

# COMMERCIAL HEAT PUMP

The most popular commercial Heat Pumps in Australia set the new standard.

## CASE STUDY

**RIO TINTO –  
GUDAI-DARRI MINE, WA**

### Challenge

Rio Tinto has embarked on a long-term plan to implement energy saving solutions and reduce their carbon footprint. To reduce ongoing operational and running costs Rio Tinto and SPP Group Perth choose work with Rheem on two centralized hot water systems. By installing high efficiency Rheem Air to Water Commercial Heat Pumps for both

male and female facilities, the energy consumption was reduced by up to 75% comparing with traditional Electric Hot Water systems.

### Hot Water Solution

Total hot water plant installed included:

- 10 x 953035 – 35kW horizontal discharge, stackable Air to Water Heat Pumps
- 9 x 3000 litre RT3000 stainless steel storage tanks, each with 30kW Auxiliary Commercial Electric Heating Unit



## YF SERIES AIR TO WATER HEAT PUMP

WHERE ULTRA-LOW CARBON FOOTPRINT IS ESSENTIAL



HEAT PUMP



HOT WATER TO 65°C<sup>1</sup>



FLEXIBLE, USES CAR PARK AIR



LOW AMBIENT OPERATION

### Up to 65°C<sup>1</sup> hot water delivery to the building with ultra-low GWP and improved COP.

#### ULTRA-LOW GWP

Rheem YF Series commercial heat pumps employ R1234yf refrigerant which has an ultra-low global warming potential (GWP) rating of <1, combined with an improved co-efficient of performance (COP), making it the prime choice where ESD requirements are paramount.

Available in Air to Water (A2W) and Water to Water (W2W) models in nominal 15kW and 30kW outputs.

#### IMPROVED COP

Detailed engineering has tuned the average COP of the A2W models up to 4.28 for the 30kW model and 4.23 for the 15kW model. Further product enhancement allows the heat pump to operate in ambient conditions to a low of 0°C, reducing the reliance on auxiliary heating methods, thereby improving overall annual efficiency.

#### MULTIPLE INSTALLATION OPTIONS

A2W models are designed with both vertical and horizontal discharge options, with fan options available in ducted and non-ducted versions. Horizontal discharge models can also be stacked two high to reduce plant footprint.

#### FURTHER PRODUCT IMPROVEMENTS

Efficiency has been improved with the use of variable speed Electronically Commutated fans and an upgraded micro-controller now allows up to six

15kW heat pumps to be inter-linked for common BMS connectivity in Modbus or BACnet (interface card required). This also allows for optional staging and rotation on a lead/follower basis for further energy reduction and product life improvement.

The 30kW model has dual controller and refrigerant circuits providing 50% redundancy in a single unit package.

An electronic expansion valve improves performance by accurately metering the correct amount of refrigerant and reverse cycle de-ice provides rapid de-icing in low ambient environments improving recovery.

#### STANDARD RHEEM FEATURES

The features that make Rheem the first choice in heat pump technology are still maintained, including:

- Marine grade aluminium cabinet that won't rust

- Evaporator coils fully dipped with Rheemkote® as standard, meeting 10,000hr neutral salt spray test for superior corrosion protection
- Rheem iQ controller monitors 9 operating parameters providing on-board diagnostics and BMS input – improved reliability and servicing
- Auxiliary boost interlock – when activated, only operates in extreme low ambient conditions or when >50% of the heat pumps are in fault – surety of hot water supply
- Fully certified including Electrical Safety, EMC and Water Mark – confidence in your selection
- Tested in ambient conditions as high as 45°C – built for the Australian climate
- Rheem has been leading the way in commercial heat pump technology since 2008 supported by an in-house service team, with local technical support



\*Conditions apply: For full terms and conditions please contact Rheem or visit [www.rheem.com.au/rheem/help/Warranties](http://www.rheem.com.au/rheem/help/Warranties)



# TECHNICAL DATA

AIR TO WATER					
Product data		Ducted Exhaust	Non-Ducted Exhaust	Ducted Exhaust	Non-Ducted Exhaust
MODEL		952015	953015	952030	953030
Heating Capacity <sup>2</sup>	kW	15.16	15.16	29.78	29.78
Power Input <sup>2</sup>	kW	3.87	3.58	7.11	6.96
Coefficient of Performance COP <sup>2</sup>		3.92	4.23	4.19	4.28
Recovery @ 50°C Rise <sup>2</sup>	L/hr	261	261	512	512
Operating Range (ambient)	°C	0 - 45			
Maximum DHW Temperature <sup>1</sup>	°C	65			
Refrigerant		R1234yf			
Refrigerant Mass	kg	2.25	2.25	4.5 <sup>4</sup>	4.5 <sup>4</sup>
Hot Water Side					
TPR Valve Setting (VE/RT/RW)	kPa	1000 / 850 / 700			
ECV Setting (VE/RT/RW) <sup>3</sup>	kPa	860 / 700 / 550			
Maximum Water Supply Pressure					
- Without ECV (VE/RT/RW)	kPa	800 / 680 / 550			
- With ECV (VE/RT/RW)	kPa	680 / 550 / 450			
Design Flow Rate	L/s	1.1	1.1	2.2	2.2
Design Pressure Drop	kPa	40	40	50	50
Heat Exchanger Design	0/V	00/H0 = 316 Stainless Steel Double Wall Brazed Plate / 0V/HV = Copper Tube in Tube Vented			
Air Side					
Air Flow (at maximum static pressure)	L/s	1972	1972	3750	3750
Maximum Static Pressure	Pa	63	5	37	5
Minimum Free Air Ventilation per inlet and outlet	m <sup>2</sup>	2	2	4	4
Electrical Connection					
Power Supply		3 Phase / 380-415V / 50 Hz			
Max Current per Phase (running, excl pump)	Amps	14.4	12.5	23.2	23
Max Pump Current	Amps	2.4	2.4	4.4	4.4
Minimum Circuit Breaker size (per phase)	Amps	20	20	40	40
Installation Data					
Approx Weight Empty	kg	120	120	260	260
Approx Weight Full	kg	125	125	270	270
Sound Pressure Level @3m	dBa	69	57	69	58
Clearances					
Evap Coil Side	mm	350	350	500	500
Back (vertical discharge models)	mm	Nil	Nil	Nil	Nil
Back (horizontal discharge models)	mm	1200	1200	2000	2000
Display Side	mm	850	850	850	850
Water Connection Side	mm	600	600	600	600
Top (vertical discharge models) <sup>5</sup>	mm	2500	2500	3500	3500
Top (horizontal discharge models)	mm	Clearance above unit required for service personnel to stand			

<sup>1</sup> When ambient temperature is not likely to drop below 5°C during operation.

<sup>2</sup> 20°C ambient / 60%RH, 39°C water in / 42°C water out.

<sup>3</sup> ECV not supplied with water heater.

<sup>4</sup> 2 circuits at 2.25kg each.

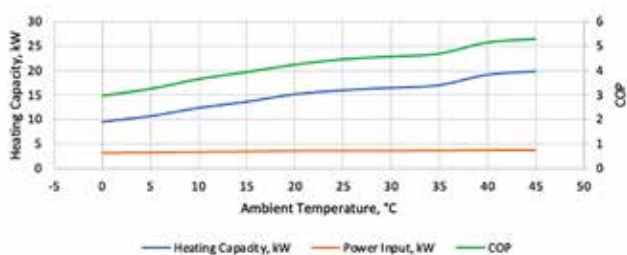
<sup>5</sup> Horizontal discharge models recommended for indoor installation. Different clearance may be acceptable subject to confirmation of the site specific details.

# TECHNICAL DATA

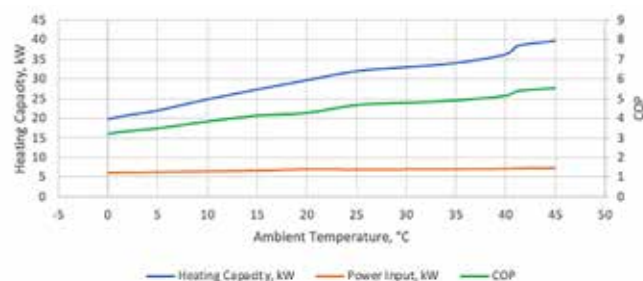
AIR TO WATER 15kW MODEL RECOVERY										
Ambient Temperature °C	0	5	10	15	20	25	30	35	40	45
Output (kW)	9.54	10.68	12.38	13.62	15.16	15.95	16.46	16.98	19.10	19.78
Recovery – Litres per hour										
20°C rise	410	459	532	586	652	686	708	730	821	851
25°C rise	328	367	426	469	522	549	566	584	657	680
30°C rise	273	306	355	390	435	457	472	487	548	567
35°C rise	234	262	304	335	373	392	404	417	469	486
40°C rise	205	230	266	293	326	343	354	365	411	425
45°C rise	NA	204	237	260	290	305	315	325	365	378
50°C rise	NA	184	213	234	261	274	283	292	329	340
55°C rise	NA	NA	194	213	237	249	257	266	299	309

AIR TO WATER 30kW MODEL RECOVERY										
Ambient Temperature °C	0	5	10	15	20	25	30	35	40	45
Output (kW)	19.82	22.03	24.89	27.40	29.78	32.09	33.11	34.15	36.33	39.81
Recovery – Litres per hour										
20°C rise	852	947	1070	1178	1281	1380	1424	1468	1562	1712
25°C rise	682	758	856	943	1024	1104	1139	1175	1250	1369
30°C rise	568	632	714	785	854	920	949	979	1041	1141
35°C rise	487	541	612	673	732	789	814	839	893	978
40°C rise	426	474	535	589	640	690	712	734	781	856
45°C rise	NA	421	476	524	569	613	633	653	694	761
50°C rise	NA	379	428	471	512	552	569	587	625	685
55°C rise	NA	NA	389	428	466	502	518	534	568	622

