

AIR COOLED SCREW CHILLER



WORLD STANDARD AIR CONDITIONERS

CAE *SERIES*

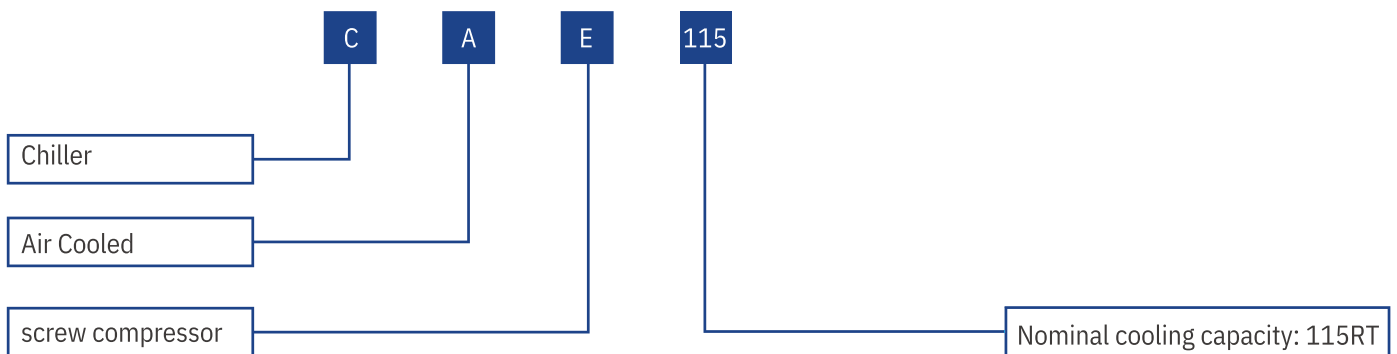


Air Cooled Screw Chiller

Overview

Flooded air cooled screw chiller adopts high efficiency semi-hermetic twin-rotor screw compressor, high efficiency evaporator and high efficiency inverted fin-coil heat exchanger, through the EXV control technology, the unit operates efficiently within its working range, even in energy-saving mode. The unit adopts R134a environmentally friendly refrigerant. The products are designed for large and medium-sized commercial, civil, and industrial buildings. They are also well-suited for areas with heavy anti-corrosion requirements, offering a wide range of applicability.

Nomenclature



Operating range

Operating condition	Cooling
Ambient temperature	10°C ~ 43°C
Water outlet temperature	5°C ~ 20°C

Unit member

High efficiency fan

Metal blade, large air volume.

Fin-coil condenser

Window type hydrophilic aluminum fins, high efficiency inner-threaded tube.

Flooded evaporator

EXV

Integrated starter panel and control panel

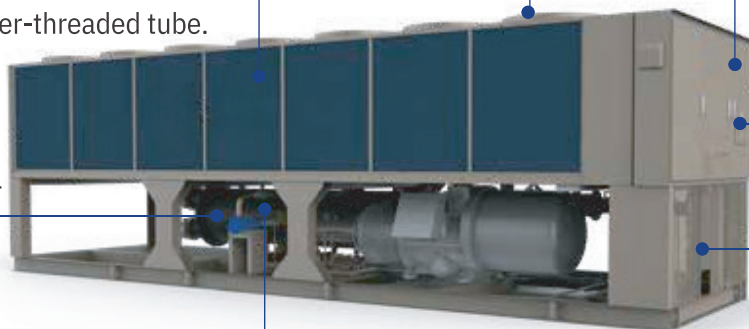
The starter panel is equipped with circuit breaker. The control panel is low-voltage power supply.

Built-in touch screen

7-inch colorful touch screen

Double oil separation

Compressor filter + centrifugal oil separation, oil rate of heat exchanger is below 0.03%.



Features

High Efficiency

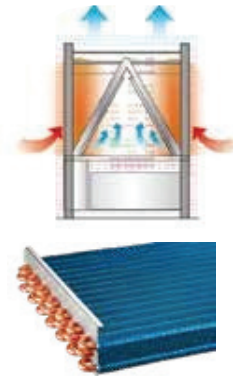
High efficiency screw compressor



- ❖ The screw rotor adopts the optimized compression process profile design, not only ensures excellent volume efficiency, but also reduces the leakage of the compressor. The twin screw rotor adopts five teeth to six teeth asymmetrical design, the machining accuracy is as high as micron level, stable and reliable.
- ❖ Refrigerant-cooled large capacity motor design, high motor efficiency. The screw rotor is driven by motor directly, less moving parts and wearing parts, high mechanical efficiency.
- ❖ Compressor adopts high efficiency bearing, high load resistance design, proprietary reverse bearing and balance axial thrust balance drum design, can effectively prolong the service life of the compressor and ensure the continuous operation of the chiller ≥ 50000 hours.
- ❖ The new protection module provides complete electrical protection for reverse and lose phases, and provides real-time temperature detection of motor winding and discharge temperature detection, and has the function of fault self-locking to ensure the safety of compressor operation.

