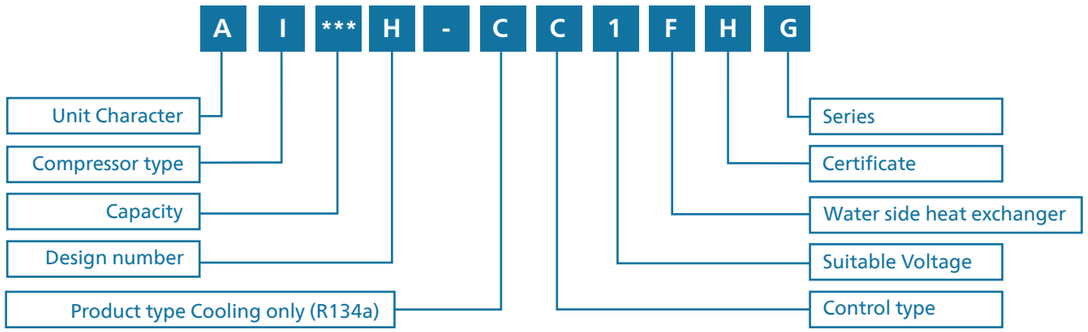
Tasaki

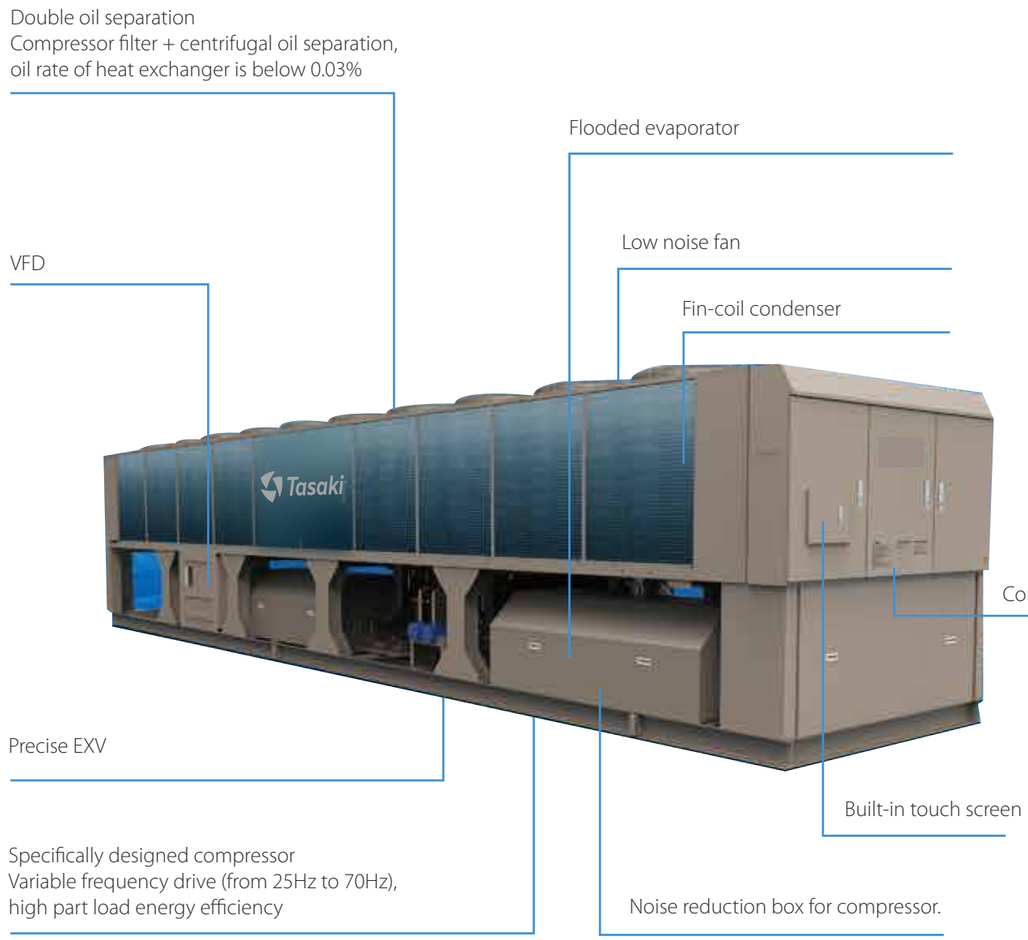
AirBoost Inverter
Air Cooled Screw Chiller
AI***H-CC1FHG