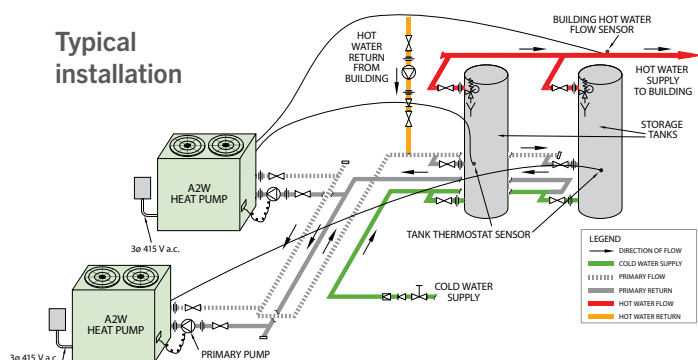
15kW A2W COP and Heating Capacity



30kW A2W COP and Heating Capacity



Typical installation



PUMP AND PIPE SIZING CHART								
Number of Heat Pumps in Parallel	15kW				30kW			
	1	2	3	4	1	2	3	4
Primary Pump	Grundfos CM3-2				Grundfos CM10-1			
Branch Size	40				50			
Header Size	40	50	65	80	50	80	100	100

ACCESSORIES				
Storage Tank	Pump 15kW	Pump 30kW	BMS Card	LAN Cable
410L (VE)			17520-BACnet TCP/IP 17520-Modbus TCP/IP	17670
1000 to 5000L (RT 316L-SS)	CM3-2 366084	CM10-1 366094	17521-BACnet MS/TP	
1000 to 3000L (RW 2205-SS)			17522-Modbus RS485	





## YF SERIES WATER TO WATER HEAT PUMP

CONNECT TO BUILDING CONDENSER LOOP FOR EXCEPTIONAL COP PERFORMANCE



HEAT PUMP



WASTE HEAT RECOVERY



UP TO 7.0 COP EFFICIENCY

### High heating output with ultra-low GWP and exceptional COP.

The Rheem Water to Water (W2W) heat pump has captured the imagination of system designers as a compact system that can be installed virtually anywhere with a COP up to 7. And is now available in R1234yf refrigerant with a GWP of <1 providing exceptional carbon footprint reduction.

#### SIZING RE-IMAGINED

With the ability to produce up to 63% more hot water than the equivalent A2W version when connected to a 35°C condenser circuit, heat pump sizing is turned on its head, providing the ability for more recovery kW and less storage with reduced complexity, plant footprint and weight.

#### PRODUCT ENHANCEMENTS

The evaporator heat exchanger is now copper shell and tube, suited to the conditions found in HVAC condenser circuits and an upgraded micro-controller now allows up to six 16kW

heat pumps to be inter-linked for common BMS connectivity in Modbus or BACnet (interface card required). This also allows for optional staging and rotation on a lead/follower basis for further energy reduction and product life improvement.

The 32kW model has dual controller and refrigerant circuits providing 50% redundancy in a single unit package.

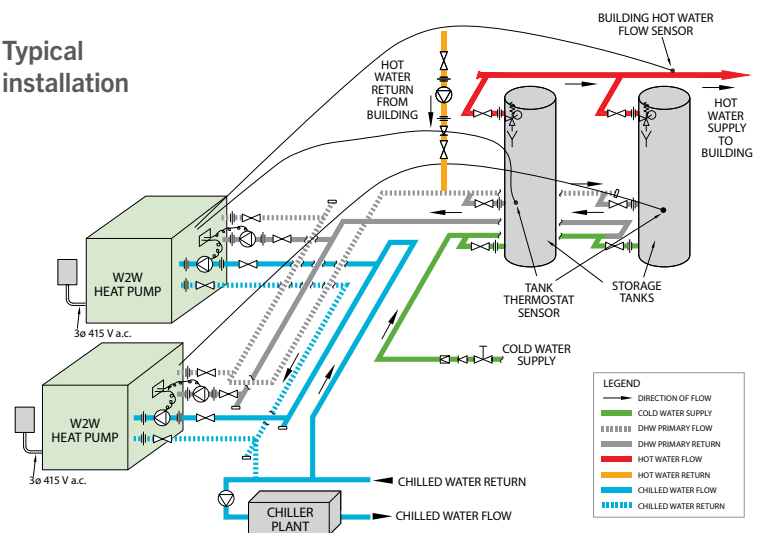
#### STANDARD RHEEM FEATURES

The features that make Rheem the first choice in heat pump technology are still maintained, including:

- Marine grade aluminium cabinet – won't rust
- Copper shell and tube evaporator heat exchanger – better suited to HVAC condenser circuits

- Rheem iQ controller monitors 11 operating parameters providing on-board diagnostics and BMS input – improved reliability and servicing
- Auxiliary boost interlock – when activated, only operates if chiller circuit is off or when >50% of the heat pumps are in fault – surety of hot water supply
- Double stack capability as standard – halves footprint
- Fully certified including Electrical Safety, EMC and Water Mark – confidence in your selection
- Rheem has been leading the way in commercial heat pump technology since 2008 supported by an in-house Service team, with local technical support

#### Typical installation



\*Conditions apply: For full terms and conditions please contact Rheem or visit [www.rheem.com.au/rheem/help/Warranties](http://www.rheem.com.au/rheem/help/Warranties)

# TECHNICAL DATA

WATER TO WATER			
MODEL		955016	955032
Nominal Heating Capacity at 20°C Cold Water Temperature <sup>1</sup>	kW	16.04	32.09
Nominal Cooling Capacity at 20°C Cold Water Temperature <sup>1</sup>	kW	12.97	25.94
Nominal Heating Capacity at 35°C Cold Water Temperature <sup>2</sup>	kW	23.11	46.22
Power Input <sup>2</sup>	kW	3.07	6.15
Coefficient of Performance (Heating) at 20°C Cold Water Temperature <sup>1</sup>	°C	5.22	5.22
Coefficient of Performance (Cooling) at 20°C Cold Water Temperature <sup>1</sup>	°C	4.22	4.22
Coefficient of Performance (Heating) at 35°C Cold Water Temperature <sup>2</sup>	°C	6.9	6.9
Maximum Stored DHW Temperature	°C	65	
Refrigerant		R1234yf	
Refrigerant Mass	kg	2	4 <sup>4</sup>
<b>Hot Water Side</b>			
TPR Valve Setting (VE/RT/RW)	kPa	1000 / 850 / 700	
ECV Setting (VE/RT/RW) <sup>3</sup>	kPa	860 / 700 / 550	
Maximum Water Supply Pressure			
- Without ECV (VE/RT/RW)	kPa	800 / 680 / 550	
- With ECV (VE/RT/RW)	kPa	680 / 550 / 450	
Hot Water Side Design Flow Rate	L/s	1.2	2.39
Heat Exchanger Design	O/V	00 = 316 Stainless Steel Double Wall Brazed Plate / OV = Copper Tube in Tube Vented	
Design Pressure Drop	kPa	50	50
<b>Cold Water Side</b>			
Maximum Water Supply Pressure	kPa	1000	1000
Cold Water Side Design Flow Rate	L/s	1.41	2.82
Heat Exchanger Design		Single Wall Copper Shell in Tube	
Design Pressure Drop	kPa	50	50
Electrical Connection			
Power Supply		3 Phase / 380-415V / 50Hz	
Max Current per Phase (running, excl pumps)	Amps	9.6	19.3
Max Pump Current (allow for 2 x pumps per heat pump)	Amps	2 x 2.4	2 x 4.4
Minimum Circuit Breaker size (per phase)	Amps	20	40
<b>Installation Data</b>			
Approx Weight Empty	kg	125	250
Approx Weight Full	kg	130	260
Sound Pressure Level @3m	dBa	59	62
<b>Clearances</b>			
Front	mm	850	
Back	mm	Nil	
Water Connection Side	mm	500	
RH Side	mm	Nil	
Top	mm	Clearance required for personnel to stand	

<sup>1</sup> Rating Conditions: Heating 39°C water in, 42°C water out, 51°C SCT, Cold 20°C water in, 15°C water outlet, 10°C SST.

<sup>2</sup> Rating Conditions: Heating 39°C water in, 42°C water out, 51°C SCT, Cold 35°C water in, 29.5°C water outlet, 10°C SST.

<sup>3</sup> ECV not supplied with water heater.

<sup>4</sup> 2 circuits at 2kg each.

