COMMERCIAL HEAT PUMP

A2W

Heat water using free energy from the air using our Air-to-Water models

W2W

Heat water using waste heat from a chiller using our Water-to-Water models

Richmond®
The Water Heater Experts™

These high efficiency models offer:

- Reduced running costs and CO2 emissions for building owners
- High quality components for durability
- Richmond iQ control provides on board diagnostics, system configuration and optional high level BMS connectivity via Modbus or BACnet

FOR WHERE ENERGY EFFICIENCY IS ESSENTIAL

HEAT PUMP | HOT WATER TO 65 °C | SAVE UP TO 75% ENERGY

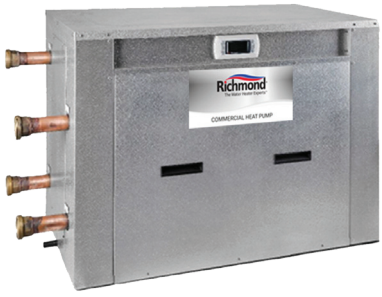
HIGHLY EFFICIENT

On average, 25% of the operating cost of an electric water heater. Delivers hot water up to 65°C, with a system Coefficient of Performance (COP) of up to 4.37[1] and 4.95[2]. This makes it substantially cheaper to run than electric, natural gas or propane. Highly efficient option for fuel redundancy. Heat pumps can also be used as a preheat to other boost fuel types.

LOW AMBIENT OPERATION

Reverse cycle defrost allows continued performance in low ambient temperature conditions.

A2W



W2W

65 ˚C hot water in a super-efficient, super-compact package.

OPERATING PRINCIPLES:

Heat pumps capture and then transfer energy stored in the form of heat from air and water into heating energy. Naturally created energy in the surrounding air or waste heat from the air conditioning system is captured by an evaporator and then boosted by a compressor to a high temperature, at which point it is transferred via a condenser to heat water in a storage tank. This process is highly efficient.
The system saves energy, depending on the COP and operating conditions up to four unit (A2W) or six units (W2W) of heating energy is gained for only one unit of electrical input energy.

The Richmond Commercial Heat Pump are manufactured for the following heat source options:

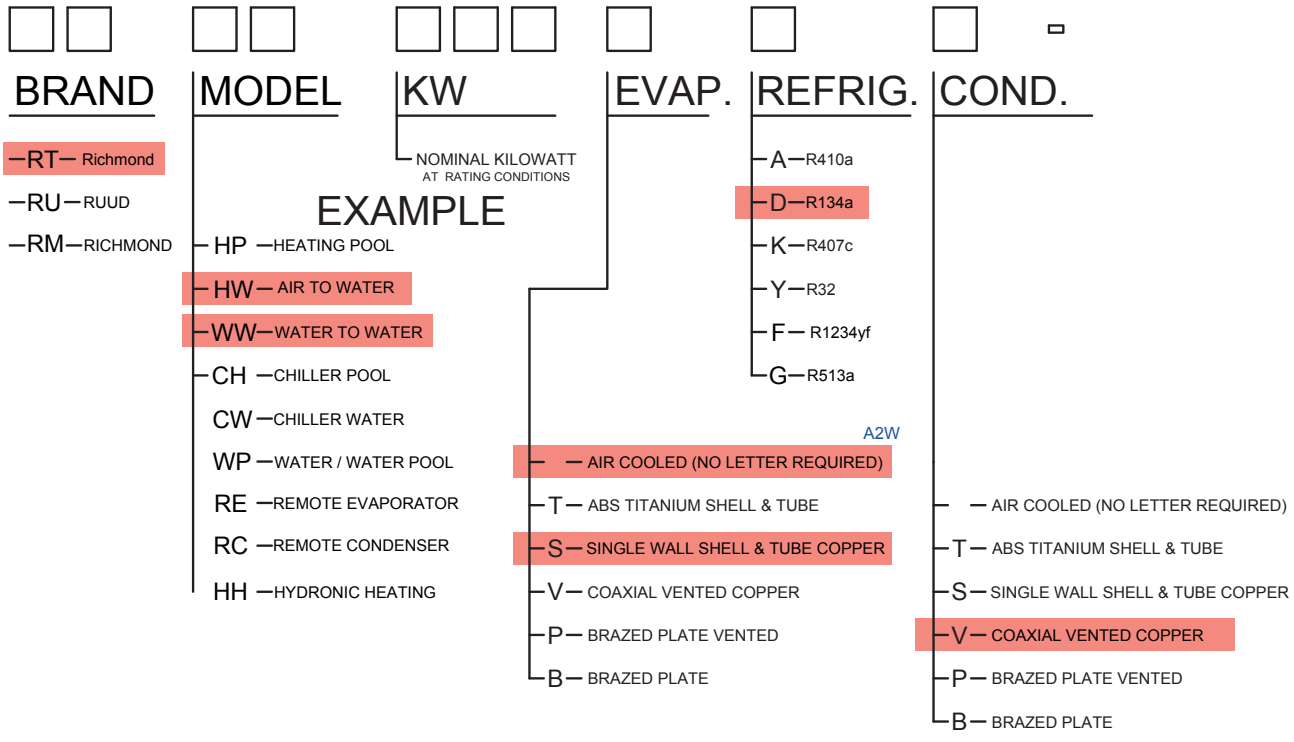
AIR-TO-WATER HEAT PUMPS:

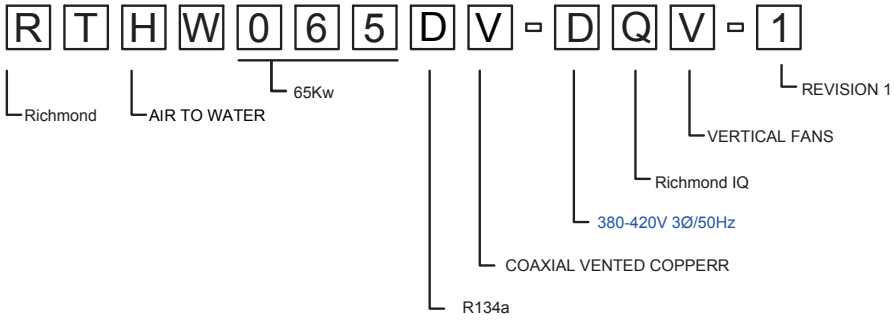
In Air-to-Water design, the Richmond Heat Pump transfers heat from the air, providing the advantages of a solar water heater without the need for direct solar gain to a collector.
The technology is perfectly suited to temperate climates where the warm temperatures and high humidity translate to highly-efficient water heating. However, while the rate of transfer is highest on warm days, the Richmond Heat Pump design is versatile and heat gain is made even in low ambient temperatures providing the potential for year-round heating across a range of climates.

WATER-TO-WATER HEAT PUMPS:

The Richmond Water-to-Water Heat Pump is a compact and quiet option where a water source is available. The choice of water source can vary, from groundwater to the ocean, to the condensing loop of a building or the outlet water from a cooling plant. A regular, consistent water source produces a stable high efficiency output, with the potential benefit of providing the dual function of hot water and chilled water supply

NOMENCLATURE





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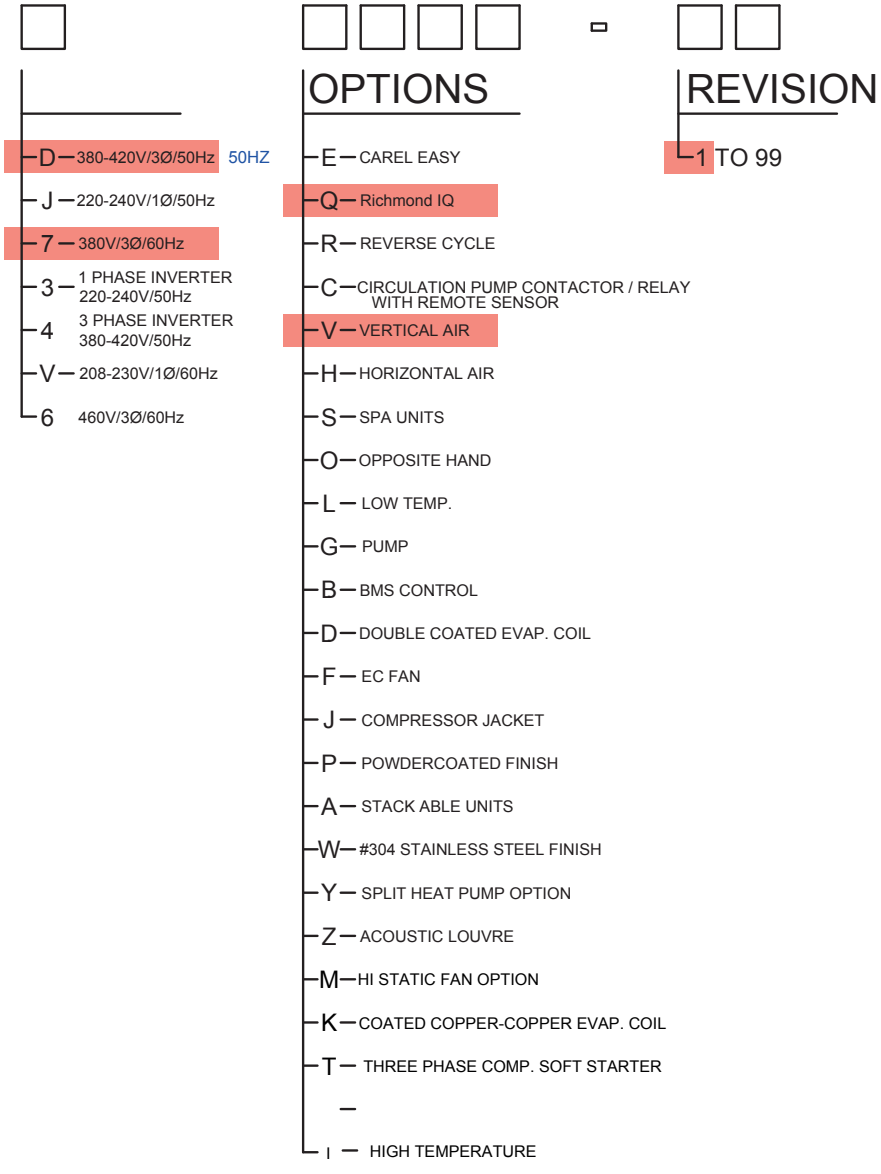


STANDARD MODEL NUMBERS & DATA:

A2W Standard Model For 50Hz Market				
Air to Water Heat Pump	Heating Capacity (KW)	Power Input (KW)	Max Outlet Water Temperature (°C)	Dimensions (mm) Length x Width x Height
RMHW022DP-DQV-1	22	4.5	65°C	1176 x 565 x 1011 mm
RMHW049DP-DQV-1	49	10	65°C	1857 x 807 x 1378 mm
RMHW070DV-DQV-1	70.8	14	65°C / 70°C*	2180 x 1002 x 1375
RMHW096DV-DQV-1	94.9	19.34	65°C / 70°C*	2180 x 1134 x 1438
RMHW124DV-DQV-1	121.8	24.7	65°C / 70°C*	2380x 1134 x 1476
RMHW153DV-DQV-1	151.4	30.76	65°C / 70°C*	2540 x 1258 x 1933
RMHW186DV-DQV-1	182.8	34.7	65°C / 70°C*	3463 x 1963 x 2348
RMHW248DV-DQV-1	243.7	51.07	65°C / 70°C*	3595 x 1963 x 2288

W2W Standard Model For 50Hz Market				
Water to Water Heat Pump	Heating Capacity (KW)	Power Input (KW)	Max Outlet Water Temperature (°C)	Dimensions (mm) Length x Width x Height
RMHW071SDS-DQ-1	71.1	14.2	70°C	2120 x 805 x 1000
RMHW088SDS-DQ-1	87.8	17.3	70°C	2120 x 805 x 1000
RMHW116SDS-DQ-1	114.5	23.03	70°C	2370 x 1150 x 1000
RMHW142SDS-DQ-1	142.3	28.37	70°C	2370 x 1150 x 1000
RMHW176SDS-DQ-1	175.6	34.6	70°C	2370 x 1150 x 1000
RMHW213SDS-DQ-1	213.46	42.56	70°C	2586 x 2240 x 1270

Notes:

The above capacities are at rated condition as following:

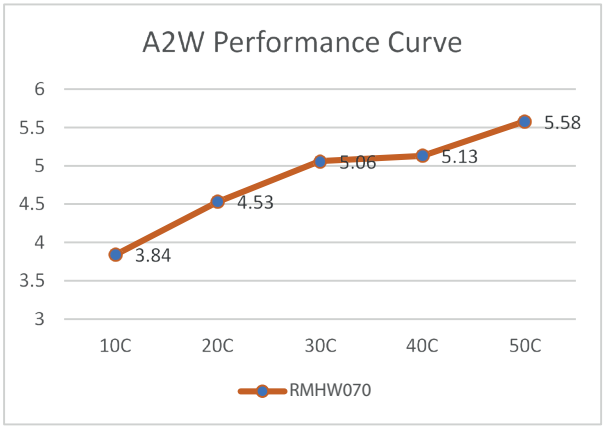
[1]For A2W at 30 °C Ambient Temperature with water out temperature of 45°C (Max: 65°C)

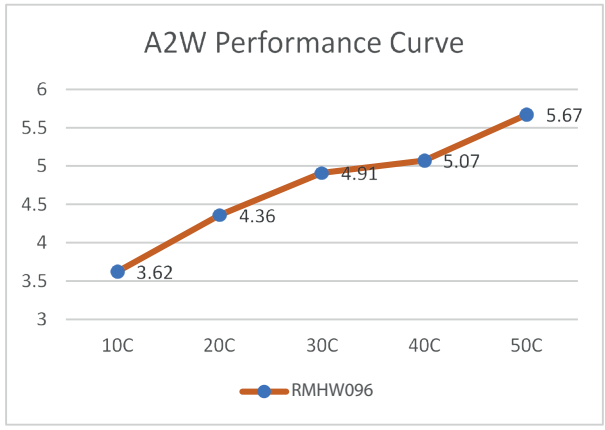
[2]For W2W at 20 °C Cold water in Temperature with water out temperature of 45 °C (Max: 70°C)

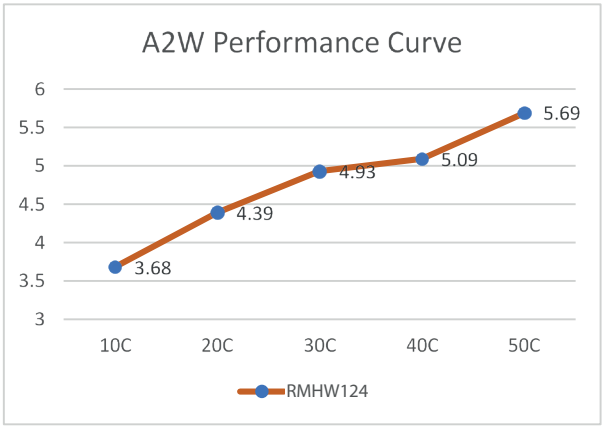
Voltage-Phase: 380 – 415V 3 Phase, R134a refrigerant, Coaxial Vented Copper condenser / Richmond IQ Control

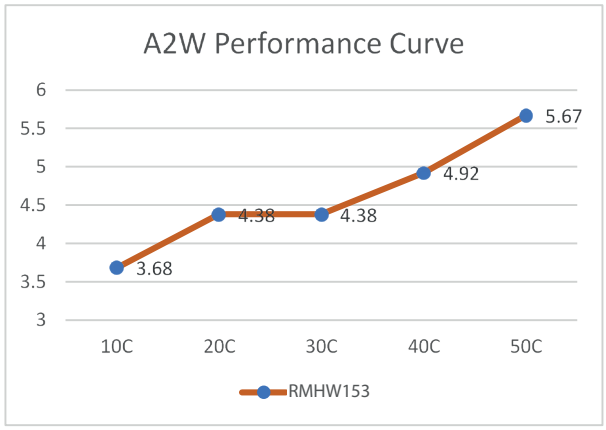
For 22 kw and 49 kW A2W models : Voltage - phase : 380-415V 3 phase, R134a refrigerant,
Vented Brazed Plate Heat Exchanger / Richmond IQ Control

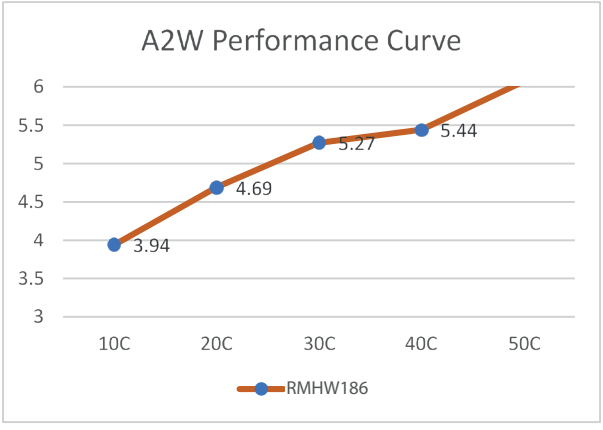
A2W EACH MODEL COP AT VARIOUS AMBIENT TEMPERATURES

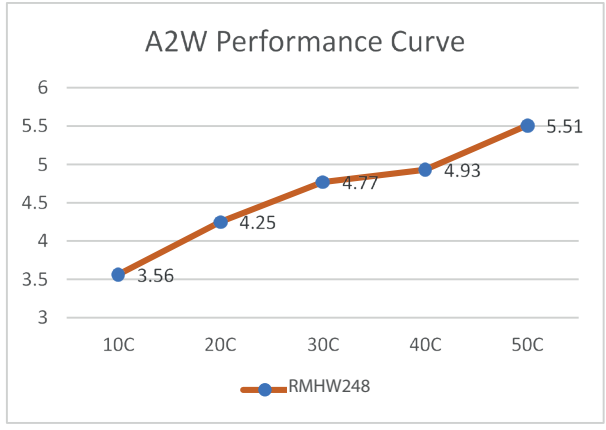










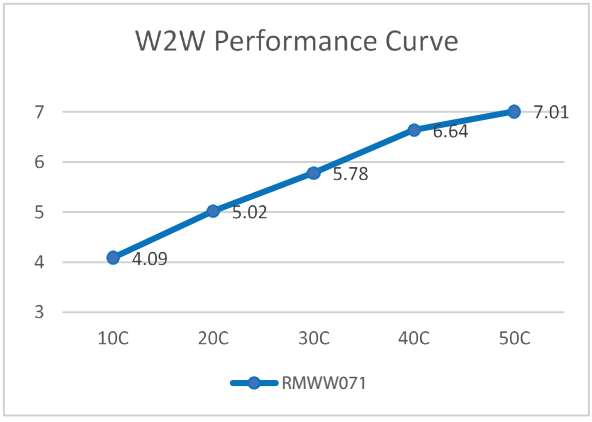


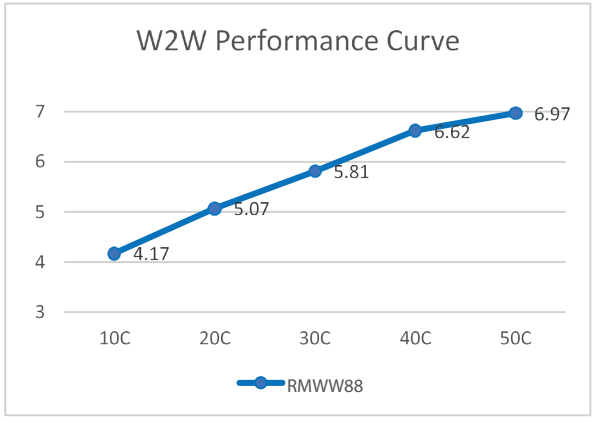
Notes:

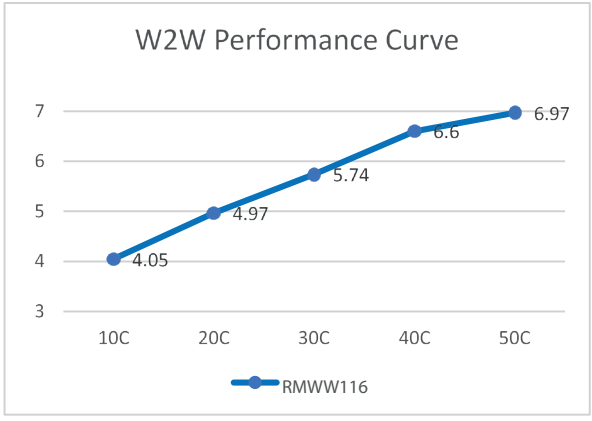
The above COP values are at water out temperature of 45°C

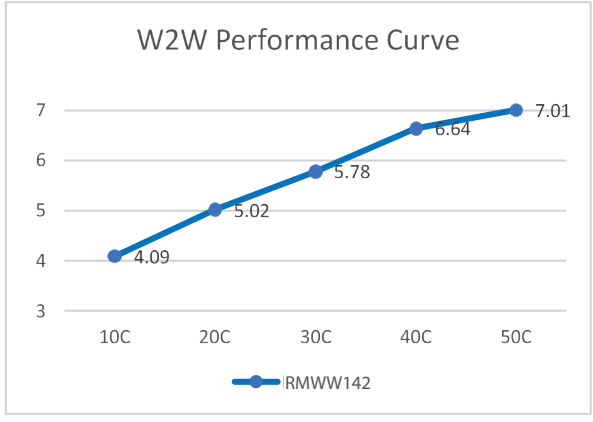
For A2W nominal capacities are shown at 30 °C ambient temperature and water out temperature of 45°C (Max: 65°C)

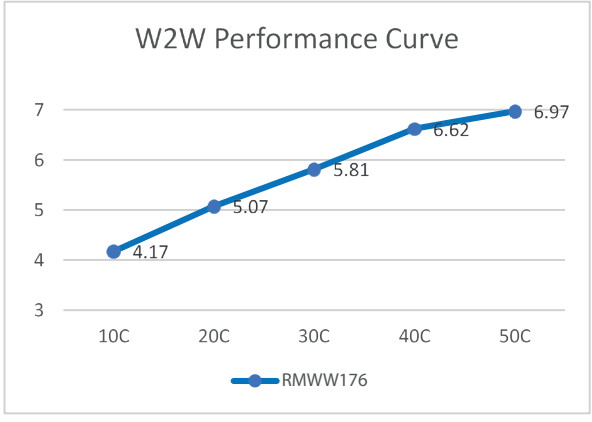
W2W EACH MODEL COP AT VARIOUS COLD WATER IN TEMPERATURES

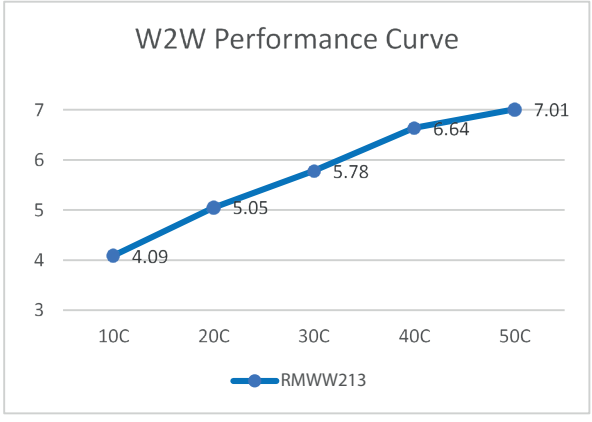




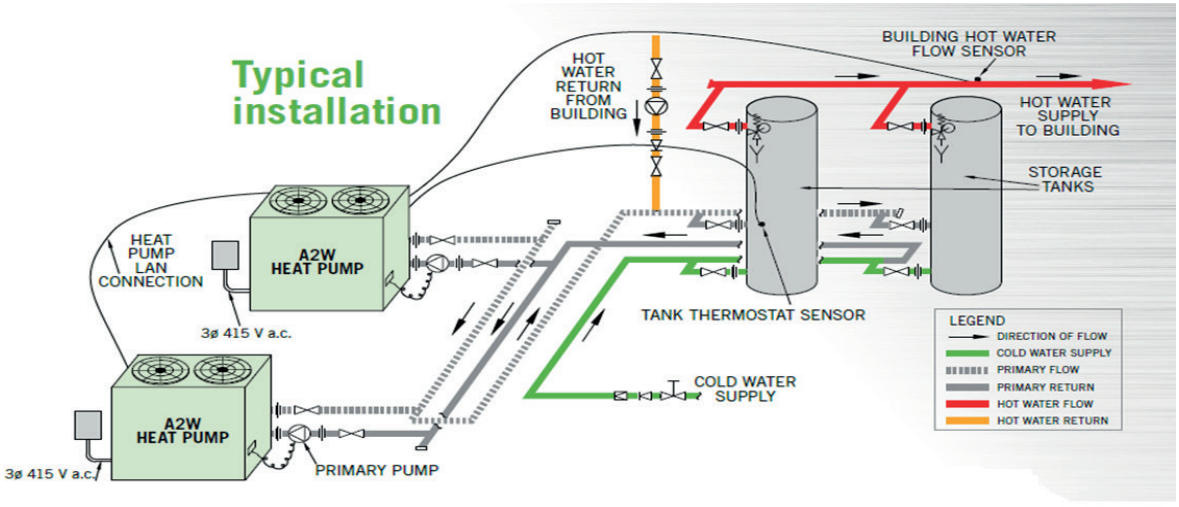




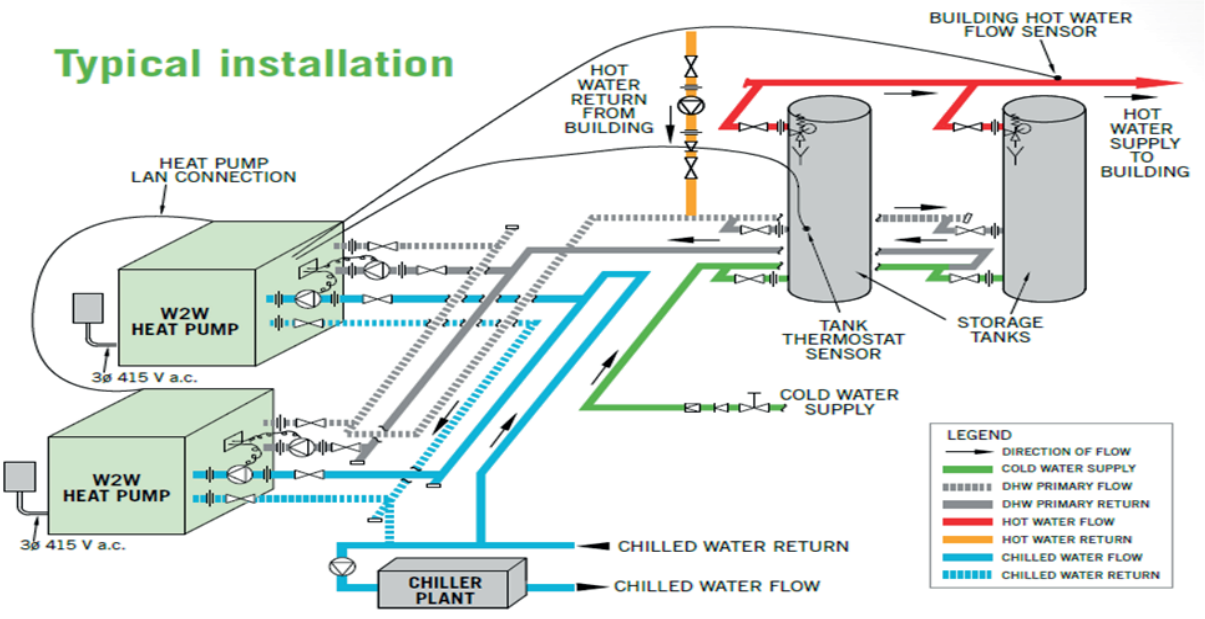




A2W Schematic Layout



W2W Schematic Layout



Notes:

What can be supplied by Richmond: Standard Heat Pump units with standard IQ controller as per selection and design, Storage tanks, back up heating elements (where selected).

What need to be supplied by others at site: Pumps, complete piping network with valves and all accessories, any additional control functions, wirings, drain points etc.

CONTROL FEATURES:

Richmond Commercial Heat Pump comes with exclusive IQ Controller which is a critical part of the system.
The IQ controller enables energy savings by helping optimal operation with higher efficiencies across a broad range of hot water application.

TEMPERATURE CONTROL

Enables to control single point or as sophisti¬cated as differing time-based differentials or dead band operation, with potential to link to compressor staging for variable loads in mechanical hot water heating.