High efficiency air side heat exchanger

- ❖ Inverted air-side heat exchanger, the airflow is evenly distributed to achieve high efficiency heat exchange.
- ❖ High efficiency inner-threaded pipes and high quality arc-shaped window aluminum fins are closely combined by mechanical expansion pipe to improve heat transfer efficiency, reduce pressure loss and wind noise.
- ❖ Professional temperature field simulation, optimized design.



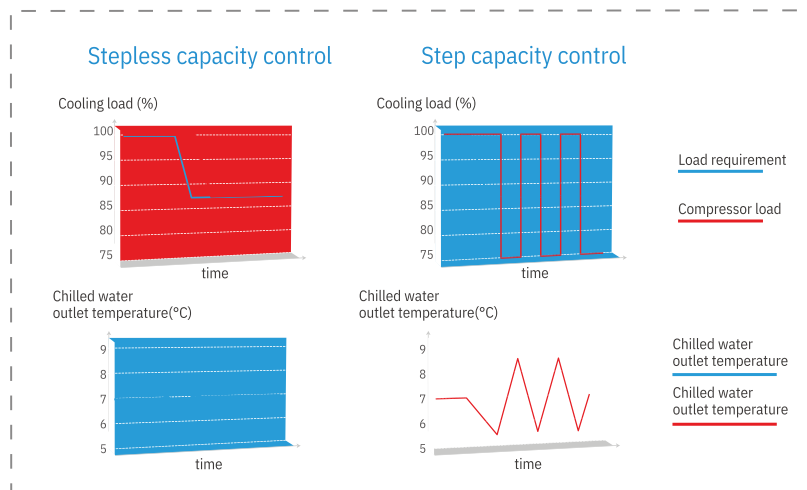
High efficiency flooded evaporator

- ❖ The refrigerant distributor can distribute refrigerant evenly, optimize the temperature field and improve the evaporation temperature, so as to improve the operating efficiency.
- ❖ Specially designed baffle plate to avoid the compressor suction with liquid, improving the reliability of the unit.
- ❖ The water box at both ends can be disassembled to facilitate maintenance.



Stepless Capacity Control

Through high-precision capacity control, the load change of the unit is closely tracked, and the refrigerant flow is adjusted. The capacity adjustment mode adopts stepless control, the refrigerating capacity is completely matched with the load, the unit still keeps efficient operation at partial load, and the outlet water temperature of the unit is stable, thus enhancing the user experience.

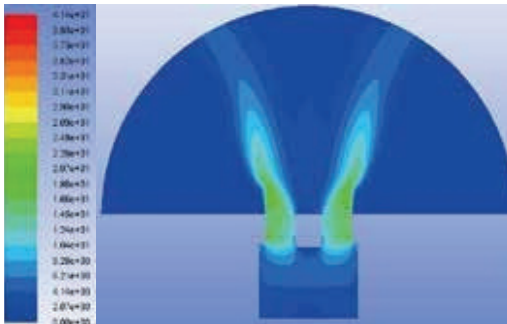


Green and Low Noise

- ❖ The whole series of units adopt R134a eco-friendly refrigerant, which has high refrigeration efficiency and no damage to the atmospheric ozone layer.
- ❖ Screw compressor is semi-closed structure, driven by direct motor, with low speed and low noise.
- ❖ Low noise option can be selected to further reduce the noise value of the unit by 2 ~ 3 dBA.

High efficiency and large air volume fan

- ❖ The impeller of the fan is optimized by professional flow field software, which ensures that the impeller has good aerodynamic performance, obtains greater air volume while ensuring the low noise operation, and improves the heat transfer effect on the air side.
- ❖ Through the optimization design of the motor coil, the motor of the fan can effectively reduce the loss and improve the operation efficiency, so that the motor has less heat, less power consumption and long operation life.



Velocity field distribution diagram



Large air volume axial fan

Intelligent Control

It is controlled by microcontroller, and has many automatic control functions such as fault diagnosis, antifreeze monitoring, etc., which ensures the efficient operation and convenient operation of the unit. The unit has its own RS485 communication interface, and multiple units can implement multi-communication control; The unit can be controlled by the upper computer. The operation of each unit can be controlled by the upper computer according to the load demand and operation time.