# TECHNICAL DATA

## WATER TO WATER 16kW MODEL RECOVERY

Cold Water Side Temperature (°C)	12	14	16	18	20	25	30	35
Output (kW)	12.44	13.27	14.14	15.07	16.04	18.73	21.78	23.11
Recovery – Litres per hour								
20°C rise	535	571	608	648	690	805	937	994
25°C rise	428	456	486	518	552	644	749	795
30°C rise	357	380	405	432	460	537	624	662
35°C rise	306	326	347	370	394	460	535	568
40°C rise	267	285	304	324	345	403	468	497
45°C rise	238	254	270	288	307	358	416	442
50°C rise	214	228	243	259	276	322	375	397
55°C rise	195	207	221	236	251	293	341	361

## WATER TO WATER 32kW MODEL RECOVERY

Cold Water Side Temperature (°C)	12	14	16	18	20	25	30	35
Output (kW)	24.89	26.54	28.28	30.13	32.09	37.45	43.56	46.22
Recovery – Litres per hour								
20°C rise	1070	1141	1216	1296	1380	1610	1873	1987
25°C rise	856	913	973	1036	1104	1288	1498	1590
30°C rise	714	761	811	864	920	1074	1249	1325
35°C rise	612	652	695	740	789	920	1070	1136
40°C rise	535	571	608	648	690	805	937	994
45°C rise	476	507	540	576	613	716	832	883
50°C rise	428	456	486	518	552	644	749	795
55°C rise	389	415	442	471	502	586	681	723

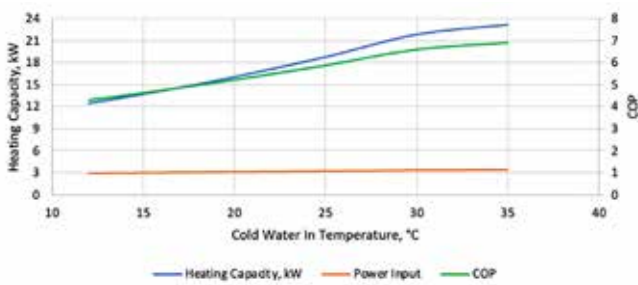
## PUMP AND PIPE SIZING CHART (HOT SIDE AND COLD SIDE)

Number of Heat Pumps in Parallel	16kW				32kW			
	1	2	3	4	1	2	3	4
Primary Pump	Grundfos CM3-2				Grundfos CM10-1			
Branch Size	40				50			
Header Size	40	50	65	80	50	80	100	100

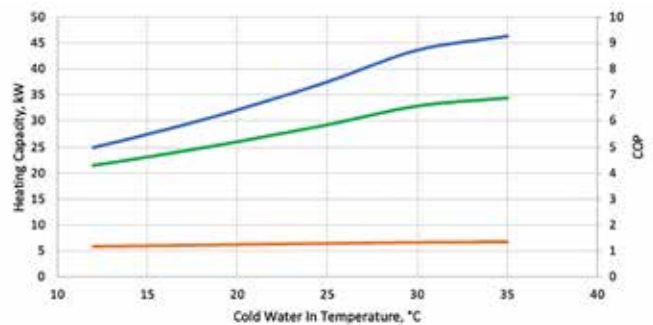
## ACCESSORIES

Storage Tank	Pump 16kW	Pump 32kW	BMS Card	LAN Cable
410L (VE)	CM3-2 366084	CM10-1 366094	17520-BACnet TCP/IP	17670
1000 to 5000L (RT 316L-SS)			17520-Modbus TCP/IP	
1000 to 3000L (RW 2205-SS)			17521-BACnet MS/TP 17522-Modbus RS485	

16kW W2W COP and Heating Capacity



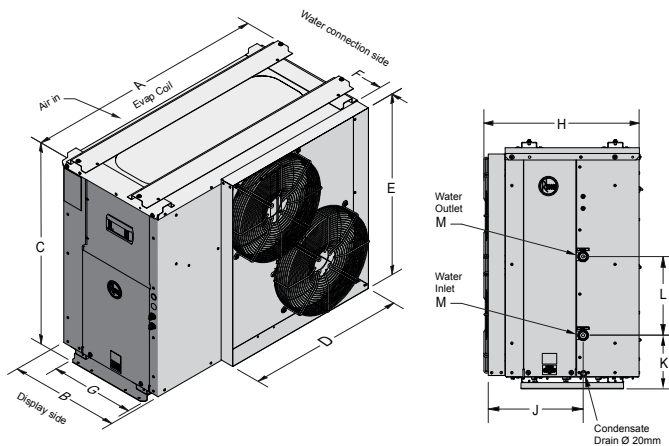
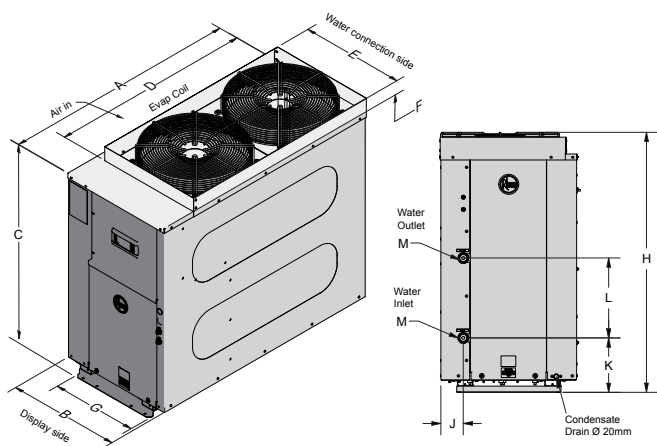
32kW W2W COP and Heating Capacity



# TECHNICAL DATA

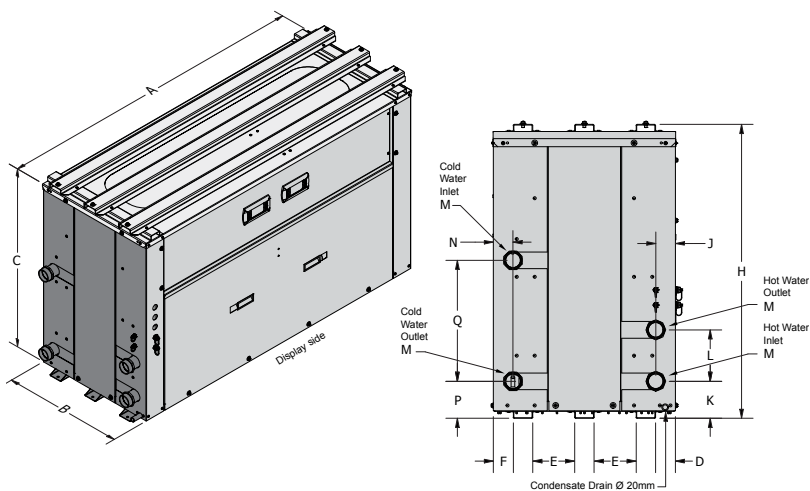
## A2W Vertical Discharge 15kW and 30kW

## A2W Horizontal Discharge 15kW and 30kW



DIMENSIONS A2W				
Model	15kW		30kW	
	Vertical	Horizontal	Vertical	Horizontal
A	1200	1200	1850	1882
B	565	565	807	807
C	984	1033	1290	1339
D (952 models)	1010	806	1452	1385
E (952 models)	521	928	725	992
F (952 models)	90	70	90	90
G	429	429	675	675
H	1049	654	1404	944
J	92	416	139	230
K	199	199	199	199
L	330	330	330	330
M	R1¼	R1¼	R2	R2

## W2W 16kW and 32kW



DIMENSIONS W2W		
Model	16kW	32kW
Dimension		
A	1051	1600
B	605	605
C	924	924
D	66	66
E	342	139
F	66	66
H	972	972
J	65	65
K	123	99
L	330	170
M	R1¼	R2
N	65	65
P	123	123
Q	220	400





## AIR TO WATER HEAT PUMP PLUS

FOR WHERE CAPACITY IS ESSENTIAL



HEAT PUMP



HOT WATER TO 65°C



ENVIRONMENT SOURCED ENERGY



HIGH-CAPACITY

### SUITS MOST AUSTRALIAN CLIMATES

Rheem has been leading the way in commercial heat pump technology since 2008 with local design and manufacturing supported by an in-house Service team, with local technical support. Detailed engineering has tuned the system operation allowing the heat pump to operate in ambient conditions as low as 0°C when feature is engaged, reducing the reliance on auxiliary heating methods, thereby improving overall annual efficiency.

### SIMPLICITY IN INSTALLATION

Using less heat pumps and circulators to generate high-volume hot water supply, the installation, connection and commissioning is vastly simplified.

Designed for outdoor installation the Heat Pump *Plus* range is supported by matching accessories for optimum performance and integration with BMS.

### RHEEM COMMERCIAL HEAT PUMP PLUS RANGE, THE FIRST CHOICE IN HIGH-CAPACITY HEAT PUMP TECHNOLOGY FEATURES:

- Marine grade aluminium cabinet – won't rust
- Evaporator coils fully dipped with Rheemkote® as standard, meeting 10,000hr neutral salt spray test – superior corrosion protection
- Rheem iQ controller providing on-board diagnostics and BMS connectivity via Modbus or BACnet – improved reliability and servicing
- Auxiliary boost interlock – only operates in extreme low ambient conditions or when heat pump is in fault – surety of hot water supply

- Fully certified including Electrical Safety and Water Mark – confidence in your selection
- Tested in ambient conditions as high as 45°C – built for the Australian climate
- Optional Double wall Tube in Tube Copper Heat Exchanger – better suited for harsh water conditions
- Multiple refrigerant circuits with individual controllers – providing up to 75% redundancy in a single unit package

### SAVINGS PLUS

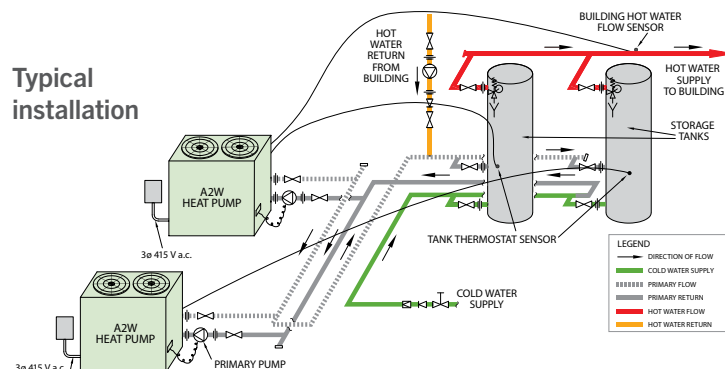
The *Plus* range features factory built and tested multi-stage units which

operate like a bank of smaller units with vertical discharge, but provide footprint, installation time and installation cost benefits by offering simplified plumbing and electrical works requirements.

