Water Source Heat Pumps

Product Catalog

Types: HRP 30 / HRP 40 / HRP 60 / HRP 80 / HRP 100
Unit Sizes: 3/4 to 2 1/2 Tons

EP3090681

CANADIAN ENERGY PERFORMANCE VERIFIED
RENDEMENT ENERGETIQUE VERIFIED

3090681
CAN/CSA STD

ETL LISTED
CONFORMS TO UL STD 1995

CERTIFIED TO C22.2 NO. 236

MEA
Accepted for use
City of New York
Department of Buildings
MEA No. 18-06-E
HTS Engineering Ltd.
ETL Listing 30717

ARI PERFORMANCE CERTIFIED
ANSI/ARI/ASHRAE/ISO Standard 13256-1
60 Hz Water Source HP
www.aridirectory.org

omega HEAT PUMPS

www.omega-heatpump.com

v4.1

Notes

Water Source Heat Pumps

Product Catalog

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Table of Contents

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Water Source Heat Pumps

Product Description

Quiet: The entire Omega Gold & Silver Series HRP product line has been developed to provide one of the quietest vertical stacking water source heat pump in the industry. Thousands of installed units prove this fact. Our units, when properly applied and installed, easily meet NC-36-37 within the suite.

Dependable

You can depend on our heat pump systems to provide year round heating and cooling to the occupants of your apartments and condominiums. Simply set the desired temperature and the heat pump will maintain it.

Serviceability

Each HRP unit has its own compressor and fan which are easily accessible through the return air panel. If repairs are required, a spare chassis can be inserted into the unit, allowing it to continuously operate while the damaged chassis is repaired offsite.

Energy Efficient

Unlike fan coil systems, the HRP system has the ability to transfer energy from one zone to another. During moderate weather, the sunny side of a building may require cooling while the shady side requires heating. When approximately one third of the units operate in cooling mode, no external heat is required.

Custom

Our units can be customized to meet the specific requirements of any project. Some options include: variable height dimensions, choice of supply air discharge locations and sizes, ultra quiet return air panel, and remote thermostat control.

Elegant

HRP units are simple to install. Installation progresses perfectly with the phases of building construction. When construction is complete, the unit becomes a seamless part of the room.

Quality

Each Omega Gold & Silver Series unit is tested to the strictest standards to maintain the highest level of quality control. Each unit is checked in a state of the art test facility before it is shipped to the job site. Large scale production accomodates short lead-times and economies of scale enable low costs without sacrificing quality.

Water Source Heat Pumps

omega HEAT PUMPS

Phases of Construction

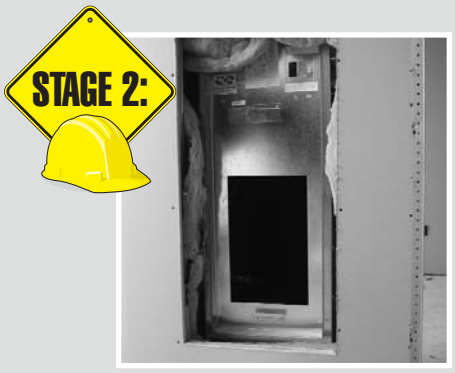
HRP units are simple to install. The installation integrates perfectly with the phases of building construction. The units are installed indoors out of the weather.

Water Source Heat Pumps

Phases of Construction

Casing and Plenum

During the initial stages of construction, the outer casing and plenum are installed.



Walls and Instalation

As the construction progresses, the casing and plenum become part of the interior wall structure.

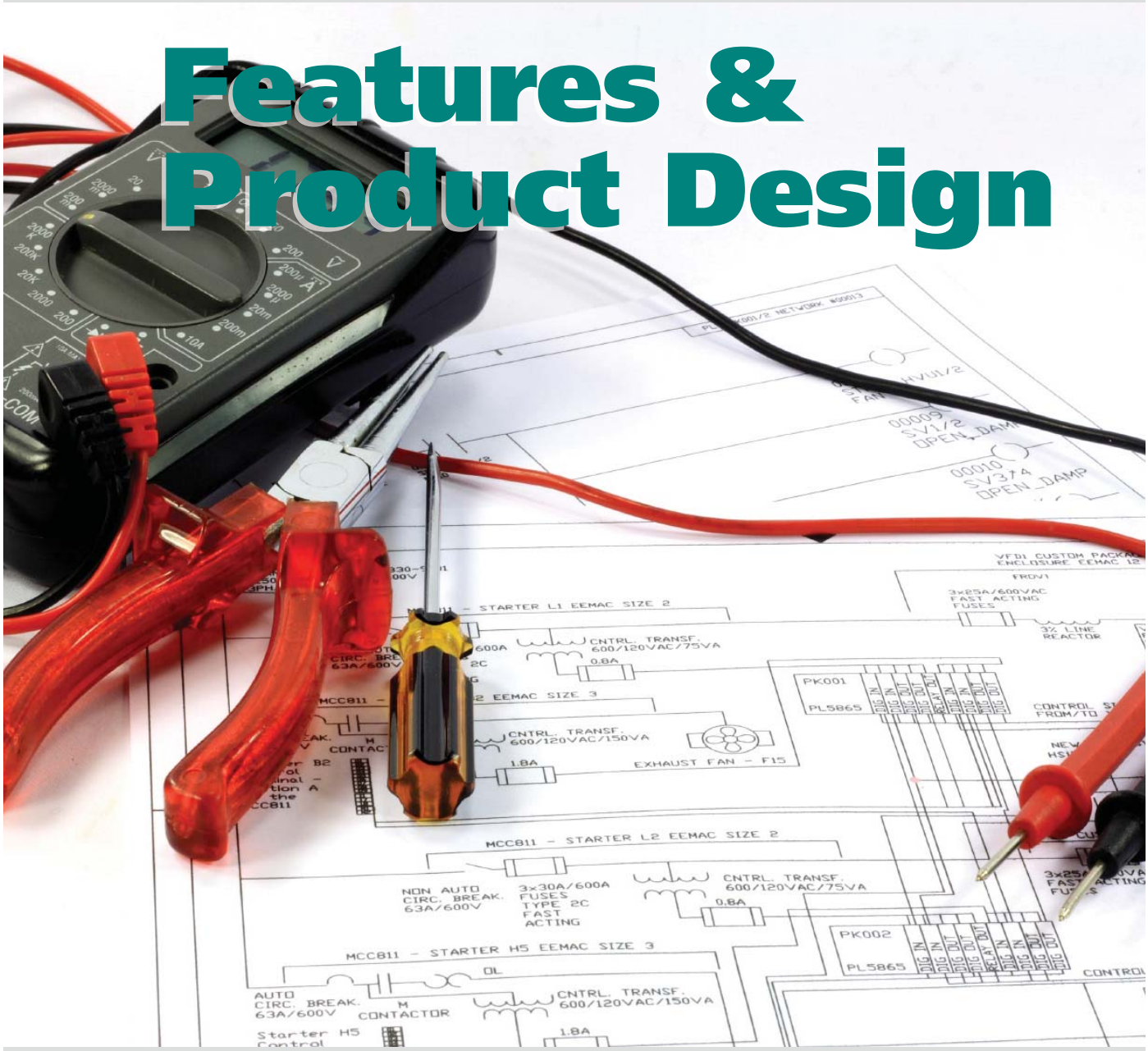
Furring and Chassis

The final chassis does not have to be installed until the majority of the construction is complete. This helps to prevent damage and allows the contractors to better allocate their workforce.

Completion

When the construction is complete, the HRP unit becomes an integrated part of the room, providing both quiet and reliable comfort to occupants.

Water Source Heat Pumps



Features & Product Design

omega HEAT PUMPS

Water Source Heat Pumps

Features

Energy Efficient Design

- High efficiency compressors
- Optimum circuited air to refrigerant coils
- Custom sized thermal expansion systems
- High efficiency blower motors
- Low pressure drop water coaxial coils
- COP/EER meets or exceeds Ashrae 90.1

Space Considerations

- Quiet operation
- Mould resistant insulation
- Heavy duty cabinet for vibration free operation
- Architecturally pleasing covers and grilles
- Elastomer vibration isolators on compressors
- High quality gasket on chassis
- Air filter
- Choice of air openings
- Riser flexibility

Acoustics

- Gold design available for acoustically sensitive applications
- Silver design for standard applications

Service

- Easy slide out chassis removal and replacement
- Allows spare chassis to be kept in stock for instant replacement
- Controls components in one location
- Plug-in controls
- Run capacitor in front of unit
- Service handles on chassis
- Low clog coaxial coil design
- Quick disconnecting water connections
- Schraeder connections for refrigerant monitoring and servicing
- Factory installed pigtails on control board

Reliability

- Spot welded centrifugal blower
- Rotary or scroll compressors by major manufacturers
- Cased air to refrigerant coil

Environment

- Environmentally friendly refrigerants
- All materials used in the unit are recyclable

INTERTEK ETL VERIFIED
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CERTIFIED TO C22.2 NO. 236

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MEA No. 18-06-E
HTS Engineering Ltd.
ETL Listing 30717

Omega Series Heat Pumps are listed by ETL as complying with nationally recognized safety standards for heat pump units.

Water Source Heat Pumps

Product Design

Casing

The sheet metal casing is designed for strength, reliability and functionality. The height may be specified to suit project details and to easily allow vertically stacked installations. The standard material used is galvanized sheet metal with a mould resistant acoustic/thermal insulation. The unit is fabricated tightly to prevent rattling and vibrations.

A variety of aesthetically pleasing front return grilles are available. In addition to providing a finished look, these grilles also provide sound attenuation for a near silent operation. A number of different supply grilles are also available. Standard and custom supply grille openings can be supplied. The casing contains a set of mounting rails for easy installation and removal of the refrigeration chassis. The rails are sized with stops for accurate placement within the unit.

All units come with a heavy duty drain pan.

Acoustics (Gold & Silver)

Omega offers Gold & Silver options in heat pump casing design. For standard applications, the Silver design provides a single solid arrangement cabinet for ease of installation.

For sensitive acoustic applications, the Gold design utilizes a split cabinet arrangements with an acoustically isolated discharge casing to achieve NC levels below 36 to 37.

Compressor

The compressors are selected for their state of the art design, high EER and superior reliability. The size 30 and 40 units use R22 rotary compressors. The size 60, 80 and 100 units use R410 scroll compressors. Compressors are mounted to the chassis frame with an elastomer vibration isolator to minimize any vibration transfer to the building floor.

Refrigerant

Time proven R22 is used in the 30 and 40 sizes while R410 is used in the 60, 80 and 100 sizes.

R410 is now available for 30 and 40 sizes. Contact your local representative for information.

Water Source Heat Pumps

Product Design

Thermal Expansion Device

Omega Heat Pumps utilize a unique assembly of two piston flowcheck thermal expansion devices in the 30 and 40 unit sizes. The R410 units use reversible thermal expansion valves selected specifically for heat pump applications.

The piston flowcheck devices are precision machined brass assemblies consisting of a high pressure housing and a piston metering device. The piston is free to move, thus allowing free flow of refrigerant when it is moving in the reverse direction. The reversible thermal expansion valves are factory adjusted for optimum superheat in the cooling mode.

Reversing Valve

A high quality four-way reversing valve is installed in the heat pump to change refrigerant flow direction depending on whether heating or cooling is required.

Fluid to Refrigerant Coil

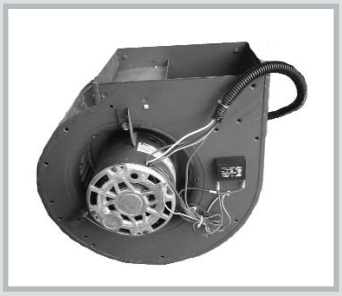
The coaxial fluid to refrigerant coil is a custom made heat transfer device consisting of a copper outer tube and a patented fluted copper inner tube. Fluid flow is opposite to the flow of refrigerant. The coaxial heat exchanger is a flat design which fits into the base of the chassis. The coils are designed for minimum pressure drop and are noted for their low fouling characteristics (although thorough system flushing and condenser water filtering is still necessary). The coils are selected for optimum subcooling in the cooling mode.

Water Source Heat Pumps

Product Design

Air to Refrigerant Coil

The air to refrigerant coil is a multi row coil with copper tubes and aluminum fins. The fin is designed to provide optimum heat transfer. The fins are mechanically bonded to the tubes. The coils are fully cased with a handy grip point for chassis removal.



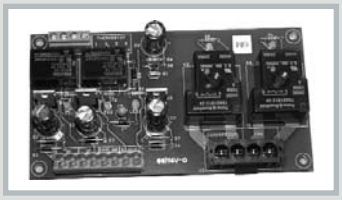
Fan Section

The fan is a quiet yet powerful centrifugal forward curve direct drive design. It is fabricated with spot welded construction, finished painted, and installed in the unit with an easily removable band fastener.

Blower Motor

High efficiency three speed permanent split capacitor type (PSC) motors are used as standard. The motor is permanently lubricated and is factory wired with a terminal plug for easy disconnect.

ECM motors are also an available option to further increase fan operating efficiency.



Controls

Controls and relays are mounted on a single control board with factory wiring to connect plugs. The board can be removed in a matter of seconds. It is mounted on the front of the unit making it immediately accessible for diagnostics.

