



## CFC-free Refrigerant Water-cooled Water Chiller

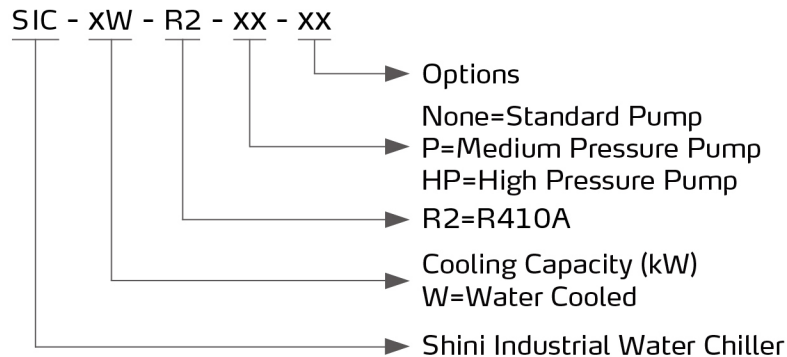
SIC-33W-R2



Refer carefully to this manual before operation.

# SIC-W-R2 Series

## ■ Coding Principle



## ■ Features

- Cooling range 7~25°C/44.6~77°F.
- Insulated water tank made of stainless steel.
- Equipped with anti-freeze thermostat.
- Adopt R410A refrigerant, used to improve coefficient of performance (COP) and R410A is ozone-friendly.
- Refrigeration loop controlled by high and low pressure switches to ensure stable operation.
- Compressor and pump overload protection.
- Adopt precise high-precision temperature controller with an accuracy of  $\pm 0.1^{\circ}\text{C}$ .
- All adopt quality compressors from major supplier.
- Middle pressure pump is optional.
- SIC-W-R2 adopts tube-in-shell condenser design. Without any need of cooling water for excellent heat transfer and rapid cooling.
- Equipped with RS485 communication interface to realize centralized monitoring.



Control Panel

## ■ Options

- For models optional with medium pressure pump, add "P" at the end of the model code, and for models optional with high pressure pump, add "HP" at the end of the model code.
- The level sensor in water tank is optional to check whether the water level is within normal range, and add "SG" at the end of the model code.
- The liquid pipe solenoid valve is optional to cut off the refrigerant supply to effectively prevent liquid hammer phenomenon after restart, and add "LS" at the end of the model code.
- The level indicator is optional to check the refrigerant water content, and add "LSG" at the end of the model code.
- The flow switch is optional to ensure that the compressor runs under sufficient water amount, and add "FW" at the end of the model code.