### FURTHER PRODUCT IMPROVEMENTS

An upgraded micro-controller now allows multi-stage units to provide redundancy by operating separate refrigerant circuits in a “first in-first out” configuration whilst rotating the lead compressor to provide even duty. Energy reduction and product life improvement is also achieved owing to better control of the operating parameters.

### Typical installation



202kW model shown for illustration purposes.



\*Conditions Apply: For full terms and conditions please contact Rheem or visit [www.rheem.com.au/rheem/help/Warranties](http://www.rheem.com.au/rheem/help/Warranties)

# TECHNICAL DATA

AIR TO WATER MODELS							
Product data		953060DP / 953060DV	953079DP / 953079DV	953101DP / 953101DV	953126DP / 953126DV	953152DP / 953152DV	953202DP / 953202DV
Heating Capacity <sup>1</sup>	kW	60.72	81.96	101.08	132.06	159.69	211.73
Power Input <sup>1</sup>	kW	13.72	19.22	24.44	32.02	36.78	49.02
COP <sup>1</sup>		4.42	4.26	4.14	4.12	4.34	4.32
Recovery @50°C Rise <sup>1</sup>	L/hr	1044	1410	1739	2271	2747	3642
Operating Range (ambient)	°C	0 - 45					
Maximum DHW Temperature <sup>2</sup>	°C	65					
Refrigerant		R134a					
Hot Water Side							
TPR Valve Setting (VE/RT/RW)	kPa	1000 / 850 / 700					
ECV Setting (VE/RT/RW) <sup>3</sup>	kPa	850 / 700 / 550					
Maximum Water Supply Pressure							
- Without ECV (VE/RT/RW)	kPa	800 / 680 / 560					
- With ECV (VE/RT/RW) <sup>3</sup>	kPa	650 / 550 / 450					
Heat Exchanger Design	DP / DV	DP - 316 Stainless Steel Double Wall Braze Plate / DV = Copper Tube in Tube Vented					
Design Pressure Drop	kPa	50					
Design Flow Rate	L/s	3.63	4.89	6.04	7.90	9.54	12.66
Air Side							
Air Flow (at maximum static pressure)	L/s	4583	7083	7222	11800	13333	17778
Maximum Static Pressure	Pa	5	5	5	5	5	5
Electrical Connection							
Power Supply		3 Phase / 380-415V / 50 Hz					
Max Current per Phase (heat pump running, excluding pump)	Amps	41.4	60.6	85.6	88.3	127.1	169.5
Max Current per Phase (pump running only)	Amps	3.7	3.7	3.7	3.7	3.7	11.0
Minimum Circuit Breaker size (per phase)	Amps	50	80	100	100	150	200
Installation Data							
Length Dim A	mm	2180	2180	2465	2540	3650	3650
Width Dim B	mm	1135	1135	1135	1260	1970	1970
Height Dim C	mm	1360	1545	1625	1935	2290	2290
Water Connections - Flange Table E Dim D <sup>4</sup>	mm	65	80	80	100	100	125
Approx Weight: Empty	kg	400	600	650	1180	1500	2200
Full	kg	450	650	725	1255	1600	2300
Clearances							
Evap Coils (both sides)	mm	1000	1000	1000	1000	1000	1000
Display / Compressor Access Side	mm	850	850	850	850	850	850
Water Connection Side	mm	500	500	850	850	850	850
Top (vertical discharge)	mm	3500	3500	3500	3500	3500	3500

<sup>1</sup> 20°C ambient / 60%RH. 39°C water in / 43°C water out.

<sup>2</sup> When ambient temperature is not likely to drop below 5°C during operation and low ambient temperature mode is not selected.

<sup>3</sup> ECV not supplied with water heater.

<sup>4</sup> Counter flange, gasket, bolts and nuts are not supplied.

# TECHNICAL DATA

## ACCESSORIES FOR ALL AIR TO WATER HEAT PUMP PLUS MODELS

BMS Interface	Card
BACnet TCP/IP Modbus TCP/IP	17520
BACnet MS/TP	17521
Modbus RS485	17522

## PUMP AND PIPE SIZING CHART

		Header Size for Number of Heat Pumps in Parallel				Primary Circulator	Primary Circulator
		1	2	3	4	Pump Model	Pump Connection Flanges
953060	mm	80	100	125	150	CRN 32-2, 4 Pole	DN65, PN40
953079	mm	80	125	150	150	CRN 45-2-2, 4 Pole	DN80, PN40
953101	mm	100	125	150	200	CRN 45-2-2, 4 Pole	DN80, PN40
953126	mm	100	150	200	200	CRN 64-2-1, 4 Pole	DN100, PN16
953152	mm	125	150	200	N/A	CRN 64-2-1, 4 Pole	DN100, PN16
953202	mm	150	200	N/A	N/A	CRN 95-1, 4 Pole	DN100, PN16

Note: Header pipe sizing is based on 20 bends and a total length of primary and return piping of:  
 - 40m for heat pumps under 120 kW, excluding equa-flow manifolds on storage tanks and heat pumps, or  
 - 60m for heat pumps above 120 kW, excluding equa-flow manifolds on storage tanks and heat pumps  
 for maximum velocity of 1.2m/s. One pump per heat pump.

## RECOVERY AT 50°C TEMPERATURE RISE

Ambient Temperature °C	5	10	15	20	25	30	35	40
	Recovery - Litres per hour							
953060	803	902	967	1029	1062	1163	1194	1224
953079	1022	1162	1259	1353	1405	1568	1618	1669
953101	1318	1495	1618	1739	1805	2013	2077	2142
953126	1639	1859	2011	2161	2243	2501	2580	2662
953152	1977	2243	2426	2608	2707	3020	3115	3213
953202	2636	2991	3235	3477	3610	4026	4153	4284

## RECOVERY AT 55°C TEMPERATURE RISE

Ambient Temperature °C	5	10	15	20	25	30	35	40
	Recovery - Litres per hour							
953060	730	820	879	935	965	1057	1085	1113
953079	929	1057	1144	1230	1278	1425	1470	1517
953101	1198	1359	1471	1581	1641	1830	1888	1947
953126	1490	1690	1828	1964	2039	2274	2346	2420
953152	1797	2039	2206	2371	2461	2745	2832	2921
953202	2396	2719	2941	3161	3282	3660	3776	3894

## WATER TO WATER HEAT PUMP PLUS

CONNECT TO BUILDING CONDENSER LOOP FOR EXCEPTIONAL COP PERFORMANCE



HEAT PUMP



WASTE HEAT RECOVERY



COMPACT



UP TO 7.0 COP EFFICIENCY

### High-capacity heating with a compact footprint

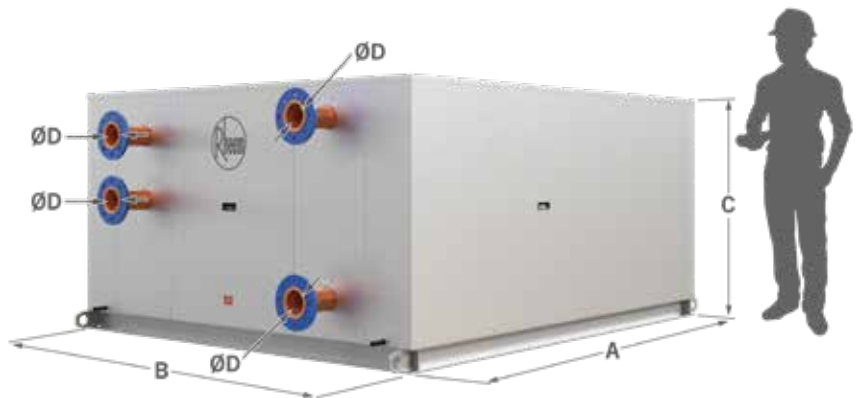
The Rheem Water to Water (W2W) heat pump has captured the imagination of system designers as a compact system that can be installed virtually anywhere with no ventilation requirements.

#### SIZING RE-IMAGINED

With the ability to produce up to 63% more hot water than the equivalent A2W version when connected to a 35°C condenser circuit, heat pump sizing is turned on its head, providing the ability for more recovery kW and less storage with reduced complexity, plant footprint and weight.

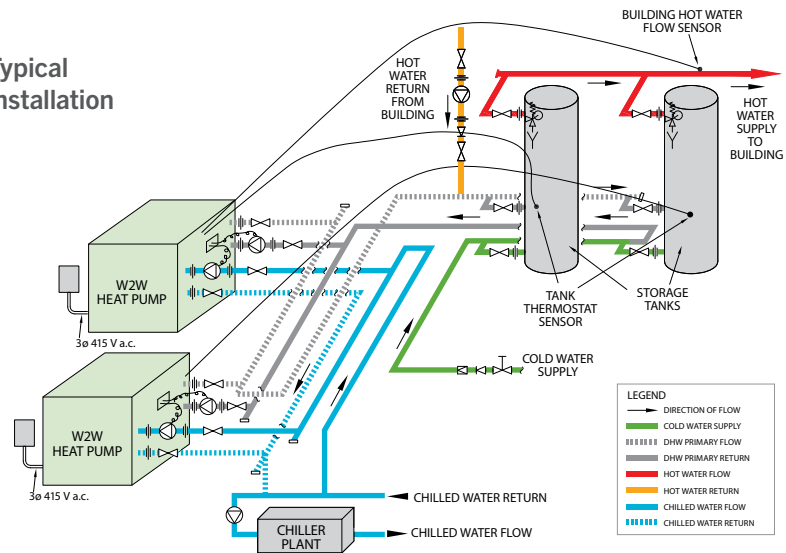
#### PRODUCT ENHANCEMENTS

The evaporator heat exchanger is now copper shell-in-tube, suited to the conditions found in HVAC condenser circuits. An upgraded micro-controller now allows for operating separate refrigerant circuits in a “first in-first out” configuration whilst rotating the lead compressor to provide even duty, redundancy, energy reduction and product life improvement.