Water Source Heat Pumps

Product Design

Gold & Silver

It is said that "silence is golden". Recognizing this fact, the Golden series heat pump was designed to provide one of the quietest units in the industry. Its unique split casing design attenuates vibration and noise to NC levels at or below 36-37. Use the "GOLD" series HRP for acoustically sensitive applications.

The Silver series was developed with same quality components and manufacturing techniques as the Gold series, but utilizes a traditional solid casing design. Use the "SILVER" series HRP in less sensitive noise projects.

Testing and Quality

Omega employs state of the art manufacturing techniques, coupled with rigorous quality control procedures to guarantee every HRP is manufactured with the highest degree of reliability and consistency. The employment of Lean Six Sigma procedures results in efficient and cost effective manufacturing techniques driving a quality and highly competitive product. In the chassis production line, a 6 station QC system ensures that every stage of chassis production is tested, retested and guaranteed to pass. This testing also ensures that each unit complies with ARI published guidelines.

Design Notes

Water Source Heat Pumps

Engineering Design

omega HEAT PUMPS

Water Source Heat Pumps

Engineering Design

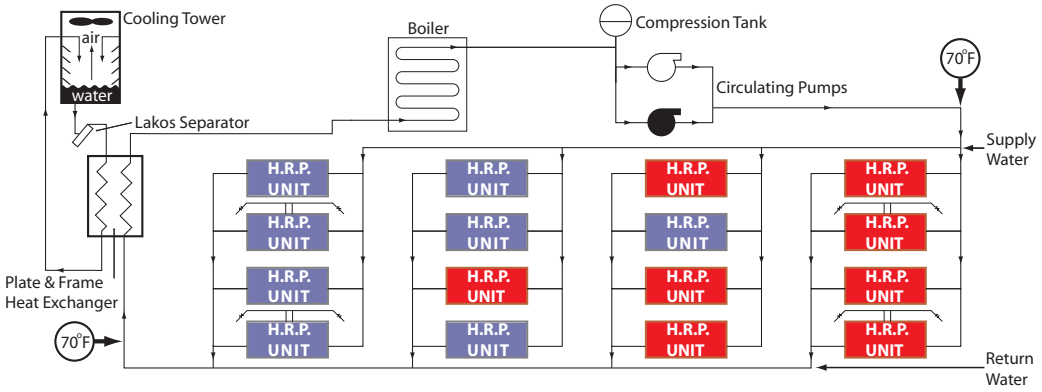
The water loop provides both a source and a sink of energy. You can conserve energy by effectively pumping heat from the warm areas of the builing to the cold ones.

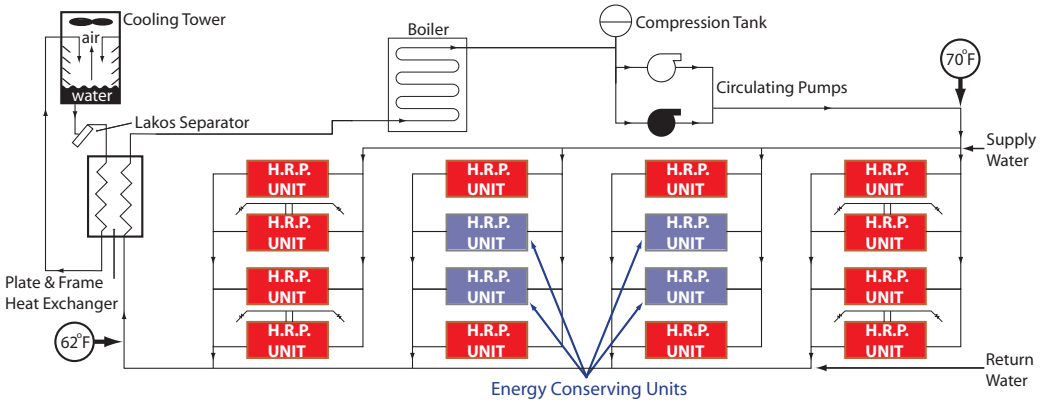
Consider a two-pipe closed loop water circuit, through which non-refrigerated water is circulated continuously throughout the building. In moderate weather, units serving the shady side of a building are often heating, while those serving the summer are cooling. When approximately one third of the units in operation are cooling, they add sufficient heat to the water loop so that it is not required to add or remove heat from the water loop.

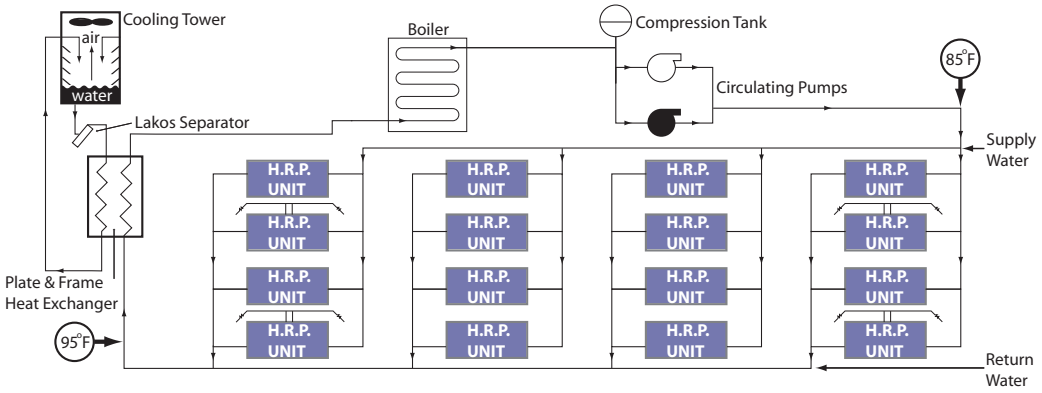
When heating is required, the heat pumps will absorb heat from the loop circuit, whereas when cooling is required, the heat pump will reject heat to the loop circuit. Only in very cold weather (with most or all units heating) is it necessary to add heat to the water with a water heater. This is done when the temperature of the water loop falls to 65°F (18°C). The amount of this heat is reduced any time one or more units are operating on cooling. The central water heater is never larger than two thirds the size required in other systems but is usually less because of diversity.

A vertical stacking heat pump provides the essential benefits of a centralized system but gives the individual choice of heating or cooling. Additionally, the occupant may select heating, cooling, or may shut off the unit without affecting conditions maintained in other spaces. During hot weather with most or all units cooling, heat removed from the air is transferred to the water loop. A water tower rejects the excess heat outdoors to maintain a maximum water temperature of approximately 95°F.

Water Source Heat Pumps





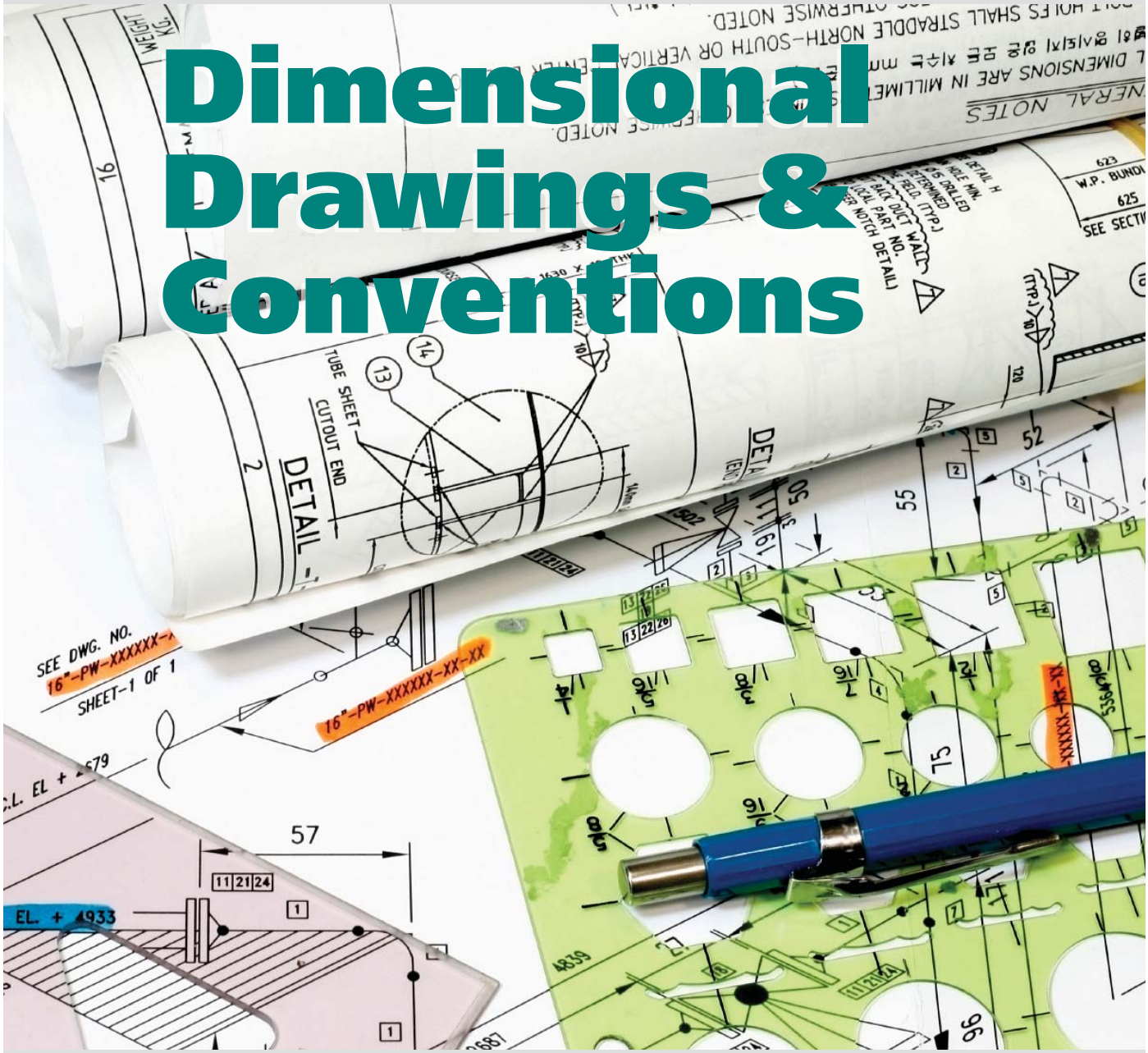


Water Source Heat Pumps

Engineering Design Notes

Water Source Heat Pumps

Dimensional Drawings & Conventions

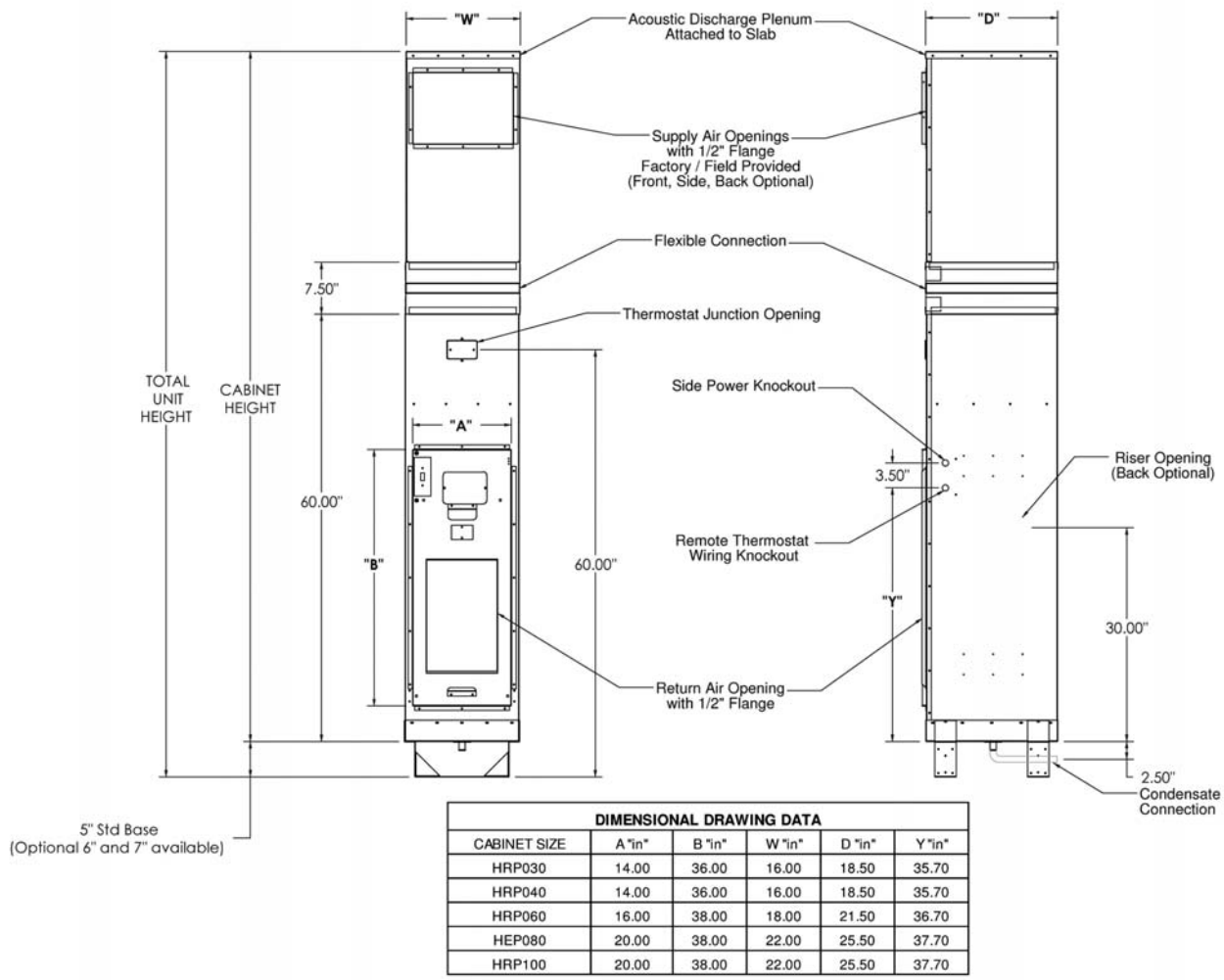


omega HEAT PUMPS

Water Source Heat Pumps

Dimensional Drawings

Split Units with Acoustic Plenum (drawings not to scale, dimensions are subject to change)