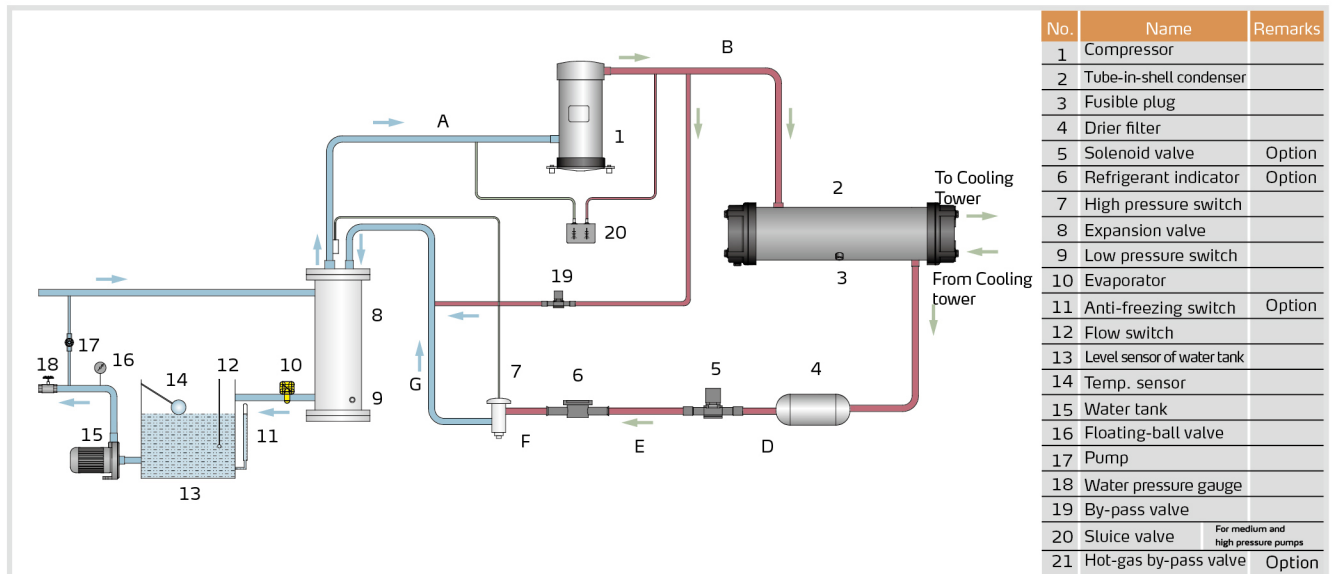
## Application

It is applied to plastics industry to precisely control moulds temperature so that molding cycle can be reduced and quality would be improved. Also SIC-W-R2 series can be applicable for electronic and machinery manufacturing to ensure normal operation temperature for devices.

## Working Principle

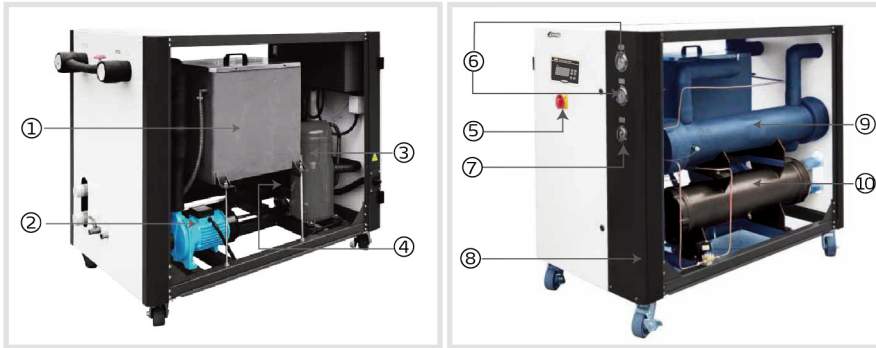
When the SIC-W water-cooled water chiller starts up, compressor starts working. Refrigerant is compressed into high temperature and high pressure gas in the process from B to C, and then be cooled when passing through the condenser and changed into liquid. Heat is taken away by the cooling water. In the process from C to D to E and F, the liquid refrigerant is dried and filtered by drier filter. After that, it will pass through solenoid valve, refrigerant indicator and then reach expansion valve. In the process from F to G, the high pressure liquid refrigerant will be throttled and depressurized by heat expansion valve and temperature will go down. In the process from G to A, chilled water absorbs the heat of process water in the evaporator and returns back to compressor. This heat exchange process repeats until process water is cooled down to required temperature.

Hot-air bypass function: the compressor continues working when process water is cooled down to required temperature, then the hot-air bypass valve opens as the temperature drops to its set value. A part of the refrigerant from the compressor passes through the by-pass valve and then reaches evaporator, balancing out part of the machine refrigerating capacity and then goes back to compressor without passing through the condenser. With the help of hot-air bypass valve, the system can stay in an balanced condition and meanwhile can keep control accuracy within  $\pm 1^{\circ}\text{C}/1.8^{\circ}\text{F}$ .



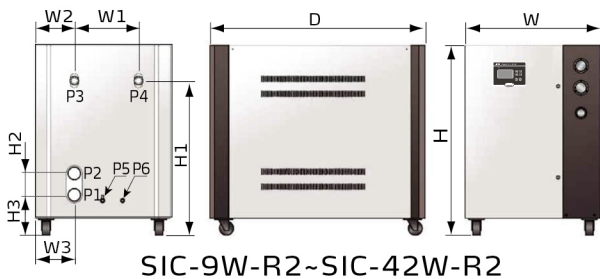
# SIC-W-R2 Series

## Structure of SIC-W-R2



- ① Stainless steel water tank for storage of circulation water.
- ② Heavy-duty 3-phase pump ensures no blockages and high torque.
- ③ Scroll compressor(s) for super high efficiency and low noise.
- ④ Drier filter(behind compressor).
- ⑤ Main switch.
- ⑥ High/low pressure gauges.
- ⑦ Pump pressure gauge.
- ⑧ Powder coated frame.
- ⑨ Tube-in-shell evaporator ensures efficient cooling.
- ⑩ Tube-in-shell condenser design for quick heat transfer and excellent heat radiation.

