



CFC-free Refrigerant Air-cooled Water Chiller

SIC-12A-R2

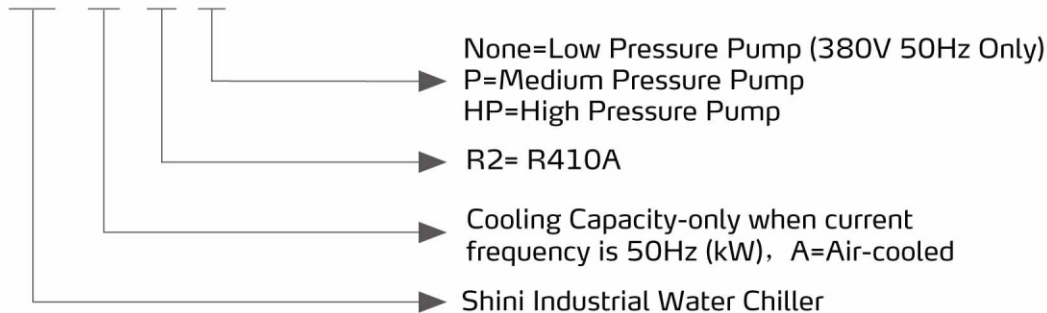


Refer carefully to this manual before operation.

SIC-A-R2 Series

■ Coding Principle

SIC - xA - R2- xx



Notes:

CE=CE Conformity

■ Features

Standard configuration

- Cooling range 7~25°C.
- Stainless steel insulated water tank.
- Equipped with anti-freeze thermostat.
- Adopt R410A refrigerant, used to improve coefficient of performance (COP) and R410A is ozone-friendly.
- Refrigerant loop controlled by high and low pressure switches to ensure stable operation.
- Compressor and pump overload protection.
- Adopt precise Italian temperature controller with an display accuracy of $\pm 0.1^{\circ}\text{C}$.
- Low pressure pump is standard configuration.
- All adopt quality compressors from major supplier.
- Adopt fin style condenser design. Without any need of cooling water for excellent heat transfer and rapid cooling.

Accessory option

- Medium and high pressure pumps are optional to meet any requirements.
- Lever sensor of water tank is available to detect water level.
- Hot-air bypass valve can be opted to reach the accuracy of $\pm 1^{\circ}\text{C}$.
- Solenoid valve is optional to prevent evaporator freezing by cutting the refrigerant immediately after downtime.
- Refrigerant indicator can be opted to detect the refrigerant and ensure its quality and water ratio.
- Optional flow switches to detect chilled water flow.