DIMENSIONAL DRAWING DATA					
CABINET SIZE	A "in"	B "in"	W "in"	D "in"	Y "in"
HRP030	14.00	36.00	16.00	18.50	35.70
HRP040	14.00	36.00	16.00	18.50	35.70
HRP060	16.00	38.00	18.00	21.50	36.70
HEP080	20.00	38.00	22.00	25.50	37.70
HRP100	20.00	38.00	22.00	25.50	37.70

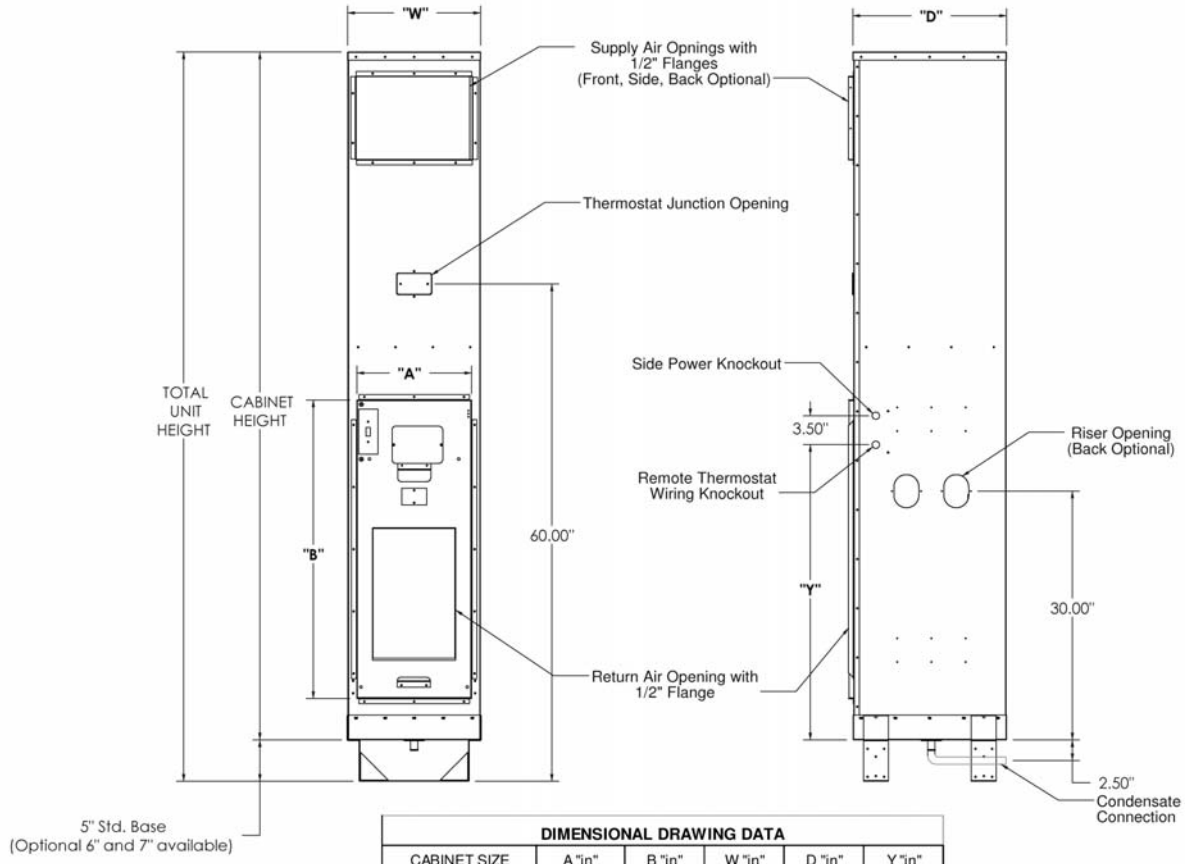
Additional Notes:

- Temporary riser supports provided. (Contractor to supply riser clamps to support risers in multi-storey applications).
- Return air opening is on the front of the unit, rear right hand unit shown.
- Unit includes hose kits and shut off valves.
- Optional risers are made with type M copper, expanded connections are provided.
- Contractor to provided couplings where the piping is not swagged.

SILVER SERIES

Water Source Heat Pumps

Dimensional Drawings



DIMENSIONAL DRAWING DATA

CABINET SIZE	A "in"	B "in"	W "in"	D "in"	Y "in"
HRP030	14.00	36.00	16.00	18.50	35.70
HRP040	14.00	36.00	16.00	18.50	35.70
HRP060	16.00	38.00	18.00	21.50	36.70
HEP080	20.00	38.00	22.00	25.50	37.70
HRP100	20.00	38.00	22.00	25.50	37.70

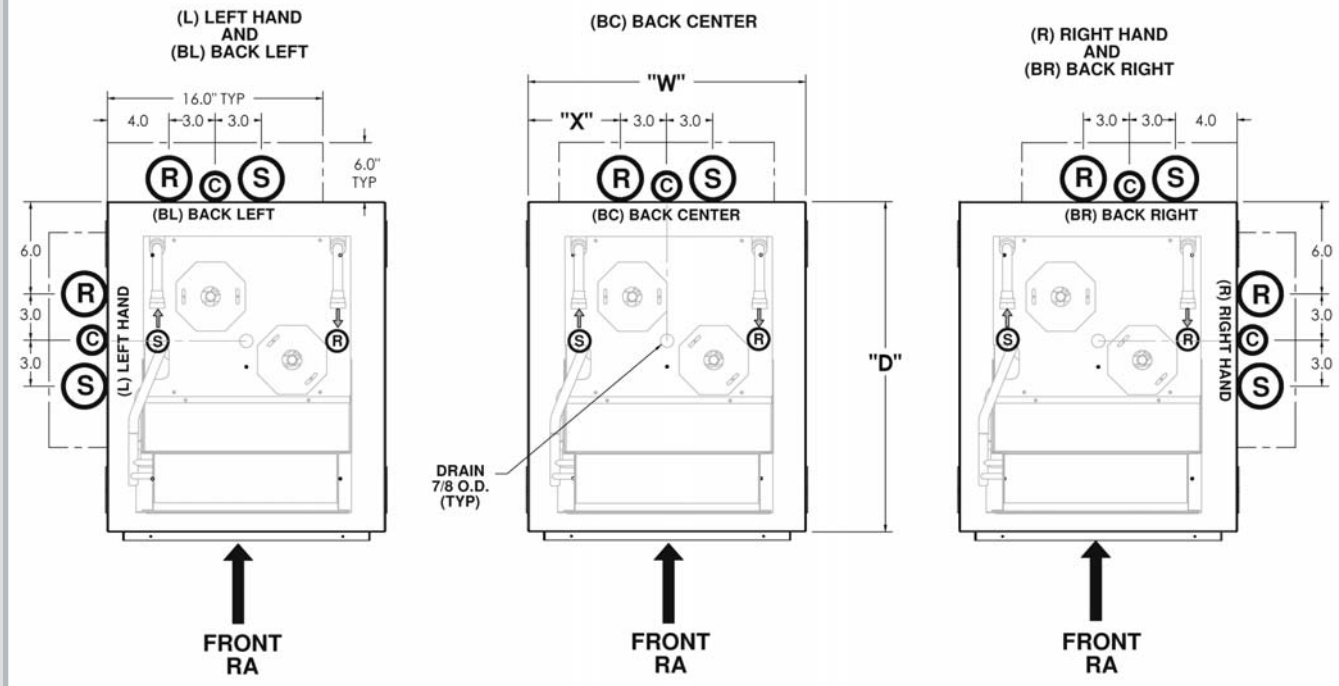
Additional Notes:

- Temporary riser supports provided. (Contractor to supply riser clamps to support risers in multi-storey applications).
- Return air opening is on the front of the unit, rear right hand unit shown.
- Unit includes hose kits and shut off valves.
- Risers are made with type M copper, expanded connections are provided.
- Contractor to provided couples where the piping is not swagged.

Water Source Heat Pumps

Dimensional Drawings

Riser Handing & Locations



DIMENSIONAL DRAWING DATA			
CABINET SIZE	W "in"	D "in"	X "in"
HRP030	16.00	18.50	5.00
HRP040	16.00	18.50	5.00
HRP060	18.00	21.50	6.00
HEP080	22.00	25.50	8.00
HRP100	22.00	25.50	8.00

Additional Notes:

- Temporary riser supports provided, contractor to supply clamps for multistory applications.
- Riser couplings are not provided, expanded connections are provided on 1 end of riser only.
- Riser Size: 0.75" to 4.00".

Legend:

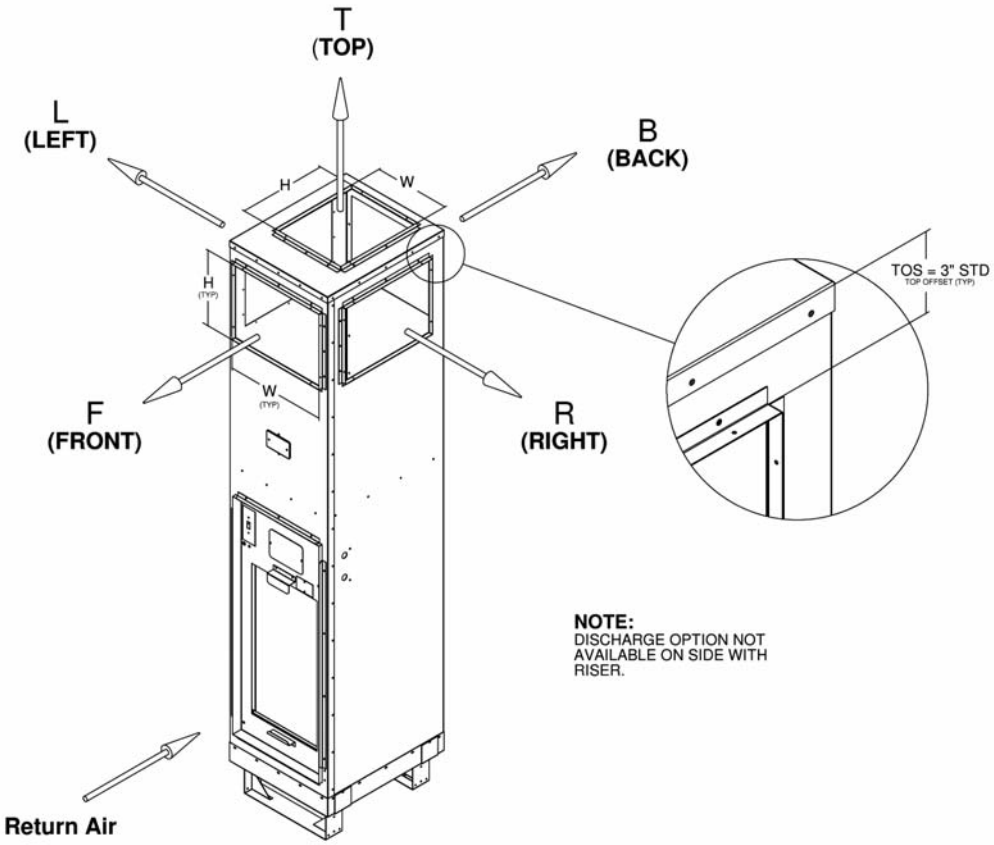
S = Supply Riser
C = Condinsate Riser
R = Return Riser

- All handings determined facing returen air opening.
  L = Left
  BL = Back Left
  BC = Back Center
  BR = Back Right
  R = Right

Water Source Heat Pumps

Dimensional Drawings

Discharge Arrangements (drawings not to scale, dimensions are subject to change)



	HRP 30	HRP 40	HRP 60	HRP 80	HRP 100
	W x H	W x H	W x H	W x H	W x H
Discharge Openings	14 X 8	14 X 10	16 X 12	16 X 16	18 X 16
Top Discharge	12 X 12	12 X 12	14 X 12	14 X 14	16 X 14

Dimensions are in inches.