## Outline Drawings







## Dimensions

Item	Model	SIC-9W-R2	SIC-14W-R2	SIC-21W-R2	SIC-28W-R2	SIC-33W-R2	SIC-42W-R2	SIC-56W-R2	SIC-66W-R2	SIC-84W-R2	SIC-112W-R2	SIC-126W-R2	SIC-132W-R2	
H	mm	970		1050		1200		1450				1760		
	inch	38.2		41.3		47.2		57				69.3		
H1	mm	790		910		1078		765		750	490	520		
	inch	31.1		35.8		42.4		30.1		29.5	19.3	20.5		
H2	mm	91		140		140		200				140		
	inch	3.6		5.5		5.5		7.9				5.5		
H3	mm	207		225		308		190		200		190		
	inch	8.1		8.9		12.1		7.5		7.9		7.5		
W	mm	605		830		865		1055				1100		
	inch	23.8		32.7		34		41.5				43.3		
W1	mm	273		370		459		300			300	205		
	inch	10.7		14.6		18		11.8			11.8	8.0		
W2	mm	164		230		202		295		215	260	230	325	
	inch	6.5		9.0		8.0		11.6		8.5	10.2	9.0	12.8	
W3	mm	164		230		162		205			267	250	505	
	inch	6.5		9.0		6.4		8.0			10.5	9.8	19.9	
D	mm	1080		1200		1470		2235			2870	3085	3285	
	inch	42.5		47.2		57.9		88.0			113	121.5	129.3	
P1 (inch) Cooling Water Inlet			1 1/2			2			2 1/2			2x2 1/2		
P2 (inch) Cooling Water Outlet			1 1/2			2			2 1/2			2x2 1/2		
P3 (inch) Chilled Water Inlet		1		1 1/2		2					2 1/2			
P4 (inch) Chilled Water Outlet		1		1 1/2		2					2 1/2			
P5 (inch) Water Tank Drainage Port							1/2					1		
P6 (inch) Water Tank Overflow Port							1/2					1		
Weight	kg	210	240	330	340	430	495	750	760	800	1200	1450	1750	
	lb	463	529	727.5	729	948	1,091	1,653	1,675	1,764	2,646	3,197	3,858	

## Model Selection Reference

Mould Clamping Force (T)	Moulding Capacity (kg/hr)	Model (kW)
≤250	≤25	6
≤450	≤45	11
≤650	≤65	14
≤850	≤85	18
≤1300	≤130	27
≤1800	≤180	38

Mould Clamping Force (T)	Moulding Capacity (kg/hr)	Model (kW)
≤2500	≤250	52
≤3000	≤300	62
≤4000	≤400	84
≤5000	≤500	104
≤6000	≤600	126