ADVANCED OPERATIONAL CONTROL:

Maintain operation within correct parameters. The controller is fed information on operation and performance for both the water and refrigeration aspects of the system. Sensors provide data on water inlet and outlet temperatures, Refrigeration pressure transducers and sensors constantly monitor suction and discharge pressures and temperatures.
Evaporator coil sensors and ambient air temperature sensing allows specialist programming to optimize efficiency based on outside conditions.

SAFETY AND SERVICEABILITY:

Compressor operation, entering and leaving water temperatures and alarm status are immediately vis¬ible.
Quick access for alarm attention is made from the Home Screen.
The dedicated Service Module within the IQ Controller provides a unique and broad array of information to aid service and maintenance.

SAVING ELECTRICITY COSTS

Exclusive programming logic to optimize lowered-priced times of operation by slight movements of the target water temperature

SAVING PUMP COSTS

The IQ controller can control power to the water pump, In-line with the run profile determined by the intelligent controller to minimize heating costs.

USER INTEGRATION FEATURES:

The IQ controller is designed to integrate with Building Management Systems
The IQ controller has BMS capability via BACnet on MS/TP or on RS485, BACnet on TCP/IP via web server (via Ethernet LAN connection) or Modbus serial card allowing direct interrogation, status checking and performance data review.

APPLICATION:

DOMESTIC HOT WATER:

Water heating is a significant user of energy and can account for 25% of total household energy consumption giving a clear incentive to convert to a renewable heating technology.

MECHANICAL AND PROCESS WATER HEATING AND CHILLING:

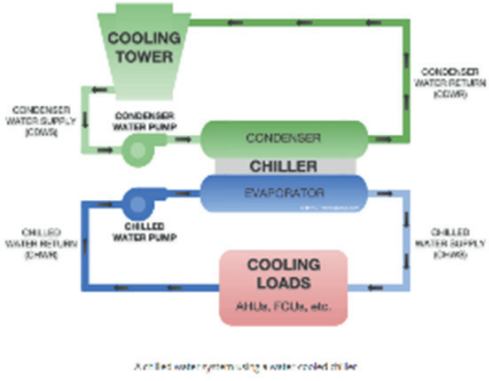
The highly efficient Heat Pump is used to provide electrically generated low-cost hot water in many specialist applications, ranging from hospitals, large office buildings and supermarkets to more diverse uses in manufacturing, mining and primary industry. Mechanical hot water or chilled water is typically supplied to fan coils for space heating or cooling and for process often the hot water is used directly.

HIGH-TEMPERATURE HOT WATER:

The specialist focus and research capability of our manufacturing base means that the heat pump can provide high efficiency hot water up to 70°C leaving water temperature (W2W)

HOT WATER TO CHILLED WATER:

When coupled to a building's chilled water ring main, this Water-to-Water heat pump provides energy efficient water heating whilst simultaneously providing the by-product of a chilled water supply.

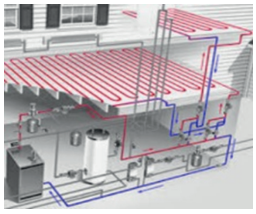


HYDRONIC HEATING:

Typically providing hot water at mid-range temperatures for home and building comfort, heating via either a hydronic loop or radiators, this range of high-efficiency heat pumps have also been used in primary industry applications such as piggeries, poultry farming and greenhouses.

AQUACULTURE WATER HEATING AND CHILLING:

The client base using our technology includes market leading commercial operators, international government research facilities, and a range of seafood processing industries (e.g. kingfish, lobster, barramundi and abalone).



RESIDENTIAL, COMMERCIAL AND AQUATIC CENTRE POOL HEATING:

The Richmond technology platform is internationally recognized in this field. Many prestigious international projects are included in a proud history including heating and cooling for the Pan Pacific, Commonwealth Games, Asian Games and Pacific Games.

ELITE SPORTS:

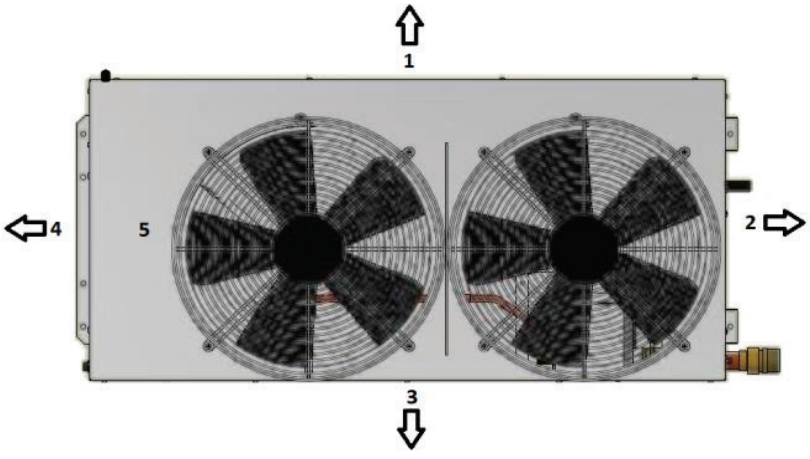
The Richmond Heat Pump is a feature of many major sports' stadiums, providing heating and chilling of water for elite athlete training and recovery. In water-to-water design, these units simultaneously provide heating and chilling to separate recovery ice baths and hot spas.

AIR-TO-WATER HEAT PUMP SPECIFICATIONS

Vented Brazed Plate Heat Exchanger / Richmond IQ Control	RMHW022DP-DQV-1
ELECTRICAL INPUT	
Voltage/Phase	380 - 415 Volts / 3 Phase / 50 Hz
Full Load / Locked Rotor (Amps Per Phase)	15.4 FLA / 101 LRA (inc pump)
Min. Circuit Size	20.0 Amps
Refrigerant	R134a
Nominal Heating Capacity	21.69 kW
Power Input	4.48 kW
COP	4.84 COP
Noise Level	61 dBa @ 3 m
Rated Load Amps @ 15°C SST / 50°C SCT	12.2 Amps
AIR SIDE	
	Fan
Size	450mm
Type	Axial
Number Per Unit	2
Air Flow (at max. static pressure)	1600 L/s
Max. Static Pressure	5 Pa
Min. Ventilation per Inlet and Outlet (w/ cross flow ventilation)	2.0 m^2 each
HEAT EXCHANGER (Water Side)	
Type of Water Tube	Double Wall
Design	Vented Brazed Plate
Flow Rate Excl. By Pass	1.10 L/s
Max. Outlet Water Temp	65°C*
Design Pressure Drop	33 kPa
Max. Operating Pressure	1,550 kPa +200/-300 kPa
Recommended Water Pump	Grundfos CM3-2
Max. Recommended Pump Current/Power Input	2.4 Amps | 300 Watts
GENERAL INFORMATION	
Water Connections	R 1-1/4" (Male 1-1/4" BSP)
Drain	20mm PVC
Defrost	Hot Gas Injection
Cabinet Construction	1.2mm Stucco Aluminium
Approx. shipping weight	130 kg
Size L x W x H	1176 x 565 x 1011 mm

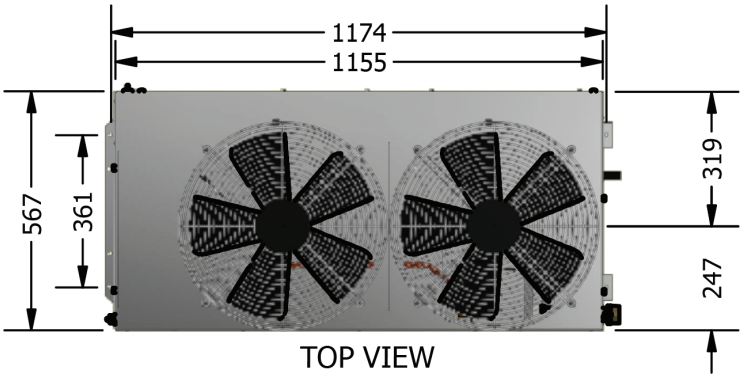
COP TABLE

Water Out °C	Ambient Temperature °C									
	0 °C	5 °C	10 °C	15 °C	20 °C	25 °C	**30 °C**	35 °C	40 °C	45 °C
45 °C	11.18 kW 2.81 COP	12.85 kW 3.16 COP	14.51 kW 3.50 COP	16.17 kW 3.84 COP	17.83 kW 4.19 COP	19.76 kW 4.52 COP	**21.69 kW** **4.84 COP**	23.62 kW 5.17 COP	25.55 kW 5.50 COP	27.48 kW 5.83 COP
50 °C	11.07 kW 2.56 COP	12.70 kW 2.88 COP	14.33 kW 3.19 COP	15.96 kW 3.51 COP	17.59 kW 3.82 COP	19.42 kW 4.12 COP	21.25 kW 4.42 COP	23.08 kW 4.72 COP	24.91 kW 5.02 COP	26.74 kW 5.32 COP
55 °C	10.96 kW 2.31 COP	25.65 kW 2.60 COP	14.16 kW 2.88 COP	15.76 kW 3.17 COP	17.36 kW 3.46 COP	19.08 kW 3.73 COP	20.81 kW 4.00 COP	22.54 kW 4.27 COP	24.27 kW 4.54 COP	26.00 kW 4.81 COP
60 °C	N/A	12.42 kW 2.31 COP	13.98 kW 2.57 COP	15.55 kW 2.83 COP	17.12 kW 3.09 COP	18.75 kW 3.33 COP	20.38 kW 3.58 COP	22.00 kW 3.82 COP	23.63 kW 4.06 COP	25.26 kW 4.30 COP
65 °C	N/A	12.32 kW 2.13 COP	13.88 kW 2.39 COP	15.42 kW 2.62 COP	16.97 kW 2.86 COP	18.54 kW 3.09 COP	20.10 kW 3.31 COP	21.67 kW 3.54 COP	23.24 kW 3.76 COP	24.80 kW 3.99 COP

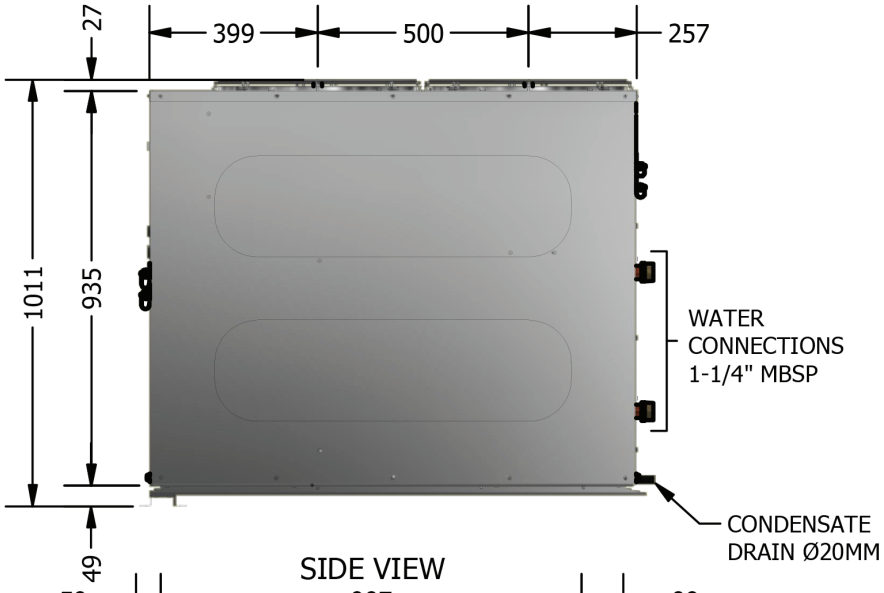


UNIT CLEARANCES		
Direction	Description	Minimum Clearance Required
1	Evaporator Coil	350mm
2	Water Connections	500mm
3	Plain Back	Nil
4	Compressor Access	850mm
5	Top - Fan Discharge	2500mm

When units are placed side by side, allow at least 700mm distance between evaporator coils.
Rating Conditions: 30°C ambient, 60% RH, 39°C Water in, 45°C Water out
* Max outlet temperature when ambient is above 5°C

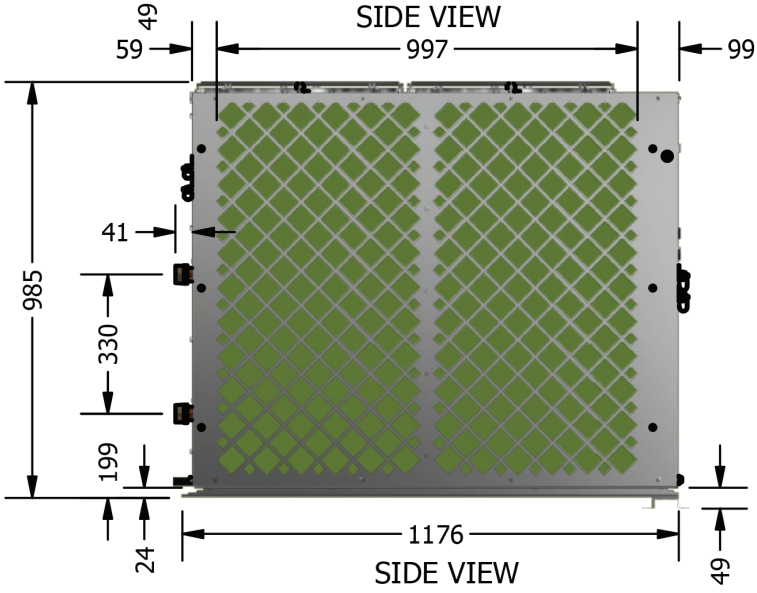


TOP VIEW



SIDE VIEW

END VIEW



SIDE VIEW

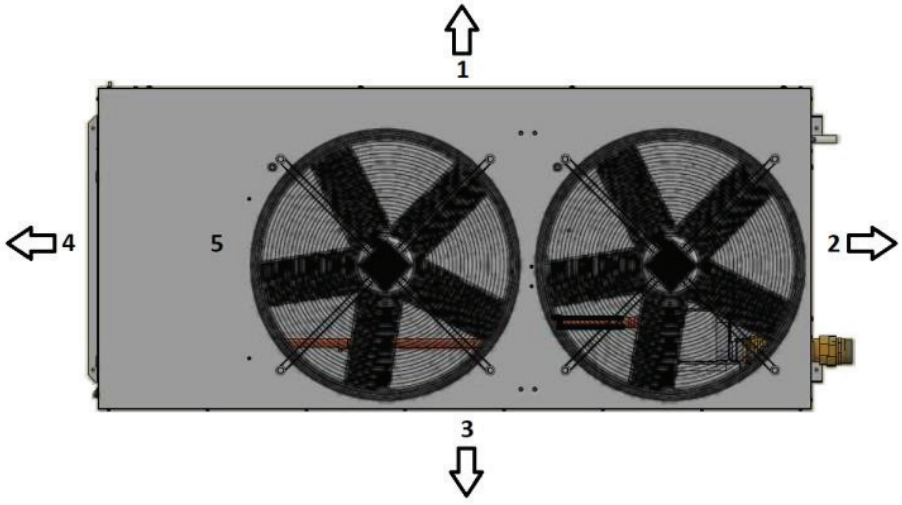
END VIEW

AIR-TO-WATER HEAT PUMP SPECIFICATIONS

Vented Brazed Plate Heat Exchanger / Richmond IQ Control	RMHW049DP-DQV-1
ELECTRICAL INPUT	
Voltage/Phase	380 - 415 Volts / 3 Phase / 50 Hz
Full Load / Locked Rotor (Amps Per Phase)	34.0 FLA / 174 LRA (inc pump)
Min. Circuit Size	40.0 Amps
Refrigerant	R134a
Nominal Heating Capacity	49.05 kW
Power Input	9.93 kW
COP	4.94 COP
Noise Level	69 dBa @ 3 m
Rated Load Amps @ 10°C SST / 51°C SCT	28.6 Amps
AIR SIDE	
	Fan
Size	630mm
Type	Axial
Number Per Unit	2
Air Flow (at max static pressure)	4306 L/s
External Static Pressure	5 Pa
Min. ventilation per Inlet and Outlet	4.0 m²
HEAT EXCHANGER (Water Side)	
Type of Water Tube	Double Wall
Design	Vented Brazed Plate
Flow Rate Excl. By Pass	2.20 L/s
Max. Outlet Water Temp	65°C*
Design Pressure Drop	40 kPa
Max. Operating Pressure	1,550 kPa +200/-300 kPa
Recommended Water Pump	Grundfos CM10-1
Max. Recommended Pump Current/Power Input	4.4 Amps | 670 Watts
GENERAL INFORMATION	
Water Connections	R2 (Male 2" BSP)
Drain	20mm Aluminium
Defrost	Hot Gas Injection
Cabinet Construction	1.2mm Stucco Aluminium
Approx. shipping weight	300 kg
Size L x W x H	1857 x 807 x 1378 mm

COP TABLE

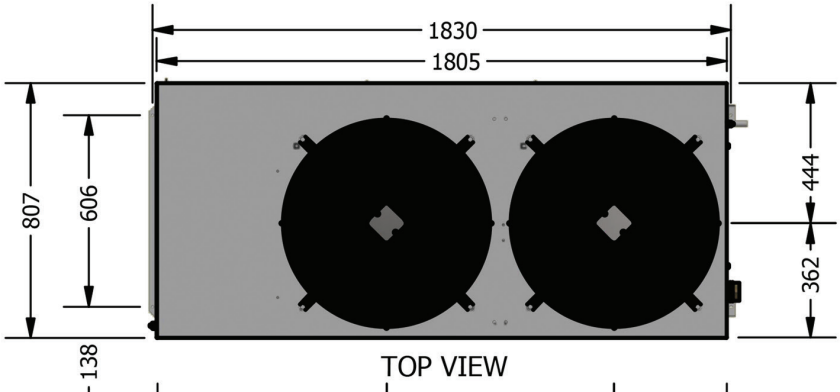
Water Out °C	Ambient Temperature °C									
	0 °C	5 °C	10 °C	15 °C	20 °C	25 °C	**30 °C**	35 °C	40 °C	45 °C
45 °C	22.63 kW 2.33 COP	26.60 kW 2.72 COP	29.07 kW 2.97 COP	33.96 kW 3.46 COP	39.55 kW 4.02 COP	46.04 kW 4.65 COP	**49.05 kW** **4.94 COP**	52.11 kW 5.23 COP	54.57 kW 5.45 COP	56.28 kW 5.61 COP
50 °C	22.18 kW 2.07 COP	26.06 kW 2.42 COP	28.46 kW 2.64 COP	33.16 kW 3.07 COP	38.53 kW 3.55 COP	44.73 kW 4.11 COP	47.60 kW 4.37 COP	50.53 kW 4.62 COP	52.88 kW 4.83 COP	54.51 kW 4.97 COP
55 °C	21.85 kW 1.88 COP	25.65 kW 2.20 COP	27.98 kW 2.39 COP	32.54 kW 2.78 COP	37.72 kW 3.22 COP	43.70 kW 3.72 COP	46.46 kW 3.95 COP	49.28 kW 4.18 COP	51.53 kW 4.36 COP	53.11 kW 4.49 COP
60 °C	N/A	25.25 kW 2.00 COP	27.52 kW 2.17 COP	31.94 kW 2.52 COP	36.93 kW 2.91 COP	42.68 kW 3.36 COP	45.33 kW 3.56 COP	48.04 kW 3.77 COP	50.21 kW 3.93 COP	51.72 kW 4.05 COP
65 °C	N/A	24.80 kW 1.77 COP	27.00 kW 1.93 COP	31.23 kW 2.23 COP	35.98 kW 2.56 COP	41.44 kW 2.95 COP	43.96 kW 3.13 COP	46.52 kW 3.31 COP	48.58 kW 3.45 COP	50.01 kW 3.55 COP



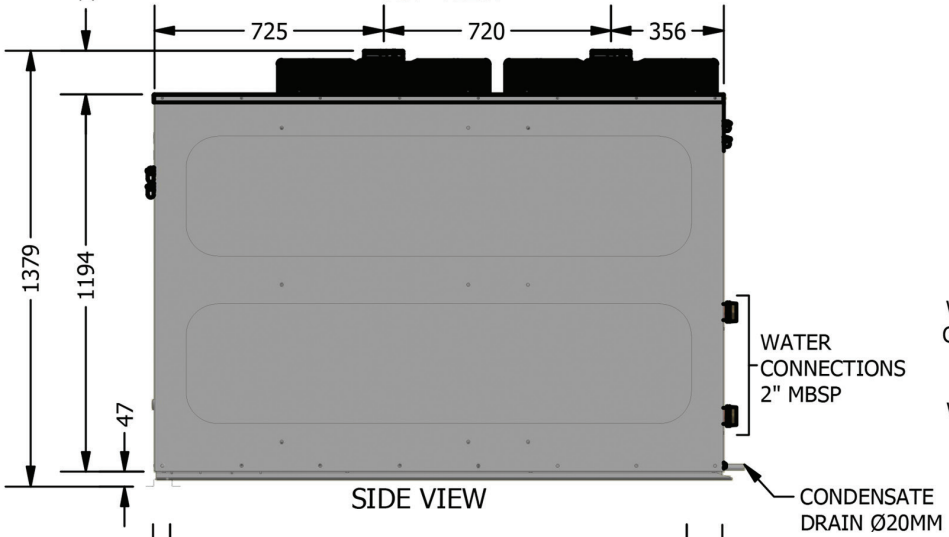
UNIT CLEARANCES		
Direction	Description	Minimum Clearance Required
1	Evaporator Coil	500mm
2	Water Connections	500mm
3	Plain Back	Nil
4	Compressor Access	850mm
5	Top – Fan Discharge	3500mm

When units are placed side by side, allow at least 1000mm between evaporator coils.

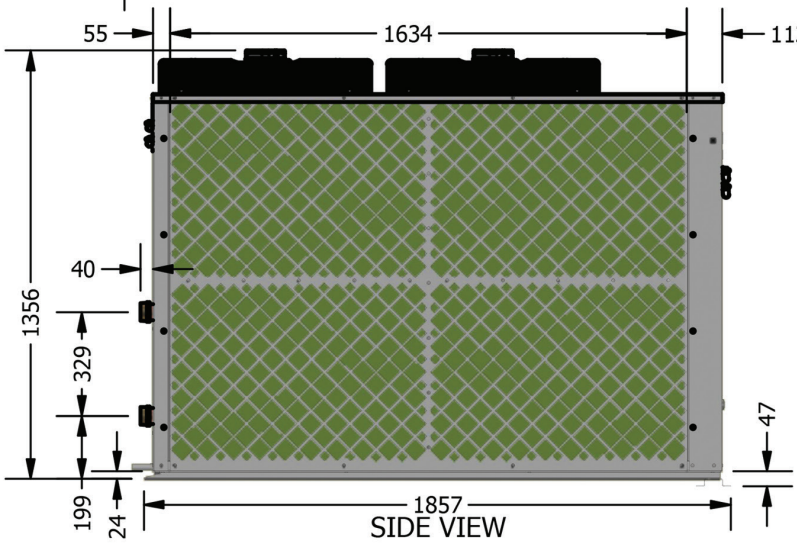
Rating Conditions: 30°C ambient, 60% RH, 39°C Water in, 45°C Water out



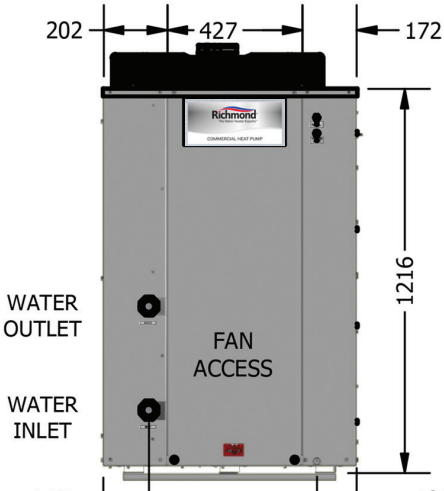
TOP VIEW



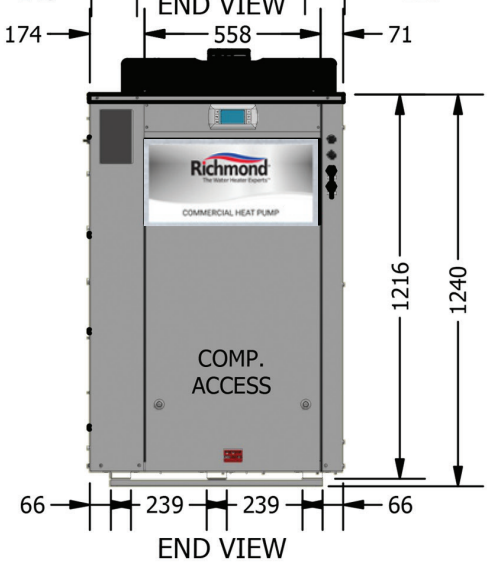
SIDE VIEW



SIDE VIEW



END VIEW



END VIEW

AIR-TO-WATER HEAT PUMP SPECIFICATIONS

Model No.	**RMHW070**
Brand	**Richmond**

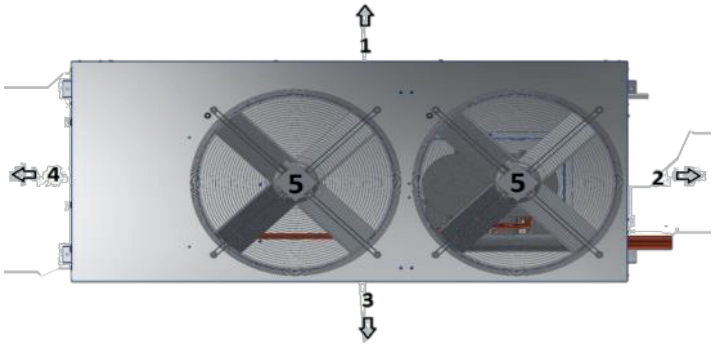
ELECTRICAL INPUT		
Voltage/Phase	380 - 415 Volts / 3 Phase / 50 Hz	
Full Load Amps	40.2 Amps	
Locked Rotor (Amps Per Phase)	118.0 Amps	
Min. Circuit Breaker Size	50.0 Amps	
Refrigerant	R134a	
Nominal Heating Capacity	70.83 kW	
Power Input	14.00 kW	
COP	5.06 COP	
Noise Level	69 dBa @ 3 m	
Rated Load Amps @ 12°C SST / 51°C SCT	27.0 Amps	
TECHNICAL DATA		
	Compressor	**Fan**
SAP Number	20018	21171
Type	Scroll	Axial 630
Number Per Unit	2	2
FLA (Full Load Amps, each)	19.0 Amps	1.1 Amps
Voltage / Phase	380 - 415 / 3	380 - 415 / 3
Pole/RPM	2/2,900	6/890
Air Flow	N/A	4700 L/s
External Static Pressure	N/A	32 Pa
HEAT EXCHANGER (Water Side)		
Type of Water Tube	Single Wall	Double Wall
Design	Shell and Tube	Co-axial Vented
Flow Rate Excl. By Pass	2.82 L/s	
Max. Outlet Water Temp	65°C / 70°C*	
Design Pressure Drop	50 kPa	
Max. Operating Pressure	2,450 kPa	
GENERAL INFORMATION		
Water Connections	65mm Table E Flange	
Drain	20mm Aluminium	
Defrost	Reverse Cycle De-ice	
Cabinet Construction	1.2mm Stucco Aluminium	
Approx. Shipping Weight	400 kg	
Size L x W x H	2180mm x 1002mm x 1375mm	

UNIT CLEARANCES		
Direction	Description	Minimum Clearance Required
1	Evaporator Coil	1000mm
2	Water Connections	500mm
3	Evaporator Coil	1000mm
4	Compressor Access	850mm
5	Top – Fan Discharge	3500mm

