow Devices (Option)
The automatic flow kit shall contain a Hays Mesurflo® automatic flow control valve, two ball valves, two flexible stainless steel hoses, a high flow Y-strainer, and may include a strainer blow- down and various other accessories. The automatic flow control valve shall be factory set to a rated flow, and shall automatically control the flow to within 10% of the rated value over a 40 to 1 differential pressure, operating range (2 to 80 PSID). Operational temperature shall be rated from fluid freezing, to 225°F. The valve body shall be constructed from hot forged brass UNS C37700 per ASTM B-283 latest revision. For more information pertaining to the automatic balancing hose kits. See literature documentation.

Ball Valves (Option)
Ball valves shall be field installed between the unit and the supply and return lines of the loop to stop water flow to the unit in a maintenance or service situation.

Cabinet
The structural integrity of the cabinets shall remain unaffected by the removal of any or all access panels. All panels shall be insulated with ¾" Foil Face fiberglass. The insulation meets the erosion requirements of UL 181. It has a flame spread of less than 25 and a smoke developed classification of less than 50 per ASTM E-84 and UL 723. Access for inspection and cleaning of the unit drain pan, coils and fan section shall be provided. The unit shall be installed for proper access.

Compressors

Unit contains a high efficiency rotary or scroll compressor. External vibration isolation is provided by rubber mounting devices located underneath the mounting base of the compressor. Provide internal thermal overload protection against excessive discharge pressure is provided by means of a high pressure switch. A loss of charge is provided by a low pressure safety switch.

Basic Controls
Units shall include the following controls and functions. Service test mode with diagnostic LED shall allow service personnel to check the operation of the FHR and control system efficiently. Upon entering Test mode, time delays speed up, and the Status LED displays a code to indicate the last fault experienced. This mode shall provide easy fault diagnosis; based on the fault code that the status LED displays.

24V Status LED
Shall be Green light indicators proving 24V power to the control module.

VPC (Vacated Premises Control Option)
Shall allow the unit to operate for either 1 or 2 hours per day (total) during extended periods of no occupancy. (Requires optional kit).

Nuisance Trip Protection
Unit shall attempt to start up to three times with a fault signal. If the fault continues, the unit locks out.

Condensate Overflow lock out shall consist of an electronic sensor mounted to the drain pan. When condensate pan liquid reaches an unacceptable level, the unit is automatically deactivated and placed in a lockout condition.

GUIDE SPECIFICATIONS (CONT.)

Provide High and Low Pressure Switches.

Provide condenser coil low temperature protection, high/low voltage protection because of high or low voltage conditions.

Provide a random re-start timer to ensure a random delay in energizing each different HRC unit to minimize peak electrical demand during start-up from different operating modes or after building power outages. Provide the circuit board with conformal coating (both sides of board) for humidity and condensation protection.

Provide Anti-short Cycle Timer, Alarm Relay - Activated if the unit locks out. Provide Field selectable settings:

5 Second Compressor Delay - Blower starts before the compressor, attenuates compressor start up sound.

45 Second Blower-off Delay - Increases cooling efficiency.

Continuous Dehumidification Mode - Selects continuous low speed fan operation for increased humidity removal.
Provide Accessory Relays (2) - Relays can be selected to cycle with either the fan or compressor. Relay "1" can be configured for use with slow opening water valves (60 second pre-compressor initialization) and relay "2" can be configured for a 30 second post fan delay.

Drain Pans
The condensate pan shall be constructed of corrosion resistant material. The bottom of the drain pan shall be sloped on two planes which pitches the condensate to the drain connection. The drain pan shall be flame rated per UL945V-B.

