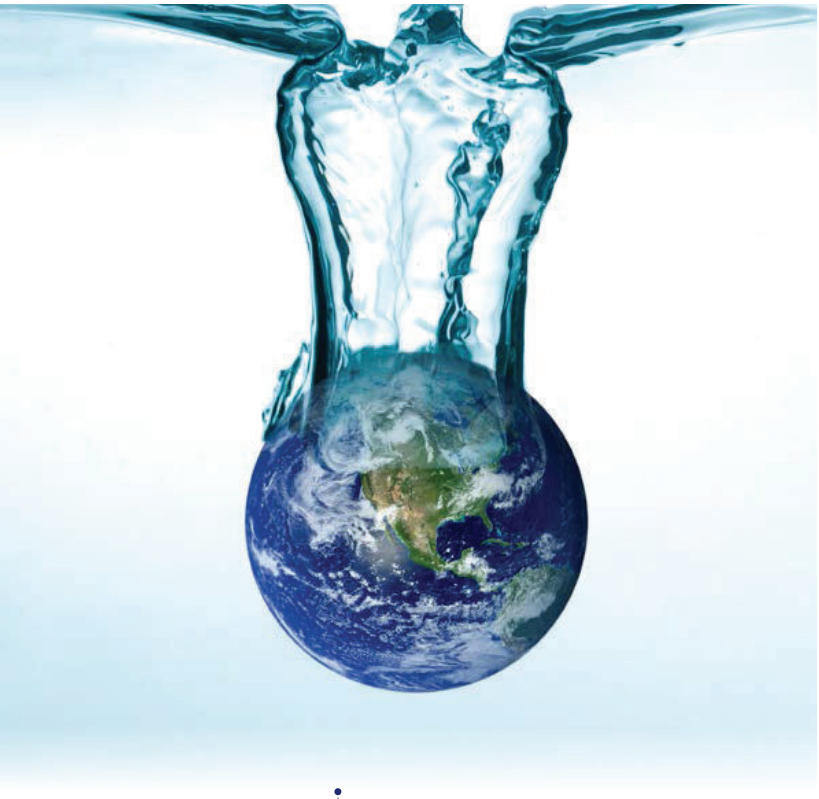
RoyalCool

Air cooled Water Chiller & Heat Pump

Engineered for
the Hash Weather conditions in the Gulf



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Enjoy Comfortable life!

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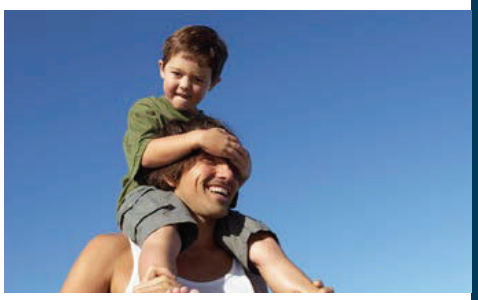
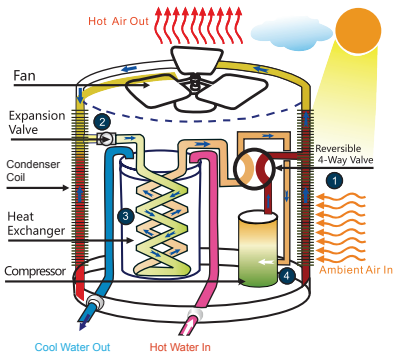


How does Royal Cool Water Chiller & Heat Pump System work?

AS A CHILLER



1 STAGE ONE
The temperature of the hot gaseous refrigerant discharged from the compressor is much higher than the outside ambient air temperature. When the outside air passes across the condenser coil, the gaseous refrigerant transfers its heat to the air and condenses into liquid.

2 STAGE TWO
The liquid refrigerant passes through the expansion valve, reducing its pressure and temperature.

3 STAGE THREE
The low temperature refrigerant passes to the heat exchanger evaporator, where the actual heat transfer takes place: the refrigerant absorbs heat from the water pumped into the heat exchanger and evaporates, whereby the water temperature is reduced.

4 STAGE FOUR
The gas refrigerant is then sucked to the compressor and compressed, increasing its pressure and temperature, ready to start the whole cycle once again.

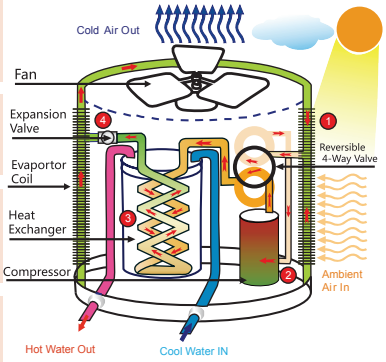
AS A HEAT PUMP

1 STAGE ONE
The heat transfer medium (the refrigerant) is colder than the outside air. As the outside air passes across the evaporator coil, the liquid refrigerant absorbs heat from the air and evaporates.