213kW model shown for illustration purposes.

#### Typical installation



\*Conditions Apply: For full terms and conditions please contact Rheem or visit [www.rheem.com.au/rheem/help/Warranties](http://www.rheem.com.au/rheem/help/Warranties)



# TECHNICAL DATA

WATER TO WATER MODELS							
Product data		955071SDP / 955071SDV	955088SDP / 955088SDV	955116SDP / 955116SDV	955142SDP / 955142SDV	955176SDP / 955176SDV	955213SDP / 955213SDV
Nominal Heating Capacity at 20°C Cold Water Temperature <sup>1</sup>	kW	71.15	87.79	114.52	142.31	175.58	213.46
Nominal Cooling Capacity at 20°C Cold Water Temperature <sup>1</sup>	kW	56.97	70.47	91.49	113.93	140.93	170.9
Nominal Heating Capacity at 35°C Cold Water Temperature <sup>2</sup>	kW	102.93	126.8	165.49	205.86	253.59	308.78
Power Input <sup>1</sup>	kW	14.19	17.32	23.03	28.37	34.64	42.56
Coefficient of Performance (Heating) <sup>1</sup> at 20°C		5.02	5.07	4.97	5.02	5.07	5.02
Coefficient of Performance (Cooling) <sup>1</sup> at 20°C		4.02	4.07	3.97	4.02	4.07	4.02
Coefficient of Performance (Heating) <sup>2</sup> at 35°C		7.01	6.97	6.97	7.01	6.97	7.01
Maximum DHW Temperature	°C	65					
Refrigerant		R134a					
<b>Hot Water Side</b>							
TPR Valve Setting (VE/RT/RW)	kPa	1000 / 850 / 700					
ECV Setting (VE/RT/RW) <sup>3</sup>	kPa	850 / 700 / 550					
Maximum Water Supply Pressure							
- Without ECV (VE/RT/RW)	kPa	800 / 680 / 560					
- With ECV (VE/RT/RW) <sup>3</sup>	kPa	650 / 550 / 450					
Heat Exchanger Design	DP / DV	DP = 316 Stainless Steel Double Wall Brazed Plate / DV = Copper Tube in Tube Vented					
Design Pressure Drop	kPa	50					
Design Flow Rate	L/s	4.25	5.24	6.84	8.50	10.48	12.75
<b>Cold Water Side</b>							
Maximum Water Supply Pressure	kPa	660					
Cold Water Side Flow Rate	L/s	3.40	4.21	5.46	6.80	8.41	10.20
Heat Exchanger Design	S	S = Shell in Tube					
Design Pressure Drop	kPa	50					
<b>Electrical Connection</b>							
Power Supply		3 Phase / 380-415V / 50 Hz					
Max Current per Phase (heat pump running, excluding pump)	Amps	40.2	46.1	61.8	80.6	93.7	120.6
Max Current per Phase (2 pumps running only)	Amps	4.1 (230V)	11.1 (230V)	7.3 (400V)	7.3 (400V)	7.3 (400V)	22.0 (400V)
Minimum Circuit Breaker size (per phase)	Amps	50	63	80	100	120	150
<b>Installation Data</b>							
		DP = 316 Stainless Steel Double Wall Brazed Plate / DV = Copper Tube in Tube Vented					
Length Dim A	mm	2120 / 2120	2120 / 2540	2400 / 2540	2400 / 2540	2400 / 2590	2590 / 2890
Width Dim B	mm	805 / 805	805 / 1250	1150 / 1250	1150 / 1250	1150 / 2205	2205 / 2205
Height Dim C	mm	1100 / 1100	1100 / 1175	1175 / 1175	1175 / 1175	1175 / 1380	1380 / 1380
Water Connections - Flange Table E Dim D <sup>4</sup>	mm	65	80	80	100	100	125
Approx Weight: Empty	kg	400 / 420	450 / 500	625 / 675	725 / 775	825 / 875	1300 / 1400
Full	kg	450 / 470	500 / 550	700 / 750	800 / 850	925 / 975	1400 / 1500
<b>Clearances</b>							
Plain Back (Controller & Compressor Access for 955213 only)	mm	50	50	50	50	50	850
Right Side	mm	50	50	50	50	50	50
Left Side	mm	50	50	50	50	50	50
Front Side (Water Connections / Controller & Compressor Access)	mm	850	850	850	850	850	850
Top (Clearance above unit required for service personnel to stand)	mm	350	350	350	350	350	350

<sup>1</sup> Rating Conditions: Heating 39°C water in / 43°C water out, 51°C SCT, Cold 20°C water in / 14.5°C water out.

<sup>2</sup> Rating Conditions: Heating 39°C water in / 43°C water out, 51°C SCT, Cold 35°C water in / 29.5°C water out.

<sup>3</sup> ECV not supplied with water heater.

<sup>4</sup> Counter flange, gasket, bolts and nuts are not supplied.



# TECHNICAL DATA

## ACCESSORIES FOR ALL WATER TO WATER HEAT PUMP PLUS MODELS

BMS Interface	Card
BACnet TCP/IP Modbus TCP/IP	17520
BACnet MS/TP	17521
Modbus RS485	17522

## PUMP AND PIPE SIZING CHART

		Header Size for Number of Heat Pumps in Parallel				Primary Circulator	Primary Circulator
		1	2	3	4	Pump Model	Pump Connections
955071	mm	80	100	125	150	MAGNA1 40-120 F N	DN40, PN10
955088	mm	100	125	150	200	MAGNA1 65-150 F N	DN65, PN10
955116	mm	100	150	150	200	CRN 45-2-2, 4 Pole	DN80, PN40
955142	mm	125	150	200	200	CRN 64-2-2, 4 Pole	DN100, PN16
955176	mm	125	200	200	N/A	CRN 64-2-1, 4 Pole	DN100, PN16
955213	mm	150	200	N/A	N/A	CRN 95-1, 4 Pole	DN100, PN16

Note: Header pipe sizing is based on 20 bends and a total length of primary and return piping of:  
 - 40m for heat pumps under 120 kW, excluding equa-flow manifolds on storage tanks and heat pumps, or  
 - 60m for heat pumps above 120 kW, excluding equa-flow manifolds on storage tanks and heat pumps  
 for maximum velocity of 1.2m/s. One pump per heat pump (hot side and cold side)

## RECOVERY

Temperature Rise °C	50			55		
	12	20	35	12	20	35
Chilled/Condenser Water Temperature °C	Recovery - Litres per hour					
955071SDP / 955071SDV	984	1224	1770	894	1113	1609
955088SDP / 955088SDV	1215	1510	2181	1105	1373	1983
955116SDP / 955116SDV	1582	1970	2846	1439	1791	2588
955142SDP / 955142SDV	1967	2448	3541	1789	2225	3219
955176SDP / 955176SDV	2431	3020	4362	2210	2745	3965
955212SDP / 955212SDV	2951	3672	5311	2683	3338	4828

# R134a SERIES AIR TO WATER HEAT PUMP

FOR WHERE ENERGY EFFICIENCY IS ESSENTIAL



HEAT PUMP



HOT WATER TO 65°C<sup>1</sup>



SAVE UP TO 75% ENERGY



FLEXIBLE, USES CAR PARK AIR

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

### HIGHLY EFFICIENT

On average, 25% of the operating cost of an electric water heater. Delivers hot water up to 65°C<sup>1</sup>, with a system Coefficient of Performance (COP) of up to 4.2<sup>2</sup>. 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.

### GREEN POINTS

Adds to the green points from End of Trip Facilities. The heat pump is designed to draw it's air from and discharge within basement car parks without flueing, unlike gas systems therefore reducing CO<sub>2</sub> emissions.

### MULTIPLE INSTALLATION OPTIONS

Designed for both vertical or horizontal discharge options, with a discharge fan option available in both ducted and non-ducted versions. Horizontal discharge models can also be stacked two high to reduce plant footprint (suffix 'S').

### SUITS MOST AUSTRALIAN CLIMATES

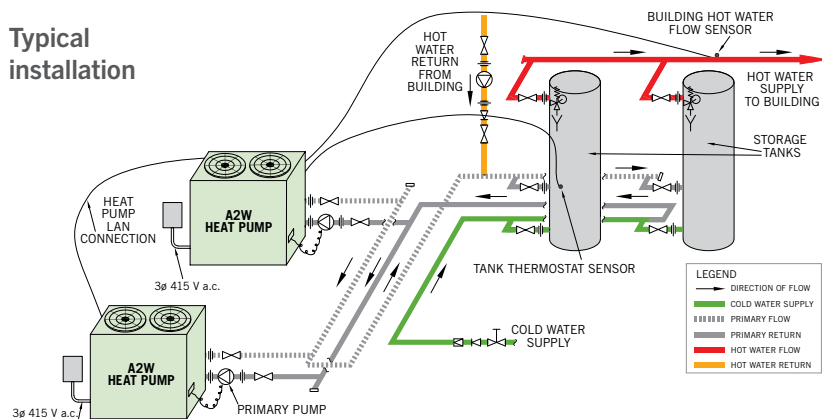
Manufactured by Rheem in Australia and supported by a nationwide in-house Service team, with local technical support. Automatic defrost allows continued performance in low ambient temperature conditions by diverting a portion of the hot refrigerant to the evaporator coil to melt any ice which may form. In addition, the evaporator

is fully dipped with Rheem Kote® to provide extra protection in corrosive atmospheres, and the unit has been tested in ambient conditions as high as 45°C.