COP TABLE

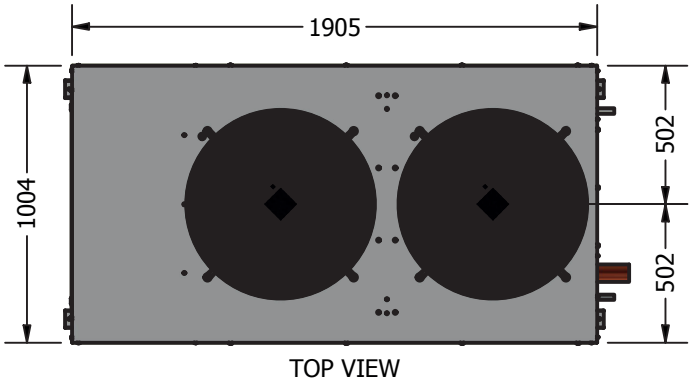
Water Out °C	Ambient Temperature °C						
	0 °C	5 °C	10 °C	15 °C	20 °C	25 °C	27 °C
45 °C	42.21 kW 3.05 COP	47.84 kW 3.43 COP	53.66 kW 3.84 COP	58.23 kW 4.18 COP	63.04 kW 4.53 COP	66.41 kW 4.76 COP	68.15 kW 4.88 COP
50 °C	41.00 kW 2.70 COP	46.54 kW 3.02 COP	52.17 kW 3.38 COP	56.53 kW 3.67 COP	61.07 kW 3.97 COP	64.22 kW 4.19 COP	65.85 kW 4.29 COP
55 °C	39.89 kW 2.46 COP	45.35 kW 2.74 COP	50.82 kW 3.05 COP	55.01 kW 3.31 COP	59.33 kW 3.58 COP	62.31 kW 3.77 COP	63.84 kW 3.87 COP
60 °C	38.63 kW 2.24 COP	44.01 kW 2.49 COP	49.32 kW 2.77 COP	53.32 kW 2.99 COP	57.42 kW 3.23 COP	60.22 kW 3.40 COP	61.66 kW 3.48 COP
65 °C	N/A	42.10 kW 2.22 COP	47.19 kW 2.45 COP	50.97 kW 2.64 COP	54.78 kW 2.84 COP	57.36 kW 2.98 COP	58.67 kW 3.06 COP
70 °C	N/A	N/A	N/A	N/A	51.82 kW 2.50 COP	54.18 kW 2.62 COP	55.36 kW 2.68 COP

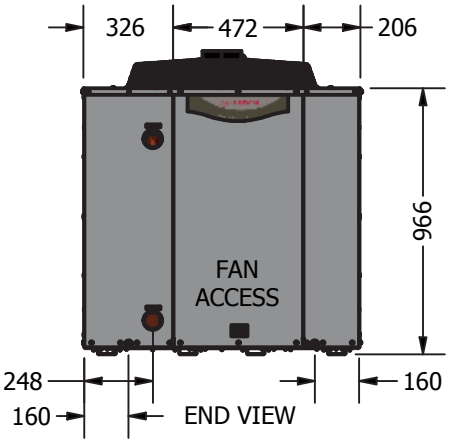
Water Out °C	Ambient Temperature °C						
	30 °C	35 °C	40 °C	46 °C	48 °C	50 °C	52 °C
45 °C	**70.83 kW** **5.06 COP**	71.74 kW 5.12 COP	71.92 kW 5.13 COP	75.50 kW 5.35 COP	77.45 kW 5.46 COP	79.45 kW 5.58 COP	81.51 kW 5.68 COP
50 °C	68.34 kW 4.46 COP	69.19 kW 4.51 COP	69.36 kW 4.52 COP	72.67 kW 4.74 COP	74.48 kW 4.85 COP	76.32 kW 4.96 COP	78.21 kW 5.06 COP
55 °C	66.18 kW 4.02 COP	66.97 kW 4.07 COP	67.13 kW 4.08 COP	70.23 kW 4.27 COP	71.92 kW 4.38 COP	73.63 kW 4.48 COP	75.39 kW 4.59 COP
60 °C	63.84 kW 3.62 COP	64.59 kW 3.66 COP	64.73 kW 3.67 COP	67.62 kW 3.85 COP	69.18 kW 3.94 COP	70.77 kW 4.04 COP	72.40 kW 4.14 COP
65 °C	60.66 kW 3.17 COP	61.34 kW 3.21 COP	61.47 kW 3.22 COP	64.08 kW 3.37 COP	65.49 kW 3.45 COP	66.92 kW 3.54 COP	68.38 kW 3.62 COP
70 °C	57.16 kW 2.78 COP	57.76 kW 2.81 COP	57.88 kW 2.81 COP	60.21 kW 2.94 COP	61.46 kW 3.01 COP	62.73 kW 3.08 COP	64.02 kW 3.16 COP

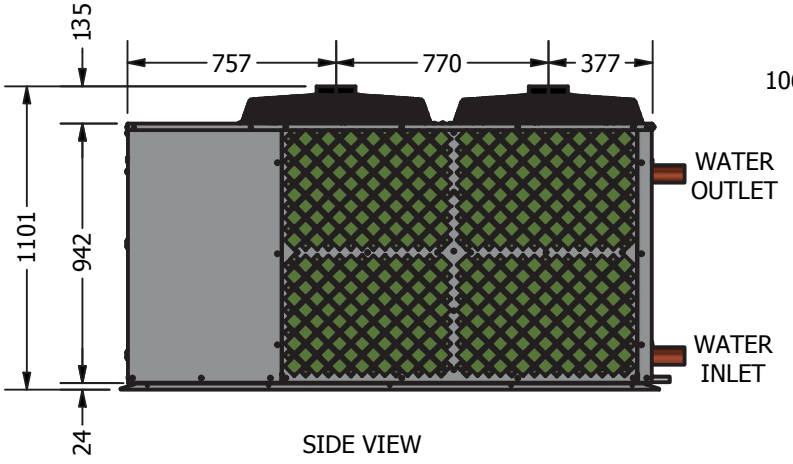


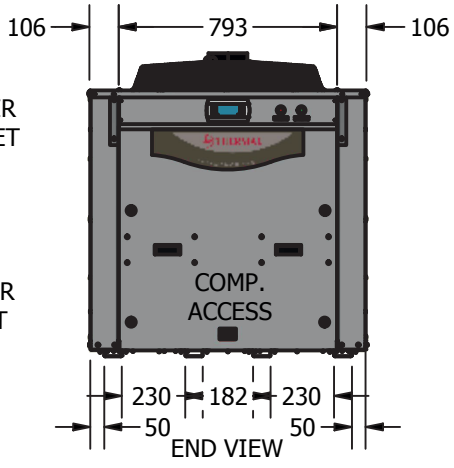
When the units are placed side by side, allow 2000mm distance between evaporator coils.
Rating Conditions: 30°C ambient, 60% RH, 39°C Water in, 45°C Water out
* Max outlet temperature when ambient is above 20°C

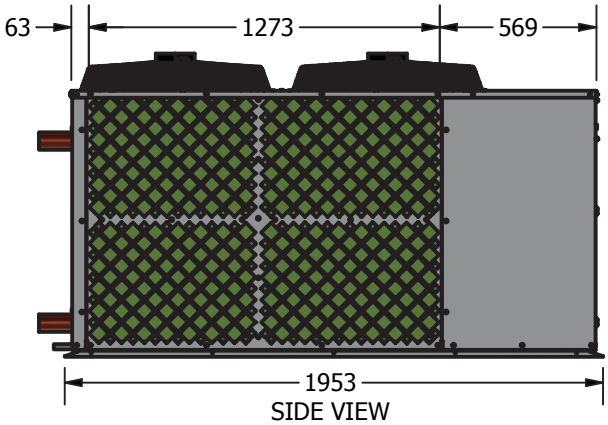
MODEL NO: RMHW070

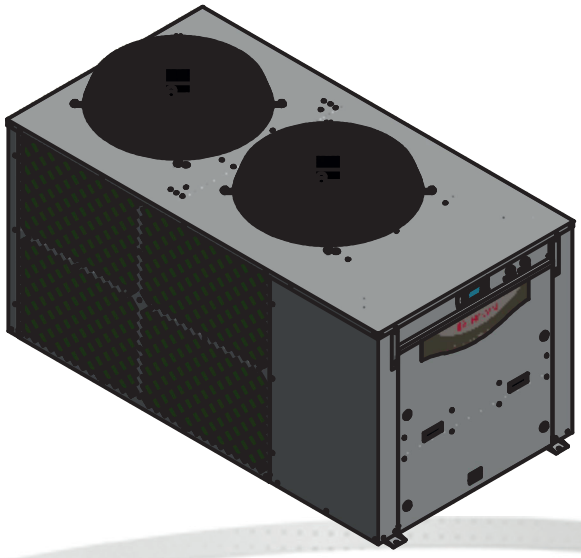




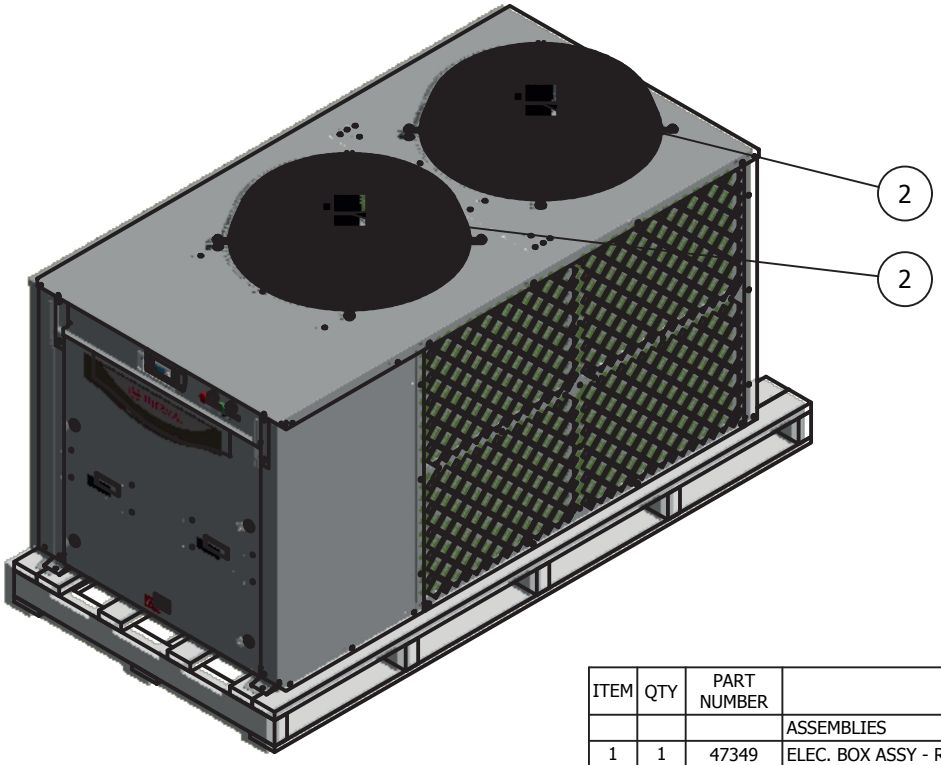




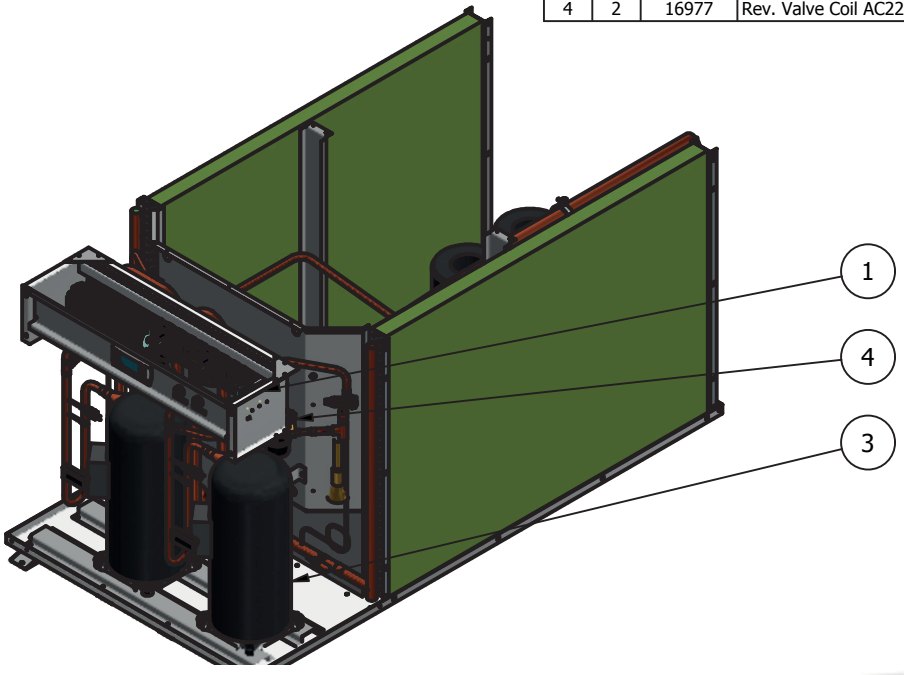




MODEL NO: RMHW070



ITEM	QTY	PART NUMBER	DESCRIPTION
			ASSEMBLIES
1	1	47349	ELEC. BOX ASSY - RTHW080K#-DQV-1
			MAIN PARTS
2	2	21076	S6D630AN0101 630mm AXIAL FAN
3	2	20018	ZR144KCE-TFD-522 36kW 3 phase R22/R407c
4	2	16977	Rev. Valve Coil AC220-240V



AIR-TO-WATER HEAT PUMP SPECIFICATIONS

Model No.	**RMHW096**
Brand	**Richmond**

ELECTRICAL INPUT		
Voltage/Phase	380 - 415 Volts / 3 Phase / 50 Hz	
Full Load Amps	56.5 Amps	
Locked Rotor (Amps Per Phase)	174.0 Amps	
Min. Circuit Breaker Size	80.0 Amps	
Refrigerant	R134a	
Nominal Heating Capacity	94.92 kW	
Power Input	19.34 kW	
COP	4.91 COP	
Noise Level	69 dBa @ 3 m	
Rated Load Amps @ 12°C SST / 51°C SCT	45.8 Amps	
TECHNICAL DATA		
	Compressor	**Fan**
SAP Number	20056	21156
Type	Scroll	Axial 710
Number Per Unit	2	2
FLA (Full Load Amps, each)	26.9 Amps	1.4 Amps
Voltage / Phase	380 - 415 / 3	380 - 415 / 3
Pole/RPM	2/2,900	6/890
Air Flow	N/A	6980 L/s
External Static Pressure	N/A	22 Pa
HEAT EXCHANGER (Water Side)		
Type of Water Tube	Single Wall	Double Wall
Design	Shell and Tube	Co-axial Vented
Flow Rate Excl. By Pass	3.78 L/s	
Max. Outlet Water Temp	65°C / 70°C*	
Design Pressure Drop	50 kPa	
Max. Operating Pressure	2,450 kPa	
GENERAL INFORMATION		
Water Connections	65mm Table E Flange	
Drain	20mm Aluminium	
Defrost	Reverse Cycle De-ice	
Cabinet Construction	1.2mm Stucco Aluminium	
Approx. Shipping Weight	600 kg	
Size L x W x H	2180mm x 1002mm x 1373mm	

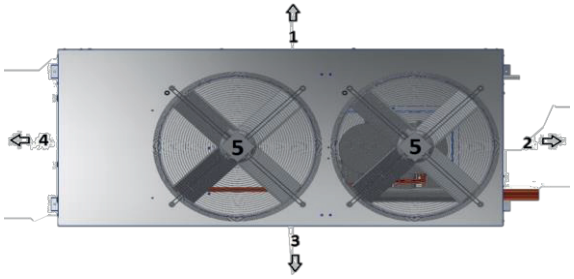
UNIT CLEARANCES

Direction	Description	Minimum Clearance Required
1	Evaporator Coil	1000mm
2	Water Connections	500mm
3	Evaporator Coil	1000mm
4	Compressor Access	850mm
5	Top – Fan Discharge	3500mm

COP TABLE

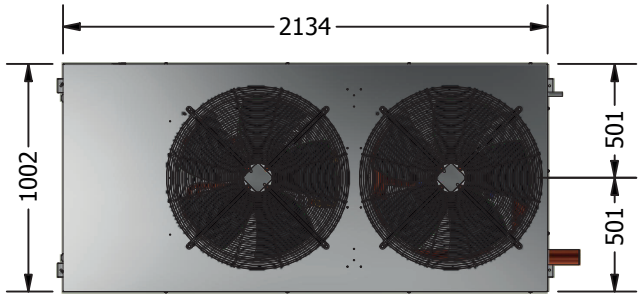
Water Out °C	Ambient Temperature °C						
	0 °C	5 °C	10 °C	15 °C	20 °C	25 °C	27 °C
45 °C	53.45 kW 2.80 COP	60.97 kW 3.19 COP	69.33 kW 3.62 COP	76.24 kW 3.97 COP	83.78 kW 4.36 COP	89.19 kW 4.63 COP	92.01 kW 4.77 COP
50 °C	52.37 kW 2.49 COP	59.64 kW 2.83 COP	67.68 kW 3.21 COP	74.31 kW 3.52 COP	81.53 kW 3.85 COP	86.70 kW 4.09 COP	89.40 kW 4.22 COP
55 °C	51.53 kW 2.26 COP	58.61 kW 2.57 COP	66.40 kW 2.91 COP	72.80 kW 3.19 COP	79.75 kW 3.49 COP	84.73 kW 3.70 COP	87.33 kW 3.81 COP
60 °C	50.74 kW 2.05 COP	57.62 kW 2.33 COP	65.15 kW 2.63 COP	71.32 kW 2.88 COP	78.01 kW 3.15 COP	82.80 kW 3.34 COP	85.30 kW 3.44 COP
65 °C	N/A	56.46 kW 2.06 COP	63.67 kW 2.33 COP	69.55 kW 2.54 COP	75.91 kW 2.78 COP	80.46 kW 2.94 COP	82.83 kW 3.03 COP
70 °C	N/A	N/A	N/A	N/A	73.92 kW 2.45 COP	78.23 kW 2.59 COP	80.47 kW 2.66 COP

Water Out °C	Ambient Temperature °C						
	30 °C	35 °C	40 °C	46 °C	48 °C	50 °C	52 °C
45 °C	**94.92 kW** **4.91 COP**	97.92 kW 5.05 COP	98.23 kW 5.07 COP	104.19 kW 5.36 COP	107.47 kW 5.51 COP	110.84 kW 5.67 COP	114.32 kW 5.83 COP
50 °C	92.18 kW 4.34 COP	95.04 kW 4.47 COP	95.34 kW 4.49 COP	101.03 kW 4.74 COP	104.16 kW 4.88 COP	107.38 kW 5.02 COP	110.70 kW 5.17 COP
55 °C	90.01 kW 3.93 COP	92.76 kW 4.05 COP	93.04 kW 4.06 COP	98.52 kW 4.29 COP	101.53 kW 4.41 COP	104.63 kW 4.54 COP	107.82 kW 4.67 COP
60 °C	87.87 kW 3.55 COP	90.51 kW 3.65 COP	90.78 kW 3.66 COP	96.05 kW 3.87 COP	98.93 kW 3.98 COP	101.91 kW 4.10 COP	104.97 kW 4.22 COP
65 °C	85.27 kW 3.12 COP	87.78 kW 3.21 COP	88.03 kW 3.22 COP	93.02 kW 3.40 COP	95.76 kW 3.50 COP	98.58 kW 3.60 COP	101.48 kW 3.70 COP
70 °C	82.77 kW 2.74 COP	85.15 kW 2.82 COP	85.39 kW 2.83 COP	90.10 kW 2.98 COP	92.69 kW 3.07 COP	95.36 kW 3.16 COP	98.10 kW 3.24 COP

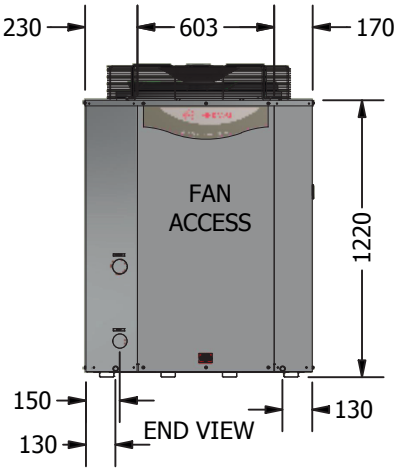


When the units are placed side by side, allow 2000mm distance between evaporator coils.
Rating Conditions: 30°C ambient, 60% RH, 39°C Water in, 45°C Water out
* Max outlet temperature when ambient is above 20°C

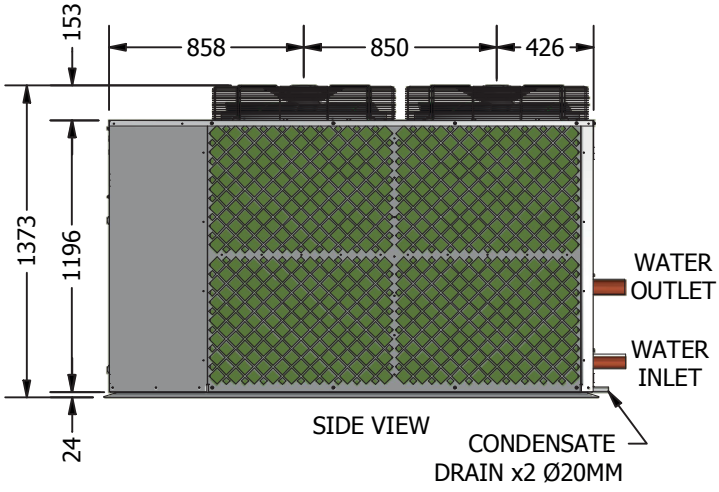
MODEL NO: RMHW096



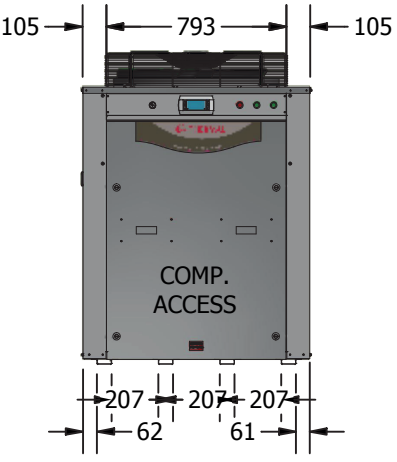
TOP VIEW



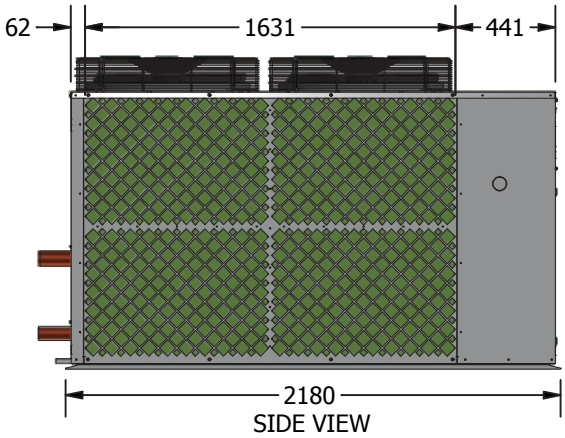
END VIEW



SIDE VIEW

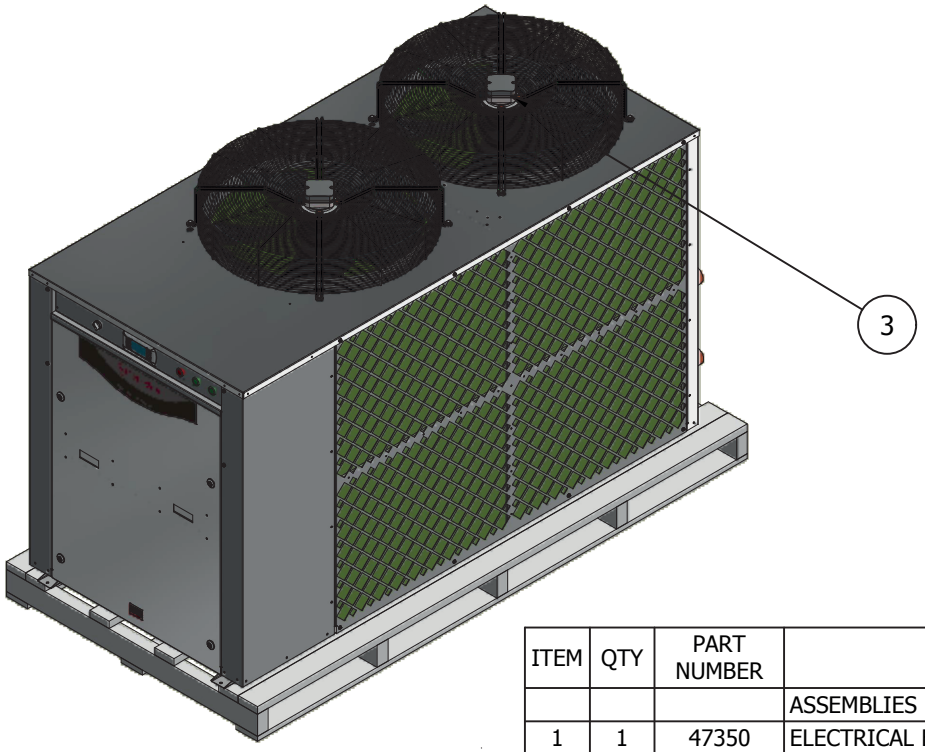


END VIEW

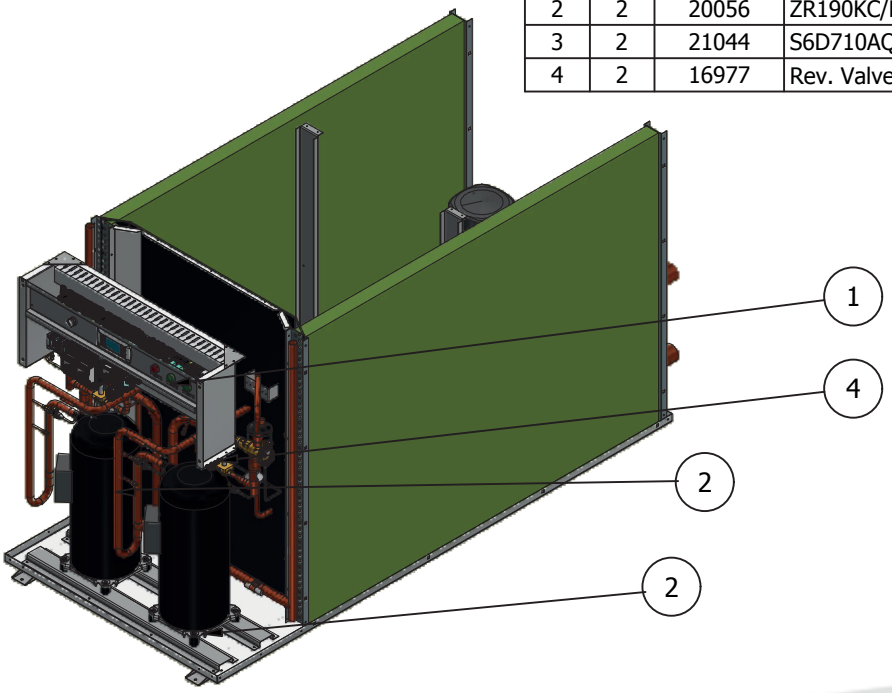


SIDE VIEW

MODEL NO: RMHW096



ITEM	QTY	PART NUMBER	DESCRIPTION
			ASSEMBLIES
1	1	47350	ELECTRICAL BOX ASSY - RTHW096D#-DQ#-1
			MAIN PARTS
2	2	20056	ZR190KC/KCE 3Phase R22/R407c
3	2	21044	S6D710AQ0101 710mm fan basket grill
4	2	16977	Rev. Valve Coil AC220-240V



AIR-TO-WATER HEAT PUMP SPECIFICATIONS

Model No.	**RMHW124**
Brand	**Richmond**

ELECTRICAL INPUT		
Voltage/Phase	380 - 415 Volts / 3 Phase / 50 Hz	
Full Load Amps	82.2 Amps	
Locked Rotor (Amps Per Phase)	225.0 Amps	
Min. Circuit Breaker Size	100.0 Amps	
Refrigerant	R134a	
Nominal Heating Capacity	121.86 kW	
Power Input	24.73 kW	
COP	4.93 COP	
Noise Level	69 dBa @ 3 m	
Rated Load Amps @ 12°C SST / 51°C SCT	49.3 Amps	
TECHNICAL DATA		
	Compressor	**Fan**
SAP Number	20092	21156
Type	Scroll	Axial 710
Number Per Unit	2	2
FLA (Full Load Amps, each)	39.7 Amps	1.4 Amps
Voltage / Phase	380 - 415 / 3	380 - 415 / 3
Pole/RPM	2/2,900	6/890
Air Flow	N/A	6980 L/s
External Static Pressure	N/A	22 Pa
HEAT EXCHANGER (Water Side)		
Type of Water Tube	Single Wall	Double Wall
Design	Shell and Tube	Co-axial Vented
Flow Rate Excl. By Pass	4.85 L/s	
Max. Outlet Water Temp	65°C / 70°C*	
Design Pressure Drop	50 kPa	
Max. Operating Pressure	2,450 kPa	
GENERAL INFORMATION		
Water Connections	75mm Table E Flange	
Drain	20mm Aluminium	
Defrost	Reverse Cycle De-ice	
Cabinet Construction	1.2mm Stucco Aluminium	
Approx. Shipping Weight	650 kg	
Size L x W x H	2380mm x 1134mm x 1476mm	