Electrical
The unit control box shall contain all necessary devices to allow heating and cooling operation to occur from a remote wall thermostat. These devices shall be as follows:

- 24 VAC energy limiting class II [50 VA (minimum) transformer] 24 VAC blower motor relay
- 24 VAC compressor contactor for compressor control
- Thermostat connections shall be provided for ease of hook-up to a terminal strip located in the unit's control box.
- One inch filters shall be standard and factory installed. Hoses (option)
- Hoses shall consist of a stainless steel outer braid with an inner core of tube made of a nontoxic synthetic polymer material. The hoses shall be suitable for water temperatures ranging between 33°F and 211°F without the use of glycol.

Sound Attenuation (Option) Provide a heavy duty, insulated compressor cover that reduces unwanted compressor noise (DUE TO ACCESS), this option must be field installed on the unit before unit is installed).

Motors to be multi-speed, 230V, single phase, 60-Hz, permanent split capacitor (PSC) type, factory mounted to the blower assembly with rubber isolators.

Refrigerant Tubing
The refrigerant tubing shall be copper. This system shall be free from contaminants and conditions such as drilling fragments, dirt and oil.

Refrigerant Circuits
The refrigerant circuit shall contained a thermal expansion device (TXV). Service pressure ports shall be factory supplied on the high and low pressure sides for easy refrigerant pressure or temperature testing

Indoor Blower Wheels are double width, double inlet (DWDI), forward curved, centrifugal type. They are statically and dynamically balanced for a smooth, quiet operation. The Class I housing is constructed of heavy gauge steel with die-formed inlet cones.

Coaxial Heat Exchanger, features a tube in tube coaxial water-to-refrigerant heat exchanger and constructed of a convoluted copper (optional cupro-nickel) inner tube and steel outer tube with a designed refrigerant working pressure of 450 PSIG (3100 kPa) and designed water side working pressure of no less than 400 PSIG (2750 kPa)

Control Module and Safety Devices
Unit to include a control module that controls the units operation and monitors the safety controls that protect the compressor, heat ex-changer, wiring and other components from damage caused by operating outside of design conditions. Safety controls include the following:

- High pressure switch located in the refrigerant discharge line.
- Low pressure switch located in the refrigerant suction line.
- Water coil low temperature cutout sensor located on the heat exchanger to prevent unit operation below low temperature setting.
- Condensate overflow protection sensor located in the drain pan.
- The control module includes the following features:
    - **Anti-Short Cycle Timer** - 5 minute anti-short cycle protection for the compressor. NOTE: THE 5 MINUTE ANTI-SHORT CYCLE ALSO OCCURS AT POWER UP.
    - **Random Start** - The controller features a 5-80 second random start upon power up.
    - **Low Pressure Bypass Timer** - The low pressure switch input is bypassed for the initial 120 seconds of a compressor run cycle to prevent nuisance low pressure lockouts.
    - **Over / Under Voltage Shutdown** - Should an Over / Under Voltage condition be detected, the module will initiate a shutdown. Over / Under Voltage Shutdown is a in that if the voltage comes back with range of 18.5VAC to 31VAC, then normal operation will be restored.
    - **Alarm Relay** - The module has a set of contacts for remote fault indication. Contacts can be 24VAC output or converted to a dry contact.
    - **Test Mode** - Test pins can be momentarily jumped to enter into a 10 minute test mode period in which all time delays are sped up to 15 times. While in the test mode the LED Display will display a code representing the last fault in memory.

PACKAGING AND SHIPPING OPTIONS

Units Are Shipped FOB Factory

Chassis can be shipped 2 ways.

1. Upright in carton 4 per pallet, see figure 1.
2. Upright inside cabinet (risers shipped separate or customer supplied) 4 per pallet, see figure 1.

Cabinet without risers attached can ship upright 4 per pallet, see figure 1.

Cabinet with risers attached must be shipped horizontal and normally on dedicated open flatbed trailer either 3 or 6 per pallet, see figure 2 and 3. Cabinets are palletized to maximize shipping density then grouped by unit size, building, and floor where possible. Pallets are stretch wrapped and flatbed load is tarped for protection. Special shipping accommodations can be provided. Request added cost before quoting job, shipping cost could increase significantly and any additional charges will be billed. Some examples include, end fork pallets, reduced number of units per pallet, palletized specifically by riser, by floor, or over crating.