AirBoost air cooled screw chiller is designed to realize peak efficiency under all operating conditions, all year round cooling, free cooling, quick start and low noise operation.
It can be widely used in large and medium-sized commercial, civil or industrial buildings and is ideal for data centers, cold storages, temperature sensitive operations such as pharmaceutical labs, hospitals, and manufacturing facilities require constant cooling for equipment and processes, places where the chillers will probably be installed near noise sensitive places such as guest room and meeting room, etc.

Nomenclature



Unit member



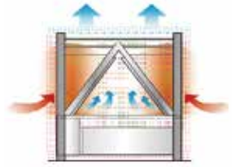
Features

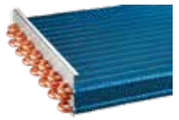
High efficiency screw compressor

- 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 inverter motor design, high motor efficiency. The screw rotor is driven by motor directly, less moving parts and wearing parts, high mechanical efficiency.
- The compressor is specifically designed to run with the newest variable frequency technology. Running freely from 25Hz to 70Hz, high part load energy efficiency.

High efficiency air side heat exchanger

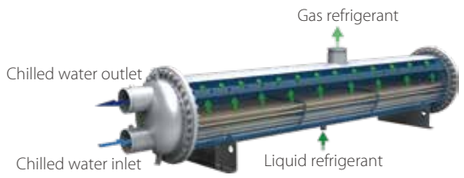
- High efficiency and low noise axial flow fan. The fan impeller design is optimized by professional flow field software to ensure that the impeller has good aerodynamic performance, which ensures that the fan operates with low noise and at the same time obtains larger air volume and improves the heat transfer effect of the air side.
- Inverted M-type 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.



High precision EXV

- Internationally renowned brands, stable and reliable quality.
- Responsive, no hysteresis, improve unit energy efficiency.
- PID high-precision adjustment to ensure that the whole situation is stable and efficient operation.

High precision EXV

Traditional thermal expansion valve

0.1Hz inverter technology

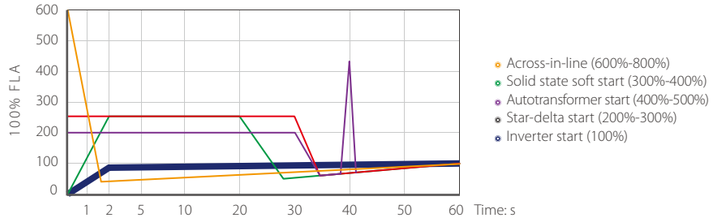
- International leading inverter regulation technology can achieve 0.1Hz frequency regulation, so as to achieve high-precision water temperature control, trend prediction, self-diagnosis, advance regulation, avoid frequent temperature fluctuations and even shutdown, improve user comfort and reduce energy consumption.

Temperature change under conventional control

Temperature change under prospective control

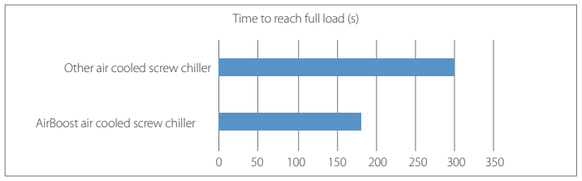
Zero in-rush current

- The unit adopts inverter starting mode, which produces zero in-rush current during the starting process and enables a stable operation from 0A to FLA.