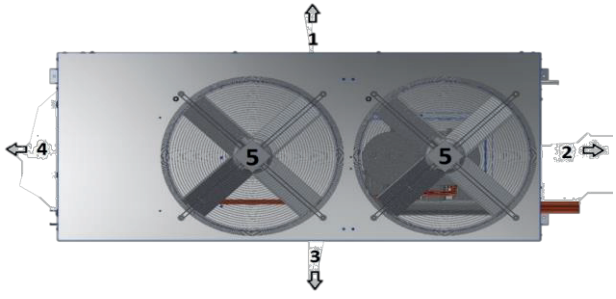
UNIT CLEARANCES

Direction	Description	Minimum Clearance Required
1	Evaporator Coil	1000mm
2	Water Connections	850mm
3	Evaporator Coil	1000mm
4	Compressor Access	850mm
5	Top – Fan Discharge	3500mm

COP TABLE

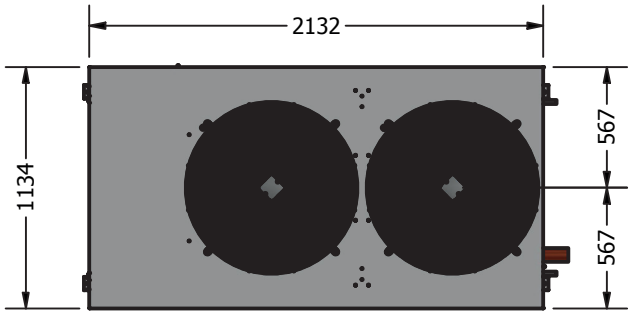
Water Out °C	Ambient Temperature °C						
	0 °C	5 °C	10 °C	15 °C	20 °C	25 °C	27 °C
45 °C	69.24 kW 2.92 COP	78.59 kW 3.27 COP	89.16 kW 3.68 COP	97.96 kW 4.02 COP	107.60 kW 4.39 COP	114.52 kW 4.65 COP	118.14 kW 4.79 COP
50 °C	68.59 kW 2.63 COP	77.56 kW 2.94 COP	87.65 kW 3.29 COP	96.04 kW 3.58 COP	105.21 kW 3.90 COP	111.78 kW 4.12 COP	115.22 kW 4.24 COP
55 °C	68.16 kW 2.43 COP	76.83 kW 2.70 COP	86.54 kW 3.00 COP	94.60 kW 3.26 COP	103.39 kW 3.54 COP	109.70 kW 3.74 COP	112.99 kW 3.85 COP
60 °C	67.81 kW 2.24 COP	76.18 kW 2.47 COP	85.52 kW 2.74 COP	93.25 kW 2.97 COP	101.67 kW 3.22 COP	107.70 kW 3.40 COP	110.85 kW 3.49 COP
65 °C	N/A	75.50 kW 2.22 COP	84.37 kW 2.45 COP	91.69 kW 2.64 COP	99.66 kW 2.85 COP	105.35 kW 3.01 COP	108.33 kW 3.08 COP
70 °C	N/A	N/A	N/A	N/A	97.81 kW 2.53 COP	103.17 kW 2.66 COP	105.97 kW 2.73 COP

Water Out °C	Ambient Temperature °C						
	30 °C	35 °C	40 °C	46 °C	48 °C	50 °C	52 °C
45 °C	**121.86 kW** **4.93 COP**	125.69 kW 5.07 COP	126.08 kW 5.09 COP	133.69 kW 5.37 COP	137.87 kW 5.53 COP	142.16 kW 5.69 COP	146.57 kW 5.85 COP
50 °C	118.76 kW 4.37 COP	122.39 kW 4.49 COP	122.76 kW 4.51 COP	129.99 kW 4.76 COP	133.96 kW 4.89 COP	138.04 kW 5.03 COP	142.23 kW 5.18 COP
55 °C	116.38 kW 3.96 COP	119.86 kW 4.07 COP	120.22 kW 4.08 COP	127.14 kW 4.31 COP	130.94 kW 4.43 COP	134.85 kW 4.55 COP	138.87 kW 4.68 COP
60 °C	114.10 kW 3.59 COP	117.43 kW 3.69 COP	117.77 kW 3.70 COP	124.39 kW 3.89 COP	128.03 kW 4.00 COP	131.76 kW 4.11 COP	135.60 kW 4.23 COP
65 °C	111.39 kW 3.17 COP	114.53 kW 3.25 COP	114.85 kW 3.26 COP	121.10 kW 3.43 COP	124.53 kW 3.52 COP	128.05 kW 3.62 COP	131.68 kW 3.72 COP
70 °C	108.84 kW 2.80 COP	111.80 kW 2.87 COP	112.10 kW 2.87 COP	117.98 kW 3.02 COP	121.20 kW 3.10 COP	124.52 kW 3.18 COP	127.92 kW 3.26 COP

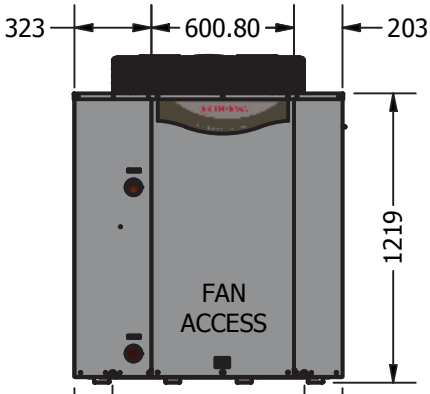


When the units are placed side by side, allow 2000mm distance between evaporator coils.
Rating Conditions: 30°C ambient, 60% RH, 39°C Water in, 45°C Water out
* Max outlet temperature when ambient is above 20°C

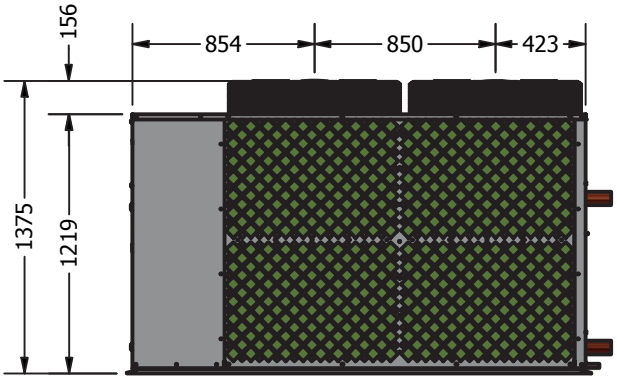
MODEL NO: RMHW124



TOP VIEW



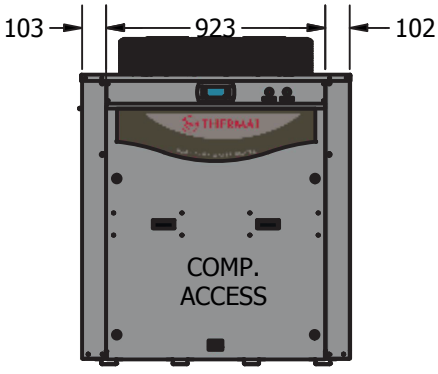
END VIEW

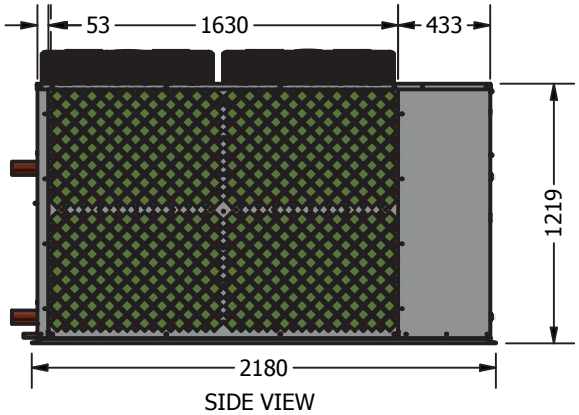


WATER OUTLET

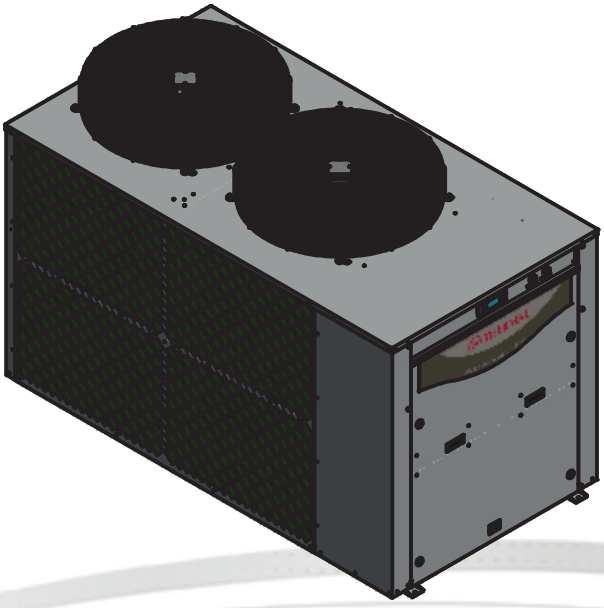
WATER INLET

SIDE VIEW

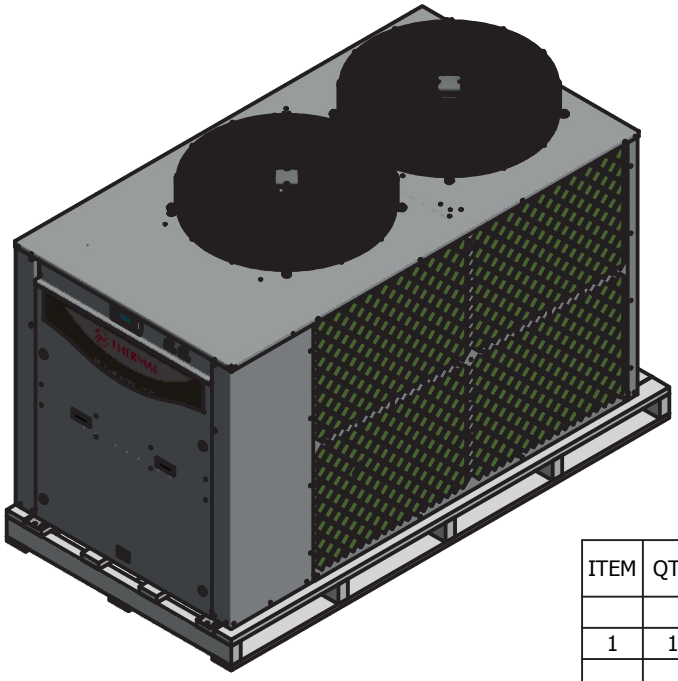




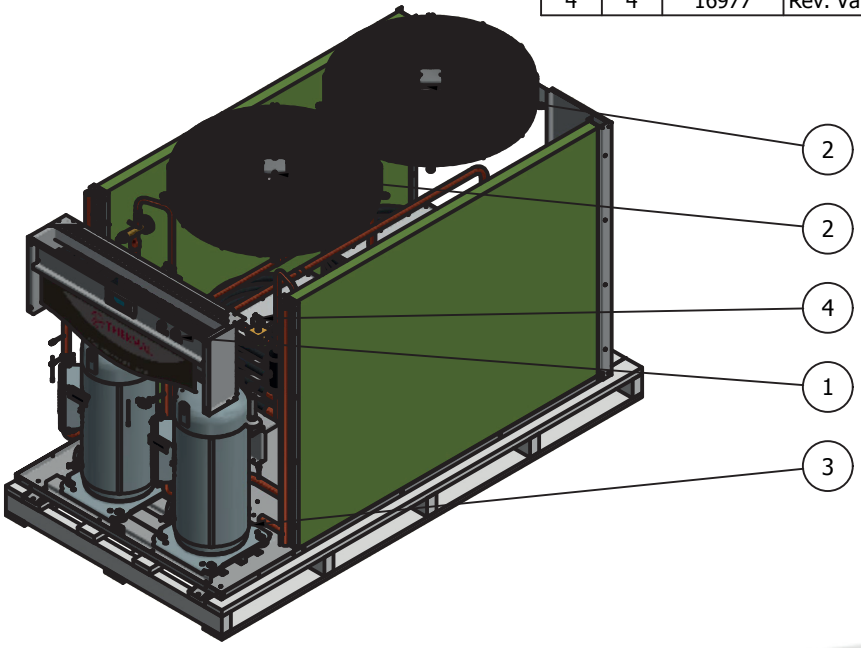
SIDE VIEW



MODEL NO: RMHW124



ITEM	QTY	PART NUMBER	DESCRIPTION
			ASSEMBLIES
1	1	47351	ELECTRICAL BOX ASSY. - RTHW135K#-DQ#-1
			MAIN PARTS
2	2	21044	S6D710AQ0101 710mm fan basket grill
3	2	20092	ZR250KCE-TWD-522 Compressor
4	4	16977	Rev. Valve Coil AC220-240V



AIR-TO-WATER HEAT PUMP SPECIFICATIONS

Model No.	**RMHW153**
Brand	**Richmond**

ELECTRICAL INPUT		
Voltage/Phase	380 - 415 Volts / 3 Phase / 50 Hz	
Full Load Amps	84.7 Amps	
Locked Rotor (Amps Per Phase)	272.0 Amps	
Min. Circuit Breaker Size	100.0 Amps	
Refrigerant	R134a	
Nominal Heating Capacity	151.42 kW	
Power Input	30.76 kW	
COP	4.92 COP	
Noise Level	74 dBa @ 3 m	
Rated Load Amps @ 12°C SST / 51°C SCT	61.5 Amps	
TECHNICAL DATA		
	Compressor	**Fan**
SAP Number	20103	21129
Type	Scroll	Axial 800
Number Per Unit	2	2
FLA (Full Load Amps, each)	34.5 Amps	2.7 Amps
Voltage / Phase	380 - 415 / 3	380 - 415 / 3
Pole/RPM	2/2,900	6/890
Air Flow	N/A	11652 L/s
External Static Pressure	N/A	16 Pa
HEAT EXCHANGER (Water Side)		
Type of Water Tube	Single Wall	Double Wall
Design	Shell and Tube	Co-axial Vented
Flow Rate Excl. By Pass	6.04 L/s	
Max. Outlet Water Temp	65°C / 70°C*	
Design Pressure Drop	50 kPa	
Max. Operating Pressure	2,450 kPa	
GENERAL INFORMATION		
Water Connections	75mm Table E Flange	
Drain	40mm Aluminium	
Defrost	Reverse Cycle De-ice	
Cabinet Construction	1.2mm Stucco Aluminium	
Approx. Shipping Weight	1180 kg	
Size L x W x H	2540mm x 1258mm x 1933mm	

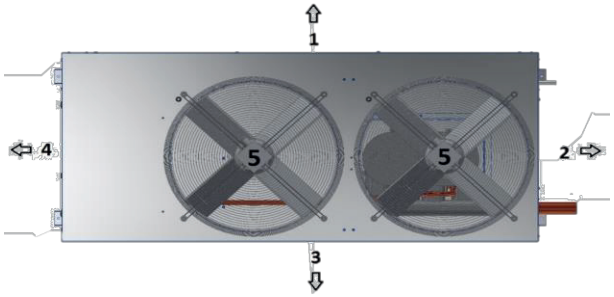
UNIT CLEARANCES

Direction	Description	Minimum Clearance Required
1	Evaporator Coil	1000mm
2	Water Connections	850mm
3	Evaporator Coil	1000mm
4	Compressor Access	850mm
5	Top – Fan Discharge	3500mm

COP TABLE

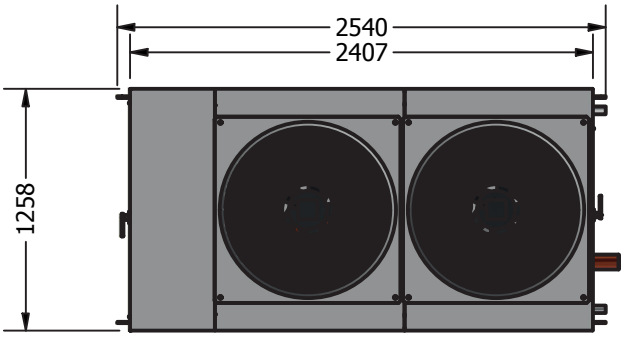
Water Out °C	Ambient Temperature °C						
	0 °C	5 °C	10 °C	15 °C	20 °C	25 °C	27 °C
45 °C	86.02 kW 2.89 COP	97.71 kW 3.26 COP	110.84 kW 3.68 COP	121.77 kW 4.02 COP	133.72 kW 4.38 COP	142.31 kW 4.65 COP	146.80 kW 4.78 COP
50 °C	85.13 kW 2.59 COP	96.37 kW 2.91 COP	108.93 kW 3.27 COP	119.34 kW 3.57 COP	130.71 kW 3.90 COP	138.86 kW 4.13 COP	143.13 kW 4.25 COP
55 °C	84.53 kW 2.37 COP	95.42 kW 2.66 COP	107.52 kW 2.98 COP	117.52 kW 3.25 COP	128.43 kW 3.54 COP	136.25 kW 3.74 COP	140.33 kW 3.85 COP
60 °C	84.05 kW 2.16 COP	94.58 kW 2.42 COP	106.23 kW 2.71 COP	115.83 kW 2.95 COP	126.28 kW 3.20 COP	133.76 kW 3.39 COP	137.66 kW 3.48 COP
65 °C	N/A	93.71 kW 2.16 COP	104.80 kW 2.40 COP	113.90 kW 2.60 COP	123.78 kW 2.83 COP	130.84 kW 2.98 COP	134.53 kW 3.07 COP
70 °C	N/A	N/A	N/A	N/A	121.51 kW 2.49 COP	128.16 kW 2.62 COP	131.62 kW 2.70 COP

Water Out °C	Ambient Temperature °C						
	30 °C	35 °C	40 °C	46 °C	48 °C	50 °C	52 °C
45 °C	**151.42 kW** **4.92 COP**	156.18 kW 5.07 COP	156.67 kW 5.08 COP	166.14 kW 5.36 COP	171.34 kW 5.52 COP	176.69 kW 5.67 COP	182.19 kW 5.83 COP
50 °C	147.52 kW 4.37 COP	152.04 kW 4.50 COP	152.50 kW 4.51 COP	161.49 kW 4.76 COP	166.42 kW 4.90 COP	171.50 kW 5.04 COP	176.73 kW 5.18 COP
55 °C	144.54 kW 3.96 COP	148.87 kW 4.08 COP	149.31 kW 4.09 COP	157.91 kW 4.31 COP	162.64 kW 4.44 COP	167.50 kW 4.56 COP	172.51 kW 4.69 COP
60 °C	141.69 kW 3.58 COP	145.82 kW 3.69 COP	146.25 kW 3.70 COP	154.47 kW 3.90 COP	158.99 kW 4.01 COP	163.64 kW 4.12 COP	168.42 kW 4.24 COP
65 °C	138.32 kW 3.15 COP	142.22 kW 3.24 COP	142.62 kW 3.25 COP	150.38 kW 3.42 COP	154.63 kW 3.52 COP	159.01 kW 3.62 COP	163.52 kW 3.72 COP
70 °C	135.19 kW 2.77 COP	138.86 kW 2.84 COP	139.23 kW 2.85 COP	146.52 kW 3.00 COP	150.52 kW 3.08 COP	154.63 kW 3.17 COP	158.87 kW 3.25 COP

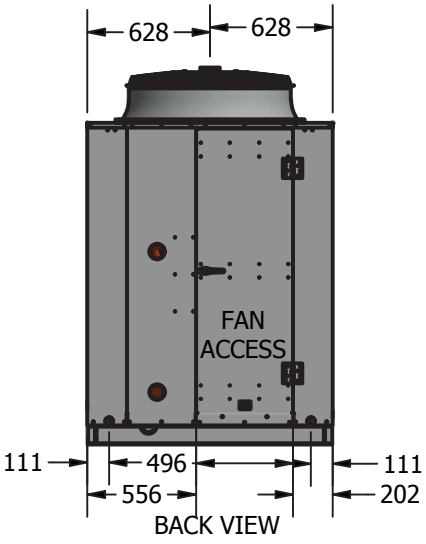


When the units are placed side by side, allow 2000mm distance between evaporator coils.
Rating Conditions: 30°C ambient, 60% RH, 39°C Water in, 45°C Water out
* Max outlet temperature when ambient is above 20°C

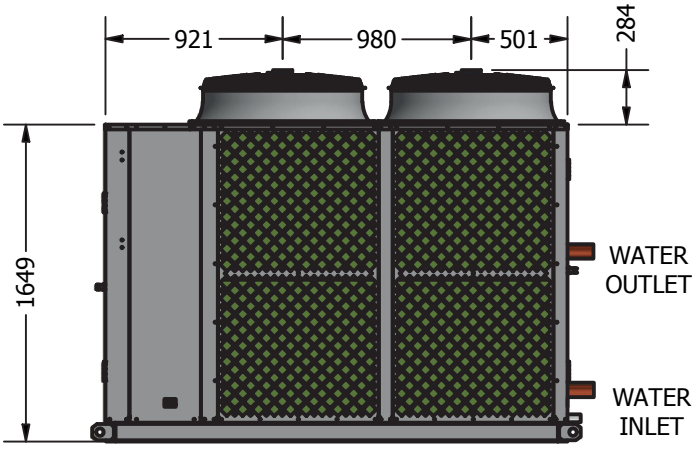
MODEL NO: RMHW153



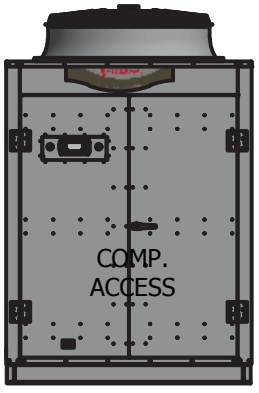
TOP VIEW



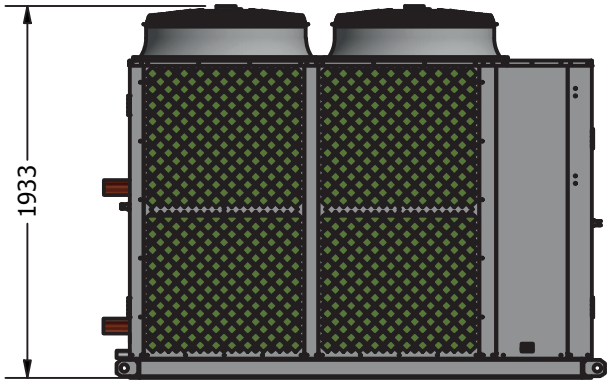
BACK VIEW



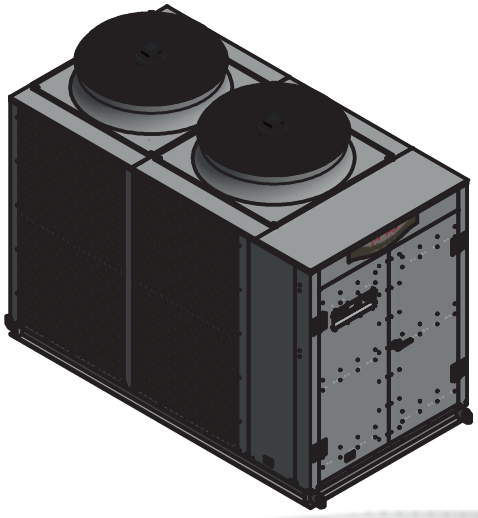
SIDE VIEW



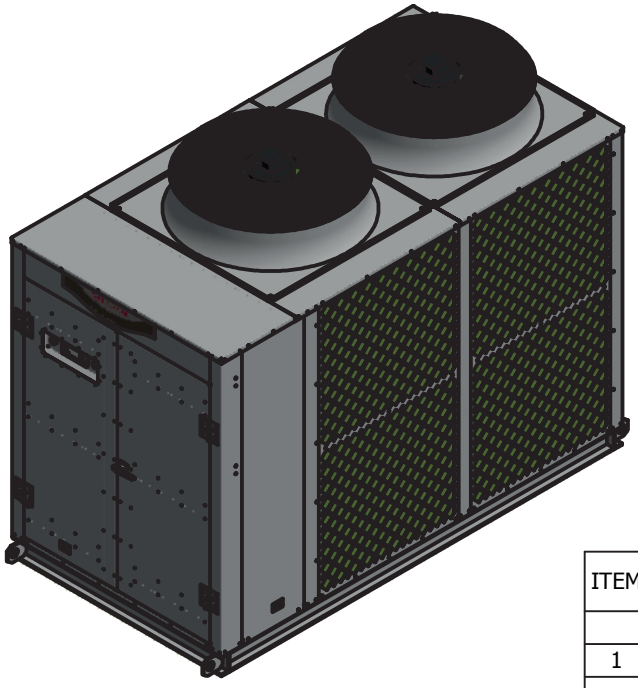
FRONT VIEW



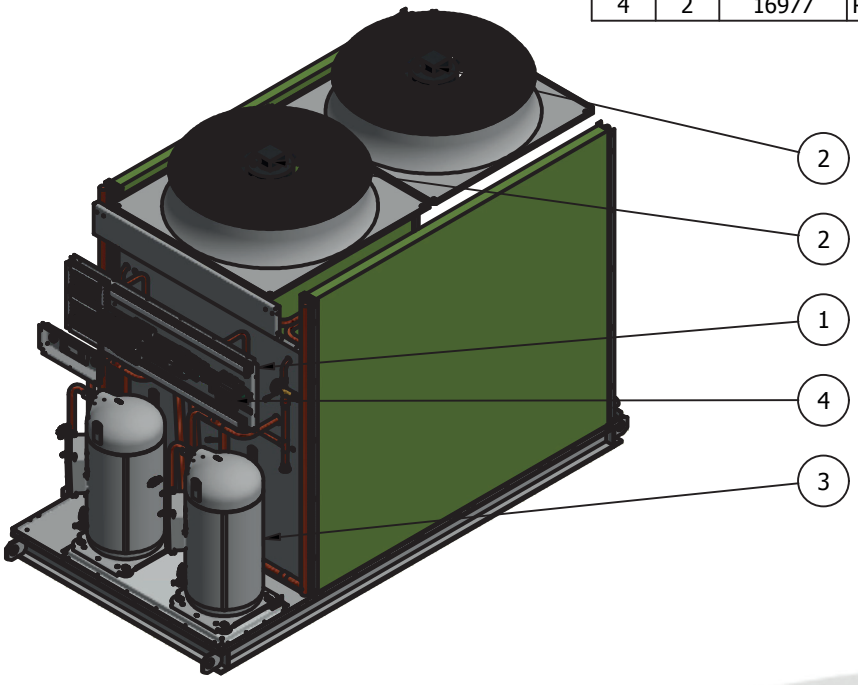
SIDE VIEW



MODEL NO: RMHW153



ITEM	QTY	PART NUMBER	DESCRIPTION
			MAIN PARTS
1	1	47352	ELECTRICAL ASSY - RTHP540-3 / RTHW540-3
			ASSEMBLIES
2	2	21129	SA000147 W6D800GD0101 Axial Fan
3	2	20103	ZR310KCE-TWD-522 Compressor
4	2	16977	Rev. Valve Coil AC220-240V



AIR-TO-WATER HEAT PUMP SPECIFICATIONS

Model No.	**RMHW186**
Brand	**Richmond**

ELECTRICAL INPUT		
Voltage/Phase	380 - 415 Volts / 3 Phase / 50 Hz	
Full Load Amps	122.9 Amps	
Locked Rotor (Amps Per Phase)	225.0 Amps	
Min. Circuit Breaker Size	150.0 Amps	
Refrigerant	R134a	
Nominal Heating Capacity	182.78 kW	
Power Input	34.69 kW	
COP	5.27 COP	
Noise Level	72 dBa @ 3 m	
Rated Load Amps @ 12°C SST / 51°C SCT	76.3 Amps	
TECHNICAL DATA		
	Compressor	**Fan**
SAP Number	20092	21171
Type	Scroll	Axial 630
Number Per Unit	3	6
FLA (Full Load Amps, each)	38.8 Amps	1.1 Amps
Voltage / Phase	380 - 415 / 3	380 - 415 / 3
Pole/RPM	2/2,900	6/890
Air Flow	N/A	14100 L/s
External Static Pressure	N/A	13 Pa
HEAT EXCHANGER (Water Side)		
Type of Water Tube	Single Wall	Double Wall
Design	Shell and Tube	Co-axial Vented
Flow Rate Excl. By Pass	7.28 L/s	
Max. Outlet Water Temp	65°C / 70°C*	
Design Pressure Drop	50 kPa	
Max. Operating Pressure	2,450 kPa	
GENERAL INFORMATION		
Water Connections	100mm Table E Flange	
Drain	40mm Aluminium	
Defrost	Reverse Cycle De-ice	
Cabinet Construction	1.2mm Stucco Aluminium, Galvanised Base and Frame	
Approx. Shipping Weight	1500 kg	
Size L x W x H	3595mm x 1963mm x 2288mm	