Control Panel

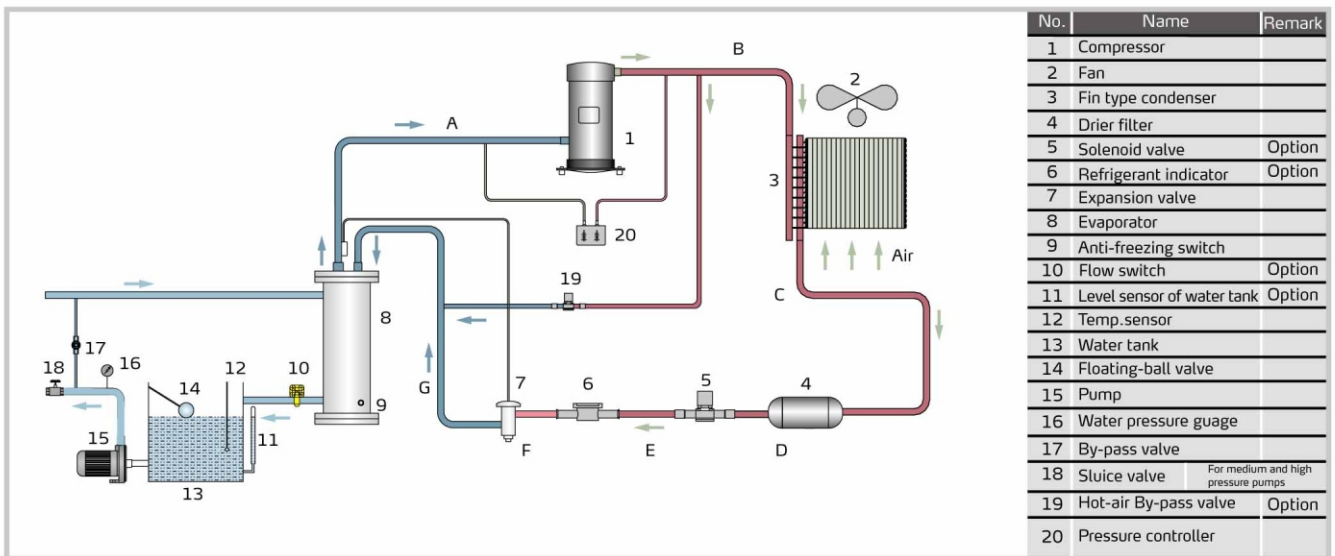
Application

SIC-A-R2 series are applicable for cooling moulds to reduce products molding cycle; also they are available in the cooling of equipments in order to maintain a normal temperature. Besides, they are suitable for other industries with the need of cooling.

Working Principle

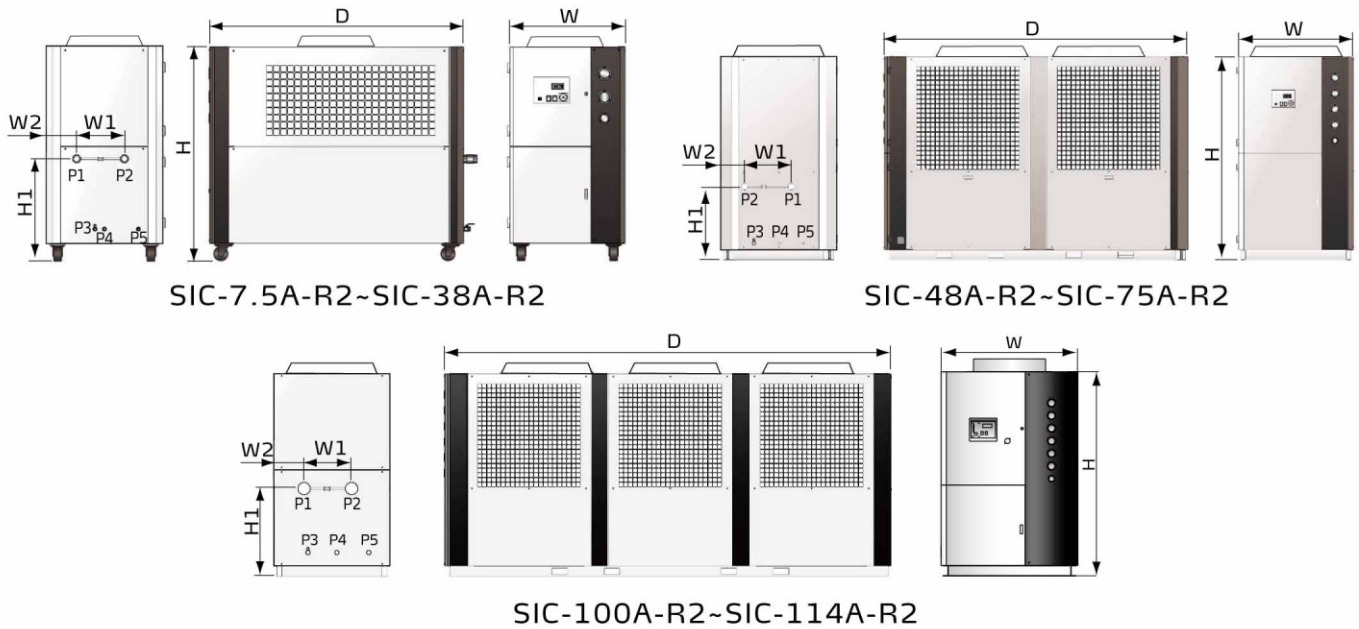
When SIC-A-R2 air-cooled water chiller starting-up, compressor starts working. Refrigerant is compressed into high temperature high pressure gas in the process from B to C, and then be cooled when passing through condenser and changed into liquid. Heat is taken away by the cooling air. In the process from C to D to E and F, liquid refrigerant is dried and filtered by the drier filter. After that, it passes through solenoid valve, level sensor and then reaches the expansion valve. In the process from F to G, the high pressure liquid refrigerant is throttled and depressurized by heat expansion valve and temperature goes down. In the process from G to A, chilled water absorbs the heat of process water in evaporator and returns back to the compressor. This heat exchange process repeats until process water is cooled down to requirement temperature.