Quick start

- It takes only 180s to return to 100% capacity while other comparable chillers need at least 300s to reach full load. Ideal for temperature sensitive applications such as data centers, manufacturing processes and hospitals where need the unit to restart quickly after a power failure.



Reliable and easy installation

- Modular design, maximum 8 units can be combined.
- Each unit adopts 1 or 2 compressors and each compressor is equipped with an independent refrigeration circuit.
- The compressors of the 2-circuit unit can be used as backup for each other. The running time of each compressor of a 2-circuit unit and each unit in a whole system can both be balanced and the service life of the whole system is extended.
- No need for a dedicated equipment room or purchase cooling tower and other accessories.

Quiet operation

- Optimized system design, eliminate abnormal noise caused by flow.
- 5~10dBA noise reduction (standard with sound insulation box and low noise fan).
- Double layer sound insulation material + super low noise fan (customized).

The inner wall of the box is made of highly effective silencing materials

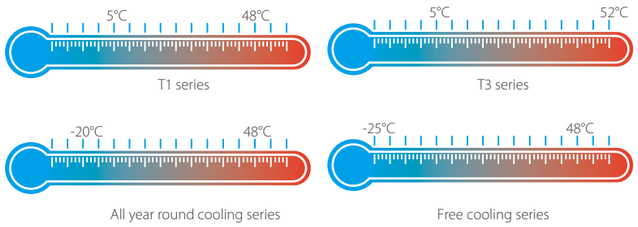
Super low noise solution fan

Eco-friendly

R134a refrigerant has zero ozone depletion potential and has no elimination cycle for now.
The refrigerant complies with the Montreal Protocol.

Wide ambient temperature range

The unit can operate stably under extreme conditions, ranging from -25℃ to 52℃.



Intelligent control

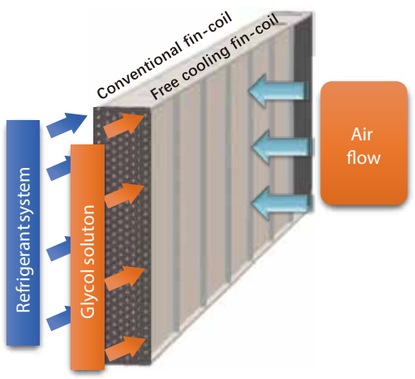
- 7-inch colorful touch screen.
- Real-time operating parameters (temperature, pressure etc.) display.
- Three-level password setting to prevent misoperation.
- Detailed fault information record.
- Power-off memory function.
- Timed ON/OFF.
- Master & Slave, Back-up, Duty cycling.
- Compatible with QuickView, M-Cloud, Tasaki Chiller Plant Control and M-BMS.

Free cooling solutions

For industrial or civil applications where cooling capacity required is stable in any outdoor condition and it is not effected by outdoor temperature, using solutions that exploit low outdoor temperatures for supplying cooling capacity for free is strongly suggested.

When the outdoor temperature is lower than the temperature of the system's return water, the free cooling system recovers cold from the external environment and reduces the operation of the compressors until they stop completely.

Tasaki solution is: Built-in free cooling heat exchanger, less space; Free cooling and compressor refrigeration sharing a set of fans, energy saving and easy maintenance.



Two configurations

Direct free cooling

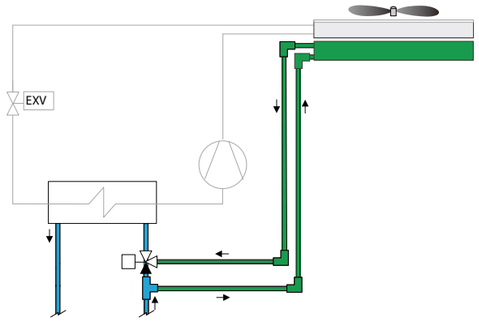
Circulating water in the project system is with glycol.