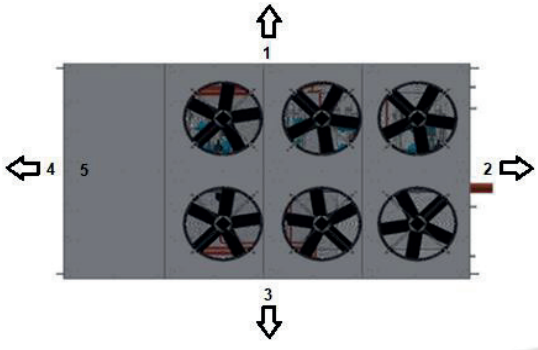
UNIT CLEARANCES

Direction	Description	Minimum Clearance Required
1	Evaporator Coil	1000mm
2	Water Connections	850mm
3	Evaporator Coil	1000mm
4	Compressor Access	850mm
5	Top – Fan Discharge	3500mm

COP TABLE

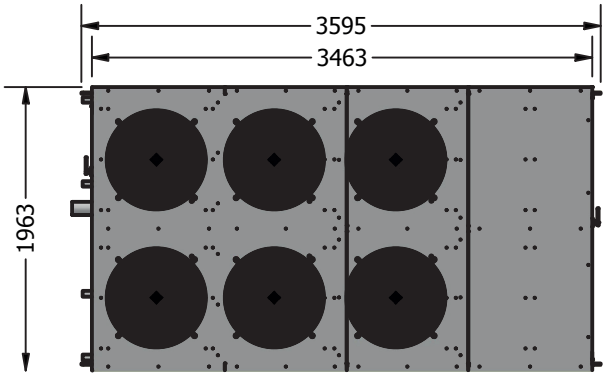
Water Out °C	Ambient Temperature °C						
	0 °C	5 °C	10 °C	15 °C	20 °C	25 °C	27 °C
45 °C	103.86 kW 3.13 COP	117.89 kW 3.51 COP	133.73 kW 3.94 COP	146.94 kW 4.30 COP	161.40 kW 4.69 COP	171.78 kW 4.97 COP	177.20 kW 5.12 COP
50 °C	102.88 kW 2.80 COP	116.34 kW 3.13 COP	131.47 kW 3.50 COP	144.05 kW 3.80 COP	157.80 kW 4.14 COP	167.67 kW 4.38 COP	172.82 kW 4.51 COP
55 °C	102.23 kW 2.57 COP	115.24 kW 2.86 COP	129.80 kW 3.18 COP	141.89 kW 3.45 COP	155.08 kW 3.75 COP	164.54 kW 3.96 COP	169.48 kW 4.07 COP
60 °C	101.71 kW 2.36 COP	114.27 kW 2.61 COP	128.27 kW 2.89 COP	139.86 kW 3.13 COP	152.50 kW 3.39 COP	161.55 kW 3.58 COP	166.28 kW 3.68 COP
65 °C	N/A	113.43 kW 2.39 COP	126.88 kW 2.63 COP	137.98 kW 2.84 COP	150.07 kW 3.07 COP	158.71 kW 3.23 COP	163.22 kW 3.32 COP
70 °C	N/A	N/A	N/A	N/A	146.70 kW 2.64 COP	154.75 kW 2.77 COP	158.95 kW 2.84 COP

Water Out °C	Ambient Temperature °C						
	30 °C	35 °C	40 °C	46 °C	48 °C	50 °C	52 °C
45 °C	**182.78 kW** **5.27 COP**	188.53 kW 5.42 COP	189.11 kW 5.44 COP	200.53 kW 5.74 COP	206.79 kW 5.91 COP	213.23 kW 6.07 COP	219.85 kW 6.25 COP
50 °C	178.13 kW 4.64 COP	183.59 kW 4.77 COP	184.14 kW 4.79 COP	194.99 kW 5.05 COP	200.93 kW 5.20 COP	207.05 kW 5.34 COP	213.34 kW 5.50 COP
55 °C	174.56 kW 4.19 COP	179.79 kW 4.31 COP	180.32 kW 4.32 COP	190.71 kW 4.55 COP	196.41 kW 4.68 COP	202.27 kW 4.81 COP	208.29 kW 4.95 COP
60 °C	171.14 kW 3.78 COP	176.14 kW 3.88 COP	176.65 kW 3.89 COP	186.58 kW 4.10 COP	192.03 kW 4.21 COP	197.64 kW 4.33 COP	203.40 kW 4.45 COP
65 °C	167.87 kW 3.40 COP	172.64 kW 3.50 COP	173.13 kW 3.51 COP	182.61 kW 3.69 COP	187.82 kW 3.79 COP	193.17 kW 3.89 COP	198.67 kW 4.00 COP
70 °C	163.26 kW 2.91 COP	167.70 kW 2.99 COP	168.15 kW 3.00 COP	176.96 kW 3.15 COP	181.80 kW 3.23 COP	186.77 kW 3.31 COP	191.88 kW 3.40 COP

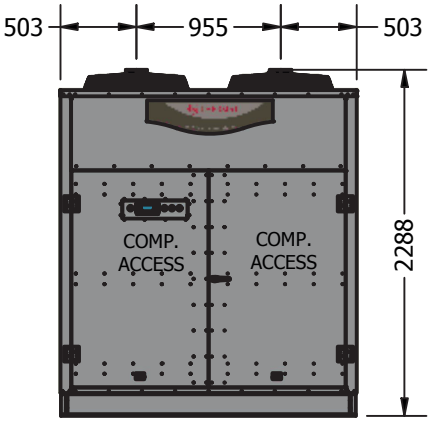


When the units are placed side by side, allow 2000mm distance between evaporator coils.
Rating Conditions: 30°C ambient, 60% RH, 39°C Water in, 45°C Water out
* Max outlet temperature when ambient is above 20°C

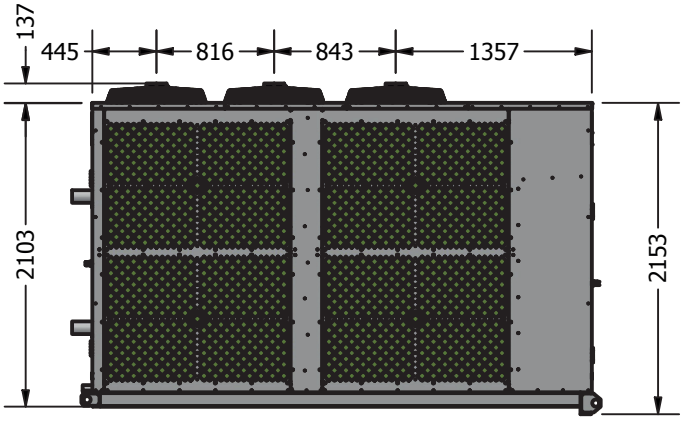
MODEL NO: RMHW186



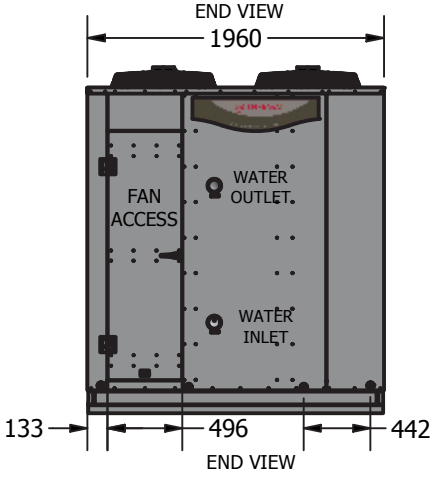
TOP VIEW



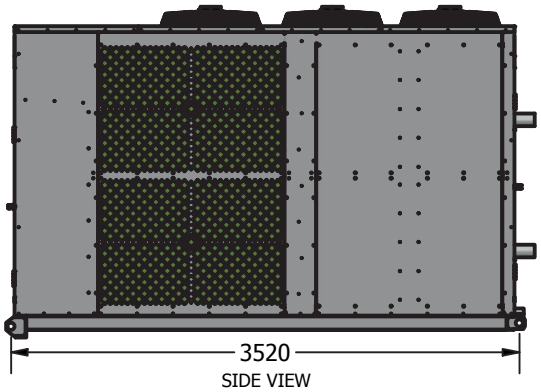
END VIEW



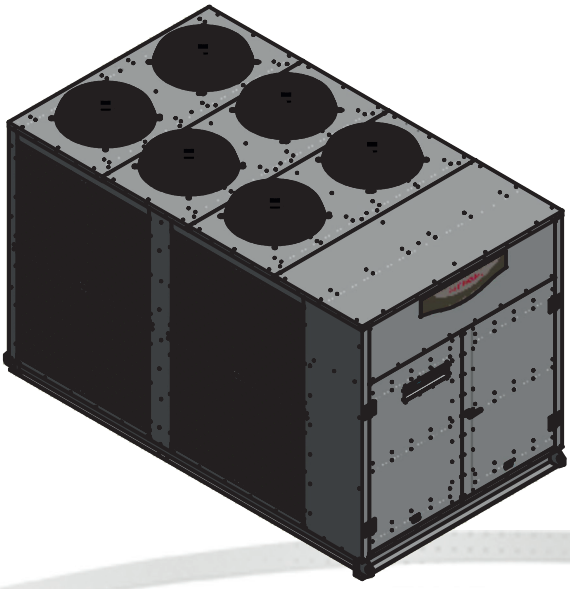
SIDE VIEW



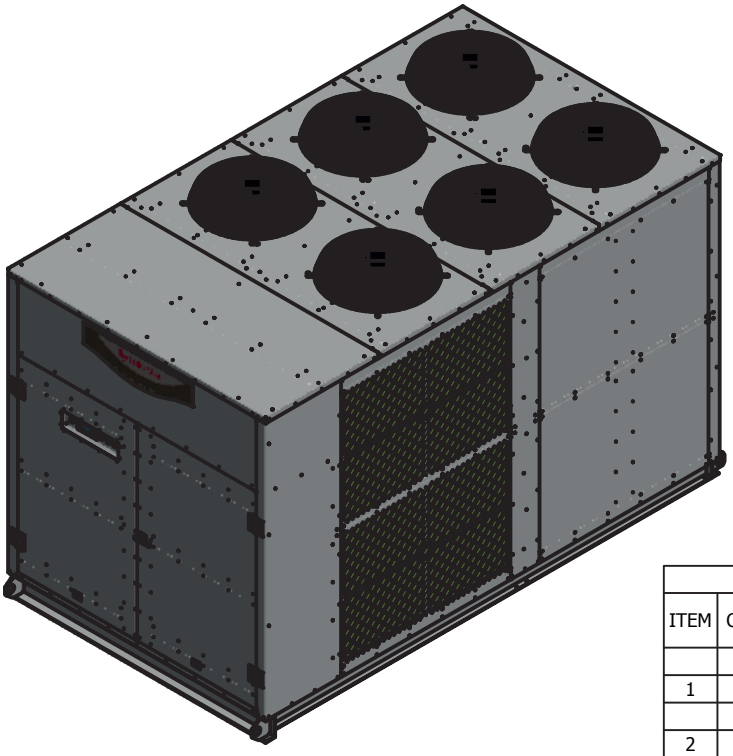
END VIEW



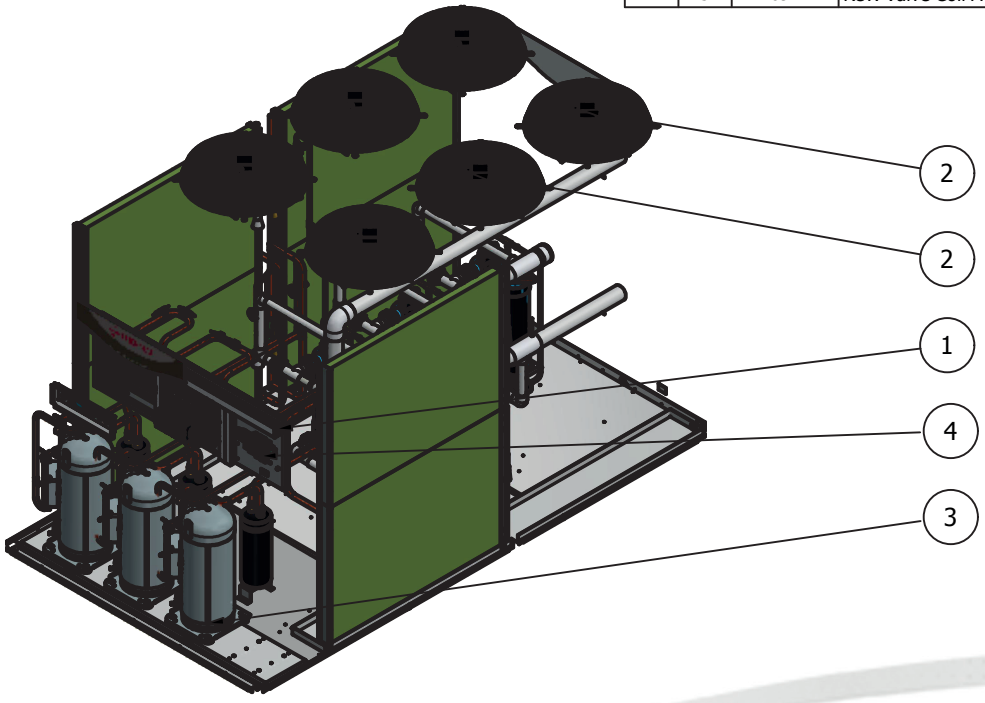
SIDE VIEW



MODEL NO: RMHW186



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
			ASSEMBLIES
1	1	47353	ELECTRICAL ASSY - RTHP199KT-DQV-1
			MAIN PARTS
2	6	21076	S6D630AN0101 630mm AXIAL FAN
3	3	20092	ZR250KCE-TWD-522 Compressor
4	3	16977	Rev. Valve Coil AC220-240V



AIR-TO-WATER HEAT PUMP SPECIFICATIONS

Model No.	**RMHW248**
Brand	**Richmond**

ELECTRICAL INPUT		
Voltage/Phase	380 - 415 Volts / 3 Phase / 50 Hz	
Full Load Amps	163.4 Amps	
Locked Rotor (Amps Per Phase)	225.0 Amps	
Min. Circuit Breaker Size	200.0 Amps	
Refrigerant	R134a	
Nominal Heating Capacity	243.71 kW	
Power Input	51.06 kW	
COP	4.77 COP	
Noise Level	73 dBa @ 3 m	
Rated Load Amps @ 12°C SST / 51°C SCT	102.6 Amps	
TECHNICAL DATA		
	Compressor	**Fan**
SAP Number	20092	21171
Type	Scroll	Axial 630
Number Per Unit	4	8
FLA (Full Load Amps, each)	38.5 Amps	1.2 Amps
Voltage / Phase	380 - 415 / 3	380 - 415 / 3
Pole/RPM	2/2,900	6/890
Air Flow	N/A	18800 L/s
External Static Pressure	N/A	13 Pa
HEAT EXCHANGER (Water Side)		
Type of Water Tube	Single Wall	Double Wall
Design	Shell and Tube	Co-axial Vented
Flow Rate Excl. By Pass	9.72 L/s	
Max. Outlet Water Temp	65°C / 70°C*	
Design Pressure Drop	50 kPa	
Max. Operating Pressure	2,450 kPa	
GENERAL INFORMATION		
Water Connections	100mm Table E Flange	
Drain	40mm Aluminium	
Defrost	Reverse Cycle De-ice	
Cabinet Construction	1.2mm Stucco Aluminium, Galvanised Base and Frame	
Approx. Shipping Weight	2200 kg	
Size L x W x H	3595mm x 1963mm x 2288mm	

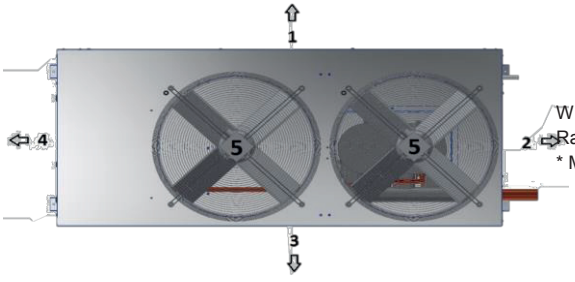
UNIT CLEARANCES

Direction	Description	Minimum Clearance Required
1	Evaporator Coil	1000mm
2	Water Connections	850mm
3	Evaporator Coil	1000mm
4	Compressor Access	850mm
5	Top – Fan Discharge	3500mm

COP TABLE

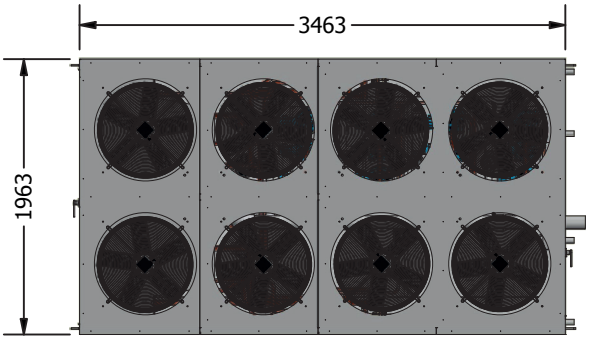
Water Out °C	Ambient Temperature °C						
	0 °C	5 °C	10 °C	15 °C	20 °C	25 °C	27 °C
45 °C	53.45 kW 2.80 COP	60.97 kW 3.19 COP	69.33 kW 3.62 COP	76.24 kW 3.97 COP	83.78 kW 4.36 COP	89.19 kW 4.63 COP	92.01 kW 4.77 COP
50 °C	52.37 kW 2.49 COP	59.64 kW 2.83 COP	67.68 kW 3.21 COP	74.31 kW 3.52 COP	81.53 kW 3.85 COP	86.70 kW 4.09 COP	89.40 kW 4.22 COP
55 °C	51.53 kW 2.26 COP	58.61 kW 2.57 COP	66.40 kW 2.91 COP	72.80 kW 3.19 COP	79.75 kW 3.49 COP	84.73 kW 3.70 COP	87.33 kW 3.81 COP
60 °C	50.74 kW 2.05 COP	57.62 kW 2.33 COP	65.15 kW 2.63 COP	71.32 kW 2.88 COP	78.01 kW 3.15 COP	82.80 kW 3.34 COP	85.30 kW 3.44 COP
65 °C	N/A	56.46 kW 2.06 COP	63.67 kW 2.33 COP	69.55 kW 2.54 COP	75.91 kW 2.78 COP	80.46 kW 2.94 COP	82.83 kW 3.03 COP
70 °C	N/A	N/A	N/A	N/A	73.92 kW 2.45 COP	78.23 kW 2.59 COP	80.47 kW 2.66 COP

Water Out °C	Ambient Temperature °C						
	30 °C	35 °C	40 °C	46 °C	48 °C	50 °C	52 °C
45 °C	**94.92 kW** **4.91 COP**	97.92 kW 5.05 COP	98.23 kW 5.07 COP	104.19 kW 5.36 COP	107.47 kW 5.51 COP	110.84 kW 5.67 COP	114.32 kW 5.83 COP
50 °C	92.18 kW 4.34 COP	95.04 kW 4.47 COP	95.34 kW 4.49 COP	101.03 kW 4.74 COP	104.16 kW 4.88 COP	107.38 kW 5.02 COP	110.70 kW 5.17 COP
55 °C	90.01 kW 3.93 COP	92.76 kW 4.05 COP	93.04 kW 4.06 COP	98.52 kW 4.29 COP	101.53 kW 4.41 COP	104.63 kW 4.54 COP	107.82 kW 4.67 COP
60 °C	87.87 kW 3.55 COP	90.51 kW 3.65 COP	90.78 kW 3.66 COP	96.05 kW 3.87 COP	98.93 kW 3.98 COP	101.91 kW 4.10 COP	104.97 kW 4.22 COP
65 °C	85.27 kW 3.12 COP	87.78 kW 3.21 COP	88.03 kW 3.22 COP	93.02 kW 3.40 COP	95.76 kW 3.50 COP	98.58 kW 3.60 COP	101.48 kW 3.70 COP
70 °C	82.77 kW 2.74 COP	85.15 kW 2.82 COP	85.39 kW 2.83 COP	90.10 kW 2.98 COP	92.69 kW 3.07 COP	95.36 kW 3.16 COP	98.10 kW 3.24 COP

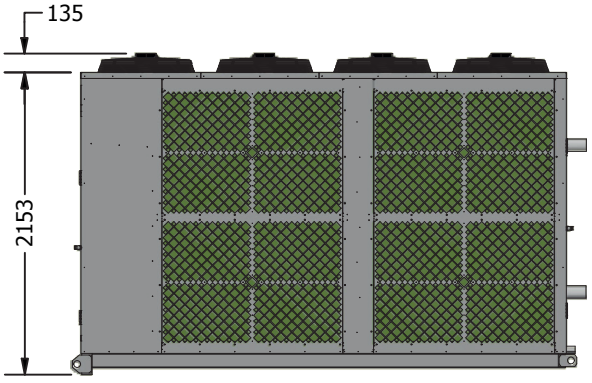


When the units are placed side by side, allow 2000mm distance between evaporator coils.
Rating Conditions: 30°C ambient, 60% RH, 39°C Water in, 45°C Water out
* Max outlet temperature when ambient is above 20°C

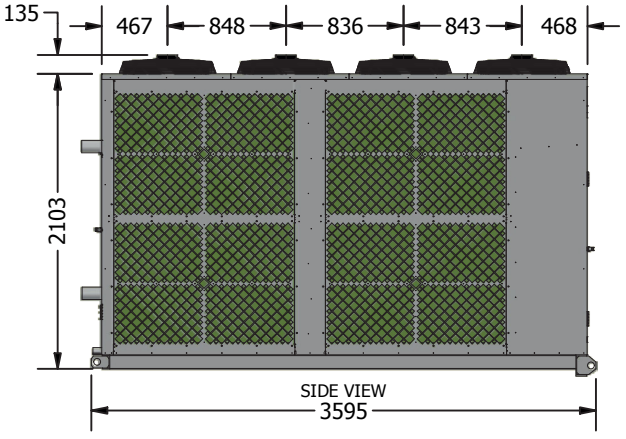
MODEL NO: RMHW248

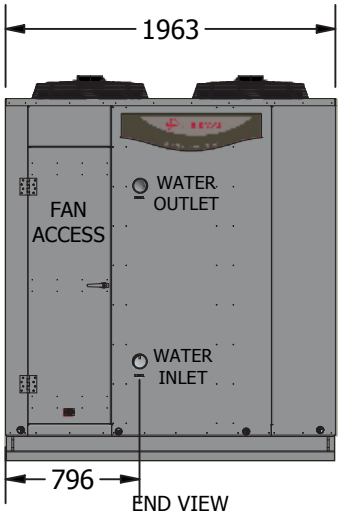


TOP VIEW

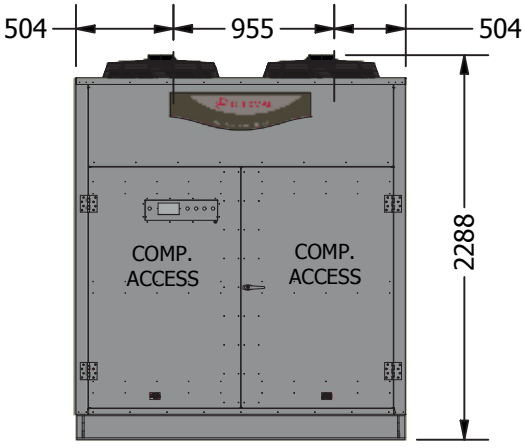


SIDE VIEW

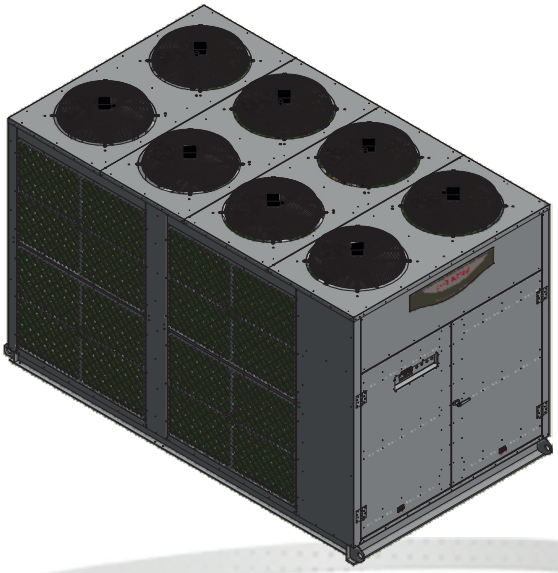




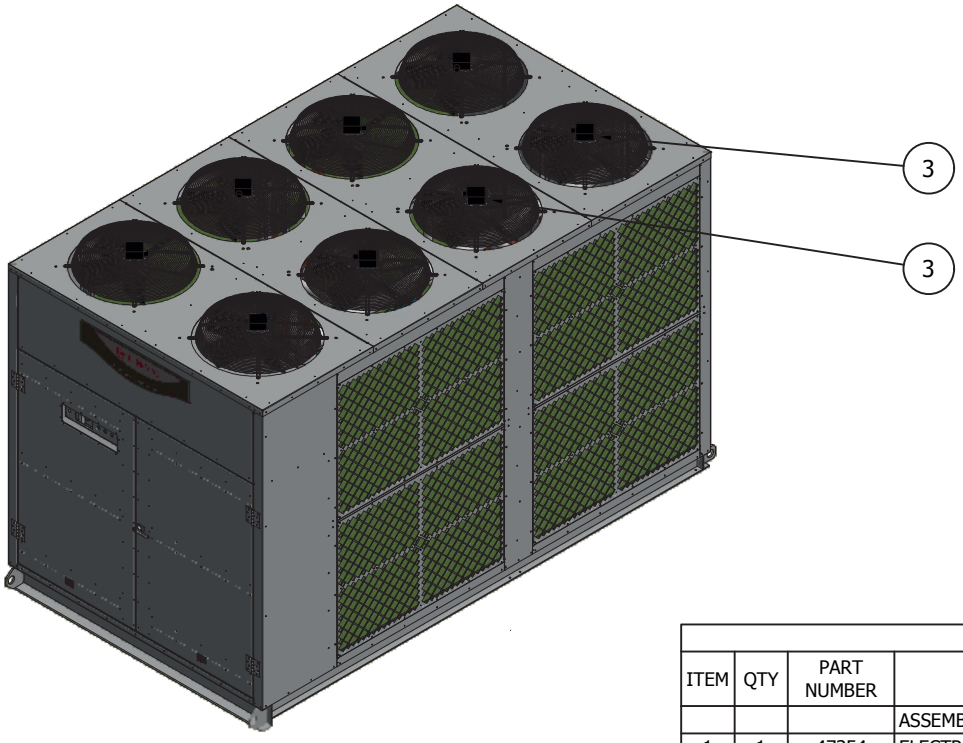
END VIEW



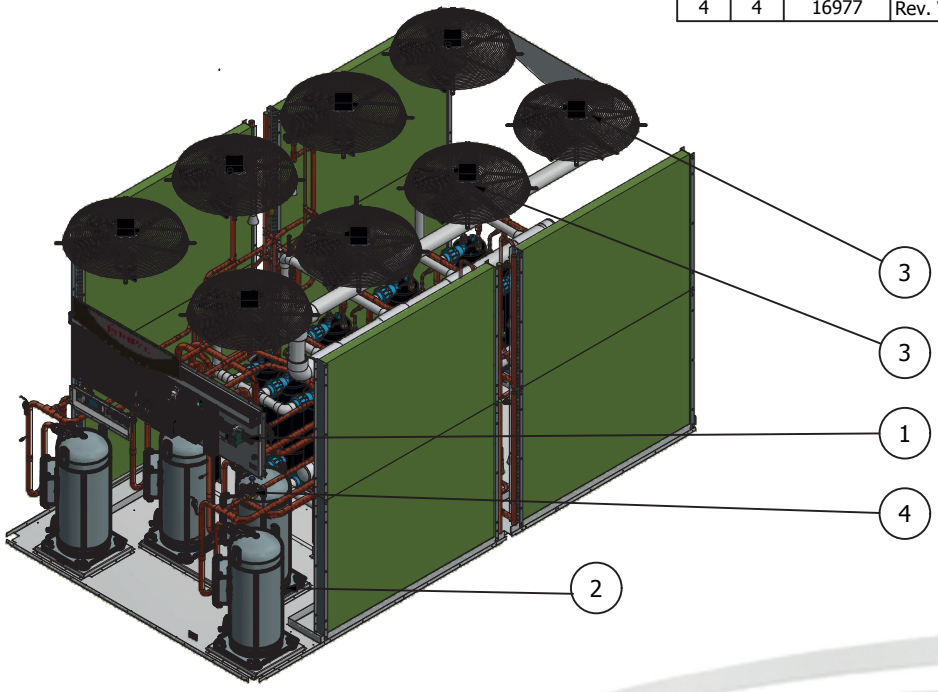
END VIEW



MODEL NO: RMHW248



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
			ASSEMBLIES
1	1	47354	ELECTRICAL ASSY - RTHW248
			MAIN PARTS
2	4	20092	ZR250KCE-TWD-522 Compressor
3	8	21076	S6D630AN0101 630mm AXIAL FAN
4	4	16977	Rev. Valve Coil AC220-240V



