



## CFC-free Refrigerant Water-cooled Water Chiller

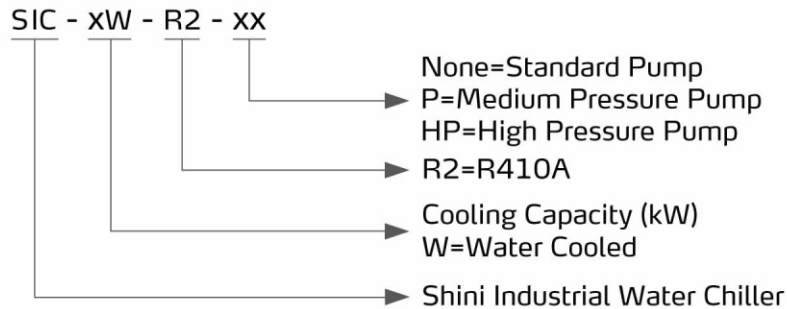
SIC-33W-R2



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  $\pm 1^{\circ}\text{C}/1.8^{\circ}\text{F}$ .
- 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

- Medium and high pressure pumps are optional to meet any pressure requirements.
- Water tank level sensor is available to detect whether the water level is normal.
- Solenoid valve is optional to prevent compressor re-start and the liquid impact phenomenon by cutting the refrigerant immediately after downtime.
- Refrigerant indicator can be opted to detect the refrigerant and the water ratio.
- Optional flow switches to ensure compressor works in sufficient water quantity.
- 1/2" water flow regulator SFR-400 is optional. (Only suitable for SIC-9W-R2 & SIC-14W-R2)