Free cooling fin + electric three-way valve, achieve free cooling at low ambient temperature.

Direct heat exchange, high heat exchange efficiency.

Overall project circulating water is anti-freeze liquid, strong anti-freezing ability.

Client requires consideration of glycol system design.



Indirect free cooling

Circulating water in the project system is conventional water.

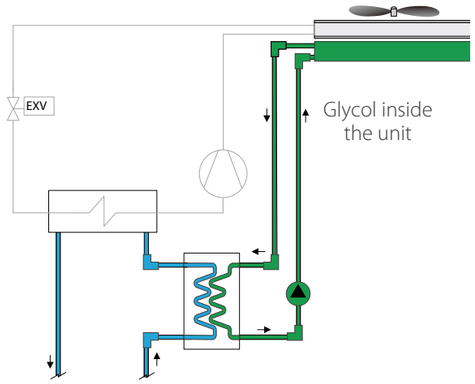
Free cooling fin, plate heat exchanger and glycol circulating pump to form a closed system.

Equipped with plate heat exchanger, transfer free cooling energy to the whole project.

The terminal system and the water pump do not need to consider the performance attenuation and water resistance increase caused by antifreeze liquid.

Two-stage heat exchange can reduce heat exchange requirements of the compressor.

No need for special water system design.



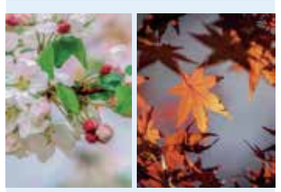
No-Glycol inside the project system

Three operating modes

Summer

Free cooling is off.
Compression cycle is on.

Middle season



Free cooling is on.
Compression cycle is on.

Winter

Free cooling is on.
Compression cycle is off.