2 STAGE TWO
The gaseous refrigerant then passes to the compressor and is compressed. When compressed, the pressure is increased and the temperature of the vapor rises, effectively concentrating the heat.

3 STAGE THREE
The hot gaseous refrigerant passes to the heat exchanger condenser, where the actual heat transfer takes place: the intensely hot gaseous refrigerant transfers its heat to the water pumped into the heat exchanger and condenses back into a liquid.

4 STAGE FOUR
The liquid refrigerant then passes through an expansion valve, reducing its pressure and temperature, ready to start the whole cycle once again.



FEATURES & HIGHLIGHTS

Features

- Tropical design for a maximum working ambient temperature of 54°C;
- High efficiency reciprocationg,scroll or rotary compressor, tropical for high ambient conditions;
- Eco friendly CFC free R417A refrigerant , without ozone depletion;
- Electric expansion valve or thermal expansion valve, for reliability and high precision expansion
- Micro processor based digital controller with LCD user interface;
- Adjustable water temperature setting: 8-30°C for chilled water; 31-55°C for hot water;
- Brazed SUS 316 plate heat exchanger for high efficiency and super corrosion resistance
- Guaranteed water safety, no potential risk of contamination to potable water;
- Full safety protection incorporated to the system:
  - high pressure and low pressure protection
  - compressor overload and high discharge temperature protection
  - phase failure protection
  - water flow protection
  - anti-freezing protection
- Heavy gauge galvanized steel cabinet with epoxy powder painting, for long lasting outdoor life span
- Coated aluminum fins, corrosion resistant
- Built in circulation pump

Highlights

- Wide Capacity Range: 1.5, 2, 2.5, 3, 4, 5,10 TR
- Available for water tanks of 200-1000 gallons
- Compatible with all types of existing tanks
- Be installed in the garden or roof
- Easy Installation: be easily installed by a plumber or electrician to an existing tank
- Easy Operation: operates like a simple domestic appliance
- Energy Saving : saves 2/3 running cost than conventional electric heaters

Technical Specifications

Water Chiller & Heat Pump 50Hz

Model			DWCH-18	DWCH-24	DWCH-24V	DWCH-30V	DWCH-36V	DWCH-48V	DWCH-60V
Power Supply	-	V/Hz/Ph	220-240/50/1				380-415/50/3		
Cooling (1): A35/24°C W45/25°C	Cooling capacity	BTU/Hr	18020	23900	24050	30100	36050	48020	60000
	Power consumption	Watts	1821	2502	2554	3139	3787	5118	6280
	EER	-	2.9	2.8	2.76	2.81	2.79	2.75	2.8
	Chilled water production △T=20°C	Gallon/hour	60	79	80	100	120	159	199
Cooling (2): A46/24°C W45/25°C	Cooling capacity	BTU/Hr	15317	20315	20442.5	25585	30642.5	40817	51000
	Power consumption	Watts	2149	2952	3014	3705	4469	6039	7474
	EER	-	2.09	2.02	1.99	2.02	2.01	1.98	2.00
	Chilled water production △T=20°C	Gallon/hour	51	67	68	85	102	135	169
Heating A20/15°C W15/55°C	Heating capacity	BTU/Hr	21624	28680	28860	36120	43260	57624	72000
	Power consumption	Watts	1474	2050	2014	2647	3092	4222	5147
	COP	-	4.3	4.1	4.2	4.0	4.1	4.0	4.1
	Hot water production △T=40°C	Gallon/hour	36	48	48	60	72	96	119
Suggested tank connection (capacity range)		Gallon	100-200	150-300	150-300	200-350	250-400	300-600	350-700
Noise level	-	dB(A)	52	52	52	55	55	58	58
Controller	-	-	Micro processor based digital wire controller with LCD display						
Compressor	Type		Rotary			Scroll			
	Qty	Nos.	1						
	Refrigerant	-	R417A						
Heat exchanger (water side)	Type	-	Plate						
	Qty	Nos.	1						
	Construction Material	-	SUS 316						
Condenser fan	Type	-	Axial						
	Airflow	CFM	1471	2059	2059	3235	3235	3529	3529
	Dia x Qty	Inch x Nos.	17.7*1	17.7*1	17.7*1	24*1	24*1	24*1	24*1
Condenser motor	Output Power	Watts	130	130	130	130	130	165	165
	RPM	-	850	850	900	900	900	850	850
	Qty	Nos.	1	1	1	1	1	1	1
Condenser coil	Type		Finned tube exchanger						
	Tube dia	mm	Φ9.52						
	Row	-	2	2	2	2	2	1	2
	FPI	-	16	16	16	16	16	18	16
	Total face area	m2	14.7	28.7	28.7	35.3	35.3	47.5	74
Circulation water pump	Type	-	Centrifugal						
	Minimum flow rate	GPM(US)	2.4	3.2	3.2	4.0	4.8	6.4	8.0
	Minimum pressure head	meter	3	3	3	4.8	4.8	3	3
	Maximum flow rate	GPM(US)	9.2	9.2	9.2	22	22	27.5	27.5
	Maximum pressure head	meter	6	6	6	7.8	7.8	6	6
	Insulation Class	IP	IP42	IP42	IP42	IP42	IP42	IP44	IP44
Water Connection	Inlet	Inch	G3/4"	G3/4"	G3/4"	G1"	G1"	G1-1/2"	G1-1/2"
	Outlet	Inch	G3/4"	G3/4"	G3/4"	G1"	G1"	G1-1/2"	G1-1/2"
Dimmension: W×H×D	Net	mm	1010*307*614	1117*427*614	554*554*663	740*740*633	740*740*633	740*740*835	740*740*835
	Shipping	mm	1070*380*665	1165*480*730	575*575*660	760*760*660	760*760*660	760*760*865	760*760*865
Weight	Net	Kg	60	80	58	77	80	97	100
	Shipping	Kg	70	90	62	80	83	100	103
Stack	-	Layer(s)	4	3	3	3	3	2	2
Loading Qty	20'/40'/40'HQ	Set(s)	90/198/264	72/150/150	118/180/318	72/135/180	72/135/180	42/90/134	42/90/134