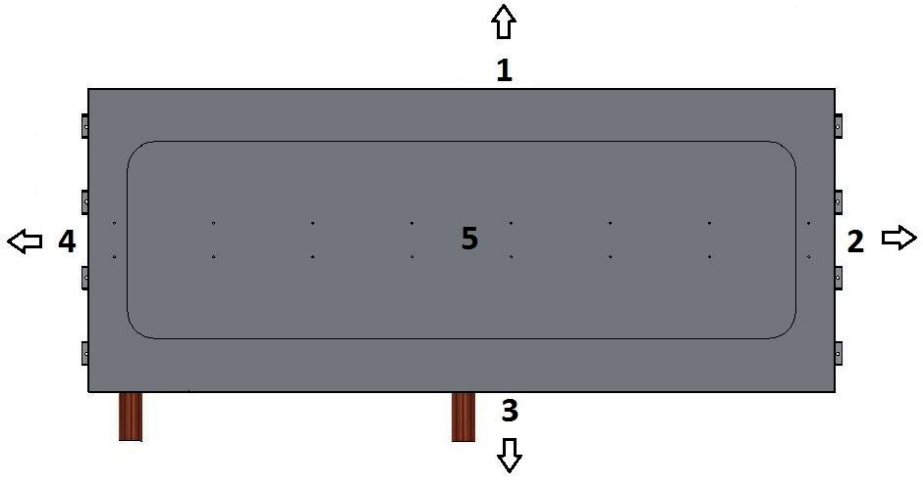
WATER-TO-WATER HEAT PUMP SPECIFICATIONS

Model No.	**RMWW071**
Brand	**Richmond**

ELECTRICAL INPUT		
Voltage/Phase	380 - 415 Volts / 3 Phase / 50 Hz	
Full Load / Locked Rotor (Amps Per Phase)	40.2 FLA / 272 LRA	
Min. Circuit Breaker Size	50.0 Amps	
Refrigerant	R134a	
Refrigeration Effect	Heating	Cooling
Nominal Capacity	71.15 kW	56.97 kW
Power Input	14.19 kW	
COP	5.02 COP	4.02 COP
Combined COP	9.03 COP	
Noise Level	61 dBa @ 3 m	
Rated Load Amps @ 10°C SST / 51°C SCT	28.1 Amps	
TECHNICAL DATA		
	Compressor	
Make / Type	Copeland / Scroll 20103	
Number Per Unit	1	
FLA (Full Load Amps, each)	40.2 Amps	
Voltage / Phase	380 - 415 / 3	
Pole/RPM	2/2,900	
HEAT EXCHANGER (Water Side)		
	Hot Side (Condenser)	**Cold Side (Evaporator)**
Type of Water Tube	Single / Double Wall	Single Wall
Design	Shell & Tube / Co-axial	Shell & Tube
Flow Rate Excl. By Pass	2.84 L/s	2.73 L/s
Max. Outlet Water Temp	70°C	N/A
Min. Outlet Water Temp	N/A	7 °C
Design Pressure Drop	50 kPa	
Max. Operating Pressure	2,450 kPa	
GENERAL INFORMATION		
Water Connections	65mm Table E Flange	
Drain	20mm Aluminium	
Cabinet Construction	1.2mm Stucco Aluminium	
Approx. Shipping Weight	400 kg	
Size L x W x H	2120mm x 805mm x 1000mm	

COP TABLE

Hot Water Out °C	Cold Water In °C							
	12 °C	14 °C	16 °C	18 °C	**20 °C**	25 °C	30 °C	35 °C
45 °C	57.19 kW 4.09 COP	60.88 kW 4.34 COP	62.82 kW 4.47 COP	66.86 kW 4.73 COP	**71.15 kW** **5.02 COP**	83.07 kW 5.78 COP	96.85 kW 6.64 COP	102.93 kW 7.01 COP
50 °C	56.35 kW 3.71 COP	59.90 kW 3.93 COP	61.76 kW 4.04 COP	65.65 kW 4.28 COP	69.77 kW 4.54 COP	81.20 kW 5.23 COP	94.42 kW 6.01 COP	100.26 kW 6.35 COP
55 °C	55.38 kW 3.27 COP	58.76 kW 3.46 COP	60.53 kW 3.56 COP	64.21 kW 3.77 COP	68.12 kW 3.99 COP	78.96 kW 4.60 COP	91.48 kW 5.29 COP	97.01 kW 5.59 COP
60 °C	54.67 kW 2.95 COP	57.92 kW 3.12 COP	59.61 kW 3.21 COP	63.14 kW 3.40 COP	66.88 kW 3.59 COP	77.24 kW 4.13 COP	89.21 kW 4.75 COP	94.49 kW 5.02 COP
65 °C	53.88 kW 2.60 COP	56.95 kW 2.75 COP	58.55 kW 2.82 COP	61.89 kW 2.98 COP	65.42 kW 3.15 COP	75.19 kW 3.61 COP	86.47 kW 4.14 COP	91.46 kW 4.38 COP
70 °C	53.19 kW 2.29 COP	56.10 kW 2.41 COP	57.61 kW 2.48 COP	60.75 kW 2.61 COP	64.08 kW 2.75 COP	73.26 kW 3.15 COP	83.86 kW 3.60 COP	88.54 kW 3.80 COP

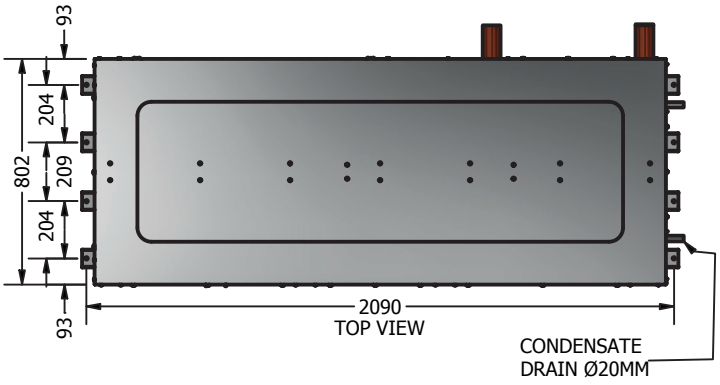


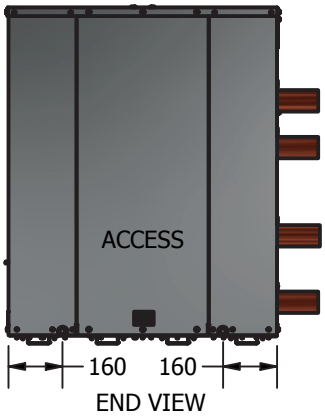
UNIT CLEARANCES

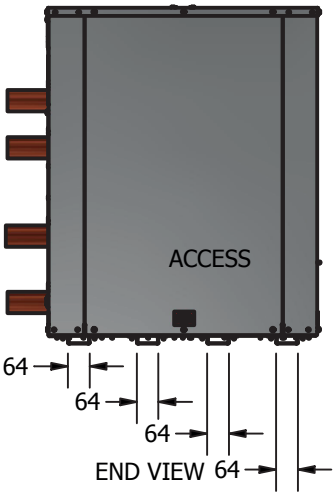
Direction	Description	Minimum Clearance Required
1	Plain Back	200mm
2	Side Access	200mm
3	Compressor Access / Water	850mm
4	Side Access	200mm
5	Top – Height Clearance	500mm

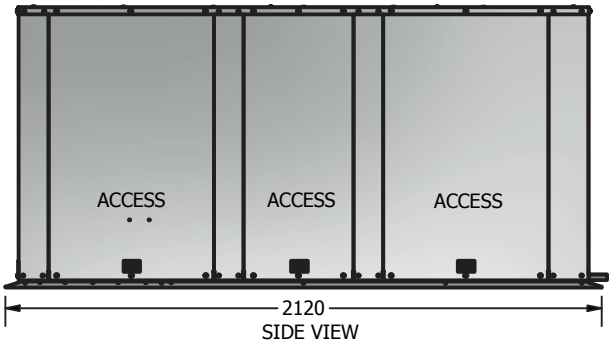
Rating Conditions: Cooling: 20°C EWT, 15°C LWT, Heating: 39°C EWT, 45°C LWT

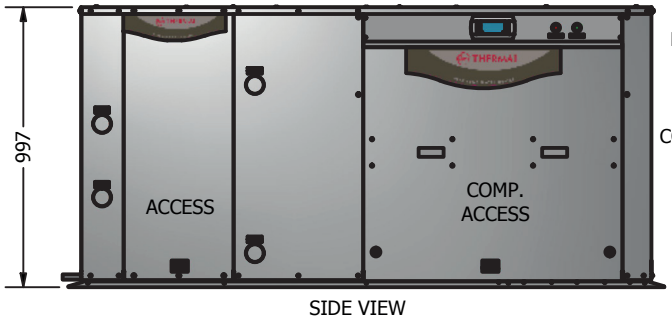
MODEL NO: RMWW071

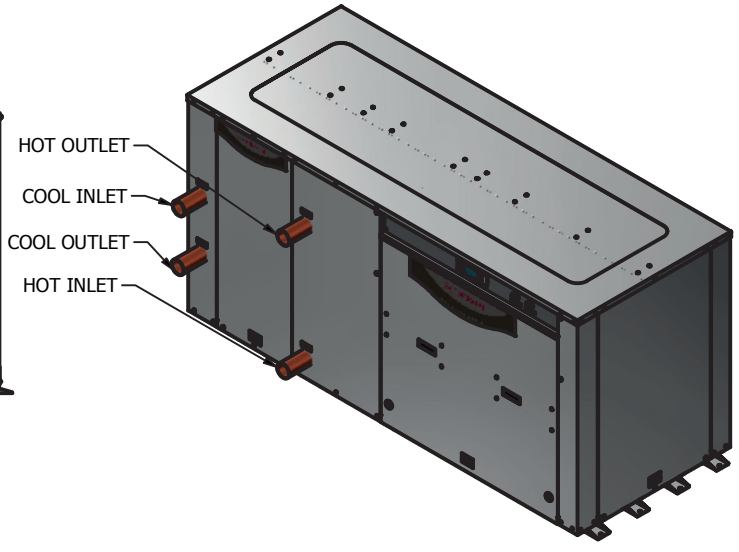




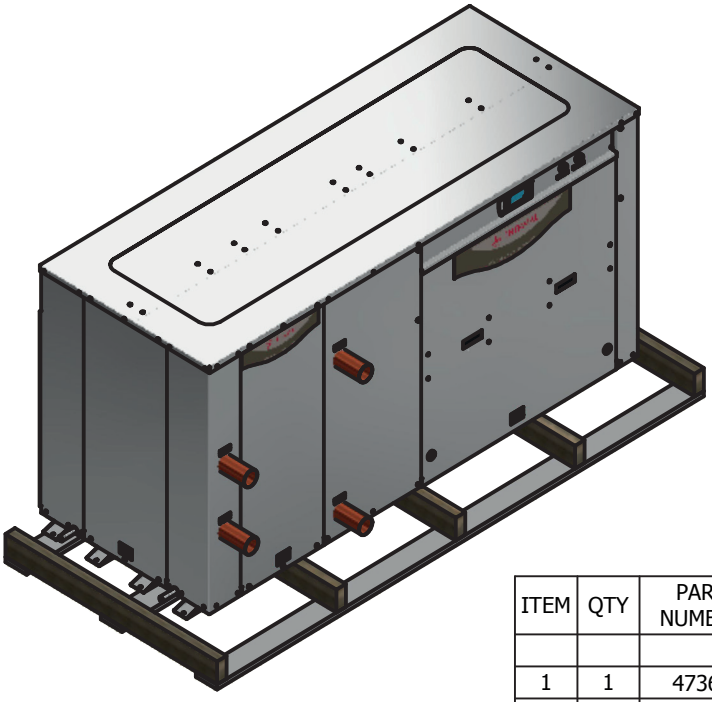




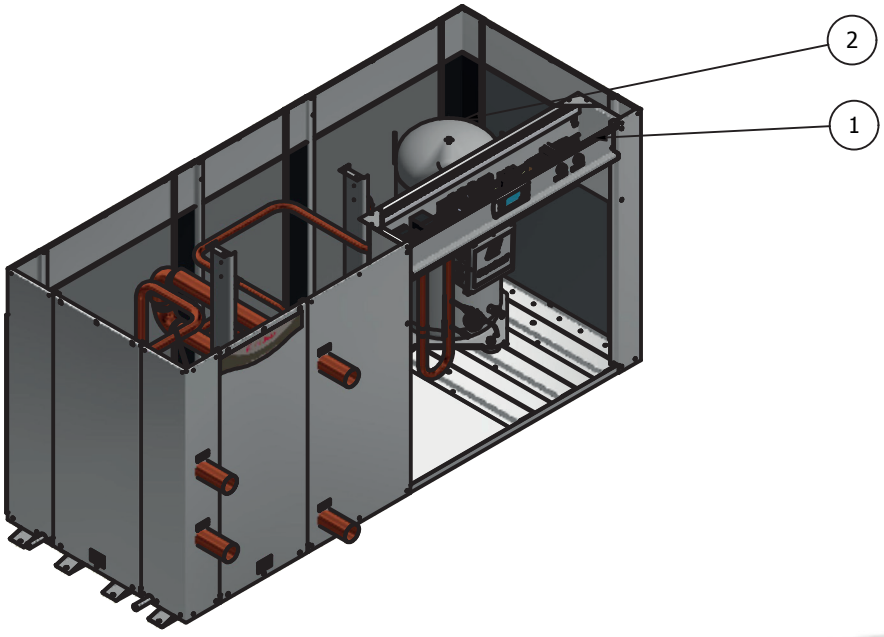




MODEL NO: RMWW071



ITEM	QTY	PART NUMBER	DESCRIPTION
			ASSEMBLIES
1	1	47360	ELECTRICAL BOX ASSY - RTWW071#D#-DQ-1
			MAIN PARTS
2	1	20103	ZR310KCE-TWD-522 Compressor



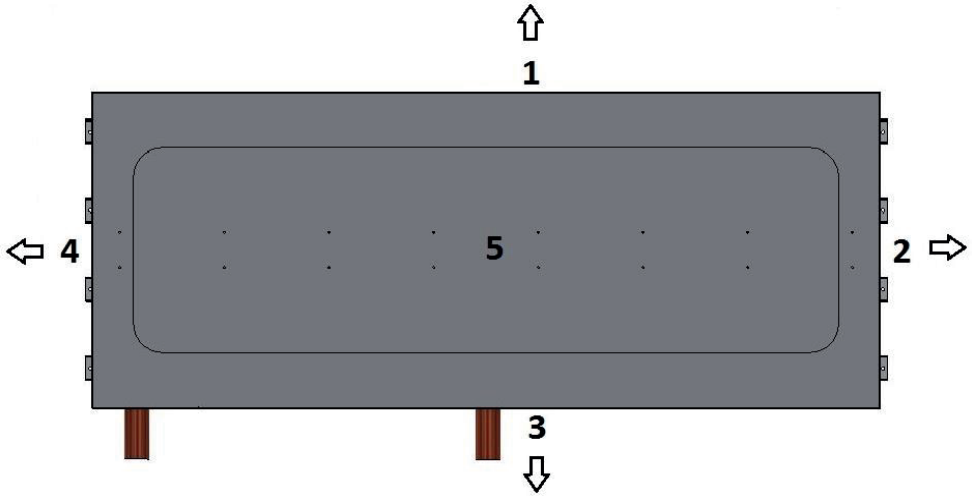
WATER-TO-WATER HEAT PUMP SPECIFICATIONS

Model No.	**RMWW088**
Brand	**Richmond**

ELECTRICAL INPUT		
Voltage/Phase	380 - 415 Volts / 3 Phase / 50 Hz	
Full Load / Locked Rotor (Amps Per Phase)	46.1 FLA / 310 LRA	
Min. Circuit Breaker Size	63.0 Amps	
Refrigerant	R134a	
Refrigeration Effect	Heating	Cooling
Nominal Capacity	87.79 kW	70.47 kW
Power Input	17.32 kW	
COP	5.07 COP	4.07 COP
Combined COP	9.14 COP	
Noise Level	61 dBa @ 3 m	
Rated Load Amps @ 10°C SST / 51°C SCT	31.4 Amps	
TECHNICAL DATA		
	Compressor	
Make / Type	Copeland / Scroll 20105	
Number Per Unit	1	
FLA (Full Load Amps, each)	46.1 Amps	
Voltage / Phase	380 - 415 / 3	
Pole/RPM	2/2,900	
HEAT EXCHANGER (Water Side)		
	Hot Side (Condenser)	**Cold Side (Evaporator)**
Type of Water Tube	Single / Double Wall	Single Wall
Design	Shell & Tube / Co-axial	Shell & Tube
Flow Rate Excl. By Pass	3.49 L/s	3.37 L/s
Max. Outlet Water Temp	70°C	N/A
Min. Outlet Water Temp	N/A	7 °C
Design Pressure Drop	50 kPa	
Max. Operating Pressure	2,450 kPa	
GENERAL INFORMATION		
Water Connections	65mm Table E Flange	
Drain	20mm Aluminium	
Cabinet Construction	1.2mm Stucco Aluminium	
Approx. Shipping Weight	450 kg	
Size L x W x H	2120mm x 805mm x 1000mm	

COP TABLE

Hot Water Out °C	Cold Water In °C							
	12 °C	14 °C	16 °C	18 °C	**20 °C**	25 °C	30 °C	35 °C
45 °C	70.66 kW 4.17 COP	75.19 kW 4.41 COP	77.56 kW 4.54 COP	82.52 kW 4.79 COP	**87.79 kW** **5.07 COP**	102.41 kW 5.81 COP	119.33 kW 6.62 COP	126.80 kW 6.97 COP
50 °C	69.65 kW 3.79 COP	74.00 kW 4.00 COP	76.28 kW 4.11 COP	81.05 kW 4.35 COP	86.10 kW 4.59 COP	100.14 kW 5.26 COP	116.38 kW 6.01 COP	123.55 kW 6.33 COP
55 °C	68.47 kW 3.37 COP	72.62 kW 3.55 COP	74.78 kW 3.65 COP	79.31 kW 3.85 COP	84.11 kW 4.06 COP	97.42 kW 4.64 COP	112.82 kW 5.30 COP	119.62 kW 5.58 COP
60 °C	67.60 kW 3.07 COP	71.58 kW 3.23 COP	73.66 kW 3.32 COP	78.00 kW 3.49 COP	82.60 kW 3.68 COP	95.35 kW 4.19 COP	110.08 kW 4.79 COP	116.59 kW 5.04 COP
65 °C	66.61 kW 2.74 COP	70.39 kW 2.88 COP	72.36 kW 2.95 COP	76.47 kW 3.10 COP	80.82 kW 3.26 COP	92.86 kW 3.70 COP	106.78 kW 4.21 COP	112.93 kW 4.43 COP
70 °C	65.70 kW 2.46 COP	69.28 kW 2.57 COP	71.15 kW 2.63 COP	75.03 kW 2.76 COP	79.14 kW 2.89 COP	90.50 kW 3.26 COP	103.61 kW 3.70 COP	109.41 kW 3.89 COP

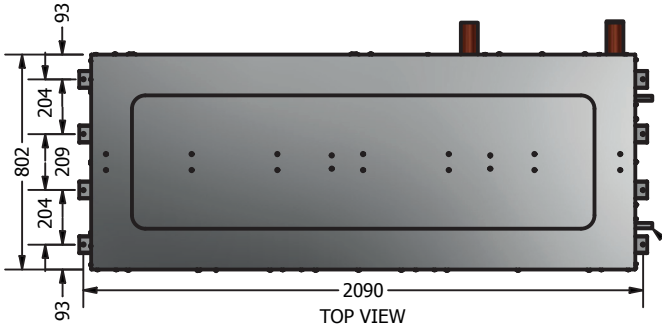


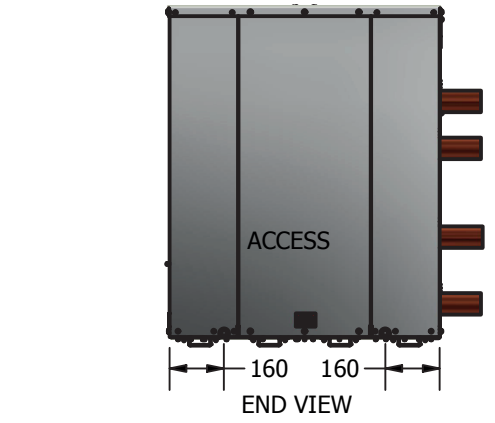
UNIT CLEARANCES

Direction	Description	Minimum Clearance Required
1	Plain Back	200mm
2	Side Access	200mm
3	Compressor Access / Water	850mm
4	Side Access	200mm
5	Top – Height Clearance	500mm

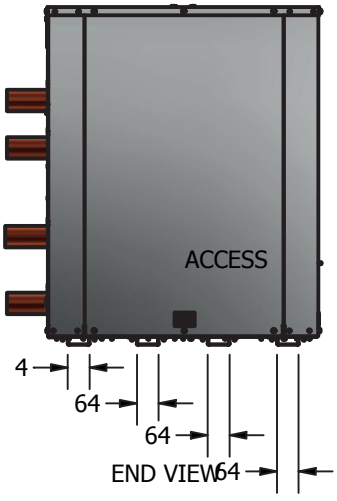
Rating Conditions: Cooling: 20°C EWT, 15°C LWT, Heating: 39°C EWT, 45°C LWT

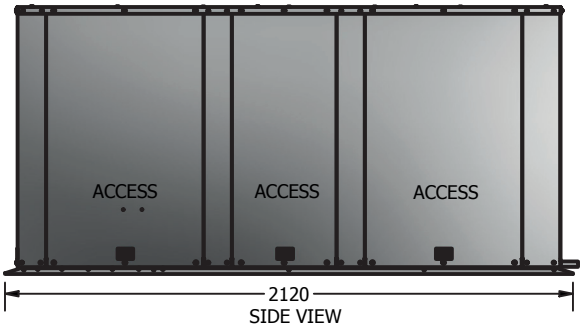
MODEL NO: RMWW088

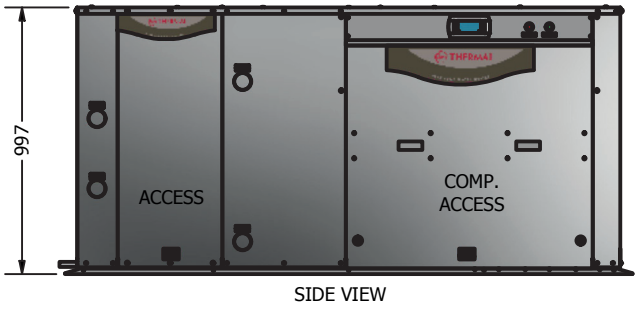


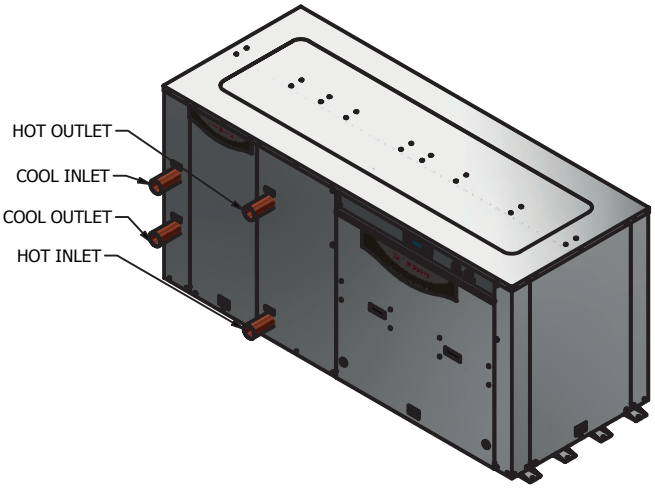


CONDENSATE DRAIN Ø20MM

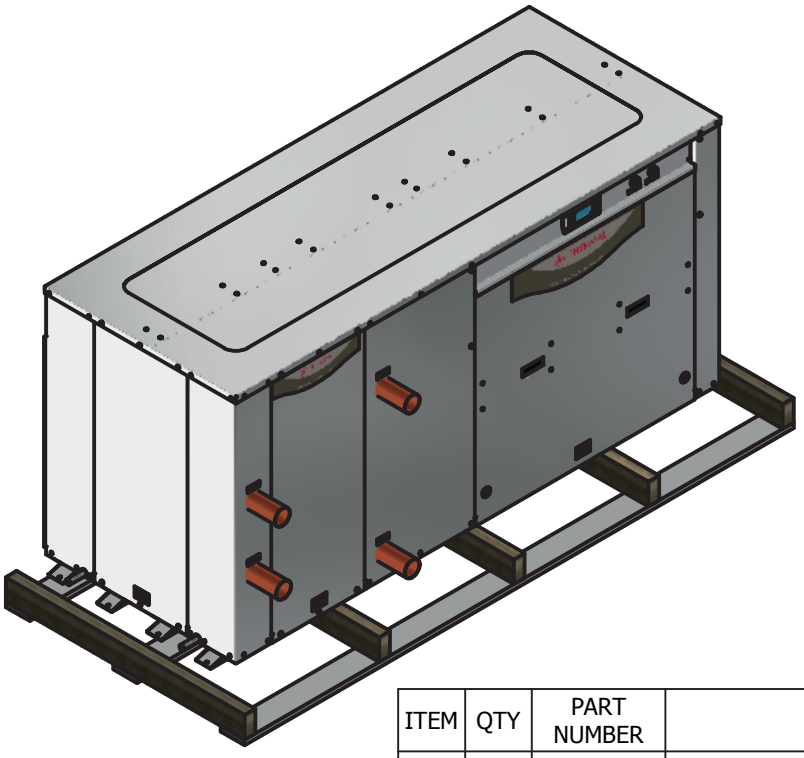




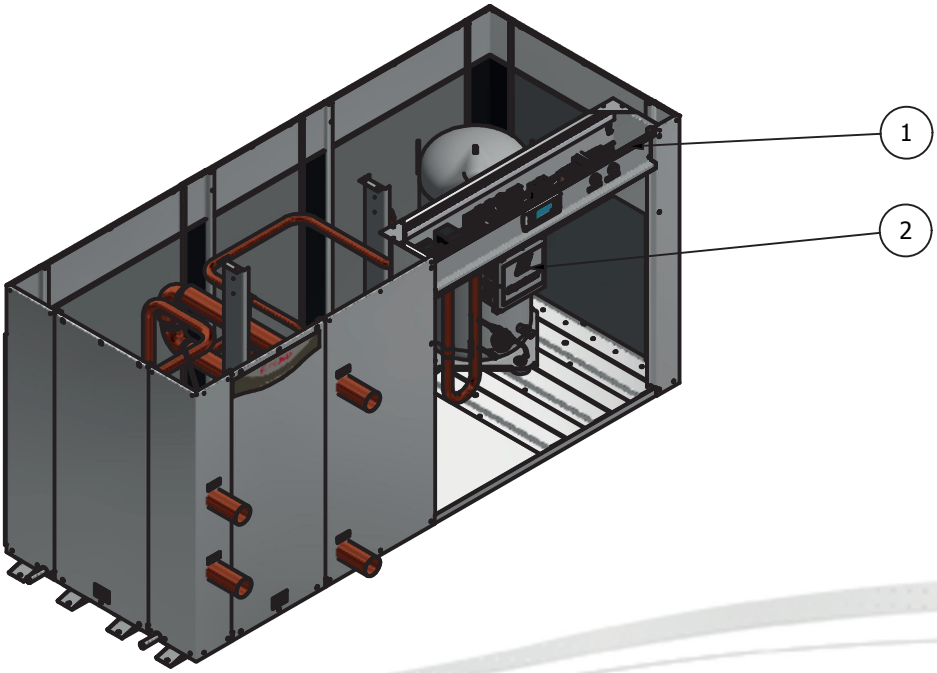




MODEL NO: RMWW088



ITEM	QTY	PART NUMBER	DESCRIPTION
			ASSEMBLIES
1	1	47361	ELECTRICAL BOX ASSY - RTWW088#D#-DQ-1
			MAIN PARTS
2	1	20105	Compressor ZR380KCE-TWD-522