Specifications

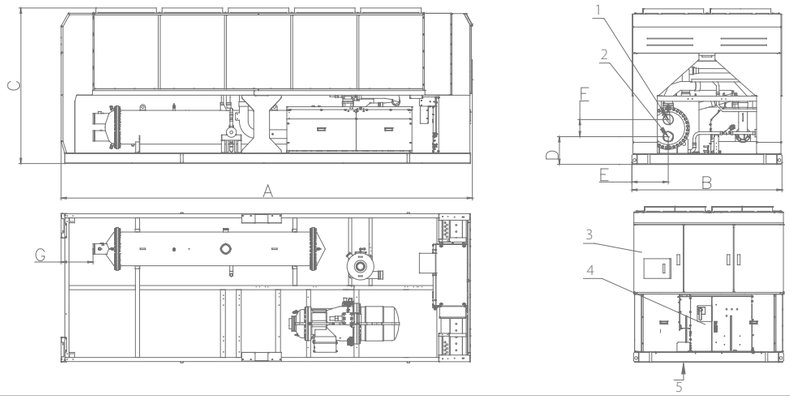
380V-3Ph-50Hz

AI***H-CC1FHG		Model	115	140	175	205	240	275	330	385	410
Nominal parameter	Cooling capacity	kW	397.0	493.0	618.1	723.8	844.5	965.0	1162	1368	1448
	Power input	kW	116.5	143.6	181.3	212.3	247.5	283.7	340.3	401.2	425.0
	Cooling COP	kW/kW	3.40	3.43	3.40	3.40	3.41	3.40	3.41	3.41	3.40
	IPLV	kW/kW	4.992	5.054	5.019	5.018	4.986	4.984	4.979	4.971	5.069
Compressor	Type	/	Semi-hermetic twin-rotor screw compressor								
	Quantity	/	1	1	1	1	1	1	2	2	2
Energy regulation mode		/	Stepless control (Single compressor 10%-100% , Dual compressor 5%-100%)								
Refrigerant	Type	/	R134a								
	Charge amount	kg	126	148	168	192	225	280	2×168	2×200	2×200
Power supply		/	380V-3Ph-50Hz								
Rated current		A	192.4	238.8	302.7	350.7	414.5	474.2	565.3	668.4	720.4
Start current		A	≤192.4	≤238.8	≤302.7	≤350.7	≤414.5	≤474.2	≤565.3	≤668.4	≤720.4
Max. operating current		A	264.6	329.8	392.3	449.9	524.8	595.3	756.0	841.6	886.6
Air side heat exchanger	Type	/	Fin-coil								
	No. of fan	/	6	8	10	12	14	16	18	20	20
	Moter power input	kW	2.0								
Water side heat exchanger	Type	/	Shell and tube								
	Water flow	m^3/h	68.28	84.79	106.3	124.5	145.3	166.0	199.8	235.3	249.1
	Water side pressure drop	kPa	42.2	43.8	73.0	68.9	80.2	72.7	75.6	73.9	75.3
	Water pipe connection	mm	DN150	DN150	DN150	DN150	DN150	DN200	DN200	DN200	DN200
	Max. working pressure	MPa	1.0								
Unit dimensions	Length	mm	4440	5240	6245	7250	8255	9260	10265	11270	11270
	Width	mm	2300	2300	2300	2300	2300	2300	2300	2300	2300
	Height	mm	2460	2460	2460	2460	2460	2460	2460	2460	2460
Unit weight		kg	4240	4950	5500	6170	7050	7600	9800	10980	10980
Operating weight		kg	4440	5150	5720	6410	7330	7940	10160	11380	11380

Note:
1. Cooling: chilled water outlet temperature 7°C, water flow=cooling capacity×0.172m^3/(h•kW), fouling factor=0.018 m^2.°C/kW, outdoor ambient temperature 35°C DB.
2. IPLV calculations according to standard performances (in accordance with AHRI 550/590).
3. 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.

Dimensions and base diagrams

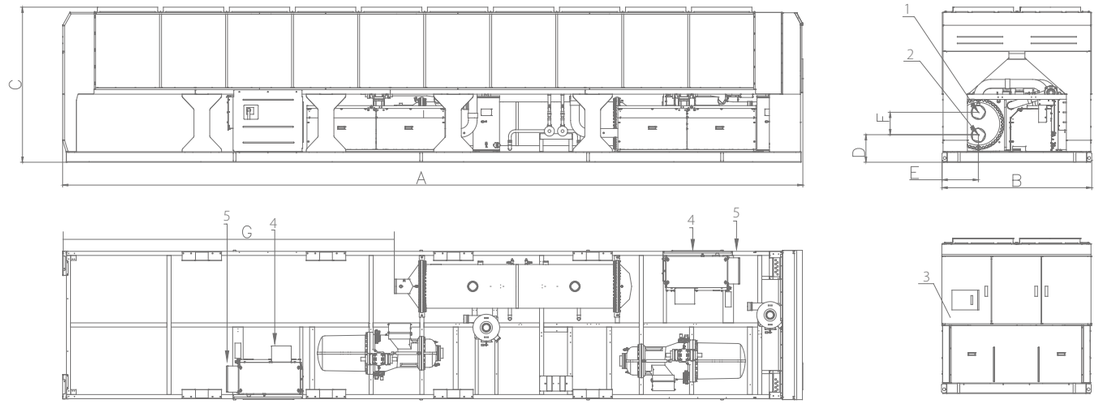
Dimensions



① Chilled water outlet
② Chilled water inlet
③ Control panel
④ VFD
⑤ Power incoming line

Dimensions (unit: mm)

AI***H-CC1FHG	A	B	C	D	E	F	G
115	4440	2300	2460	420	550	260	60
140	5240	2300	2460	420	550	260	65
175	6245	2300	2460	420	550	260	405
205	7250	2300	2460	420	550	260	1300
240	8255	2300	2460	420	550	260	2305
275	9260	2300	2460	420	550	300	3310