- ❖ Control mode: MIC
- ❖ Interface display: 7-inch touch screen
- ❖ Communication interface: RS485
- ❖ Communication protocol: Modbus-RTU
- ❖ Protection measures: more than 20 items of protection such as power supply, compressor, pressure and temperature

Specifications

Model		CAE-115	CAE-135	CAE-170	CAE-195	CAE-210	CAE-245	CAE-280	
Cooling capacity	RT	113.8	136.7	169.8	195.0	212.5	245.8	281.6	
	kW	400.2	480.7	596.9	685.8	747.2	864.3	990.1	
Power input	kW	119.9	154.6	196.4	223.7	243.8	276.4	304.9	
Cooling COP	W/W	3.337	3.109	3.039	3.066	3.064	3.126	3.247	
	kW/Ton	1.05	1.13	1.16	1.15	1.15	1.12	1.08	
IPLV	W/W	4.319	4.155	4.094	4.100	4.123	4.152	4.203	
Cooling capacity	Quantity	1							
	Type	Semi-hermetic twin-rotor screw compressor							
	Energy regulation mode	Stepless control (25%~100%)							
	Starting method	Wye-Delta							
Refrigerant	Type	R134a							
	Charge amount	kg	113.0	118.0	151.0	177.0	191.0	214.0	235.0
Power supply	/	380V-3Ph-50Hz							
Air side heat exchanger	Type	Fin-coil							
	No. of fan	/	6	6	8	10	12	12	14
	Air flow	m ³ /h	138,000	138,000	184,000	230,000	276,000	276,000	322,000
	Motor power input	kW	2.4 x 6	2.4 x 6	2.4 x 8	2.4 x 10	2.4 x 12	2.4 x 12	2.4 x 14
Water side heat exchanger	Type	Shell and tube							
	Water flow	m ³ /h	68.58	82.37	102.3	117.5	128.0	148.1	169.7
	Water side pressure drop	kPa	42.7	46.3	70.4	79.2	73.4	76.6	67.3
	Water pipe connection	mm	DN150	DN150	DN150	DN150	DN150	DN200	DN200
Unit dimensions	Length	mm	4220	4220	5055	6060	7065	6835	7840
	Width	mm	2300	2300	2300	2300	2300	2300	2300
	Height	mm	2460	2460	2460	2460	2460	2460	2460
Shipping weight	kg	3700	4300	4900	5550	5950	6750	7300	
Running weight	kg	3850	4470	4990	5770	6190	7020	7590	

Note:

- Cooling: chilled water inlet/outlet=12°C/7°C; Outdoor ambient temperature 35°C DB.
- As a result of the continuous improvement of the product, the above parameters may be changed, please refer to the product nameplate and in-kind.

Specifications

Model		CAE-295	CAE-335	CAE-380	CAE-420	CAE-480	
Cooling capacity	RT	294.5	334.6	379.4	418.5	481.3	
	kW	1035	1176	1333	1471	1692	
Power input	kW	333.6	378.9	441.6	473.9	539.8	
Cooling COP	W/W	3.102	3.104	3.018	3.104	3.134	
	kW/Ton	1.13	1.13	1.16	1.13	1.12	
IPLV	W/W	4.242	4.219	4.227	4.218	4.230	
Cooling capacity	Quantity	2					
	Type	Semi-hermetic twin-rotor screw compressor					
	Energy regulation mode	Stepless control (12.5%~100%)					
	Starting method	Wye-Delta					
Refrigerant	Type	/					
	Charge amount	kg	156+161	164+169	176+182	202+207	200+215
Power supply	/	380V-3Ph-50Hz					
Air side heat exchanger	Type	/					
	No. of fan	/	16	18	20	20	22
	Air flow	m ³ /h	368,000	414,000	460,000	460,000	506,000
	Motor power input	kW	2.4 x 16	2.4 x 18	2.4 x 20	2.4 x 20	2.4 x 22
Water side heat exchanger	Type	/					
	Water flow	m ³ /h	177.4	201.6	228.6	252.2	290.0
	Water side pressure drop	kPa	68.9	76.6	75.8	75.5	87.4
	Water pipe connection	mm	DN200	DN200	DN200	DN200	DN200
Unit dimensions	Length	mm	8865	9870	10875	10875	11880
	Width	mm	2300	2300	2300	2300	2300
	Height	mm	2460	2460	2460	2460	2460
Shipping weight	kg	9100	9600	10900	11400	13540	
Running weight	kg	9450	9970	11290	11800	14040	

Note:

- Cooling: chilled water inlet/outlet=12°C/7°C; Outdoor ambient temperature 35°C DB.
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