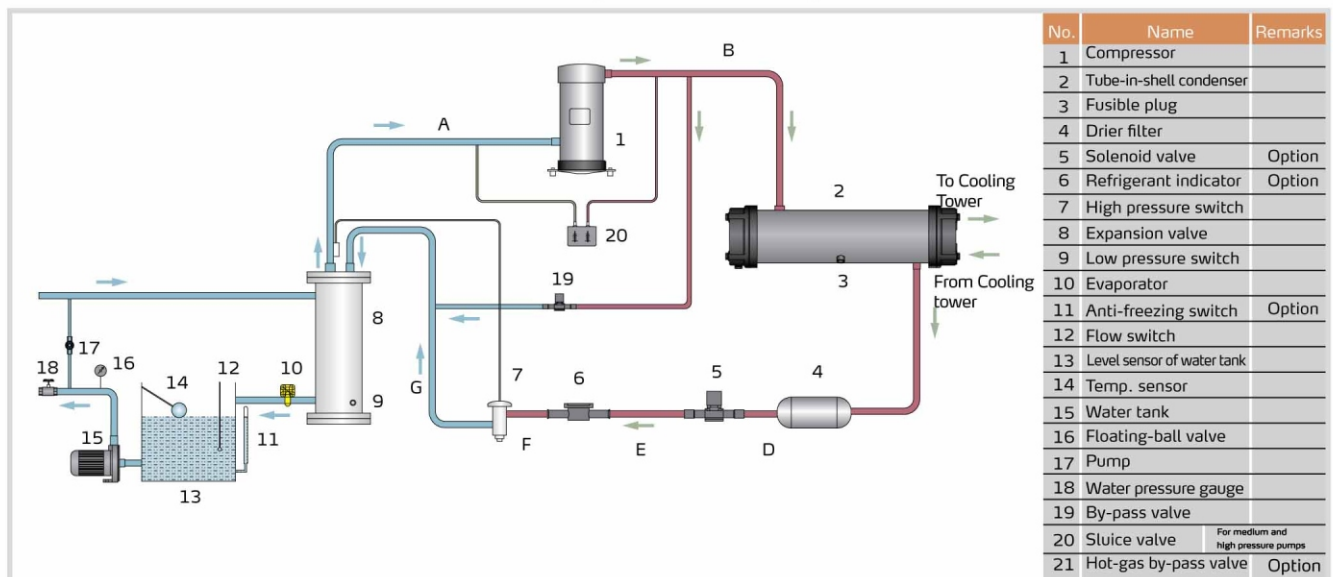
## Application

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

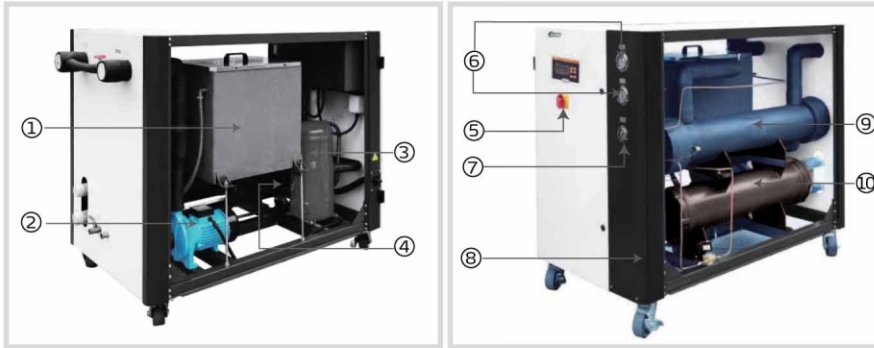
When the SIC-W water-cooled water chiller starts up, compressor starts working. Refrigerant is compressed into high temperature and high pressure gas in the process from B to C, and then be cooled when passing through the condenser and changed into liquid. Heat is taken away by the cooling water. In 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  $\pm 1^{\circ}\text{C}/1.8^{\circ}\text{F}$ .



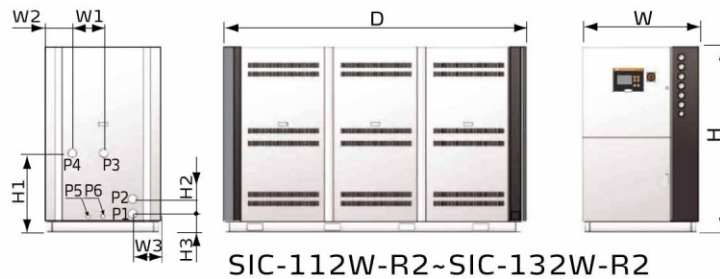
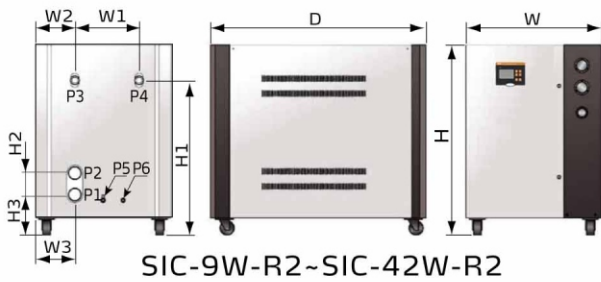
# SIC-W-R2 Series

## 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 <sup>1)</sup>	kW	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		
	kcal/hr	50Hz	7,740	12,040	18,060	24,080	28,380	36,120	48,160	56,760	72,240	94,320	108,360	113,520		
		60Hz	9,288	14,448	21,672	28,896	34,056	43,344	57,792	68,112	86,688	115,584	130,032	136,224		
Compressor	Type	Scroll														
	Power (kW)	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									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>2)</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>3)</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 (inch)	Chilled Water Outlet	1×1		1½×1			2×1				2½×1		2½×1			
	Chilled Water Inlet	1×1		1½×1			2×1				2½×1		2½×1			
	Drainage Port Of Water Tank						1/2				1					
	Overflow Port Of Water Tank						1/2				1					
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 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) The working pressure of water pump is the pressure when negative pressure of inlet water is 0.

3) This pump is used as standard either for domestic or Southeast Asia; medium (Model denotes "P", such as SIC-9W-R2-P) or high pressure pump (Model denotes "HP", such as SIC-9W-R2-P) are optional for installation on customer's demands.

4) Pump power is included in total power.

5) Demands on special voltage of power supply could be satisfied.

## Shini Group

Addr: No. 23, Minhe St., Shulin Dist.,  
New Taipei, Taiwan

Tel: +886 2 2680 9119

Fax: +886 2 2680 9229

Email: [shini@shini.com](mailto:shini@shini.com)

### Factories:

- Taiwan
- Dongguan
- Pinghu
- Ningbo
- Mumbai

2017-07-15-04 Copyrights Reserved.

[www.shini.com](http://www.shini.com)