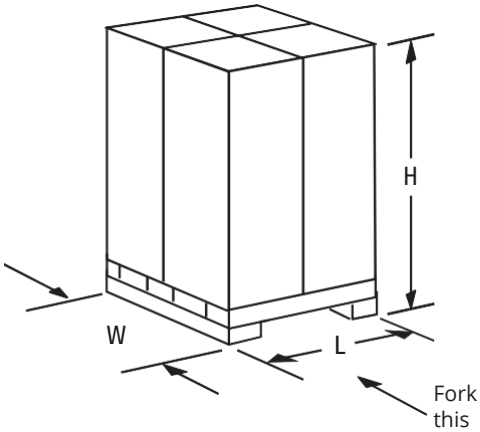


FIGURE 1

Vertical Shipping					
Description	Per 4 pack on pallet			Approx. Quantity Per 53 foot Box Trailer	Approximate Weight per Pallet
	Length	Width	Height		
Chassis 09-18	40	40	50	120 single stacked	500 lbs
Chassis 24-36	50	48	52	96 single stacked	750 lbs
Chassis 09-18	40	40	100	240 single stacked	500 lbs
Chassis 24-36	50	48	104	192 single stacked	750 lbs
Secondary Cabinet 09-18	43	43	85/93	112 single stacked	450 lbs
Secondary Cabinet 24-36	53	53	85/93	72 single stacked	700 lbs
Cabinet with Chassis 09-18	43	43	85/93	112 single stacked	960 lbs
Cabinet with Chassis 24-36	53	53	85/93	72 single stacked	1450 lbs

Shipping Height 93" for 88" cabinet small and large
Cabinets can be mixed on some loads
88" Cabinets cannot have stands factory assembled, must ship loose or units must ship horizontal.

Horizontal Shipping							
Description	Number of Cabinets per Pallet	Pallet			Up to 110" Long Riser Approx. Quality per 48 foot open Flatbed Trailer	111" to 120" Long Riser Approx. Quality per 48 foot open Flatbed Trailer	Approximate Weight per Pallet
		Length	Width	Height			
Cabinet 09-18	4	*	26	88	60	48	800 lbs
	8	*	50	88	60	48	1600 lbs
Cabinet 24-36	3	*	30	87	45	36	800 lbs
	6	*	59	87	45	36	1600 lbs

*- For length of pallet add 5" to riser length

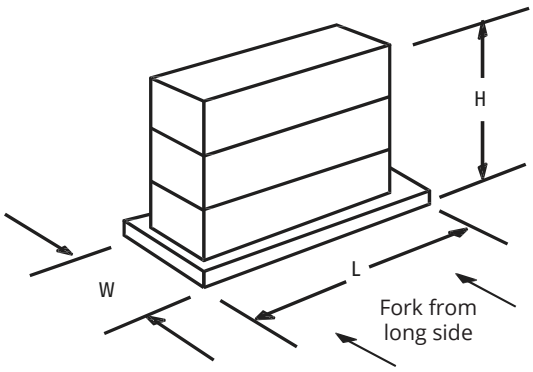


FIGURE 2

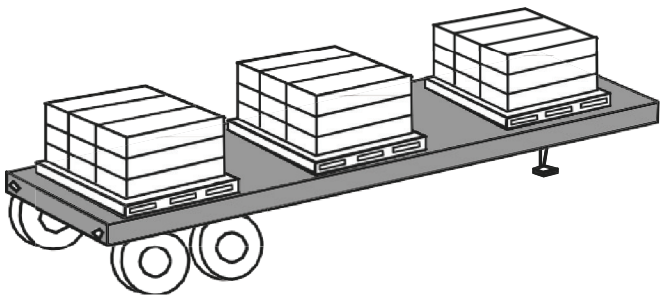


FIGURE 3