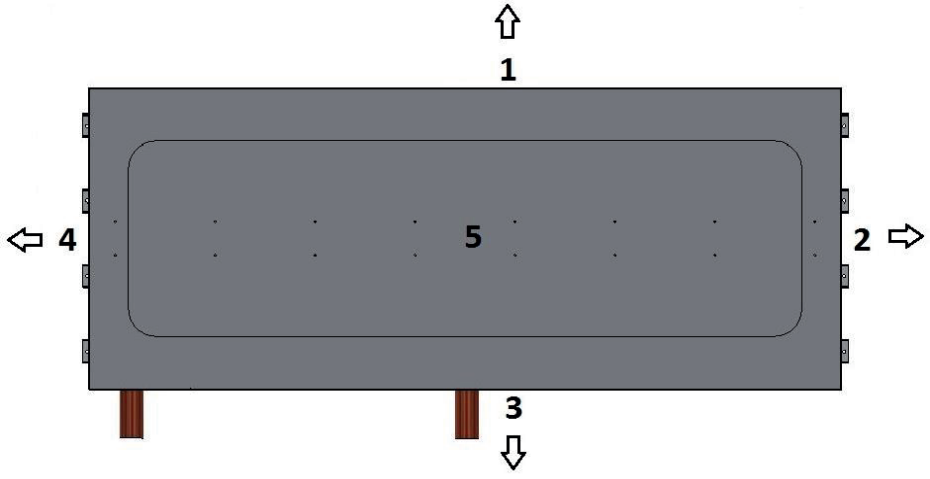
WATER-TO-WATER HEAT PUMP SPECIFICATIONS

Model No.	**RMWW116**
Brand	**Richmond**

ELECTRICAL INPUT		
Voltage/Phase	380 - 415 Volts / 3 Phase / 50 Hz	
Full Load / Locked Rotor (Amps Per Phase)	61.8 FLA / 225 LRA	
Min. Circuit Breaker Size	80.0 Amps	
Refrigerant	R134a	
Refrigeration Effect	Heating	Cooling
Nominal Capacity	114.52 kW	91.49 kW
Power Input	23.03 kW	
COP	4.97 COP	3.97 COP
Combined COP	8.94 COP	
Noise Level	64 dBa @ 3 m	
Rated Load Amps @ 10°C SST / 51°C SCT	43.3 Amps	
TECHNICAL DATA		
	Compressor	
Make / Type	Copeland / Scroll 20092	
Number Per Unit	2	
FLA (Full Load Amps, each)	30.9 Amps	
Voltage / Phase	380 - 415 / 3	
Pole/RPM	2/2,900	
HEAT EXCHANGER (Water Side)		
	Hot Side (Condenser)	**Cold Side (Evaporator)**
Type of Water Tube	Single / Double Wall	Single Wall
Design	Shell & Tube / Co-axial	Shell & Tube
Flow Rate Excl. By Pass	4.57 L/s	4.38 L/s
Max. Outlet Water Temp	70°C	N/A
Min. Outlet Water Temp	N/A	7 °C
Design Pressure Drop	50 kPa	
Max. Operating Pressure	2,450 kPa	
GENERAL INFORMATION		
Water Connections	75mm Table E Flange	
Drain	20mm Aluminium	
Cabinet Construction	1.2mm Stucco Aluminium	
Approx. Shipping Weight	625 kg	
Size L x W x H	2370 mm x 1150mm x 1000mm	

COP TABLE

Hot Water Out °C	Cold Water In °C							
	12 °C	14 °C	16 °C	18 °C	**20 °C**	25 °C	30 °C	35 °C
45 °C	92.00 kW 4.05 COP	97.96 kW 4.30 COP	101.08 kW 4.43 COP	107.60 kW 4.69 COP	**114.52 kW** **4.97 COP**	133.69 kW 5.74 COP	155.78 kW 6.60 COP	165.49 kW 6.97 COP
50 °C	90.36 kW 3.59 COP	96.04 kW 3.80 COP	99.00 kW 3.91 COP	105.21 kW 4.14 COP	111.78 kW 4.38 COP	129.99 kW 5.05 COP	150.97 kW 5.81 COP	160.21 kW 6.14 COP
55 °C	89.15 kW 3.27 COP	94.60 kW 3.45 COP	97.44 kW 3.55 COP	103.39 kW 3.75 COP	109.70 kW 3.96 COP	127.14 kW 4.55 COP	147.24 kW 5.23 COP	156.09 kW 5.53 COP
60 °C	88.02 kW 2.97 COP	93.25 kW 3.13 COP	95.97 kW 3.21 COP	101.67 kW 3.39 COP	107.70 kW 3.58 COP	124.39 kW 4.10 COP	143.62 kW 4.70 COP	152.08 kW 4.97 COP
65 °C	86.75 kW 2.64 COP	91.69 kW 2.77 COP	94.27 kW 2.84 COP	99.66 kW 2.99 COP	105.35 kW 3.15 COP	121.10 kW 3.59 COP	139.24 kW 4.11 COP	147.23 kW 4.33 COP
70 °C	85.63 kW 2.34 COP	90.30 kW 2.46 COP	92.73 kW 2.52 COP	97.81 kW 2.64 COP	103.17 kW 2.77 COP	117.98 kW 3.15 COP	135.03 kW 3.58 COP	142.55 kW 3.77 COP

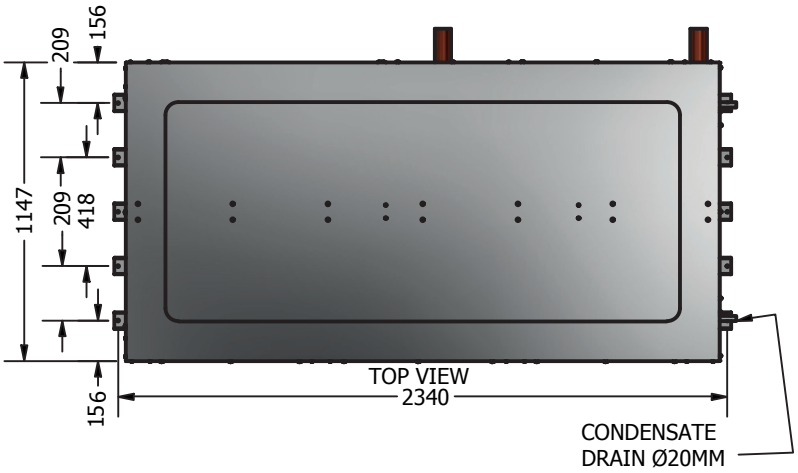


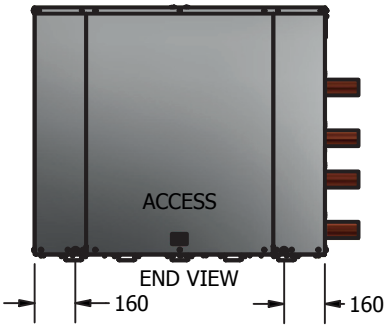
UNIT CLEARANCES

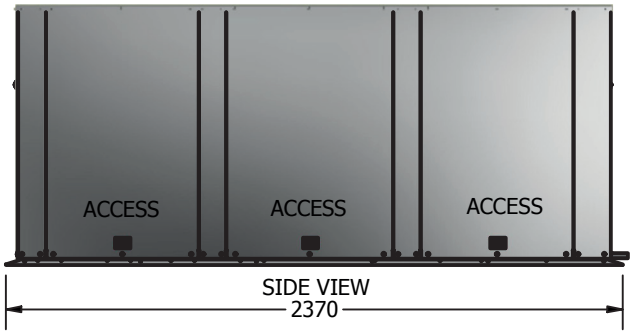
Direction	Description	Minimum Clearance Required
1	Plain Back	200mm
2	Side Access	850mm
3	Compressor Access / Water	850mm
4	Side Access	200mm
5	Top – Height Clearance	500mm

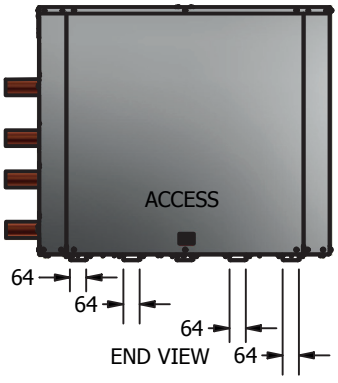
Rating Conditions: Cooling: 20°C EWT, 15°C LWT, Heating: 39°C EWT, 45°C LWT

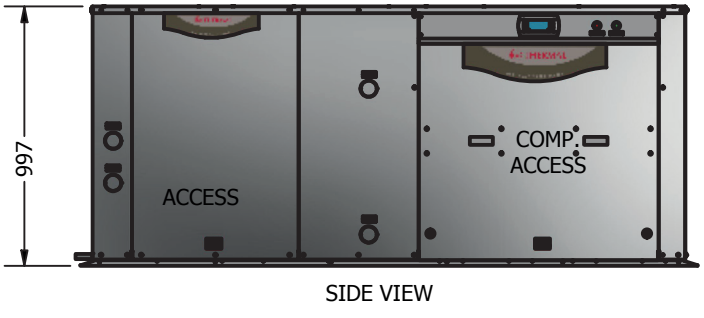
MODEL NO: RMHW116

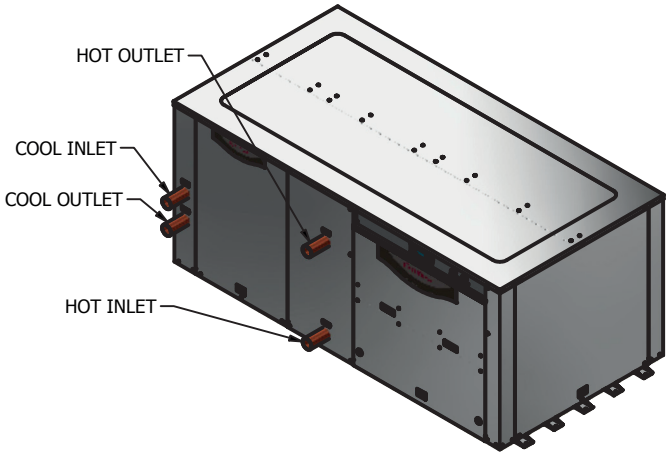












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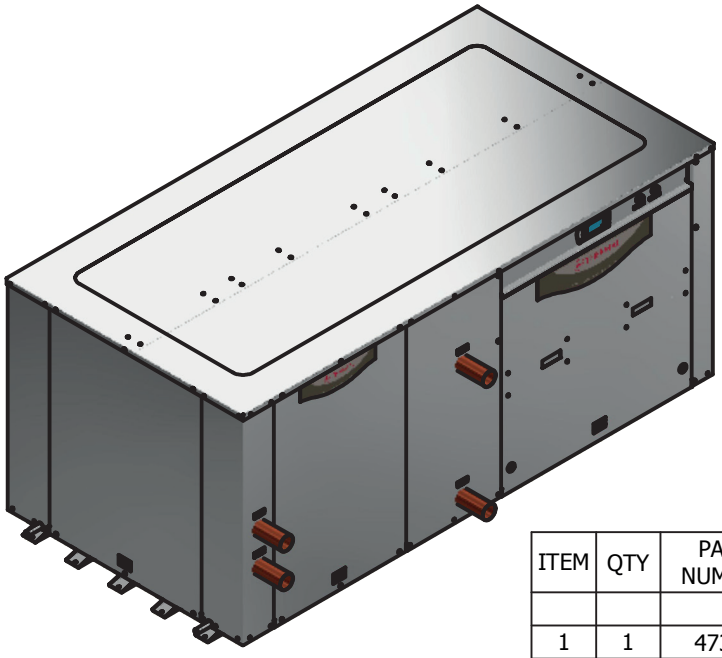
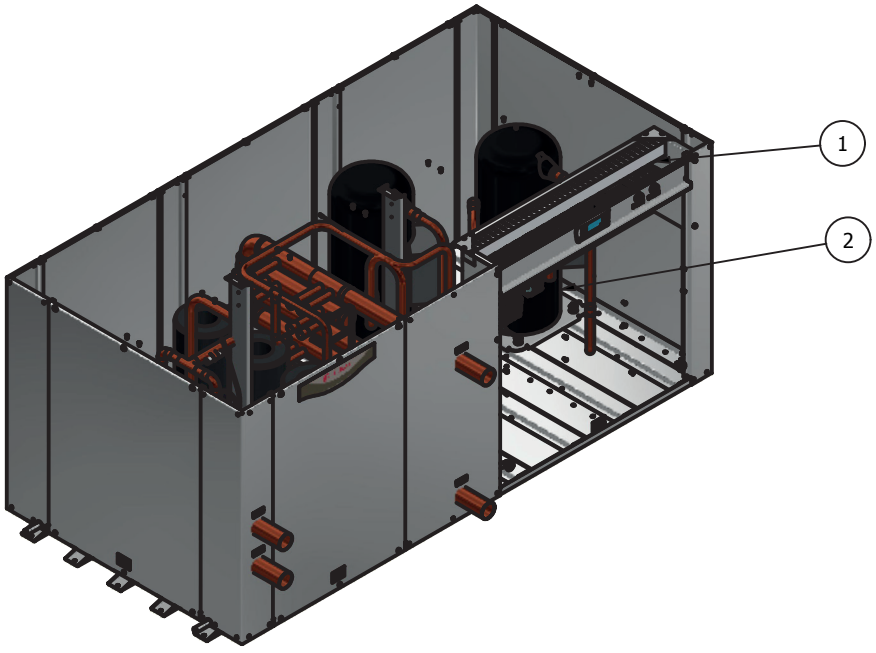


ITEM	QTY	PART NUMBER	DESCRIPTION
			ASSEMBLIES
1	1	47362	ELEC. BOX ASSY - RTWW116#D#-DQ-1
			MAIN PARTS
2	2	20092	ZR250KC/KCE-TFD Copeland 3P Compressor



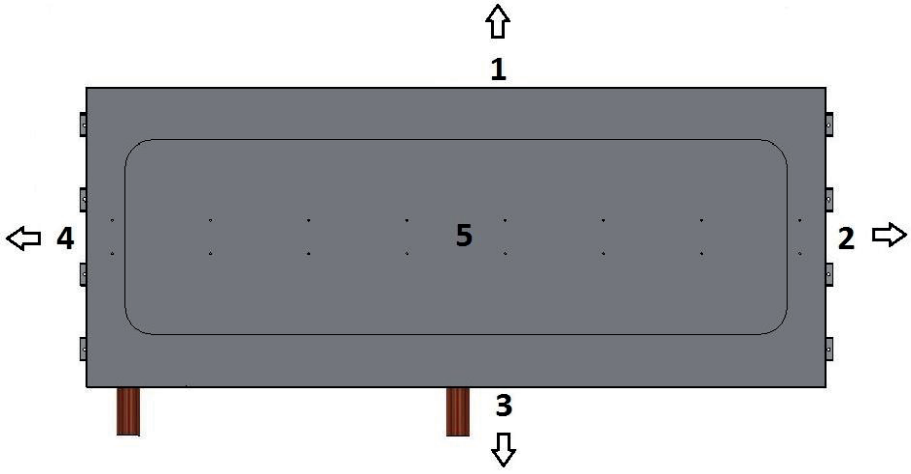
WATER-TO-WATER HEAT PUMP SPECIFICATIONS

Model No.	**RMWW142**
Brand	**Richmond**

ELECTRICAL INPUT		
Voltage/Phase	380 - 415 Volts / 3 Phase / 50 Hz	
Full Load / Locked Rotor (Amps Per Phase)	80.61 FLA / 272 LRA	
Min. Circuit Breaker Size	100.0 Amps	
Refrigerant	R134a	
Refrigeration Effect	Heating	Cooling
Nominal Capacity	142.31 kW	113.93 kW
Power Input	28.37 kW	
COP	5.02 COP	4.02 COP
Combined COP	9.03 COP	
Noise Level	64 dBa @ 3 m	
Rated Load Amps @ 10°C SST / 51°C SCT	56.1 Amps	
TECHNICAL DATA		
	Compressor	
Make / Type	Copeland / Scroll 20103	
Number Per Unit	2	
FLA (Full Load Amps, each)	40.3 Amps	
Voltage / Phase	380 - 415 / 3	
Pole/RPM	2/2,900	
HEAT EXCHANGER (Water Side)		
	Hot Side (Condenser)	**Cold Side (Evaporator)**
Type of Water Tube	Single / Double Wall	Single Wall
Design	Shell & Tube / Co-axial	Shell & Tube
Flow Rate Excl. By Pass	5.67 L/s	5.45 L/s
Max. Outlet Water Temp	70°C	N/A
Min. Outlet Water Temp	N/A	7 °C
Design Pressure Drop	50 kPa	
Max. Operating Pressure	2,450 kPa	
GENERAL INFORMATION		
Water Connections	100mm Table E Flange	
Drain	20mm Aluminium	
Cabinet Construction	1.2mm Stucco Aluminium	
Approx. Shipping Weight	725 kg	
Size L x W x H	2370mm x 1150mm x 1000mm	

COP TABLE

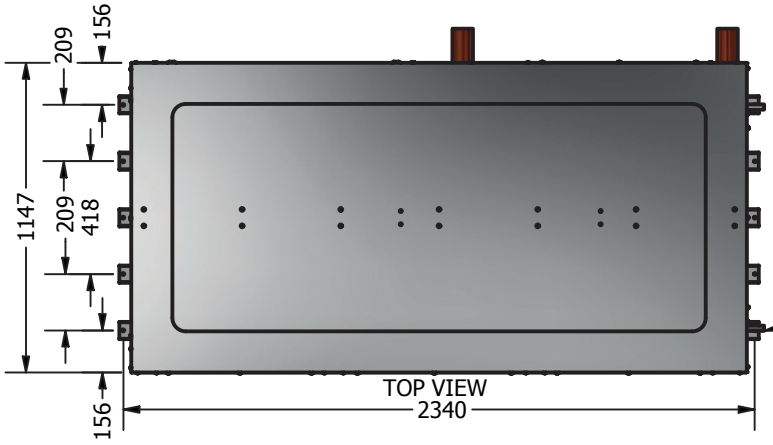
Hot Water Out °C	Cold Water In °C							
	12 °C	14 °C	16 °C	18 °C	**20 °C**	25 °C	30 °C	35 °C
45 °C	114.38 kW 4.09 COP	121.77 kW 4.34 COP	125.63 kW 4.47 COP	133.72 kW 4.73 COP	**142.31 kW** **5.02 COP**	166.14 kW 5.78 COP	193.69 kW 6.64 COP	205.86 kW 7.01 COP
50 °C	112.30 kW 3.61 COP	119.34 kW 3.83 COP	123.02 kW 3.94 COP	130.71 kW 4.18 COP	138.86 kW 4.42 COP	161.49 kW 5.10 COP	187.65 kW 5.86 COP	199.20 kW 6.19 COP
55 °C	110.76 kW 3.27 COP	117.52 kW 3.46 COP	121.05 kW 3.56 COP	128.43 kW 3.77 COP	136.25 kW 3.99 COP	157.91 kW 4.60 COP	182.96 kW 5.29 COP	194.02 kW 5.59 COP
60 °C	109.34 kW 2.95 COP	115.83 kW 3.12 COP	119.21 kW 3.21 COP	126.28 kW 3.40 COP	133.76 kW 3.59 COP	154.47 kW 4.13 COP	178.41 kW 4.75 COP	188.99 kW 5.02 COP
65 °C	107.76 kW 2.60 COP	113.90 kW 2.75 COP	117.10 kW 2.82 COP	123.78 kW 2.98 COP	130.84 kW 3.15 COP	150.38 kW 3.61 COP	172.94 kW 4.14 COP	182.91 kW 4.38 COP
70 °C	106.39 kW 2.29 COP	112.20 kW 2.41 COP	115.22 kW 2.48 COP	121.51 kW 2.61 COP	128.16 kW 2.75 COP	146.52 kW 3.15 COP	167.71 kW 3.60 COP	177.08 kW 3.80 COP

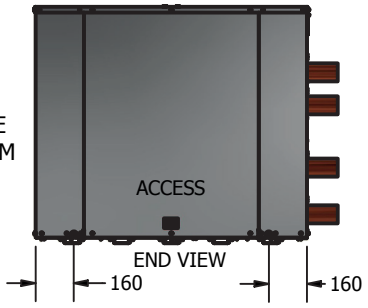


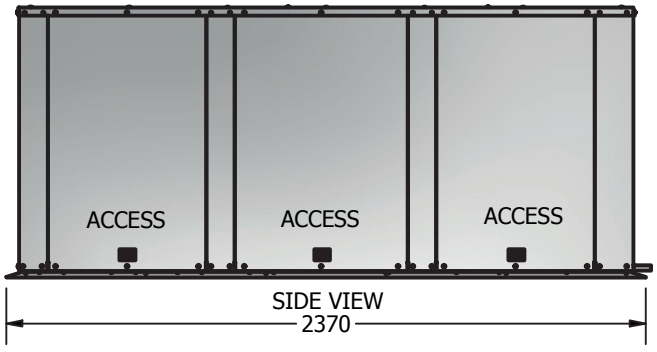
UNIT CLEARANCES		
Direction	Description	Minimum Clearance Required
1	Plain Back	200mm
2	Side Access	850mm
3	Compressor Access / Water	850mm
4	Side Access	200mm
5	Top – Height Clearance	500mm

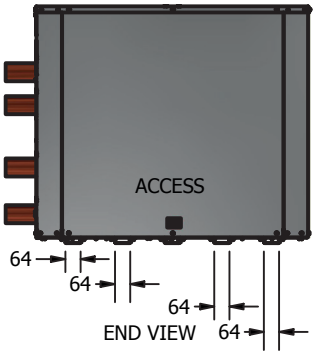
Rating Conditions: Cooling: 20°C EWT, 15°C LWT, Heating: 39°C EWT, 45°C LWT

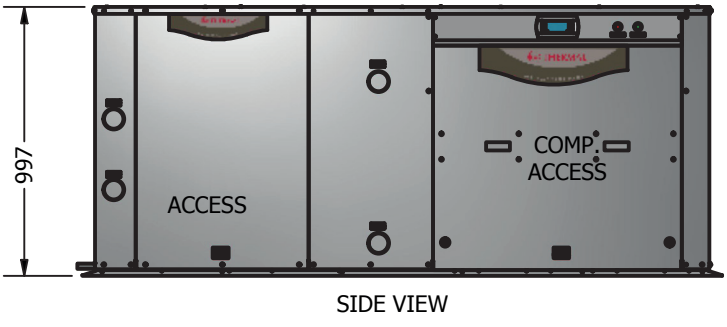
MODEL NO: RMWW142

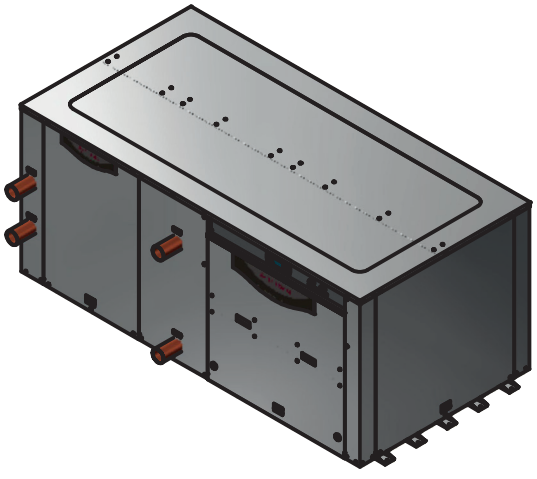




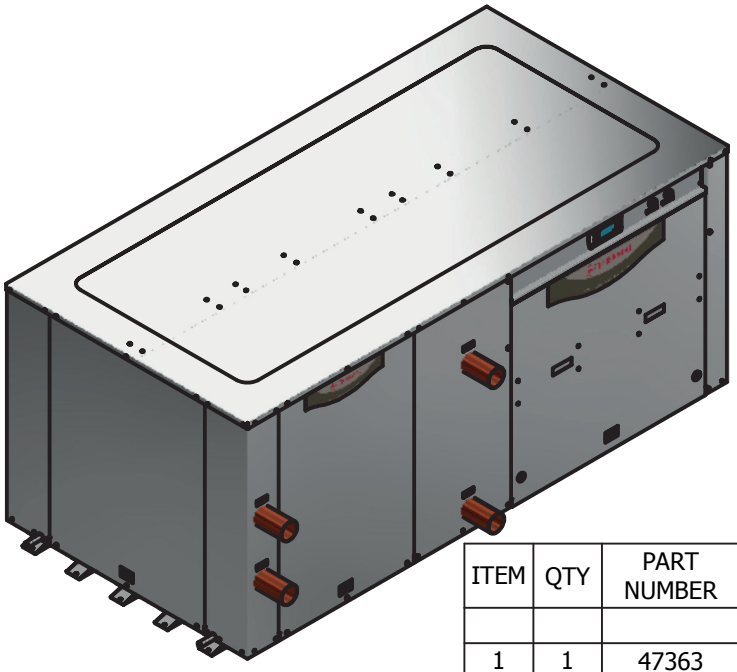




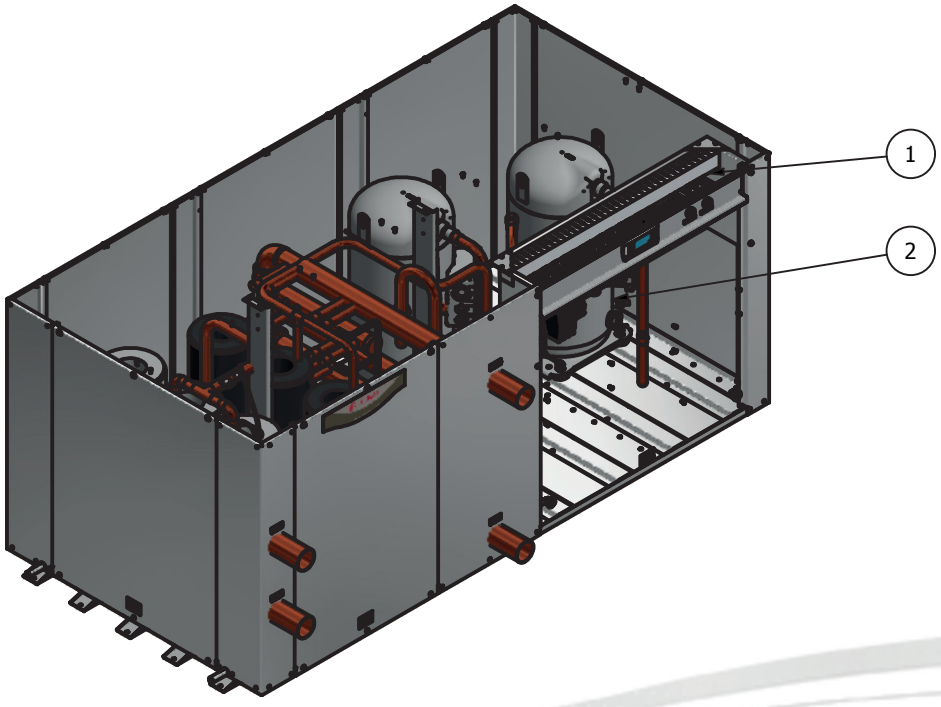




MODEL NO: RMWW142



ITEM	QTY	PART NUMBER	DESCRIPTION
			ASSEMBLIES
1	1	47363	ELEC. BOX ASSY - RTWW142#D#-DQ-1
			MAIN PARTS
2	2	20103	ZR310KCE-TWD-522 Compressor