# SIC-W-R2 Series

## Specifications

Item	Parameter	Model	SIC-9W-R2	SIC-14W-R2	SIC-21W-R2	SIC-28W-R2	SIC-33W-R2	SIC-42W-R2	SIC-56W-R2	SIC-66W-R2	SIC-84W-R2	SIC-112W-R2	SIC-126W-R2	SIC-132W-R2		
Refrigeration Capacity	kW <sup>1)</sup>	50Hz	9.0	14	21	28	33	42	56	66	84	112	126	132		
		60Hz	10.8	16.8	25.2	33.6	39.6	50.4	67.2	79.2	100.8	134.4	151.2	158.4		
	kW <sup>2)</sup>	50Hz	12.5	18.5	33	37	43	55	74	87	110	148	166	174		
		60Hz	15	22.2	39.6	44.4	51.6	66	88.8	104.4	132	177.6	199.2	208.8		
Compressor	Power (kW)	Type	Scroll													
		50Hz	2.5	3.55	5.5	7.35	8.35	10.5	14.7	16.7	21	28.35	31.5	33.4		
		60Hz	3.2	4.5	6.4	8.5	9.75	12.5	17	19.5	25	33.5	37.5	39		
Refrigerant	Weight	kg	2.5	3.0	5.5	5.5	9.8	8.7	10.8	16	17.4	21.4	26.1	32		
		lb	5.5	6.6	12.1	12.1	21.6	19.2	23.8	35.3	38.4	47.2	57.5	70.5		
	Control Mode	Thermostatic expansion valve														
	Type	R410A														
Evaporator	Type	50Hz	Tube-in-shell style													
		60Hz	Plate style									Tube-in-shell style				
Condenser	Type	Tube-in-shell style														
		In/out Pipe (Inch)	1½				2				2½				2×2½	
	Cooling Water Flow	L/min	33.5	52.2	78.3	104.3	123	156.5	208.7	246	313	417.4	469.6	491.9		
gal/min		8.9	13.8	20.7	27.6	32.5	41.3	55.1	65.0	82.7	110.3	124.0	129.9			
Water Tank	L	40			70			80			200			400		
	gal	10.6			18.5			21.1			52.8			105.7		
Pump <sup>3)</sup>	Power (kW)	50Hz	0.75/0.75/1.1			1.1/1.1/1.1			1.1/1.5/2.2			-1.8/2.4		-3.0/4.0		-4.0/5.5
		60Hz	0.75/0.75/1.1			1.1/1.1/1.5			2.2			3		5		
	Pump Flow (L/min)	50Hz	25.8	40.1	60.2	80.3	94.6	120.4	160.5	189.2	240.8	321.1	361.2	378.4		
		60Hz	30.9	48	71.9	96	113	147.2	191.7	226	287.7	383.6	431.6	452.2		
Working Pressure (kgf/cm <sup>2</sup> )	50Hz	3.3/3.7/4.5	3.1/3.5/4.3	2.8/3.9/5.7	2.7/3.3/4.0	2.7/3.7/4.7	2.6/3.5/4.5	-3.2/4.4	-3.1/4.1	-3.4/4.1	-2.8/3.8	-3.7/4.4	-3.2/4.3			
	60Hz	-3.50/5.4	-2.90/5	-3.35/4.5	-3.90/-	-4.0/5.4	-5.0/6.2	-4.1/5.1	-4.4/-	-	-	-	-			
Total <sup>4)</sup> Power (kW)	50Hz	3.25	4.3	6.61	8.45	9.45	11.6	16.9	18.9	23.2	30.55	32.7	35.6			
	60Hz	3.15	5.6	7.22	9.21	11.39	14.6	19.22	21.38	30.3	38.41	42.7	42.26			
Pipe Coupling (female thread)	Chilled Water Outlet	1"G		1½"G			2"G			2½"G			2½"G			
	Chilled Water Inlet	1"G		1½"G			2"G			2½"G			2½"G			
	Drainage Port Of Water Tank	1/ 2"G										1"G				
	Overflow Port Of Water Tank	1/ 2"G										1"G				
Protective Device	Compressor	Overload relay														
	Pump	Overload relay														
	Refrigerant Circuit	High and low pressure switches/Anti-freezing switch														
	Cooling water Circuit	By-pass valve/Water level switch (Option)														
Operation Noise dB(A)		69	70.5	70.4	72.5	71.4	74	75.5	73.3	78.5	81.4	79.6	86.5			
Power		3Φ, 230 / 400 / 460 / 575VAC, 50 / 60Hz														
Measures Exchange		1 kW = 860 kcal/hr			1 RT = 3,024 kcal/hr			10,000 Btu/hr = 2,520 kcal/hr								

- Notes: 1) Refrigeration capacity 1 is measured based on the flow 0.172 m<sup>3</sup> / (h·k W) and the outlet temperature (7°C/44.6°F) of chilled water under the environment temperature of 30°C/86°F and cooling water flow of 0.215 m<sup>3</sup> / (h·k W).
- 2) Refrigeration capacity 2 is measured based on the flow 0.172 m<sup>3</sup> / (h·k W) and the outlet temperature (20°C/68°F) of chilled water under the environment temperature of 30°C/86°F and cooling water flow of 0.215 m<sup>3</sup> / (h·k W).
- 3) The working pressure of water pump is the pressure when negative pressure of inlet water is 0.
- 4) Low pressure pump is standard medium (Model marked with "P", such as SIC-9W-R2-P) or high pressure pump (Model "HP", such as SIC-9W-R2-P) are optional for installation on customer's demands.
- 5) Pump power is included in total power.
- 6) Demands on special voltage of power supply could be satisfied.