- Rheem iQ control provides on board diagnostics, system configuration and optional high level BMS connectivity via Modbus or BACnet



### Typical installation



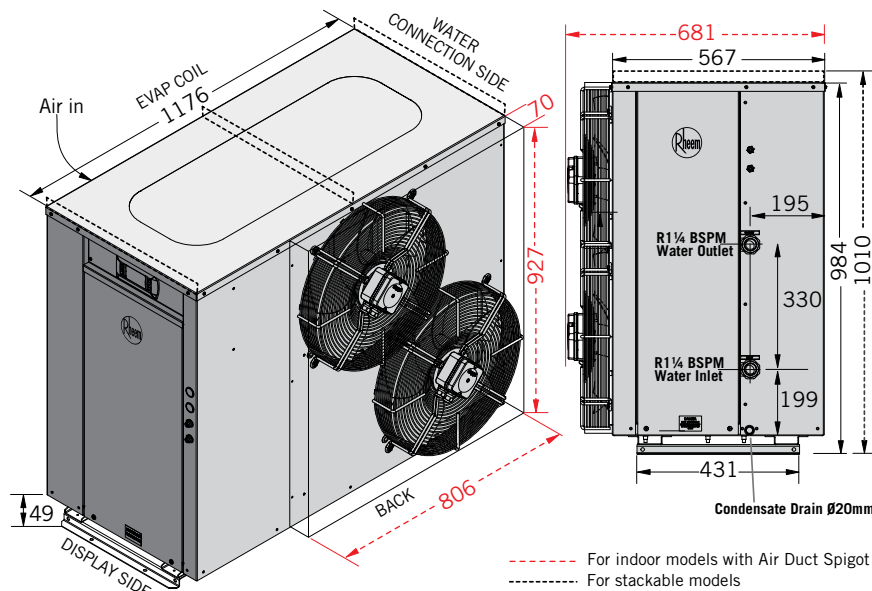
\*Conditions Apply. For full terms and conditions please contact Rheem or visit [www.rheem.com.au/rheem/help/Warranties](http://www.rheem.com.au/rheem/help/Warranties)

# TECHNICAL DATA

## AIR TO WATER 16kW MODEL

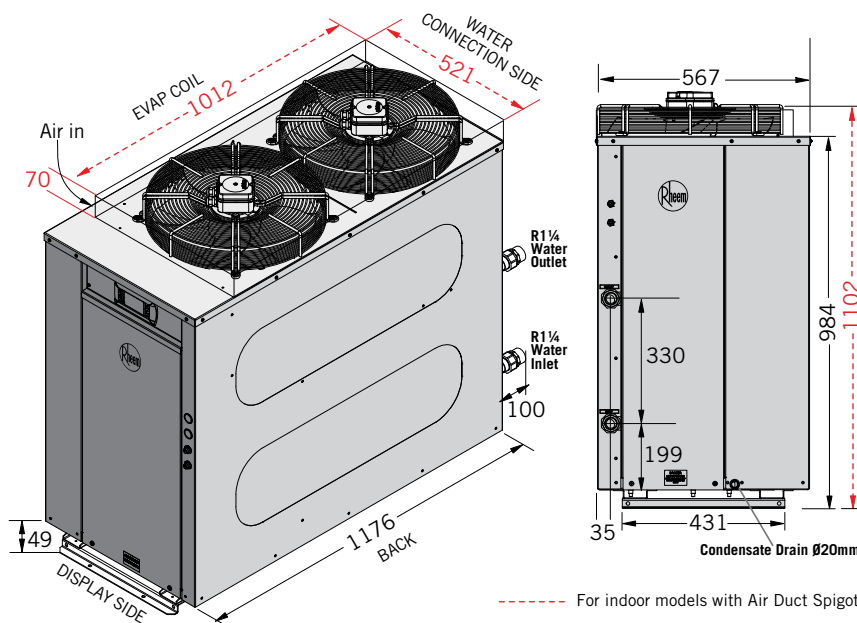
### Horizontal Discharge Models

- 953016H0 – Non Ducted
- 953016HS – Non Ducted stackable
- 952016H0 – Ducted
- 952016HS – Ducted stackable



### Vertical Discharge Models

- 95301600 – Non Ducted
- 95201600 – Ducted



# TECHNICAL DATA

AIR TO WATER 16KW MODEL			
Product data		Ducted Exhaust	Non Ducted Exhaust
Heating Capacity <sup>2</sup>	kW	17.83	17.83
Power Input <sup>2</sup>	kW	4.67	4.26
Coefficient of Performance COP <sup>2</sup>		3.9	4.2
Recovery @ 50°C Rise <sup>2</sup>	L/hr	300	
Operating Range (ambient)	°C	0-45	
Maximum DHW Temperature	°C	65	
Refrigerant		R134a	
Refrigerant Mass	kg	2.3	
Hot Water Side			
TPR Valve Setting (VE/RT)	kPa	1,000/850	
ECV Setting (VE/RT) <sup>3</sup>	kPa	850/700	
Maximum Water Supply Pressure			
- Without ECV (VE/RT)	kPa	800/680	
- With ECV (VE/RT)		650/550	
Design Flow Rate	L/s	1.1	
Design Pressure Drop	kPa	33	
Heat Exchanger Design		316 Stainless Steel DWBP	
Air Side			
Air Flow (at maximum static pressure)	L/s	1600	
Maximum Static Pressure	Pa	92	5
Minimum Ventilation per inlet or outlet (with cross flow ventilation)	each m <sup>2</sup>	2	
Electrical Connection			
Power Supply		3 Phase / 380-415V / 50 Hz	
Max Current per Phase (running, incl pump)	Amps	17.06	15.22
Minimum Circuit Breaker size (per phase)	Amps	20	
Installation Data			
Approx Weight Empty	kg	120	
Approx Weight Full	kg	125	
Storage per Heat Pump	L	400 – 4,000	
Sound Pressure Level	dBa	56.5 @ 3m	51.5 @ 3m
Clearances			
Evap Coil Side	mm	500	
Back (vertical discharge models)	mm	Nil	
Back (horizontal discharge models)	mm	1,200	
Display Side	mm	850	
Water Connection Side	mm	500	
Top (vertical discharge models) <sup>4</sup>	mm	2,500	
Top (horizontal discharge models)	mm	Clearance above unit required for service personnel to stand	

PUMP AND PIPE SIZING CHART				
Number of Heat Pumps in Parallel	1	2	3	4
Primary Pump	CM3-2			
Branch Size	40			
Header Size	40	50	65	80

Note: Header pipe sizing is based on a total length of 40m of primary flow and return piping and 20 bends, excluding equal-flow manifolds on storage tanks and heat pumps @ 1.2m/sec velocity. One pump per Heat Pump.

ACCESSORIES			
Storage Tank	Pump	BMS Card	LAN Cable
410L (VE)	CM 3-2 366084	17520-BACnet TCP/IP	17534
1000L to 5000L (SS)		17520-Modbus TCP/IP	
		17521-BACnet MS/TP	
		17522-Modbus RS485	

<sup>1</sup> When ambient temperature is not likely to drop below 10°C during operation.

<sup>2</sup> 20°C ambient/60%RH. 39°C water in / 45°C water out.

<sup>3</sup> ECV not supplied with water heater.

<sup>4</sup> Horizontal discharge models recommended for indoor installation.

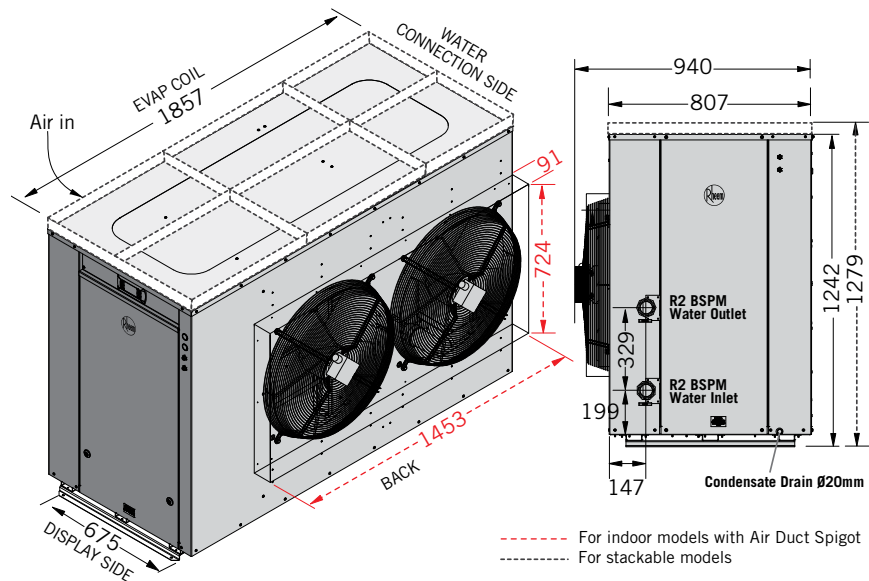
Different clearance may be acceptable subject to confirmation of the site specific details.