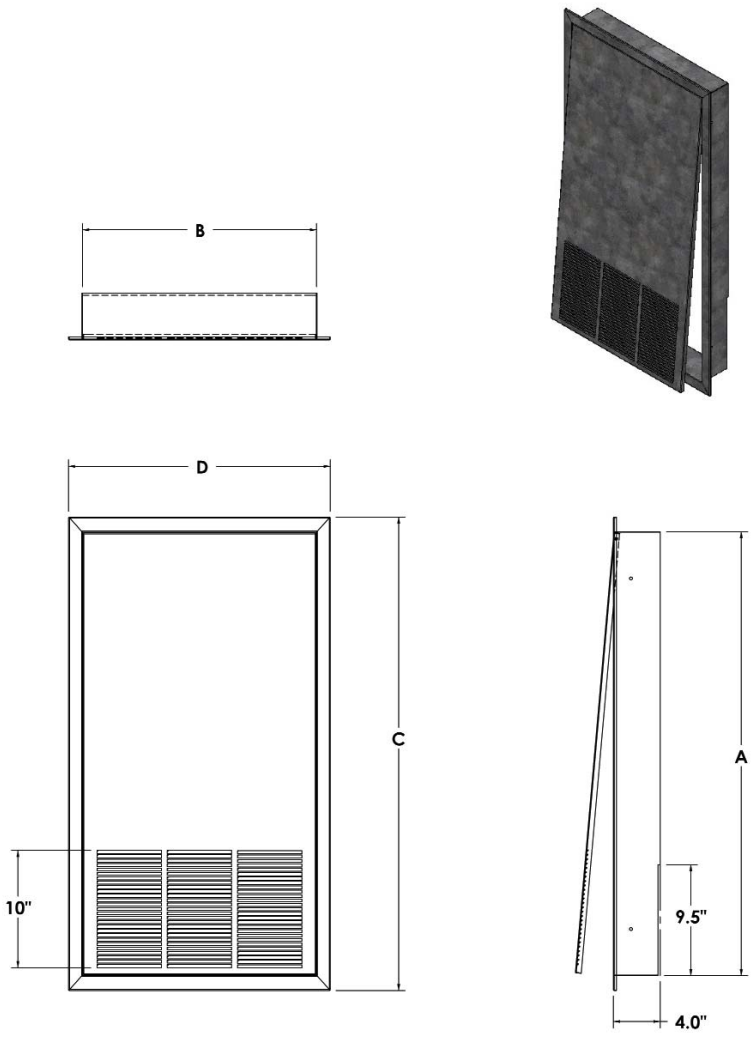
Additional Notes:

- Any combination of discharge arrangements are available (Max 3).
- **LSB** = Line of Site Baffles available when 2 or more discharge openings are on a unit (not applicable for top discharge units).
- Discharge Flanges are 0.5" deep. **(DO NOT ATTACH GRILL OR DUCT WORK TO FLANGE ON SILVER UNITS!)**
- All handings determined facing return air opening.
  - **R** = Right
  - **B** = Back
  - **T** = Top
  - **L** = Left
  - **F** = Front

Water Source Heat Pumps

Dimensional Drawings

Acoustic Return Air Front Panel (drawings not to scale, dimensions are subject to change)



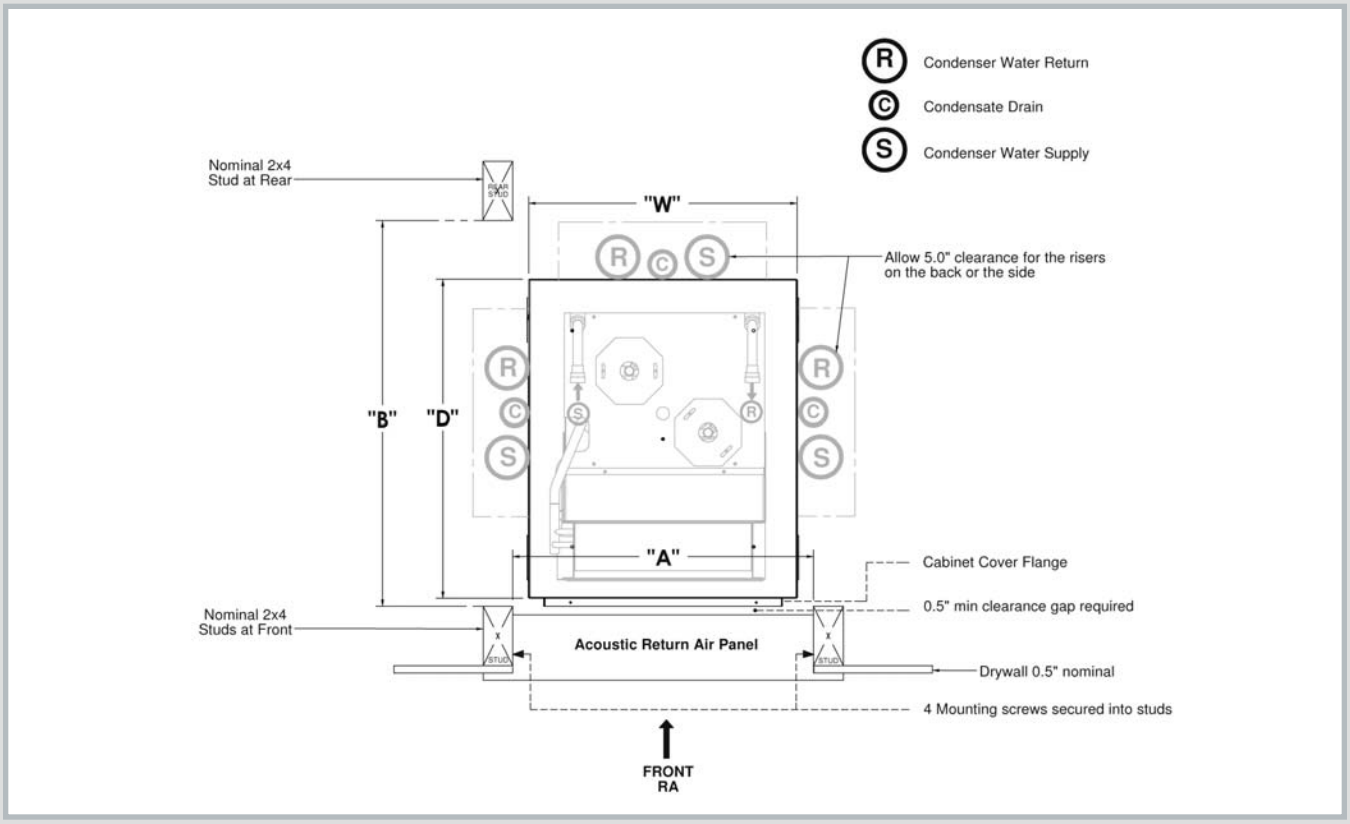
Model Size	A	B	C	D
HRP 30	36.00"	18.00"	38.46"	20.36"
HRP 40	36.00"	18.00"	38.46"	20.36"
HRP 60	38.00"	20.00"	40.46"	22.36"
HRP 80	38.00"	24.00"	40.46"	26.36"
HRP 100	38.00"	24.00"	40.46"	26.36"

All units in inches

Water Source Heat Pumps

Dimensional Drawings

Acoustic Return Air Front Panel Furring Details (drawings not to scale, dimensions are subject to change)



Model Size	W	D	Return Air Opening (Width x Height)	A	B with Side Risers	B with Back Risers
HRP 30	16.00"	18.50"	14" x 36"	18.25" min.	20.00"	24.00"
HRP 40	16.00"	18.50"	14" x 36"	18.25" min.	20.00"	24.00"
HRP 60	18.00"	21.50"	16" x 38"	20.25" min.	23.00"	27.00"
HRP 80	22.00"	25.50"	20" x 38"	24.25" min.	27.00"	31.00"
HRP 100	22.00"	25.50"	20" x 38"	24.25" min.	27.00"	31.00"

All units in inches

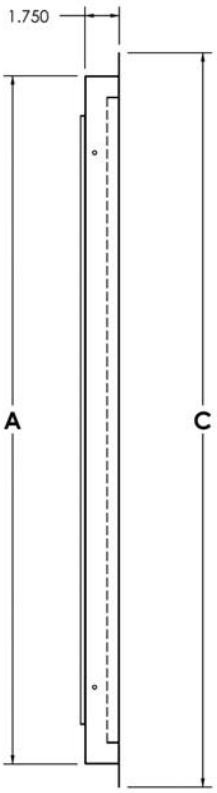
Additional Notes:

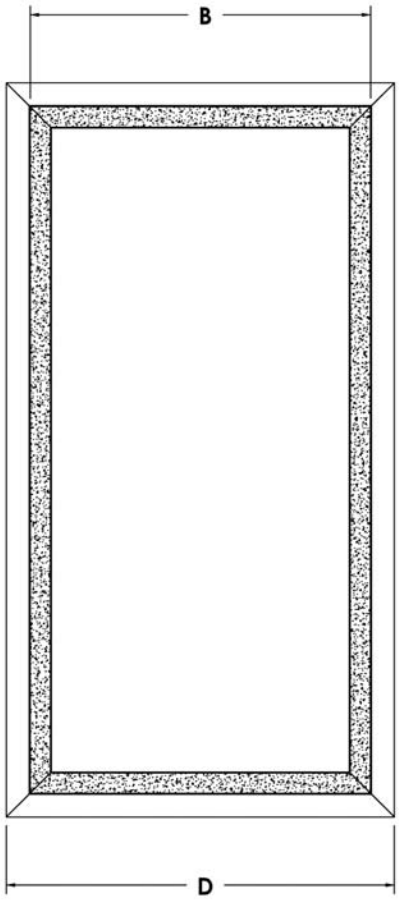
- Return air panel supplied in standard powder coat white finish (custom finishes available).
- Drywall frame is to be mounted such that there is 0.5" maximum clearance between the heat pump return air flange and the return air panel. Mount the return air panel centered in front of the return air opening.
- For rear/side risers, allow an additional 5" clearance at the back/side of the units.
- Installing contractor must insulate the drywall enclosure with lined or coated acoustical insulation suitable for plenum use.

Water Source Heat Pumps

Dimensional Drawings

Perimeter Return Air Panel (drawings not to scale, dimensions are subject to change)





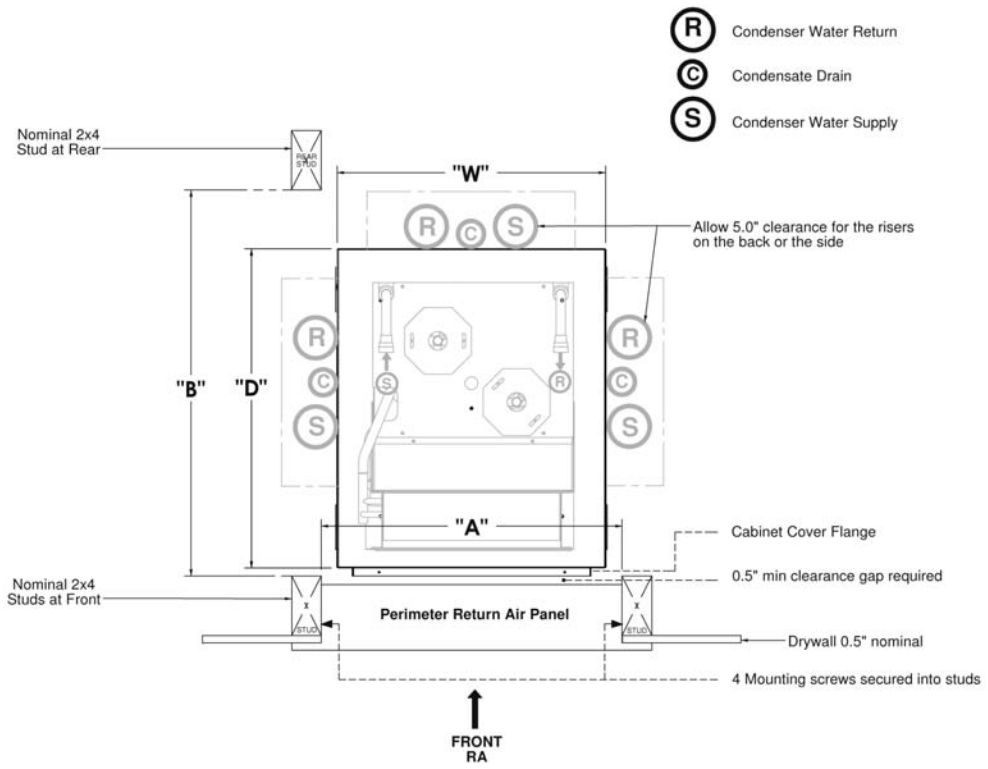
Model Size	A	B	C	D
HRP 30	35.75″	17.75″	38.20″	20.20″
HRP 40	35.75″	17.75 ″	38.20″	20.20″
HRP 60	37.75″	19.75″	40.20″	22.20″
HRP 80	37.75″	23.75″	40.20″	26.20″
HRP 100	37.75″	23.75″	40.20″	26.20″

All units in inches

Water Source Heat Pumps

Dimensional Drawings

Perimeter Return Air Panel Furring Details (drawings not to scale, dimensions are subject to change)



Model Size	W	D	Return Air Opening (Width x Height)	A	B with Side Risers	B with Back Risers
HRP 30	16.00″	18.50″	14″ x 36″	18.25″ min.	18.25″	22.25″
HRP 40	16.00″	18.50″	14″ x 36″	18.25″ min.	18.25″	22.25″
HRP 60	18.00″	21.50″	16″ x 38″	20.25″ min.	21.25″	25.25″
HRP 80	22.00″	25.50″	20″ x 38″	24.25″ min.	25.25″	29.25″
HRP 100	22.00″	25.50″	20″ x 38″	24.25″ min.	25.25″	29.25″