Hot-air bypass function: the compressor continues working when the 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 compressor passes through by-pass valve and then reaches evaporator, balancing out part of the machine refrigerating capacity and then goes back to compressor without passing through condenser. With the help of hot-air bypass valve, system can stay in balanced condition and meanwhile can keep control accuracy within $\pm 1^{\circ}\text{C}$.



SIC-A-R2 Series

Outline Drawings



Outline Drawings

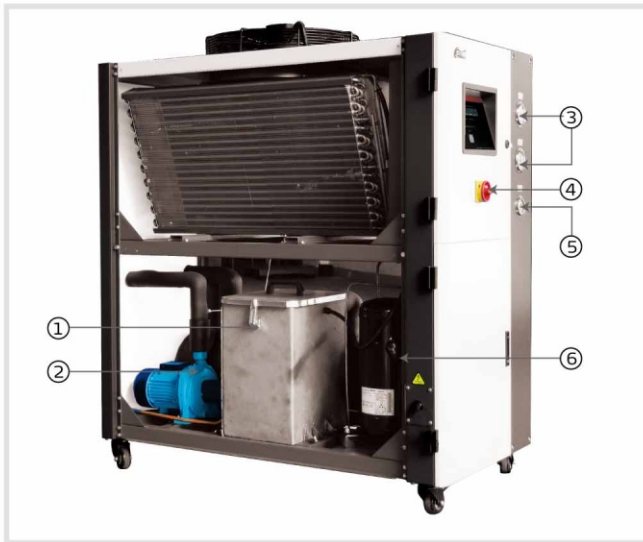
Model	H (mm)	H1 (mm)	W (mm)	W1 (mm)	W2 (mm)	D (mm)	P1 (inch) Cooling Water Inlet	P2 (inch) Cooling Water Outlet	P3 (inch) Water Tank Outlet Port	P4 (inch) Water Tank Overflow Port	P5 (inch) Water Tank Refill Port	Weight (kg)
SIC-7.5A-R2	1200	625	685	277	200	1190	1	1	1/2	1/2	1/2	305
SIC-12A-R2	1490	640	735	360	174	1320	1	1	1/2	1/2	1/2	315
SIC-18A-R2	1430	640	735	300	204	1610	1½	1½	1/2	1/2	1/2	400
SIC-24A-R2	1440	640	735	300	204	1610	1½	1½	1/2	1/2	1/2	420
SIC-28A-R2	1560	726	905	390	223	1782	2	2	1/2	1/2	1/2	530
SIC-38A-R2	1560	726	905	390	223	1782	2	2	1/2	1/2	1/2	540
SIC-48A-R2	1942	755	1208	400	257	2922	2	2	1	1/2	1/2	775
SIC-58A-R2	1942	755	1208	400	257	2922	2	2	1	1/2	1/2	800
SIC-75A-R2	1942	755	1208	418	257	2922	2½	2½	1	1/2	1/2	840
SIC-100A-R2	1942	641	1300	800	243	3475	2½	2½	1	1	1	1400
SIC-114A-R2	1942	641	1300	900	255	3475	2½	2½	1	1	1	1600