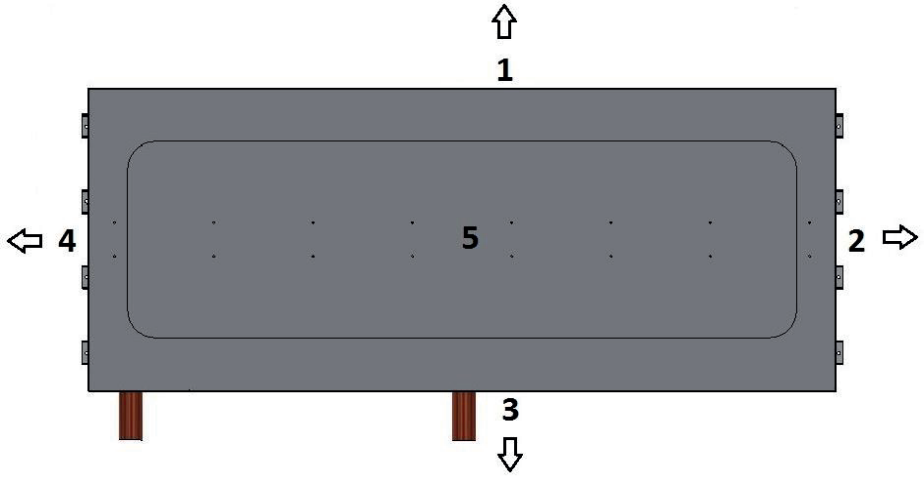
WATER-TO-WATER HEAT PUMP SPECIFICATIONS

Model No.	**RMWW176**
Brand	**Richmond**

ELECTRICAL INPUT		
Voltage/Phase	380 - 415 Volts / 3 Phase / 50 Hz	
Full Load / Locked Rotor (Amps Per Phase)	93.71 FLA / 310 LRA	
Min. Circuit Breaker Size	120.0 Amps	
Refrigerant	R134a	
Refrigeration Effect	Heating	Cooling
Nominal Capacity	175.58 kW	140.93 kW
Power Input	34.64 kW	
COP	5.07 COP	4.07 COP
Combined COP	9.14 COP	
Noise Level	64 dBa @ 3 m	
Rated Load Amps @ 10°C SST / 51°C SCT	62.7 Amps	
TECHNICAL DATA		
	Compressor	
Make / Type	Copeland / Scroll 20105	
Number Per Unit	2	
FLA (Full Load Amps, each)	46.9 Amps	
Voltage / Phase	380 - 415 / 3	
Pole/RPM	2/2,900	
HEAT EXCHANGER (Water Side)		
	Hot Side (Condenser)	**Cold Side (Evaporator)**
Type of Water Tube	Single / Double Wall	Single Wall
Design	Shell & Tube / Co-axial	Shell & Tube
Flow Rate Excl. By Pass	7.00 L/s	6.74 L/s
Max. Outlet Water Temp	70°C	N/A
Min. Outlet Water Temp	N/A	7 °C
Design Pressure Drop	50 kPa	
Max. Operating Pressure	2,450 kPa	
GENERAL INFORMATION		
Water Connections	100mm Table E Flange	
Drain	20mm Aluminium	
Cabinet Construction	1.2mm Stucco Aluminium	
Approx. Shipping Weight	825 kg	
Size L x W x H	2370mm x 1150mm x 1000mm	

COP TABLE

Hot Water Out °C	Cold Water In °C							
	12 °C	14 °C	16 °C	18 °C	20 °C	25 °C	30 °C	35 °C
45 °C	141.33 kW 4.17 COP	150.39 kW 4.41 COP	155.13 kW 4.54 COP	165.04 kW 4.79 COP	175.58 kW 5.07 COP	204.83 kW 5.81 COP	238.66 kW 6.62 COP	253.59 kW 6.97 COP
50 °C	139.29 kW 3.79 COP	148.01 kW 4.00 COP	152.56 kW 4.11 COP	162.09 kW 4.35 COP	172.21 kW 4.59 COP	200.28 kW 5.26 COP	232.75 kW 6.01 COP	247.09 kW 6.33 COP
55 °C	136.94 kW 3.37 COP	145.23 kW 3.55 COP	149.56 kW 3.65 COP	158.62 kW 3.85 COP	168.22 kW 4.06 COP	194.85 kW 4.64 COP	225.64 kW 5.30 COP	239.24 kW 5.58 COP
60 °C	135.21 kW 3.07 COP	143.17 kW 3.23 COP	147.32 kW 3.32 COP	156.00 kW 3.49 COP	165.20 kW 3.68 COP	190.69 kW 4.19 COP	220.16 kW 4.79 COP	233.18 kW 5.04 COP
65 °C	133.21 kW 2.74 COP	140.77 kW 2.88 COP	144.71 kW 2.95 COP	152.93 kW 3.10 COP	161.64 kW 3.26 COP	185.72 kW 3.70 COP	213.56 kW 4.21 COP	225.86 kW 4.43 COP
70 °C	131.40 kW 2.46 COP	138.57 kW 2.57 COP	142.30 kW 2.63 COP	150.07 kW 2.76 COP	158.29 kW 2.89 COP	181.00 kW 3.26 COP	207.23 kW 3.70 COP	218.82 kW 3.89 COP

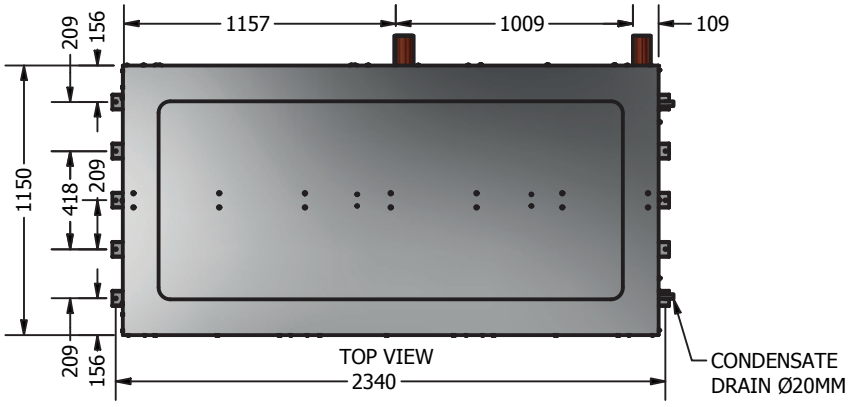


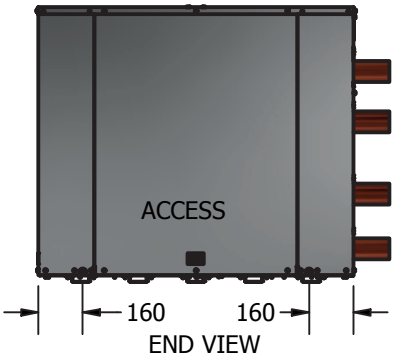
UNIT CLEARANCES

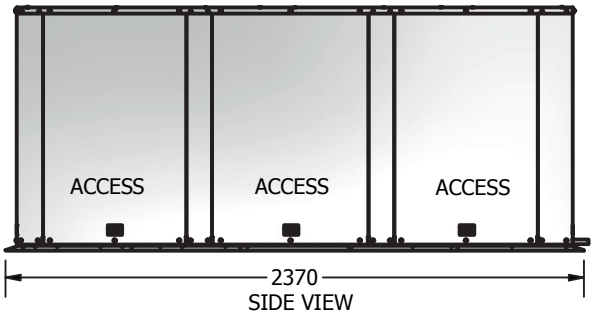
Direction	Description	Minimum Clearance Required
1	Plain Back	200mm
2	Side Access	850mm
3	Compressor Access / Water	850mm
4	Side Access	200mm
5	Top – Height Clearance	500mm

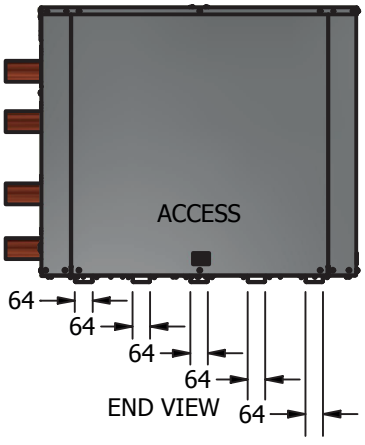
Rating Conditions: Cooling: 20°C EWT, 15°C LWT, Heating: 39°C EWT, 45°C LWT

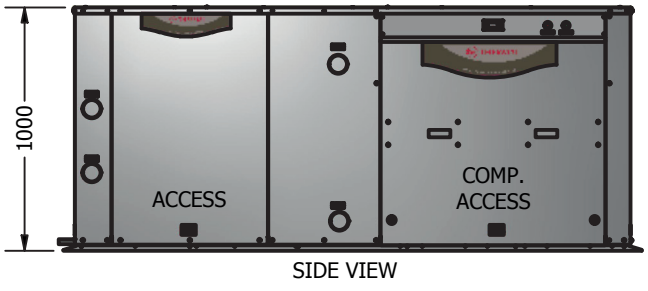
MODEL NO: RMWW176

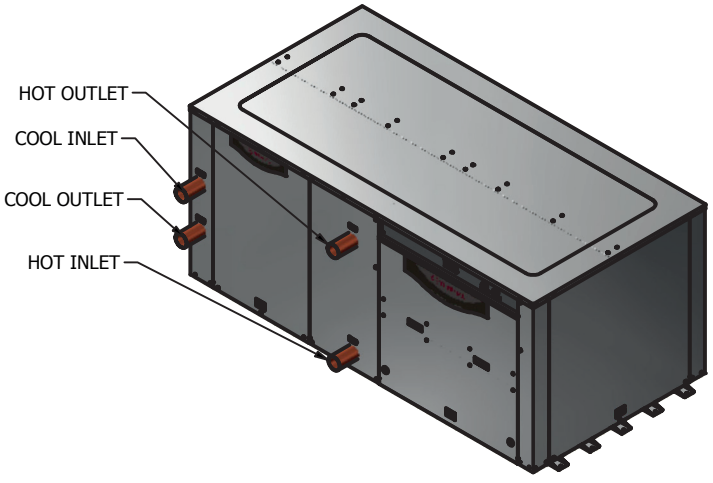




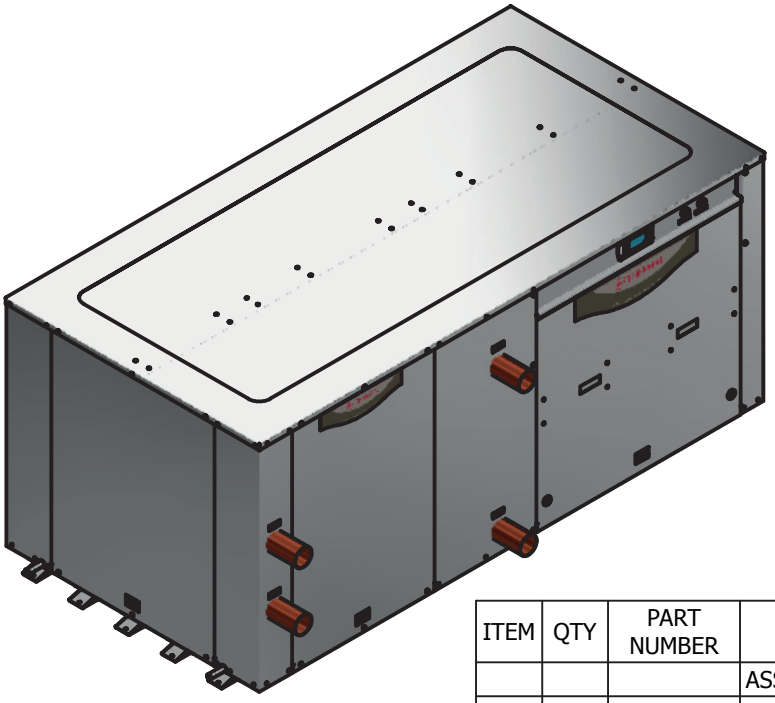




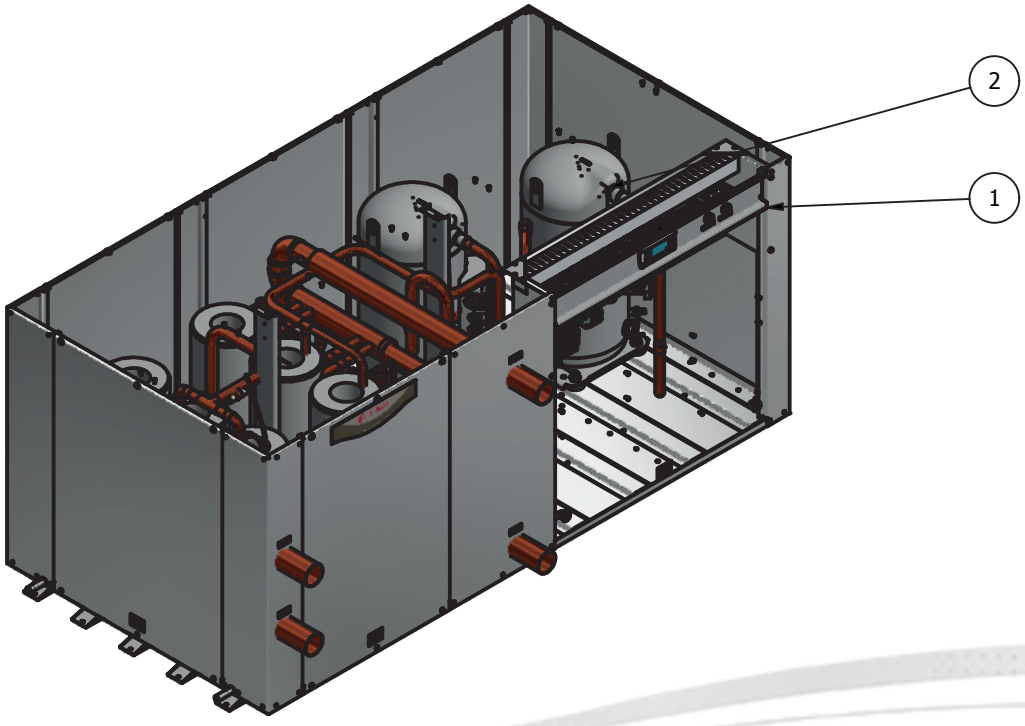




MODEL NO: RMWW176



ITEM	QTY	PART NUMBER	DESCRIPTION
			ASSEMBLIES
1	1	47364	ELEC. BOX ASSY - RTWW176#D#-DQ-1
			MAIN PARTS
2	2	20105	Compressor ZR380KCE-TWD-522



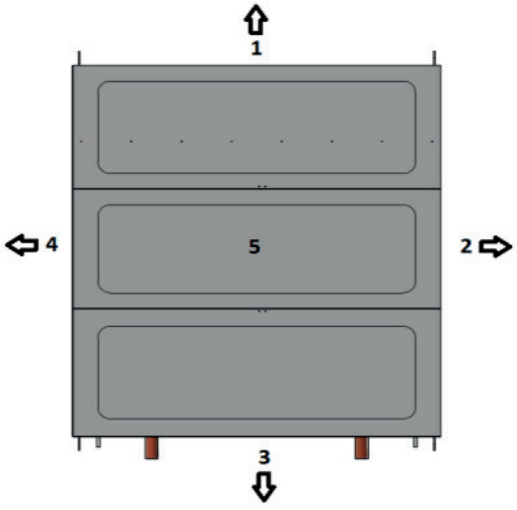
WATER-TO-WATER HEAT PUMP SPECIFICATIONS

Model No.	**RMWW213**
Brand	**Richmond**

ELECTRICAL INPUT		
Voltage/Phase	380 - 415 Volts / 3 Phase / 50 Hz	
Full Load / Locked Rotor (Amps Per Phase)	120.6 FLA / 272 LRA	
Min. Circuit Breaker Size	150.0 Amps	
Refrigerant	R134a	
Refrigeration Effect	Heating	Cooling
Nominal Capacity	213.46 kW	170.90 kW
Power Input	42.56 kW	
COP	5.02 COP	4.02 COP
Combined COP	9.03 COP	
Noise Level	67 dBa @ 3 m	
Rated Load Amps @ 10°C SST / 51°C SCT	84.2 Amps	
TECHNICAL DATA		
	Compressor	
Make / Type	Copeland / Scroll 20103	
Number Per Unit	3	
FLA (Full Load Amps, each)	40.2 Amps	
Voltage / Phase	380 - 415 / 3	
Pole/RPM	2/2,900	
HEAT EXCHANGER (Water Side)		
	Hot Side (Condenser)	**Cold Side (Evaporator)**
Type of Water Tube	Single / Double Wall	Single Wall
Design	Shell & Tube / Co-axial	Shell & Tube
Flow Rate Excl. By Pass	8.51 L/s	8.18 L/s
Max. Outlet Water Temp	70°C	N/A
Min. Outlet Water Temp	N/A	7 °C
Design Pressure Drop	50 kPa	
Max. Operating Pressure	2,450 kPa	
GENERAL INFORMATION		
Water Connections	100mm Table E Flange	
Drain	20mm Aluminium	
Cabinet Construction	1.2mm Stucco Aluminium	
Approx. Shipping Weight	1300 kg	
Size L x W x H	2586mm x 2204mm x 1270mm	

COP TABLE

Hot Water Out °C	Cold Water In °C							
	12 °C	14 °C	16 °C	18 °C	20 °C	25 °C	30 °C	35 °C
45 °C	171.57 kW 4.09 COP	182.65 kW 4.34 COP	188.45 kW 4.47 COP	200.58 kW 4.73 COP	213.46 kW 5.02 COP	249.20 kW 5.78 COP	290.54 kW 6.64 COP	308.78 kW 7.01 COP
50 °C	168.44 kW 3.61 COP	179.01 kW 3.83 COP	184.52 kW 3.94 COP	196.06 kW 4.18 COP	208.30 kW 4.42 COP	242.23 kW 5.10 COP	281.47 kW 5.86 COP	298.80 kW 6.19 COP
55 °C	166.14 kW 3.27 COP	176.28 kW 3.46 COP	181.58 kW 3.56 COP	192.64 kW 3.77 COP	204.37 kW 3.99 COP	236.87 kW 4.60 COP	274.44 kW 5.29 COP	291.03 kW 5.59 COP
60 °C	164.01 kW 2.95 COP	173.75 kW 3.12 COP	178.82 kW 3.21 COP	189.41 kW 3.40 COP	200.64 kW 3.59 COP	231.71 kW 4.13 COP	267.62 kW 4.75 COP	283.48 kW 5.02 COP
65 °C	161.63 kW 2.60 COP	170.85 kW 2.75 COP	175.66 kW 2.82 COP	185.67 kW 2.98 COP	196.26 kW 3.15 COP	225.56 kW 3.61 COP	259.41 kW 4.14 COP	274.37 kW 4.38 COP
70 °C	159.58 kW 2.29 COP	168.30 kW 2.41 COP	172.83 kW 2.48 COP	182.26 kW 2.61 COP	192.24 kW 2.75 COP	219.78 kW 3.15 COP	251.57 kW 3.60 COP	265.63 kW 3.80 COP

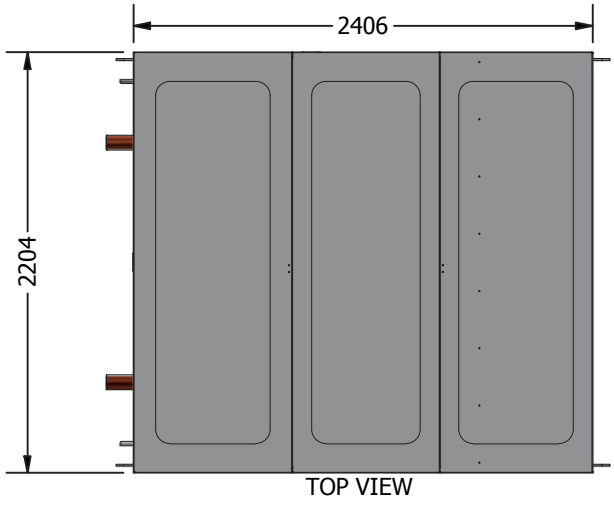


UNIT CLEARANCES

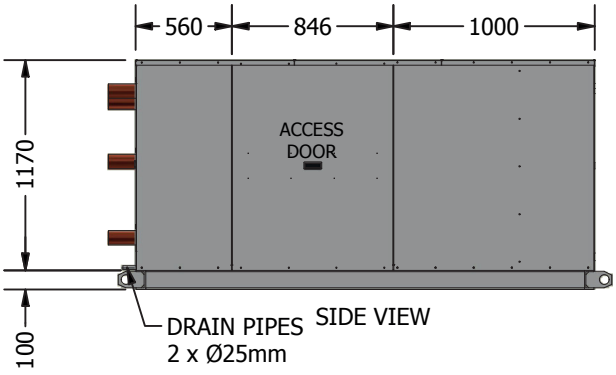
Direction	Description	Minimum Clearance Required
1	Compressor Access	850mm
2	Side Access	500mm
3	Water Connections	850mm
4	Side Access	500mm
5	Top – Height Clearance	500mm

Rating Conditions: Cooling: 20°C EWT, 15°C LWT, Heating: 39°C EWT, 45°C LWT

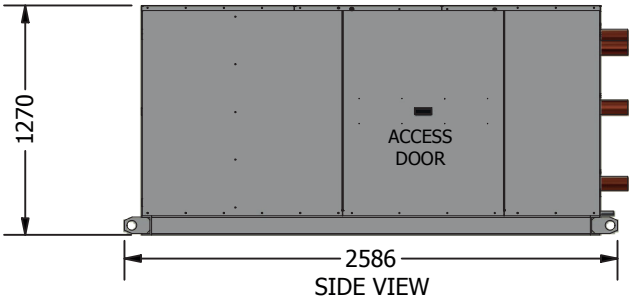
MODEL NO: RMWW213



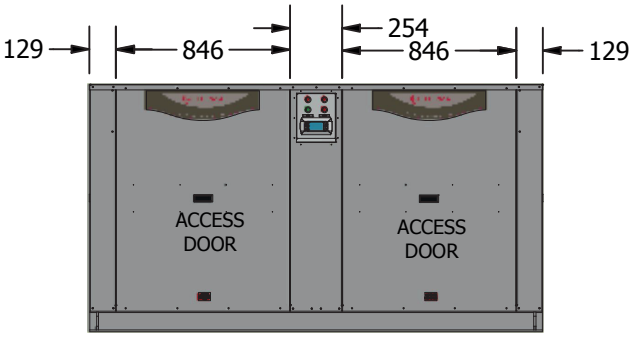
TOP VIEW



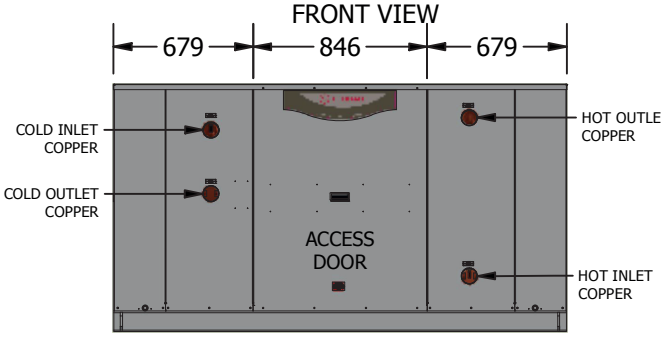
SIDE VIEW



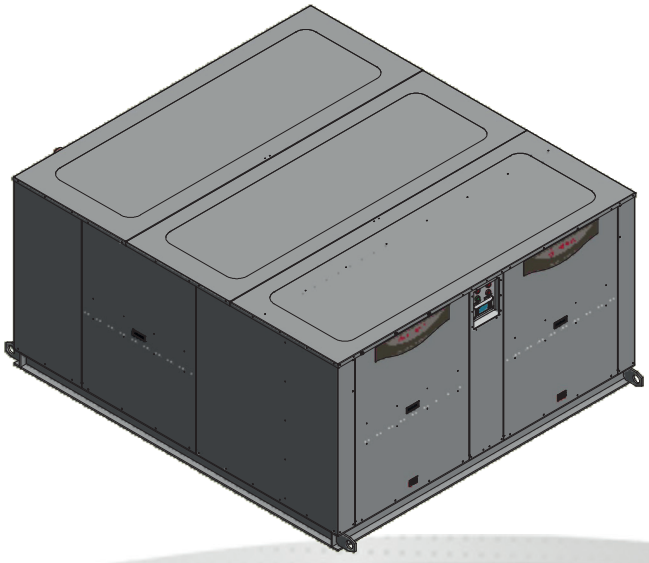
SIDE VIEW



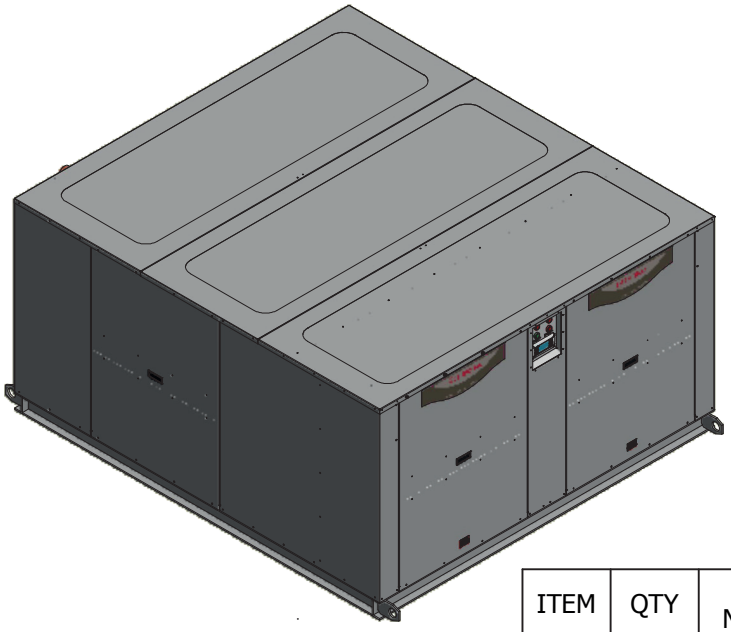
FRONT VIEW



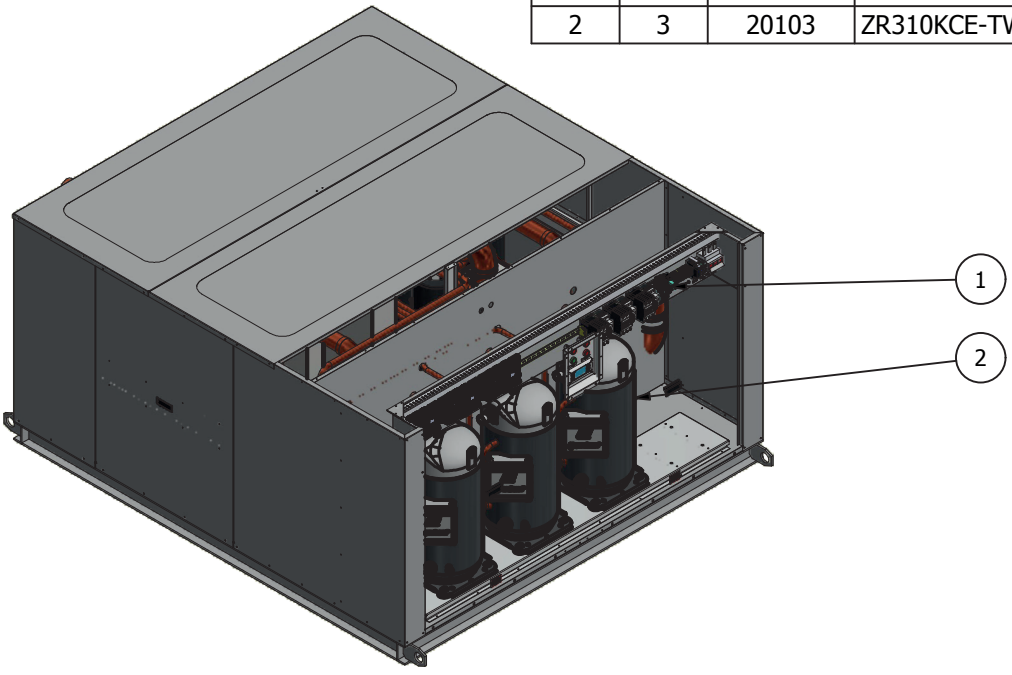
BACK VIEW



MODEL NO: RMWW213



ITEM	QTY	PART NUMBER	DESCRIPTION
			ASSEMBLIES
1	1	47365	ELECTRICAL ASSY. - RTWW213#D#-DQ-1
			MAIN PARTS
2	3	20103	ZR310KCE-TWD-522 Compressor



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