All units in inches

Additional Notes:

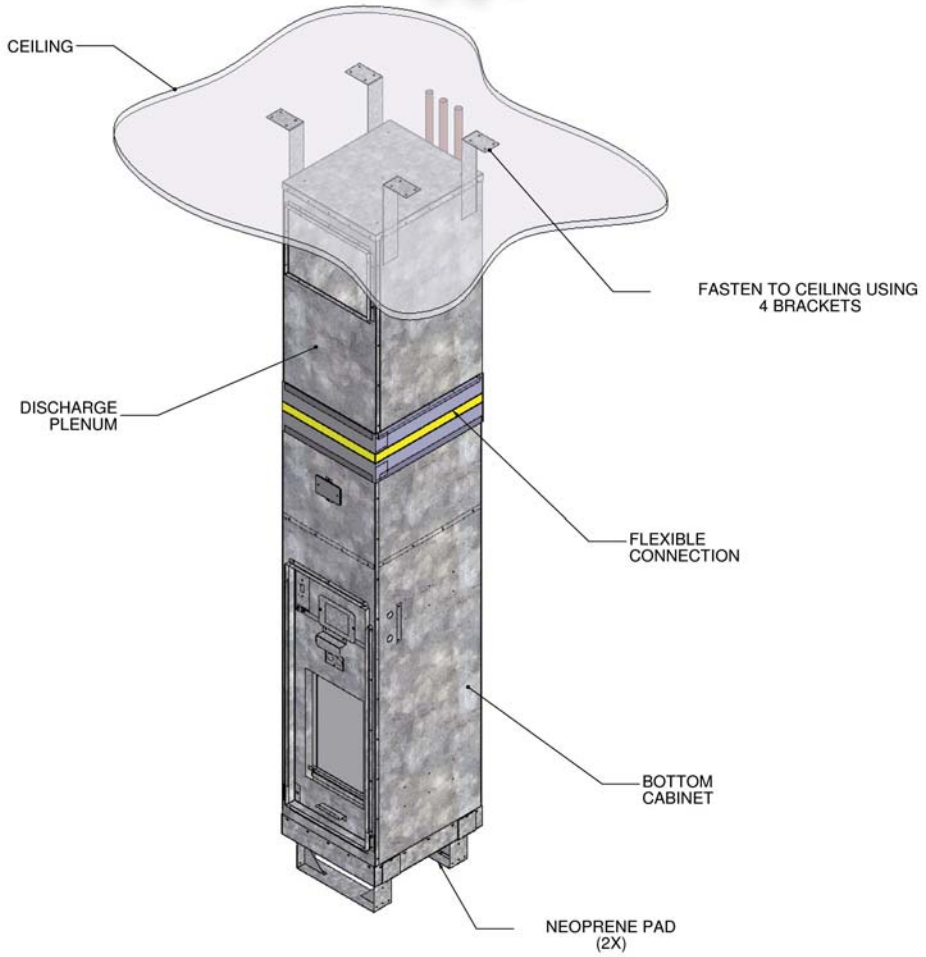
- Return air panel supplied in standard powder coat white finish (custom finishes available).
- Drywall frame is to be mounted such that there is 0.5″ maximum clearance between the heat pump return air flange and the return air panel. Mount the return air panel centered in front of the return air opening.
- For rear/side risers, allow an additional 5″ clearance at the back/side of the units.
- Installing contractor must insulate the drywall enclosure with lined or coated acoustical insulation suitable for plenum use.

Water Source Heat Pumps

Dimensional Drawings

GOLD SERIES

Installation Details for Gold Unit



Gold Series Installation requires fastening of discharge plenum to ceiling.

Water Source Heat Pumps

Performance Date

omega
HEAT PUMPS

Water Source Heat Pumps

ISO Performance Data

Size	Refrig.	Voltage	Water Flow	Air Flow	Water P Drop	Cooling				Heating		
						BTUH	WATT	COP	EER	BTUH	WATT	COP
HRP 30 (3/4 Ton)	R22	208-230/60/1	2.60 GPM	310 CFM	9' P.D.	9665	797	3.55	12.13	11767	810	4.26
HRP 30 (3/4 Ton)	R410	208-230/60/1	3.00 GPM	310 CFM	6' P.D.	9873	796	3.63	12.60	14100	944	4.37
HRP 40 (1 Ton)	R22	208-230/60/1	3.51 GPM	475 CFM	12' P.D.	12195	989	3.61	12.33	16110	1081	4.37
HRP 40 (1 Ton)	R410	208-230/60/1	3.13 GPM	475 CFM	7' P.D.	13010	1000	3.81	13.26	16600	1114	4.37
HRP 60 (1/2 Ton)	R410	208-230/60/1	4.60 GPM	600 CFM	14' P.D.	17600	1455	3.59	12.10	22600	1577	4.20
HRP 80 (2 Ton)	R410	208-230/60/1	6.72 GPM	817 CFM	15' P.D.	23952	1766	3.98	13.56	30415	1964	4.54
HRP 100 (2 1/2 Ton)	R410	208-230/60/1	6.50 GPM	1006 CFM	15' P.D.	28326	2314	3.59	12.24	36501	2505	4.27

Data certified in accordance with ISO Standard 13256-1. Cooling capacity based on 80.4ºF DB and 66.3ºF WB entering air with 86.05ºF entering water temperature. Heating capacity based on 67.5oF DB entering air with 68.3ºF entering water temperature.

**Sizes 30 and 40 use rotary compressors with R22. Sizes 60, 80 and 100 use scroll compressors with R410.

Water Source Heat Pumps

HRP 30 Performance Data — R22

		Cooling							Heating					
GPM (US GPM)	WPD (ft-H2O)	EWT (F)	LWT (F)	TOT (BTUH)	SEN (BTUH)	WATT	EER	THR (BTUH)	EWT (F)	LWT (F)	TOT (BTUH)	WATT	COP	THA (BTUH)
1.3	2.3	60	80.2	10679	7308	722	14.79	13142	50	38.8	9849	755	3.82	7273
1.8	4.3		74.8	10889	7452	706	15.42	13297		41.5	10278	773	3.90	7640
2.4	7.6		71.1	10999	7527	674	16.32	13299		43.4	10652	786	3.97	7969
2.6	9.0		70.1	11054	7565	667	16.56	13331		43.8	10706	789	3.98	8014
1.3	2.3	70	90.0	10298	7047	793	12.98	13005	60	47.8	10760	823	3.83	7953
1.8	4.3		84.6	10500	7186	776	13.53	13147		50.7	11228	843	3.91	8350
2.4	7.6		80.9	10607	7259	741	14.32	13134		51.7	11638	857	3.98	8713
2.6	9.0		80.1	10660	7295	733	14.54	13162		52.7	11696	860	3.99	8762
1.3	2.3	80	99.8	9930	6796	862	11.51	12873	70	56.6	11756	897	3.84	8696
1.8	4.3		94.5	10177	6964	843	12.01	13054		59.9	12267	918	3.92	9133
2.4	7.6		90.8	10259	7021	805	12.74	13006		62.1	12714	934	3.99	9526
2.6	9.0		90.0	10280	7035	797	12.90	12999		62.6	12778	937	4.00	9581
1.3	2.3	85	105.1	9962	6817	918	10.86	13092	80	65.3	12843	968	3.89	9538
1.8	4.3		99.5	9992	6838	897	11.14	13053		68.9	13402	922	3.96	10017
2.4	7.6		95.8	10073	6893	856	11.76	12995		71.3	13890	1009	4.03	10447
2.6	9.0		95.0	10093	6907	848	11.90	12986		71.9	13960	1012	4.04	10507
1.3	2.3	90	109.7	9573	6551	954	10.03	12828	85	69.6	13437	1007	3.91	10000
1.8	4.3		104.4	9761	6680	933	10.46	12944		73.3	14021	1031	3.98	10501
2.4	7.6		100.7	9860	6748	891	11.07	12899		75.9	14532	1049	4.06	10951
2.6	9.0		99.9	9910	6782	882	11.24	12918		76.5	14605	1052	4.07	11014
1.3	2.3	100	119.6	9231	6317	1031	8.96	12747	90	73.9	14057	1047	3.93	10483
1.8	4.3		114.3	9413	6441	1008	9.34	12851		77.8	14668	1073	4.01	11008
2.4	7.6		110.7	9508	6507	962	9.88	12790		80.4	15203	1091	4.08	11479
2.6	9.0		109.9	9556	6540	952	10.03	12805		81.1	15280	1095	4.09	11545

Cooling capacity based on 80°F DB and 67°F WB entering air. Heating capacity based on 70°F DB entering air.

Cooling Capacity Multipliers for Entering Air Temperatures

EAT Wet Bulb	Total Cooling Multiplier	Sensible Cooling @ EAT Dry Bulb				
		75	**80**	85	90	95
61	0.87	0.99				
64	0.93	0.86	1.12			
67	**1.00**	0.75	**1.00**	1.25		
70	1.06		0.82	1.09	1.36	
73	1.13			0.92	1.18	1.44

Heating Capacity Multipliers for Entering Air Temperatures

Entering Air Temp (°F)	55	60	65	**70**	75	80	85
Multiplier	1.04	1.03	1.01	1.00	0.99	0.97	0.95

Water Source Heat Pumps

HRP 30 Performance Data — R410

		Cooling							Heating					
GPM (US GPM)	**WPD** (ft-H2O)	**EWT** (F)	**LWT** (F)	**TOT** (BTUH)	**SEN** (BTUH)	**WATT**	**EER**	**THR** (BTUH)	**EWT** (F)	**LWT** (F)	**TOT** (BTUH)	**WATT**	**COP**	**THA** (BTUH)
1.3	1.2	60	80.0	10459	7311	783	13.36	13131	50	39.4	9644	809	3.49	6882
1.8	2.3		74.5	10659	7451	740	14.41	13183		41.9	10043	826	3.56	7224
2.4	4.1		71.0	10761	7522	719	14.97	13214		44.0	10180	832	3.59	7341
2.6	4.9		70.0	10795	7546	712	15.16	13225		44.3	10337	838	3.62	7479
1.3	1.2	70	90.0	10037	7016	806	12.45	12787	60	47.5	11065	866	3.74	8110
1.8	2.3		84.0	10229	7150	761	13.43	12827		50.5	11550	883	3.83	8537
2.4	4.1		80.5	10326	7218	740	13.95	12851		52.6	11810	889	3.89	8777
2.6	4.9		80.0	10359	7241	733	14.13	12860		53.2	11945	898	3.90	8880
1.3	1.2	80	99.8	9631	6733	830	11.61	12462	70	55.0	12569	923	3.99	9420
1.8	2.3		94.0	9815	6861	784	12.52	12490		59.0	13268	949	4.10	10032
2.4	4.1		90.5	9909	6927	762	13.00	12509		61.3	13680	954	4.20	10425
2.6	4.9		89.7	9914	6949	755	13.14	12489		62.0	13818	968	4.18	10514
1.3	1.2	85	105.0	9548	6692	891	10.72	12588	80	64.0	13576	990	4.02	10199
1.8	2.3		99.0	9731	6820	842	11.56	12571		38.0	14331	1017	4.13	10860
2.4	4.1		95.7	9824	6885	818	12.01	12615		70.6	14724	1032	4.18	11205
2.6	4.9		94.8	9827	6907	810	12.13	12591		71.2	14950	1035	4.23	11419
1.3	1.2	90	110.0	9397	6551	954	9.85	12653	85	69.0	14174	1019	4.08	10698
1.8	2.3		104.0	9576	6676	900	10.64	12648		72.0	14761	1040	4.16	11212
2.4	4.1		100.7	9665	6739	875	11.05	12649		75.0	14432	1063	4.25	11805
2.6	4.9		99.9	9696	6760	866	11.19	12651		75.7	15560	1065	4.28	11926
1.3	1.2	100	119.9	8983	6197	1020	8.81	12462	90	72.0	14497	1043	4.07	10937
1.8	2.3		114.0	9154	6315	962	9.51	12437		77.0	15512	1080	4.21	11827
2.4	4.1		110.5	9239	6375	935	9.88	12428		79.8	15937	1095	4.27	12201
2.6	4.9		109.7	9268	6395	926	10.01	12427		80.4	16120	1099	4.30	12370

Cooling capacity based on 80°F DB and 67°F WB entering air. Heating capacity based on 70°F DB entering air.