Notes:
1. Conditions of "Cooling (1)": Ambient air temperature DB/WB: 35°C/24°C, Inlet/Outlet water temperature:W45/25°C ;
2. Conditions of "Cooling (2)": Ambient air temperature DB/WB: 46°C/24°C, Inlet/Outlet water temperature:W45/25°C ;
3. Conditions of "Heating": Ambient air temperature DB/WB: 20°C/15°C, Inlet/Outlet water temperature:W15/55°C ;

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Model				BAWC-10	BAWC-12
Cooling performance data	Nominal cooling capacity		Ton/hour	10	12
	Power Supply		V/Hz/Ph	380-415/50/3	208-230/60/3
	Cooling (1): A35/24°C W45/25°C	Cooling capacity	BTU/hour	120855	145026
			W/hour	35450	42505
		Power consumption	Watts	13033	15289
		EER	W/W	2.72	2.78
		Chilled water production	Gallon/hour	401	481
	Cooling (2): A46/24°C W45/25°C	Cooling capacity	BTU/Hr	102727	123272
			W/hour	30133	36129
		Power consumption	Watts	15379	18042
		EER	W/W	1.96	2.00
		Chilled water production	Gallon/hour	341	409
	Controller		-	Micro processor based digital controller with LCD display	
Key components	Compressor	Type	-	Scroll	Scroll
		Make	-	DANFOSS	DANFOSS
		Qty	Nos.	1	1
		Refrigerant	-	R417A	R417A
	Heat exchanger (water side)	Type	-	Brazed plate heat exchanger	Brazed plate heat exchanger
		Qty	Nos.	1	1
		Construction Material	-	SUS316	SUS316
		Max. working pressure	Bar	45	45
	Condenser fan	Fan direction	-	Vertical	Vertical
		Airflow	CFM	10588	10588
		Dia x Qty	mm x Nos.	600*2	600*2
		Material	-	Metal	Metal
	Condenser motor	Output Power	Watts	650 *2	650 *2
		RPM	-	1300	1300
		Qty	Nos.	1	1
	Condenser coil	Type		Fin-tube	Fin-tube
		Tube dia	mm	9.52	9.52
		Row	-	2	2
		FPI	-	12.7	12.7
		Total face area	m2	110.4	110.4
	Water pump	Pressure head	Bar	6	6
		Max. water flow rate		10.26	10.26
		Power	Watts	300	300
	Water pressure drop		Bar	0.5	0.5
	Noise level	-	dB(A)	65	65
	Water Connection	Inlet	Inch	1+1/2	1+1/2
		Outlet	Inch	1+1/2	1+1/2
	Dimmension: W×H×D	Net	mm	1430*730*1190	1430*730*1190
		Shipping	mm	1480*780*1240	1480*780*1240
	Weight	Net	Kg	380	380
		Shipping	Kg	410	410
	Loading Qty	20'/40'/40'HQ	Set(s)	9/24/48	9/24/48

Notes:
1. Conditions of "Cooling (1)": Ambient air temperature DB/WB: 35°C/24°C, Inlet/Outlet water temperature:W45/25°C ;
2. Conditions of "Cooling (2)": Ambient air temperature DB/WB: 46°C/24°C, Inlet/Outlet water temperature:W45/25°C ;

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