# TECHNICAL DATA

## AIR TO WATER 35kW MODEL

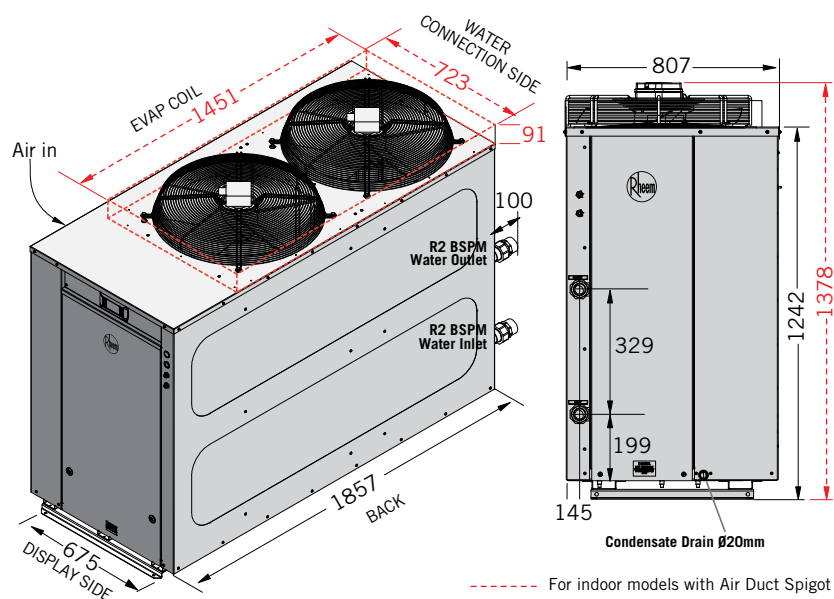
### Horizontal Discharge Models

- 953035H0 – Non Ducted
- 953035HS – Non Ducted stackable
- 952035H0 – Ducted
- 952035HS – Ducted stackable



### Vertical Discharge Models

- 95303500 – Non Ducted
- 95203500 – Ducted





# TECHNICAL DATA

AIR TO WATER 35KW MODEL			
Product data		Ducted Exhaust	Non Ducted Exhaust
Heating Capacity <sup>2</sup>	kW	39.55	39.55
Power Input <sup>2</sup>	kW	11.43	9.84
Coefficient of Performance COP <sup>2</sup>		3.5	4.0
Recovery @ 50°C Rise <sup>2</sup>	L/hr	680	
Operating Range (ambient)	°C	0-45	
Maximum DHW Temperature	°C	65	
Refrigerant		R134a	
Refrigerant Mass	kg	4.6	
Hot Water Side			
TPR Valve Setting (VE/RT)	kPa	1,000/850	
ECV Setting (VE/RT) <sup>3</sup>	kPa	850/700	
Maximum Water Supply Pressure	kPa		
- Without ECV (VE/RT)		800/680	
- With ECV (VE/RT)		650/550	
Design Flow Rate	L/s	2.2	
Design Pressure Drop	kPa	40	
Heat Exchanger Design		316 Stainless Steel DWBP	
Air Side			
Air Flow (at maximum static pressure)	L/s	5,830	5,270
Maximum Static Pressure	Pa	126	5
Minimum Ventilation per inlet or outlet (with cross flow ventilation)	each m <sup>2</sup>	4	
Electrical Connection			
Power Supply		3 Phase / 380-415V / 50 Hz	
Max Current per Phase (running, incl pump)	Amps	34.9	32.34
Minimum Circuit Breaker size (per phase)	Amps	40	
Installation Data			
Approx Weight Empty	kg	300	
Approx Weight Full	kg	310	
Storage per Heat Pump	L	400 – 8,000	
Sound Pressure Level	dBa	63.5 @ 3m	58.5 @ 3m
Clearances			
Evap Coil Side	mm	1,000	
Back (vertical discharge models)	mm	Nil	
Back (horizontal discharge models)	mm	2,000	
Display Side	mm	850	
Water Connection Side	mm	600	
Top (vertical discharge models) <sup>4</sup>	mm	3,500	
Top (horizontal discharge models)	mm	Clearance above unit required for service personnel to stand	

PUMP AND PIPE SIZING CHART				
Number of Heat Pumps in Parallel	1	2	3	4
Primary Pump	Grundfos CM 10-1			
Branch Size	50			
Header Size	50	80	100	100

Note: Header pipe sizing is based on a total length of 40m of primary flow and return piping and 20 bends, excluding equal-flow manifolds on storage tanks and heat pumps @ 1.2m/sec velocity. One pump per Heat Pump.

ACCESSORIES			
Storage Tank	Pump	BMS Card	LAN Cable
410L (VE)	CM 10-1 366094	17520-BACnet TCP/IP	17534
1000L to 5000L (SS)		17520-Modbus TCP/IP	
		17521-BACnet MS/TP	
		17522-Modbus RS485	

<sup>1</sup> When ambient temperature is not likely to drop below 10°C during operation.

<sup>2</sup> 20°C ambient/60%RH. 39°C water in / 45°C water out.

<sup>3</sup> ECV not supplied with water heater

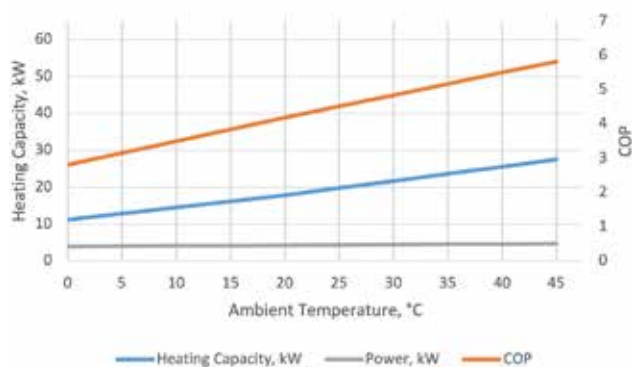
<sup>4</sup> Horizontal discharge models recommended for indoor installation. Different clearance may be acceptable subject to confirmation of the site specific details.

# TECHNICAL DATA

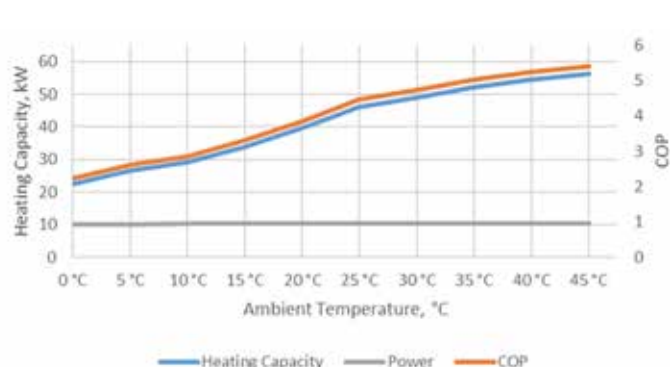
AIR TO WATER 16KW MODEL RECOVERY										
Ambient Temperature °C	0	5	10	15	20	25	30	35	40	45
Output (kW)	11.18	12.85	14.51	16.17	17.83	19.76	21.69	23.62	25.55	27.48
Recovery – Litres per hour										
20°C rise	481	553	624	695	767	850	933	1016	1099	1182
25°C rise	385	442	499	556	613	680	746	813	879	945
30°C rise	320	368	416	464	511	566	622	677	732	788
35°C rise	274	315	356	397	438	485	532	580	627	675
40°C rise	240	276	312	348	383	425	466	508	549	591
45°C rise	214	246	277	309	341	378	415	451	488	525
50°C rise	N/A	221	250	278	307	340	373	406	439	473
55°C rise	N/A	201	227	253	279	309	339	369	400	430

AIR TO WATER 35KW MODEL RECOVERY										
Ambient Temperature °C	0	5	10	15	20	25	30	35	40	45
Output (kW)	22.63	26.60	29.07	33.96	39.55	46.04	49.05	52.11	54.57	56.28
Recovery – Litres per hour										
20°C rise	973	1144	1250	1460	1701	1980	2109	2241	2347	2420
25°C rise	778	915	1000	1168	1361	1584	1687	1793	1877	1936
30°C rise	649	763	833	974	1134	1320	1406	1494	1564	1613
35°C rise	556	654	714	834	972	1131	1205	1280	1341	1383
40°C rise	487	572	625	730	850	990	1055	1120	1173	1210
45°C rise	432	508	556	649	756	880	937	996	1043	1076
50°C rise	N/A	458	500	584	680	792	844	896	939	968
55°C rise	N/A	416	455	531	618	720	767	815	853	880

16 kW A2W COP and Heating Capacity



35 kW A2W COP and Heating Capacity



# R134a SERIES WATER TO WATER HEAT PUMP

**FOR WHERE ENERGY EFFICIENCY IS ESSENTIAL**



HEAT PUMP



WASTE HEAT RECOVERY



COMPACT



UP TO 7.0 COP EFFICIENCY

## The Rheem Water to Water (W2W) range.

Includes units using readily available R134a for hot water heating up to 65°C, with a minimum entering water temperature on the building chiller loop of 12°C, or higher temperatures on the condenser loop, with the units being compact and suitable for indoor or outdoor installation.

### EFFICIENCY

The ability of these units to provide a dual efficiency sees combined COPs of up to 7.0<sup>1</sup>. The efficiency in hot water production is up to 4.0<sup>1</sup> and this leads to substantial savings in energy use and heating cost. The savings are magnified where the cooling by-product lessens a building's chilling load. COP in cooling are up to 3.0<sup>1</sup>.

### RETURN ON INVESTMENT

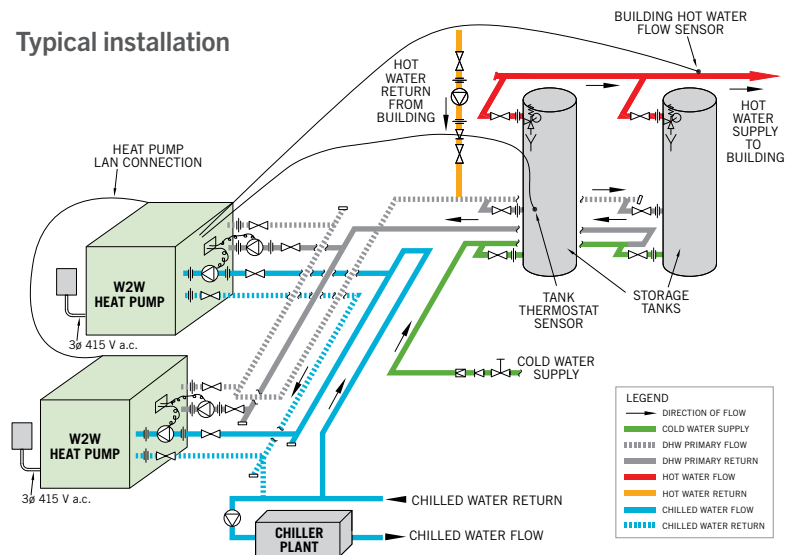
High COP of this product provides enormous savings compared to gas and electric heating systems which results in a very favourable return on investment making the W2W HP both a sound environmental and financial investment.