Cooling Capacity Multipliers for Entering Air Temperatures

EAT Wet Bulb	**Total Cooling Multiplier**	Sensible Cooling @ EAT Dry Bulb				
		75	**80**	85	90	95
61	0.87	0.99				
64	0.93	0.86	1.12			
67	**1.00**	0.75	**1.00**	1.25		
70	1.06		0.82	1.09	1.36	
73	1.13			0.92	1.18	1.44

Heating Capacity Multipliers for Entering Air Temperatures

Entering Air Temp (°F)	55	60	65	**70**	75	80	85
Multiplier	1.04	1.03	1.01	1.00	0.99	0.97	0.95

Water Source Heat Pumps

HRP 40 Performance Data R22

		Cooling							Heating					
GPM (US GPM)	**WPD** (ft-H2O)	**EWT** (F)	**LWT** (F)	**TOT** (BTUH)	**SEN** (BTUH)	**WATT**	**EER**	**THR** (BTUH)	**EWT** (F)	**LWT** (F)	**TOT** (BTUH)	**WATT**	**COP**	**THA** (BTUH)
1.7	2.8	60	78.8	13148	10072	831	15.82	15983	50	38.3	13190	939	4.12	9985
2.4	5.6		73.4	13407	10271	813	16.50	16179		41.3	13764	962	4.19	10481
3.3	10.6		69.8	13543	10343	776	17.46	16189		43.4	14265	979	4.27	10926
3.5	12.0		69.3	13611	10427	768	17.72	16231		43.8	14337	982	4.28	10988
1.7	2.8	70	88.5	12679	9713	913	13.88	15795	60	47.2	14410	1024	4.13	10916
2.4	5.6		83.3	12928	9904	893	14.48	15975		50.5	15037	1048	4.20	11459
3.3	10.6		79.6	13060	10005	852	15.32	15968		52.8	15585	1067	4.28	11945
3.5	12.0		79.1	13125	10055	844	15.55	16005		53.1	15663	1070	4.29	12013
1.7	2.8	80	98.3	12227	9366	993	12.32	15613	70	56.0	15743	1116	4.13	11935
2.4	5.6		93.2	12530	9599	971	12.91	15842		59.6	16428	1143	4.21	12528
3.3	10.6		89.5	12632	9677	927	13.63	15793		62.1	17026	1163	4.29	13060
3.5	12.0		89.0	12657	9696	917	13.80	15787		62.5	17112	1166	4.30	13133
1.7	2.8	85	103.6	12265	9396	1056	11.61	15868	80	64.6	17199	1205	4.18	13087
2.4	5.6		98.1	12303	9425	1033	11.91	15826		68.6	17947	1234	4.26	13736
3.3	10.6		94.5	12402	9501	986	12.58	15765		71.3	18601	1256	4.34	14317
3.5	12.0		94.0	12427	9520	976	12.73	15757		71.8	18695	1259	4.35	14398
1.7	2.8	90	108.2	11786	9029	1098	10.73	15533	85	69.6	13437	1007	3.91	10000
2.4	5.6		103.0	12018	9207	1074	11.19	15682		73.3	14021	1031	3.98	10501
3.3	10.6		99.4	12140	9300	1025	11.84	15638		75.9	14532	1049	4.06	10951
3.5	12.0		99.0	12201	9347	1015	12.02	15664		76.5	14605	1052	4.07	11014
1.7	2.8	100	118.1	11366	8707	1186	9.58	15413	90	73.1	18825	1303	4.23	14377
2.4	5.6		112.9	11589	8878	1160	9.99	15546		77.4	19644	1335	4.31	15089
3.3	10.6		109.3	11707	8969	1107	10.57	15484		80.5	20360	1358	4.39	15726
3.5	12.0		108.9	11766	9014	1096	10.73	15506		81.0	20462	1362	4.40	15814

Cooling capacity based on 80°F DB and 67°F WB entering air. Heating capacity based on 70°F DB entering air.

Cooling Capacity Multipliers for Entering Air Temperatures

EAT Wet Bulb	**Total Cooling Multiplier**	Sensible Cooling @ EAT Dry Bulb				
		75	**80**	85	90	95
61	0.87	0.99				
64	0.93	0.86	1.12			
67	**1.00**	0.75	**1.00**	1.25		
70	1.06		0.82	1.09	1.36	
73	1.13			0.92	1.18	1.44

Heating Capacity Multipliers for Entering Air Temperatures

Entering Air Temp (°F)	55	60	65	**70**	75	80	85
Multiplier	1.04	1.03	1.01	1.00	0.99	0.97	0.95

Water Source Heat Pumps

HRP 40 Performance Data — R410

		Cooling							Heating					
GPM (US GPM)	WPD (ft-H2O)	EWT (F)	LWT (F)	TOT (BTUH)	SEN (BTUH)	WATT	EER	THR (BTUH)	EWT (F)	LWT (F)	TOT (BTUH)	WATT	COP	THA (BTUH)
1.7	2.0	60	80.0	13846	9627	992	13.96	17230	50	40.0	11553	962	3.52	8271
2.4	4.0		74.5	14067	9780	946	14.87	17294		42.8	11870	975	3.57	8543
3.3	7.6		70.4	14219	9905	910	15.39	17326		44.6	12228	989	3.62	8754
3.5	8.6		70.0	14238	9936	902	15.79	17315		44.9	12286	996	3.65	8889
1.7	2.0	70	90.0	13238	9238	1021	12.97	16721	60	48.6	13418	1031	3.81	9899
2.4	4.0		84.2	13491	9415	964	13.99	16781		51.4	13896	1046	3.86	10218
3.3	7.6		80.3	13620	9505	937	14.35	16818		53.7	14120	1060	3.90	10503
3.5	8.6		79.7	13663	9535	928	14.72	16831		54.0	14222	1068	3.90	10580
1.7	2.0	80	99.7	12703	8865	1051	12.09	16288	70	56.8	15223	1098	4.06	11475
2.4	4.0		93.4	12987	9063	983	13.04	16342		60.1	15854	1121	4.14	12028
3.3	7.6		90.0	13111	9150	956	13.55	16372		62.4	16289	1137	4.20	12410
3.5	8.6		89.3	13152	9179	947	13.89	16383		62.8	16437	1145	4.21	12531
1.7	2.0	85	104.8	12627	8812	1128	11.19	16476	80	65.7	16456	1178	4.09	12437
2.4	4.0		99.0	12868	8980	1066	11.92	16505		69.3	17138	1203	4.18	13035
3.3	7.6		95.0	12991	9094	1026	12.54	16534		71.8	17608	1219	4.23	13448
3.5	8.6		94.4	13032	9123	1017	12.86	16542		72.2	17716	1228	4.23	13528
1.7	2.0	90	110.0	12462	6551	1209	10.31	16586	85	70.0	16919	1209	4.10	12793
2.4	4.0		104.0	12699	6676	1141	11.13	16591		73.7	17620	1234	4.18	13408
3.3	7.6		100.0	12859	6760	1097	11.57	16604		76.5	18103	1251	4.24	13833
3.5	8.6		99.4	12900	6781	1087	11.87	16608		77.0	18294	1266	4.24	13974
1.7	2.0	100	119.7	11914	6197	1292	9.22	16321	90	74.7	17855	1253	4.18	13580
2.4	4.0		113.7	12141	6315	1219	9.96	16300		78.3	18595	1279	4.26	14230
3.3	7.6		110.0	12294	6395	1173	10.35	16295		80.0	18105	1297	4.32	14680
3.5	8.6		109.2	12333	6415	1161	10.62	16295		81.5	19393	1315	4.32	14907

Cooling capacity based on 80°F DB and 67°F WB entering air. Heating capacity based on 70°F DB entering air.

Cooling Capacity Multipliers for Entering Air Temperatures

EAT Wet Bulb	Total Cooling Multiplier	Sensible Cooling @ EAT Dry Bulb				
		75	**80**	85	90	95
61	0.87	0.99				
64	0.93	0.86	1.12			
67	**1.00**	0.75	**1.00**	1.25		
70	1.06		0.82	1.09	1.36	
73	1.13			0.92	1.18	1.44

Heating Capacity Multipliers for Entering Air Temperatures

Entering Air Temp (°F)	55	60	65	**70**	75	80	85
Multiplier	1.04	1.03	1.01	1.00	0.99	0.97	0.95

Water Source Heat Pumps

HRP 60 Performance Data — R410

		Cooling							Heating					
GPM (US GPM)	**WPD** (ft-H2O)	**EWT** (F)	**LWT** (F)	**TOT** (BTUH)	**SEN** (BTUH)	**WATT**	**EER**	**THR** (BTUH)	**EWT** (F)	**LWT** (F)	**TOT** (BTUH)	**WATT**	**COP**	**THA** (BTUH)
2.7	6.4	60	77.6	19204	14640	1328	14.5	23733	50	41.8	15812	1377	3.37	11114
3.9	13.3		72.3	19582	14928	1298	15.1	24011		44.0	16425	1405	3.43	11630
4.0	14.0		72.0	19780	15080	1239	16.0	24008		44.2	16466	1408	3.43	11664
5.2	23.0		69.3	19880	15156	1227	16.2	24066		45.4	16851	1423	3.47	11994
2.7	6.4	70	87.4	18519	14118	1459	12.7	23496	60	50.6	17724	1462	3.55	12736
3.9	13.3		82.2	18883	14396	1427	13.2	23750		53.2	18411	1492	3.62	13321
4.0	14.0		81.9	19075	14542	1362	14.0	23721		53.3	18457	1495	3.62	13359
5.2	23.0		79.1	19170	14615	1348	14.2	23771		54.7	18889	1511	3.66	13732
2.7	6.4	80	97.3	17858	13614	1586	11.3	23268	70	59.2	19867	1552	3.75	14571
3.9	13.3		92.1	18302	13953	1551	11.8	23592		62.2	20699	1587	3.82	15283
4.0	14.0		91.8	18450	14065	1480	12.5	23500		62.3	20751	1590	3.82	15327
5.2	23.0		89.0	18486	14093	1466	12.6	23487		63.9	21272	1612	3.87	15771
2.7	6.4	85	101.6	16822	12895	1630	10.3	22383	80	67.8	22162	1649	3.94	16535
3.9	13.3		96.8	17619	13432	1572	11.2	22982		71.1	23114	1691	4.01	17343
4.0	14.0		96.5	17708	13500	1567	11.3	23054		71.3	23174	1695	4.01	17394
5.2	23.0		94.1	18150	13837	1559	11.6	23470		73.1	23803	1721	4.05	17929
2.7	6.4	90	107.1	17215	13124	1730	10.0	23118	85	72.0	23328	1700	4.02	17527
3.9	13.3		101.9	17554	13382	1670	10.5	23252		75.6	24382	1746	4.09	18424
4.0	14.0		101.7	17732	13518	1631	10.9	23296		75.8	2443	1749	4.09	18476
5.2	23.0		99.9	17821	13586	1622	11.0	23353		77.7	25100	1778	4.14	19033
2.7	6.4	100	117.0	16601	12656	1870	8.9	22983	90	76.3	24533	1753	4.10	18550
3.9	13.3		111.9	16927	12905	1806	9.4	23091		80.0	25667	1803	4.17	19516
4.0	14.0		111.6	17099	13036	1765	9.7	23122		80.2	26448	1807	4.17	19571
5.2	23.0		108.9	16185	13101	1751	9.8	23160		82.2	25732	1838	4.22	20176

Cooling capacity based on 80°F DB and 67°F WB entering air. Heating capacity based on 70°F DB entering air.

Cooling Capacity Multipliers for Entering Air Temperatures

EAT Wet Bulb	**Total Cooling Multiplier**	Sensible Cooling @ EAT Dry Bulb				
		75	**80**	85	90	95
61	0.87	0.99				
64	0.93	0.86	1.12			
67	**1.00**	0.75	**1.00**	1.25		
70	1.06		0.82	1.09	1.36	
73	1.13			0.92	1.18	1.44

Heating Capacity Multipliers for Entering Air Temperatures

Entering Air Temp (°F)	55	60	65	**70**	75	80	85
Multiplier	1.04	1.03	1.01	1.00	0.99	0.97	0.95

Water Source Heat Pumps

HRP 80 Performance Data — R410

		Cooling							Heating					
GPM (US GPM)	**WPD** (ft-H2O)	**EWT** (F)	**LWT** (F)	**TOT** (BTUH)	**SEN** (BTUH)	**WATT**	**EER**	**THR** (BTUH)	**EWT** (F)	**LWT** (F)	**TOT** (BTUH)	**WATT**	**COP**	**THA** (BTUH)
3.4	3.8	60	78.2	25311	19484	1649	15.35	30935	50	38.6	25293	1757	4.22	19298
4.9	7.9		72.7	25809	19867	1612	16.01	31308		41.7	26393	1799	4.30	20253
6.5	13.9		69.6	26071	20068	1539	16.94	31321		43.5	27355	1830	4.38	21109
6.7	15.0		69.3	26202	20169	1524	17.20	31400		43.7	27493	1836	4.39	21228
3.4	3.8	70	87.9	24408	18788	1812	13.47	30589	60	47.6	27633	1915	4.23	21098
4.9	7.9		82.6	24888	19158	1771	14.05	30932		51.0	28834	1961	4.31	22143
6.5	13.9		79.5	25141	19352	1691	14.87	30910		52.9	29886	1995	4.39	23078
6.7	15.0		79.2	25267	19450	1674	15.09	30979		53.1	30036	2001	4.40	23208
3.4	3.8	80	97.8	23537	18118	1969	11.95	30255	70	56.4	30189	2087	4.24	23067
4.9	7.9		92.5	24122	18568	1925	12.53	30691		60.1	31501	2137	4.32	24208
6.5	13.9		89.4	24317	18718	1838	13.23	30588		62.2	32650	2174	4.40	25230
6.7	15.0		89.1	24366	18756	1820	13.39	30574		62.4	32814	2181	4.41	25372
3.4	3.8	85	102.8	23110	17789	2095	11.03	30256	80	65.0	32981	2171	4.45	25574
4.9	7.9		97.5	23684	18231	2048	11.56	30672		69.0	34415	2223	4.54	26830
6.5	13.9		94.4	23875	18378	1955	12.21	30546		71.4	35670	2261	4.62	27954
6.7	15.0		94.0	23923	18415	1936	12.36	30528		71.6	35849	2268	4.63	28110
3.4	3.8	90	107.7	22690	17466	2179	1042	30123	85	69.2	34505	2258	4.48	26802
4.9	7.9		102.4	23136	17809	2130	10.86	30404		73.5	36005	2312	4.56	28117
6.5	13.9		99.3	23371	17990	2034	11.49	30309		76.0	37318	2352	4.65	29293
6.7	15.0		99.0	23488	18081	2013	11.67	30358		76.2	37506	2359	4.66	29456
3.4	3.8	100	117.5	21880	16843	2332	9.38	29837	90	73.5	36099	2348	4.51	28088
4.9	7.9		112.2	22311	17174	2252	9.91	29995		78.0	37669	2404	4.59	29465
6.5	13.9		109.2	22537	17348	2201	10.24	30046		80.6	39042	2446	4.68	30696
6.7	15.0		108.9	22650	17435	2175	10.42	30069		80.8	39238	2453	4.69	30867

Cooling capacity based on 80°F DB and 67°F WB entering air. Heating capacity based on 70°F DB entering air.