Model Selection References

Mould Clamping Force (T)	Molding Capacity (kg/hr)	Refrigeration Capacity (kW)
≤250	≤25	6
≤450	≤45	11
≤650	≤65	14
≤850	≤85	18
≤1300	≤130	27

Mould Clamping Force (T)	Molding Capacity (kg/hr)	Refrigeration Capacity (kW)
≤1800	≤180	38
≤3000	≤300	62
≤4000	≤400	84
≤5000	≤500	104

Structure of Air-cooled Models



- ① Stainless steel water tank for storage of circulating water.
- ② Big flow 3-phase pump ensures no blockage and high torque.
- ③ High/low pressure gauges to display system pressure.
- ④ Main power switch.
- ⑤ Pump pressure gauge to display pump pressure.
- ⑥ Scroll-type compressor(s) for super high efficiency and low noise.

- ⑦ Expansion valve for accurate adjustment of refrigerant flow.
- ⑧ Tube-fin condenser features quick heat transfer and heat radiation.
- ⑨ Shell-and-tube type evaporator ensures efficient cooling.
- ⑩ Powder coating coated frame and control box.

SIC-A-R2 Series

Specifications (50Hz)

Item	Model SIC-Parameter	7.5A-R2	12A-R2	18A-R2	24A-R2	28A-R2	38A-R2	48A-R2	58A-R2	75A-R2	100A-R2	114A-R2			
		Refrigerant ¹⁾ Capacity	kW	7.5	12	18	24	28	38	48	58	75	100	114	
Refrigerant ²⁾ Capacity	kW	9.5	14	24	32	38	45	64	76	90	121	135			
Compressor	Type	Scroll													
	Power	2.9	4.2	6.4	8.72	9.36	12.25	17.44	18.72	24.86	33.58	37.29			
Refrigerant	Filling Volume (kg)	3.5	5.0	5.5	5.5	9.0	12.5	7.5×2	8×2	8×2	7.8×2+6.8	8.7×3			
	Control Mode	Thermostatic expansion valve													
	Type	R410A													
Evaporator	Type	Tube-in-shell style													
Condenser	Type	Fin style													
	Blower (kW)	0.19	0.55	2×0.23	2×0.385	2×0.6	2×0.78	2×1.03	2×0.85	2×1.92	2×2.2+1.5	3×2.2			
Water Tank Capacity (L)		30		65		80		186		186		230		316	
Pump ³⁾	Power (kW)	0.75/0.75/1.1		1.1 / 1.1 / 1.1		1.1 / 1.5 / 2.2		2.2 / 1.8 / 2.4		2.2 / 3.0 / 4.0		2.2/4.0/5.5			
	Pump Flow (L/min)	40		80		120		190		320		378			
	Working Pressure (kgf/cm ²)	2.5 / 3.5 / 4.4		2.5 / 3.5 / 4.1		2.2 / 3.5 / 4.4		2.2 / 3.1 / 4.4		2.3 / 3.0 / 4.0		2.2/3.2/4.4			
Total Power (kW) ⁴⁾		3.85	5.5	8.0	10.6	11.66	15	21	22.6	30	41.7	46			
Pipe Coupling (inch)	Chilled Water Outlet (inch)	1		1 ¹ / ₂				2			2 ¹ / ₂				
	Chilled Water Inlet (inch)	1		1 ¹ / ₂				2			2 ¹ / ₂				
	Water Tank Drainage Port	1/2				1									
	Water Tank Overflow Port	1/2						1							
Protective Devices	Compressor	Overload relay													
	Pump	Overload relay													
	Cooling Water Circuit	High and low pressure switches/Anti-freeze switch													
	Water Circuit	Flow switch/Water level switch (Optional)/By-pass valve													
Operation Noise dB(A)		78	75	74	78	81	86	84	82	86	90	90			
Power(VAC) ⁵⁾		3Φ, 400VAC, 50Hz													
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 based on the flow of 0.172m³/(h.k W), the chilled water outlet temperature of 7°C and the environment temperature of 35°C.