### MORE KEY FEATURES

- Water Mark certified 316L stainless steel, double-wall brazed plate heat exchanger on domestic hot water side
- Multiple safeties including low temperature freeze protection and flow switch on the chilled water side
- Full commercial construction with marine grade aluminium case
- Rheem iQ control provides on board diagnostics, system configuration and optional high level BMS connectivity via Modbus or BACnet



### Typical installation

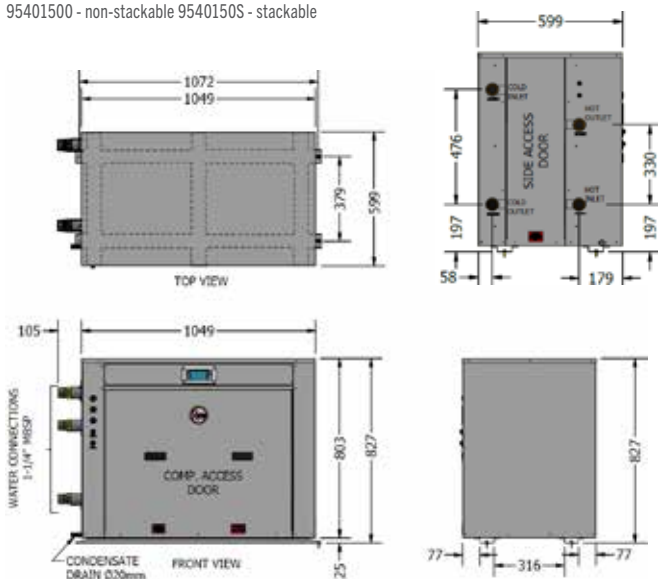


\*Conditions Apply: For full terms and conditions please contact Rheem or visit [www.rheem.com.au/rheem/help/Warranties](http://www.rheem.com.au/rheem/help/Warranties)

# TECHNICAL DATA

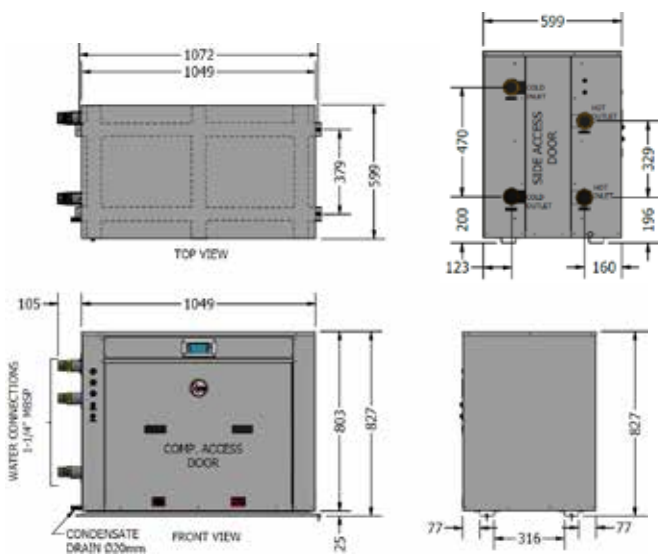
## 15kW Model

95401500 - non-stackable 9540150S - stackable



## 35kW Model

95403500 - non-stackable 9540350S - stackable



MODEL	15kW	35kW
Nominal Heating Capacity at 20°C Cold Water Temperature <sup>1</sup>	19.21kW	44.72kW
Nominal Cooling Capacity at 20°C Cold Water Temperature <sup>1</sup>	14.48kW	33.45kW
Nominal Heating Capacity at 35°C Cold Water Temperature <sup>2</sup>	27.65kW	64.84kW
Power Input kW <sup>1</sup>	3.69kW	8.75kW
Coefficient of Performance (Heating) <sup>1</sup> at 20°C	5.12	5.06
Coefficient of Performance (Cooling) <sup>1</sup> at 20°C	3.84	3.84
Coefficient of Performance (Heating) <sup>2</sup> at 35°C	6.97	7.1
Maximum DHW Temperature	65°C	
Refrigerant	R134a	
Refrigerant Mass (kg)	1.8	3.6
<b>Hot Water Side</b>		
TPR Valve Setting (VE/SS)	1000/850 kPa	
ECV Setting (VE/SS) <sup>3</sup>	850/700 kPa	
Maximum Water Supply Pressure	800/680 kPa	
– Without ECV (VE/SS) <sup>3</sup>	800/680 kPa	
– With ECV (VE/SS) <sup>3</sup>	680/550 kPa	
Hot Water Side Flow Rate	1.1L/s	2.2L/s
Heat Exchanger Heating Design	316L Stainless steel – Double wall brazed plate	
Design Heating Temperature Difference	6°K	
Design Pressure Drop	40kPa	
<b>Cold Water Side</b>		
Maximum Water Supply Pressure	2450kPa	
Cold Water Side Flow Rate	1.1L/s	1.85L/s
Heat Exchanger Cooling Design	316L Stainless steel – Single wall brazed plate	
Design Cooling Temperature Difference	5°K	
Design Pressure Drop	40kPa	
Electrical Connection	3 Phase / 415V / 50Hz	
Max Current per Phase (running, incl pumps)	13.96	29.94
Minimum Circuit Size (per phase)	20A	40A
Sound Pressure Level	56dBa @ 3m	
Approx Weight Empty	100kg	120kg
Approx Weight Full	105kg	125kg
Storage per Heat Pump	400L to 4000L	400L to 8000L
<b>Clearances</b>		
Front	850mm	
Back	Nil mm	
Water Connections Side	500mm	
RHS Side	Nil mm	
Top (clearance above unit required for service personnel to stand)	350mm	

ACCESSORIES			
Storage Tank	Pump	BMS Card	LAN Cable
410L (VE)	2 x CM 3-2 (16kW)	17520-BACnet TCP/IP	17534
1000L to 5000L (SS)	2 x CM 10-1 (35kW)	17520-Modbus TCP/IP	
		17521-BACnet MS/TP	
		17522-Modbus RS485	

<sup>1</sup> Rating Conditions: Heating 39°C water in, 45°C water out, 51°C SCT, Cold 20°C water in, 15°C water outlet, 10°C SST.

<sup>2</sup> Rating Conditions: Heating 39°C water in, 45°C water out, 51°C SCT, Cold 35°C water in, 29.5°C water outlet, 10°C SST.

<sup>3</sup> ECV not supplied with water heater

# TECHNICAL DATA

## PUMP AND PIPE SIZING CHART

No. of Heat Pumps in Parallel	15kW				35kW			
	HOT SIDE				HOT SIDE			
	1	2	3	4	1	2	3	4
Pump	Grundfos CM 3-2				Grundfos CM10-1			
Branch Size (mm)	40				50			
Header Size (mm)	40	50	65	80	50	80	100	100
No. of Heat Pumps in Parallel	COLD SIDE				COLD SIDE			
	1	2	3	4	1	2	3	4
Pump	Grundfos CM 3-2				Grundfos CM10-1			
Branch Size (mm)	40				50			
Header Size (mm)	40	50	65	80	50	80	100	100

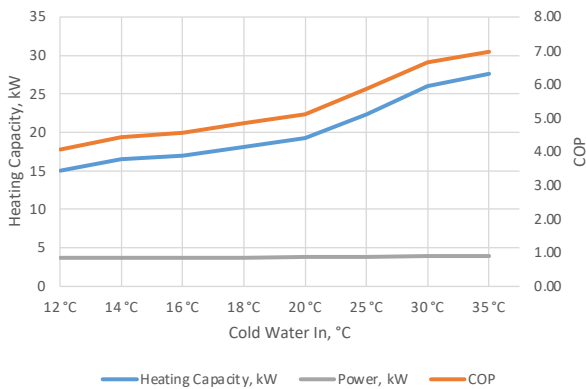
## RECOVERY – 15 KW W2W

Ambient Temperature °C	12	14	16	18	20	25	30	35
Output (kW)	14.99	16.46	16.97	18.06	19.21	22.39	26.04	27.65
Recovery – Litres per hour								
20°C rise	645	708	730	777	826	963	1120	1189
25°C rise	516	566	584	621	661	770	896	951
30°C rise	430	472	486	518	551	642	746	793
35°C rise	368	404	417	444	472	550	640	679
40°C rise	322	354	365	388	413	481	560	594
45°C rise	286	315	324	345	367	428	498	528
50°C rise	258	283	292	311	330	385	448	476
55°C rise	234	257	265	282	300	350	407	432

## RECOVERY – 35 KW W2W

Ambient Temperature °C	12	14	16	18	20	25	30	35
Output (kW)	34.75	38.21	39.44	42.00	44.72	52.25	60.98	64.84
Recovery – Litres per hour								
20°C rise	1494	1643	1696	1806	1923	2247	2622	2788
25°C rise	1195	1314	1357	1445	1538	1797	2098	2231
30°C rise	996	1095	1131	1204	1282	1498	1748	1859
35°C rise	854	939	969	1032	1099	1284	1498	1593
40°C rise	747	822	848	903	961	1123	1311	1394
45°C rise	664	730	754	803	855	999	1165	1239
50°C rise	598	657	678	722	769	899	1049	1115
55°C rise	543	597	617	657	699	817	954	1014

15 kW W2W COP and Heating Capacity



35 kW W2W COP and Heating Capacity