Cooling Capacity Multipliers for Entering Air Temperatures

EAT Wet Bulb	**Total Cooling Multiplier**	Sensible Cooling @ EAT Dry Bulb				
		75	**80**	85	90	95
61	0.87	0.99				
64	0.93	0.86	1.12			
67	**1.00**	0.75	**1.00**	1.25		
70	1.06		0.82	1.09	1.36	
73	1.13			0.92	1.18	1.44

Heating Capacity Multipliers for Entering Air Temperatures

Entering Air Temp (°F)	55	60	65	**70**	75	80	85
Multiplier	1.04	1.03	1.01	1.00	0.99	0.97	0.95

Water Source Heat Pumps

HRP 100 Performance Data — R410

		Cooling							Heating					
GPM (US GPM)	**WPD** (ft-H2O)	**EWT** (F)	**LWT** (F)	**TOT** (BTUH)	**SEN** (BTUH)	**WATT**	**EER**	**THR** (BTUH)	**EWT** (F)	**LWT** (F)	**TOT** (BTUH)	**WATT**	**COP**	**THA** (BTUH)
4.3	6.5	60	77.5	30523	23184	2114	14.44	37735	50	39.3	31018	2318	3.92	23109
6.1	13.0		72.5	31123	23640	2067	15.06	38175		42.0	32367	2374	4.00	24268
6.5	15.0		71.7	31439	23880	1973	15.93	38171		42.2	33547	2415	4.07	25307
8.1	23.0		69.4	31597	24000	1954	16.17	38262		43.7	33716	2422	4.08	25451
4.3	6.5	70	87.3	29434	22357	2323	12.67	37359	60	48.2	33888	2526	3.93	25267
6.1	13.0		82.3	30012	22796	2271	13.21	37762		51.3	35361	2587	4.01	26534
6.5	15.0		81.6	30317	23028	2168	13.98	37715		51.5	36650	2632	4.08	27670
8.1	23.0		79.3	30469	23144	2147	14.19	37794		53.1	36834	2640	4.09	27827
4.3	6.5	80	97.2	28383	21559	2525	11.24	36998	70	57.2	37022	2753	3.94	27627
6.1	13.0		92.3	29089	22095	2469	11.78	37512		60.5	38632	2820	4.02	29011
6.5	15.0		91.5	29324	22273	2357	12.44	37365		60.9	39260	2834	4.06	29590
8.1	23.0		89.2	29382	22318	2334	12.59	37344		62.5	40242	2877	4.10	30424
4.3	6.5	85	101.5	26737	20309	2595	10.30	35591	80	65.9	40447	2974	3.99	30300
6.1	13.0		96.98	28004	21271	2502	11.19	36542		69.6	42205	3045	4.06	31815
6.5	15.0		96.28	28145	21378	2495	11.28	36657		69.8	43744	3098	4.14	33173
8.1	23.0		94.21	28848	21912	2483	11.62	37319		71.8	43964	3107	4.15	33361
4.3	6.5	90	107.1	27362	20783	2755	9.93	36760	85	70.2	43215	3093	4.01	31763
6.1	13.0		102.2	27900	21192	2659	10.49	36973		74.1	44155	3167	4.09	33349
6.5	15.0		101.4	28183	21407	2697	10.85	37043		74.3	45765	3222	4.16	34771
8.1	23.0		99.1	28325	21514	2582	10.97	37133		76.4	45995	3232	4.17	34968
4.3	6.5	100	117.0	26385	20041	2978	8.86	36547	90	74.5	44270	3216	4.03	33296
6.1	13.0		112.1	26904	20436	2876	9.35	36718		78.5	46195	3294	4.11	34957
6.5	15.0		111.3	27177	20643	2811	9.67	36767		78.8	47879	3351	4.19	36446
8.1	23.0		109.1	27314	20747	2788	9.80	36827		80.9	48120	3361	4.20	36652

Cooling capacity based on 80°F DB and 67°F WB entering air. Heating capacity based on 70°F DB entering air.

Cooling Capacity Multipliers for Entering Air Temperatures

EAT Wet Bulb	**Total Cooling Multiplier**	Sensible Cooling @ EAT Dry Bulb				
		75	**80**	85	90	95
61	0.87	0.99				
64	0.93	0.86	1.12			
67	**1.00**	0.75	**1.00**	1.25		
70	1.06		0.82	1.09	1.36	
73	1.13			0.92	1.18	1.44

Heating Capacity Multipliers for Entering Air Temperatures

Entering Air Temp (°F)	55	60	65	**70**	75	80	85
Multiplier	1.04	1.03	1.01	1.00	0.99	0.97	0.95

Water Source Heat Pumps

Performance Data Notes

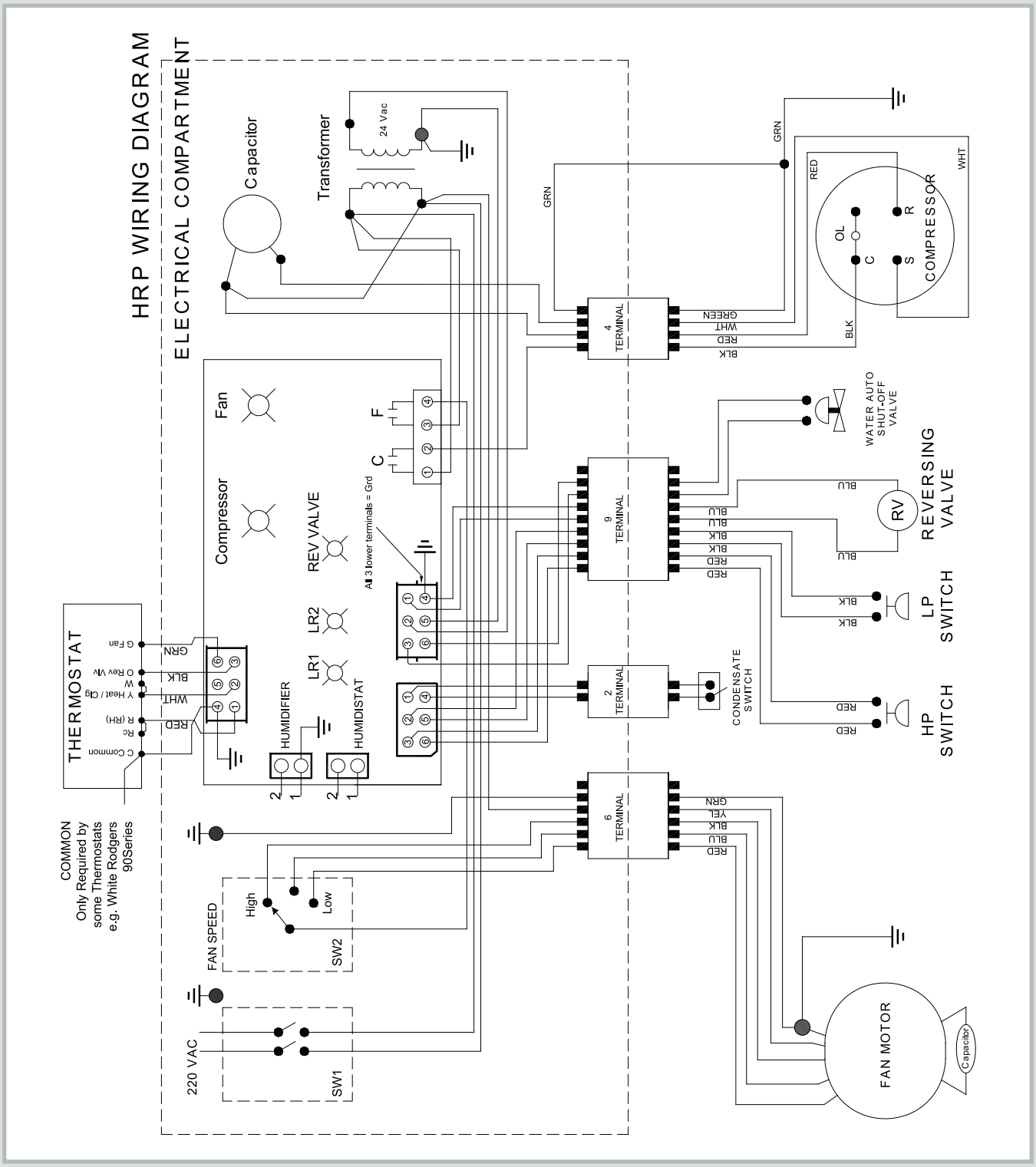
Water Source Heat Pumps

Electrical & Acoustic Data

omega HEAT PUMPS

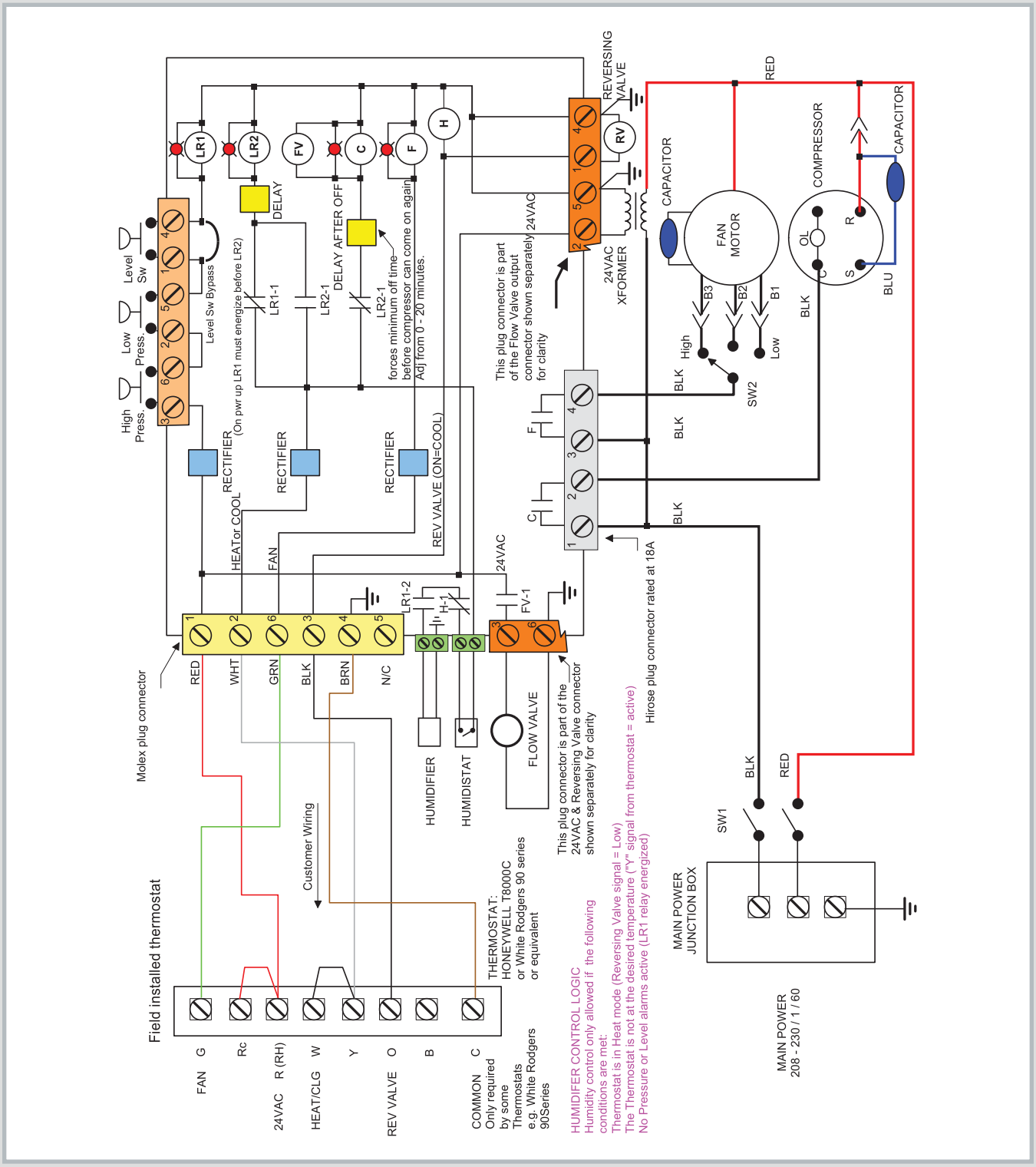
Water Source Heat Pumps

HRP Wiring Diagram



Water Source Heat Pumps

HRP Wiring Diagram



Water Source Heat Pumps

Electrical Data

UNIT SIZE	COMPRESSOR RLA	COMPRESSOR LRA	FAN MOTOR FLA	MOP	MCA	CIRCUIT BREAKER
HRP 30	3.80 A	20.0 A	1.00 A	15 A	5.80 A	15 A
HRP 40	4.80 A	26.3 A	1.00 A	15 A	7.00 A	15 A
HRP 60	10.20 A	51.0 A	1.50 A	20 A	14.30 A	15 A
HRP 80	12.80 A	60.0 A	2.10 A	30 A	18.10 A	20 A
HRP 100	14.70 A	72.5 A	2.60 A	35 A	21.00 A	30 A