2) Refrigeration capacity 2 is based on the flow of 0.172m³/(h.k W), the chilled water outlet temperature of 15°C and the environment temperature of 25°C.

3) Low pressure pump is for domestic and Southeast Asia export, customers can change for medium pressure pumps (use P for short; e.g.: SIC-and A-R2-P) or high pressure pumps (use HP for short; e.g.: SIC-and A-R2-HP), specific parameters in turn as shown above.

4) Pump power is included in total power.

5) Special orders of machine voltage can be acceptable according to customers's request.

6) The air-cooled water chiller is applicable to the conditions under the environment temperature of 43°C.



■ Specifications (60Hz)

Item	Model SIC-Parameter	12A-R2	24A-R2	28A-R2	38A-R2	48A-R2	58A-R2	75A-R2	100A-R2	114A-R2
		Refrigerant ¹⁾ Capacity	kW	15	30	35.5	45	60	70	90
Refrigerant ²⁾ Capacity	kW	17.5	37.5	41	48	75	82	96	133.5	144
Compressor	Type	Scroll								
	Power	5.28	10.2	11.73	14.8	20.4	23.76	29.6	39.8	44.4
Refrigerant	Filling Volume (kg)	5.0	5.5	9.0	12.5	7.5×2	8 ×2	8 ×2	7.8×2+6.8	8.7×3
	Control Mode	Thermostatic expansion valve								
	Type	R410A								
Evaporator	Type	Plate evaporator								
Condenser	Type	Fin style								
	Blower (kW)	0.91	2×0.57	2×0.91	2×1.1	2×2.2		2×2.2	2×2.2+2.2	3×2.2
Water Tank Capacity (L)		50	85	150		180	200	270	400	
Pump ³⁾	Power (kW)	0.75/1.5	1.1/1.1	2.2/2.2		3.0/3.0		5.5/5.5		5.5/5.5
	Pump Flow (L/min)	83/67	100/89	150/133		300/300		300/300		366/367
	Working Pressure (kgf/cm ²)	2.6/3.8	2.6/3.5	3.0/4.2		3.0/4.2		3.0/4.2		3.4/4.3
Total Power (kW) ⁴⁾		5.86	12.44	15.74	19.2	27.8	30.86	39.5	51.9	53.51
Pipe Coupling (inch)	Chilled Water Outlet (inch)	1	1 1/2	2			2.5			
	Chilled Water Inlet (inch)	1	1 1/2	2			2.5			
	Water Tank Drainage Port	1/2			1					
	Water Tank Overflow Port	1/2							1	
Protective Devices	Compressor	Overload relay								
	Pump	Overload relay								
	Cooling Water Circuit	High and low pressure switches/Anti-freeze switch								
	Water Circuit	Flow switch/Water level switch (Optional)/By-pass valve								
Operation Noise dB(A)		75	78	81	86	84	82	86	90	90
Power(VAC) ⁵⁾		3Φ, 230/400/460/575VAC, 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 based on the flow of 0.172m³/(h.k W), the chilled water outlet temperature of 7°C and the environment temperature of 35°C.

2) Refrigeration capacity 2 is based on the flow of 0.172m³/(h.k W), the chilled water outlet temperature of 20 °C and the environment temperature of 30°C.

3) Low pressure pump is for domestic and Southeast Asia export, customers can change for medium pressure pumps (use P for short; e.g.: SIC-and A-R2-P) or high pressure pumps (use HP for short; e.g.: SIC-and A-R2-HP), specific parameters in turn as shown above.

4) Pump power is included in total power.

5) Special orders of machine voltage can be acceptable according to customers's request.

6) The air-cooled water chiller is applicable to the conditions under the environment temperature of 43°C.

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