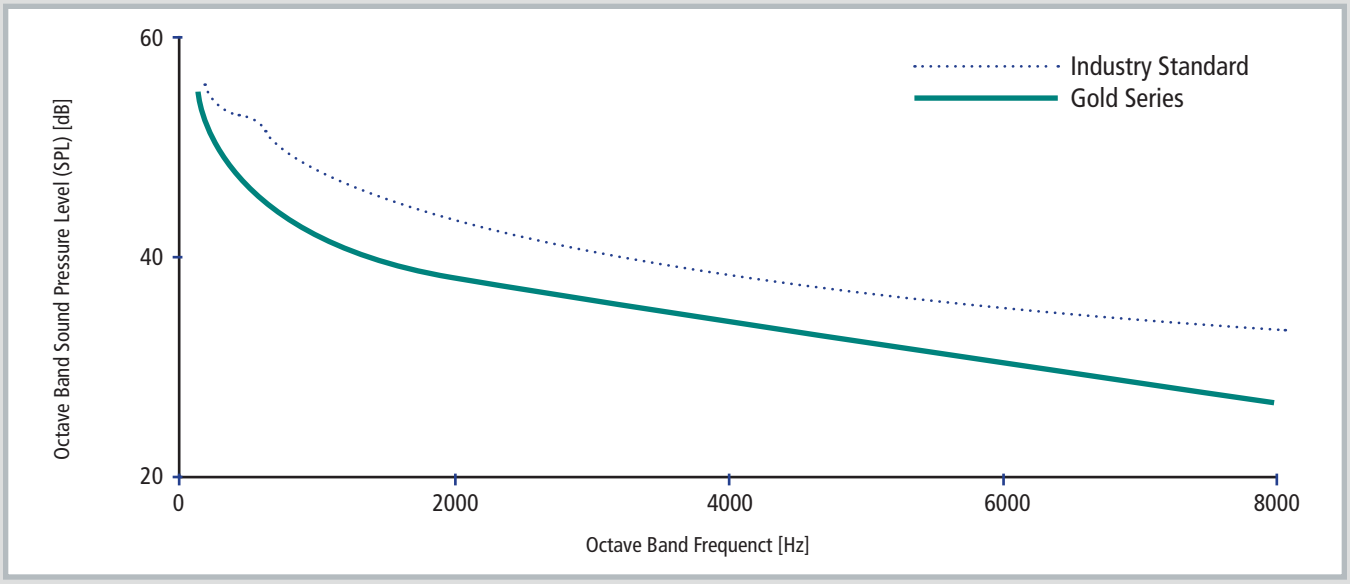
Additional Notes:

- Minimum voltage 200 V. Operating voltage 208-240 V single phase.
- RLA - Rated load amps; LRA - Locked rotor amps; FLA - Full load amps.
- MOP - Maximum overcurrent protection = (2.25 x RLA) + Fan FLA.
- MCA - Minimum circuit ampacity = (1.25 x RLA) + Fan FLA.
- Adhere to all applicable electrical codes.

Acoustic Data

Omega Gold & Silver Series Heat pumps were tested by an independent sound consultant and found to be 30% quieter than industry standard. The graph below shows the results of the sound test. Industry standard water source heat pump is shown with the dotted line, the solid line shows the Omega Gold & Silver Series sound data. Note that actual SPL measurements may vary due to installation conditions.

Omega Gold & Silver Series vs. The Industry Standard



Water Source Heat Pumps

Specifications & Startup

omega HEAT PUMPS

Water Source Heat Pumps

Specifications

Part One: General

1.1 General

1.1.1. Conform to General Provisions For Mechanical Divisions Section _____ and Basic Materials and Methods Section _____.

1.2 Submittals

1.2.1. Submit shop drawings and product data in accordance with Section _____.

1.2.2. Indicate the following: complete specifications; wiring diagrams (showing all interconnections); weight; performance details.

1.2.3. Provide data for inclusion in the Operating and Maintenance manuals in accordance with Section _____.

Part Two: Products

2.1 General

2.1.1. Vertical stacked heat pump units shall be HTS Omega (Gold & Silver) Series. Units shall provide scheduled capacities at the ampacity and voltage specified.

2.1.2. The cabinet shall be 20 gauge galvanized steel. Weld internal components for rigidity. Insulate internal surfaces with 1" thick acoustic and thermal mould resistant insulation.

2.1.3. **(OPTIONAL GOLD UNITS)** Cabinet shall be sectionalized for acoustic and installation purposes. Lower section shall have risers attached to it, house supply fan and removable chassis. Upper section shall be an acoustic discharge plenum with 1" thick 3.5 lbs. density, mould resistant, neoprene lined and mechanically fastened acoustic insulation on all inside surfaces. Discharge plenum shall be designed to be fastened to the underside of the concrete slab with (factory)(field) cut discharge openings. There shall be no rigid connection between the upper and lower cabinet sections. Provide a factory installed flexible connection between the upper and lower sections. Ensure mating surfaces of the canvas connection overlap by at least two inches and are glued together. Provide "S" cleat to join upper and lower plenums to the metal portion of the flex connection. Fasten metal portion of the flex connection with sheet metal screws thru the "S" cleat into the metal of the plenums. Heat pump manufacturer shall factory attach flexible connection to the discharge plenum section. Installing contractor shall make the final connection of the flexible connection to the lower cabinet section with field provided sheet metal screws into the factory installed "S" cleat.

2.1.4. The drain pan shall be 16 gauge (galvanized steel coated with mastic) (stainless steel). Provide a 7/8 OD copper drain connection.

2.1.5. Provide direct drive fan and motor assembly with internally overload protected, permanent split capacitor, oil lubricated motor. Units shall be supplied with three speed fan motors. Fan motors are factory wired to high speed.

Water Source Heat Pumps

Specifications

2.1.6. Factory installed supply and return risers shall be (Type M) (Type L) copper, with two combination balancing and shut off ball valves inside the cabinet. Valves shall be brass and rated for 400 PSI . Provide (3/4" internal)(external) condensate riser factory installed. Risers sizes shall be as shown on the plans.

2.1.7. Provide high temperature, high pressure water hoses for connection of the risers to the chassis. Hoses supplied shall be constructed with an inner core of rubber, a metal braided covering and an outer rubber coating. Fittings shall be brass construction. Hoses shall carry a pressure rating of 2000 PSIG. Steel braided hoses without the outer rubber covering are not acceptable.

2.1.8. The compressor chassis shall be mounted on 12 gauge slide rails. The chassis shall be isolated from the cabinet. Compressor shall have an acoustical enclosure ensuring compressor noise is isolated from air stream. Provide plug type electrical connections so that the chassis can be easily removed from the front of the cabinet for service.

2.1.9. The refrigeration circuit shall have two Schrader service valves extended to the top of the compressor enclosure. The service valves shall be accessible without removing the chassis. The refrigerant circuit shall contain reversing valve and refrigerant metering device arranged for reversing refrigerant flow.

2.1.10. Compressor shall be hermetically sealed type with internal thermal overload protection. Compressor shall be mounted on RIS isolation.

2.1.11. Air side coils shall have copper tubes mechanically bonded to aluminum fins. Coils shall be sized to meet scheduled performance for cooling and heating. Provide 1" T/A filter on coil face.

2.1.12. Water side heat exchanger shall be coaxial type with steel outer tube and copper inner tube. Condenser shall be rated at 400 PSI water side and 450 PSI refrigerant side.

2.1.13. Each unit shall be supplied with double deflection supply grilles as shown on the plans.

2.1.14. Each unit shall have (Acoustic) (Perimeter) return air acoustical panel. Panel shall be insulated with acoustical insulation. Panel shall be easily removable without tools to allow access for filter and disconnect. Panel shall be flush mounted on the drywall.

2.1.15. Unit mounted control enclosure shall contain: controls for compressor, reversing valve and fan motor; 24 volt control power transformer; terminal block for low voltage field wiring connection; terminal block for main electrical connection; (optional) unit mounted disconnect switch. Operating and safety controls shall include: low suction pressure; high discharge pressure lock out switch; compressor overload; supply fan overload. Reset of safety devices shall be accomplished by interrupting power supply to the unit. All control components, except CPT and reversing valve, shall be mounted on a circuit board with plug in quick connects to components they are controlling. Compressor capacitor shall be located in the control panel. Relays and capacitors shall be located within the acoustic compressor enclosure.

Water Source Heat Pumps

Specifications

2.1.16. Thermostats shall be (unit) (remote) mounted. Thermostat shall have a minimum 5-minute off time between compressor starts. Thermostats shall be:

- Manual changeover low voltage for cooling and heating operation. Subbase shall have system "Heat-Off-Cool" and fan "On-Auto" switches.
- Automatic changeover low voltage for cooling and heating operation. Subbase shall have system "Off-Auto" and fan "On-Auto" switches.
- Programmable microelectronic for cooling and heating, night setback, night setup, and day/night time clock operation. Thermostat shall have system "On-Off", temperature "Heat-Auto-Cool" and fan "On-Auto" switches.

2.1.17. Warranty shall be for 1 year not to exceed 18 months from date of shipment for parts only. (Optional) Provide 5 year compressor replacement parts warranty only. (Optional) Provide 5 year complete refrigerant circuit parts and labour warranty.

Part Three: Execution

3.1 Installation

3.1.1 Install units on neoprene vibration isolation pads.

3.1.2. Install all units neat and level following manufacturer instructions.

3.1.3. Installing contractor shall supply and install conection fittings to units. The flare fittings should be connected in a fashion matching industry standards. (Finger tight plus 1/4 turn with wrench.)

3.1.4 (Add for Gold units). Installing contractor shall make the final connection of the flexible connection to the lower cabinet section with field provided sheet metal screws into the factor installed "S" cleat.

3.1.5. Flush the system per manufacturer instructions before connecting chassis water connections to risers.

3.1.6. Furnish the services of a trained representative of the equipment manufacturer to supervise the startup of units.

Water Source Heat Pumps

Start Up Procedures

The following is designed to guide you through the process of flushing the HRP system. Failure to perform any of the steps below will result in the termination of the manufacture's warranty.

1. Prior to first operation of any HRP unit, the water circulating system must be cleaned and flushed of all construction dirt and debris. The chassis cannot be connected to system when flushing is being conducted. Supply and return pipes must be interconnected with factory supplied hoses to properly flush system. This will prevent the introduction of dirt into the chassis.
2. Before filling installer should ensure all flare fitting connections to the heat pumps meet industry standards. (Finger tight plus 1/4 turn with wrench.)
3. Fill system at city water makeup connection with all air vents open. After filling close all air vents assure that boiler and heat rejector are off but flow is allowed through each. The installer/contractor should start main circulating pump with pressure reducing makeup valve open. Check vents in sequence to bleed off any trapped air, assuring circulation through all components of the system.
4. Shut off circulating pump and open all drains and vents to completely drain the system. Short circuited supply and return runouts should now be connected to the HRP unit with factory supplied supply and return hoses. Teflon tape is recommended instead of pipe dope for pipe thread connections. Use no sealers at the swivel flare connections of hoses.
5. Trisodium phosphate is recommended as a cleaning agent during flushing. However, many localities prohibit the introduction of phosphates into their sewage systems. The current recommendation is to contact your local water treatment specialist.
6. Refill the system with clean water. Test with litmus paper for acidity, and treat as required to leave the water slightly alkaline (pH 7.5 to 8.5). The specified percentage of antifreeze may also be added at this time. Use commercial grade antifreeze designed for HVAC systems only. Do not use automotive grade antifreeze.
7. Installing contractor to provide written confirmation that the system was properly flushed and balanced. An independent flushing & balancing agency must be used. Once this is complete a proper start can be completed by HRP start-up contractor.
8. Set the system heat add setpoint to 70°F (27°C) and the heat rejection setpoint to 85°F (29°C). Supply power to all motors and start the circulating pumps. After full flow has been established through all components including the heat rejector (regardless of season) and air vented and loop temperatures stabilized, each of the HRP units will be ready for check, test and start-up and for air and water balancing.

Standard Warranty

Standard Warranty shall be for 1 year not to exceed 18 months from date of shipment for parts only.

Contact

omega HEAT PUMPS

Omega Heat Pump Incorporated

www.omega-heatpump.com