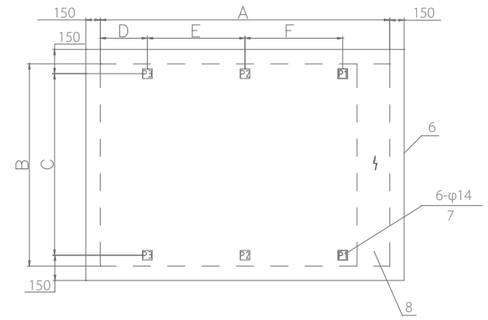
① Chilled water outlet
② Chilled water inlet
③ Control panel
④ VFD
⑤ Power incoming line

Dimensions (unit: mm)

AI***H-CC1FHG	A	B	C	D	E	F	G
330	10265	2300	2460	410	550	350	3965
385	11270	2300	2460	410	550	350	4970
410	11270	2300	2460	410	550	350	4970

Base diagrams

⑥ Installation foundation
⑦ Spring isolator installation hole
⑧ Electric control box



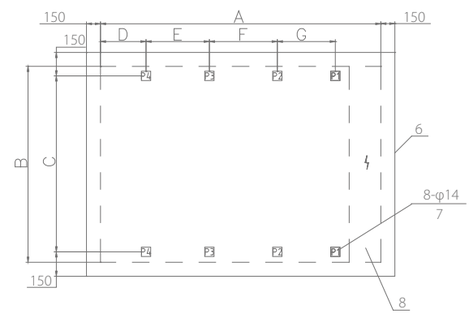
Dimensions (unit: mm)

AI***H-CC1FHG	A	B	C	D	E	F
115	4440	2300	2180	600	1670	1200
140	5240	2300	2180	800	2000	1700

Spring isolator at all points

AI***H-CC1FHG	P1	P2	P3
115	MHD-850	MHD-850	MHD-850
140	MHD-1050	MHD-1050	MHD-1050

Note:
1. The spring isolator is optional.
2. The value in the spring isolator model indicates the bearable weight (unit: kg). For example, "1050" in "MHD-1050" indicates 1050kg.



Dimensions (unit: mm)

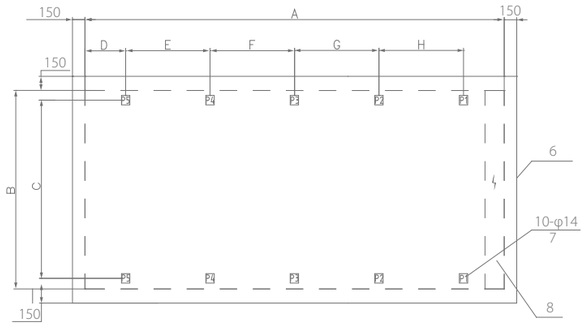
AI***H-CC1FHG	A	B	C	D	E	F	G
175	6245	2300	2180	1080	2000	1200	1200

Spring isolator at all points

AI***H-CC1FHG	P1	P2	P3	P4
175	MHD-850	MHD-850	MHD-850	MHD-850

Note:
1. The spring isolator is optional.
2. The value in the spring isolator model indicates the bearable weight (unit: kg). For example, "1050" in "MHD-1050" indicates 1050kg.

⑥ Installation foundation
⑦ Spring isolator installation hole
⑧ Electric control box



Dimensions (unit: mm)

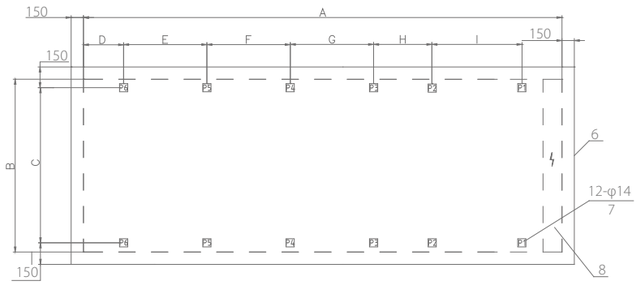
Model, SCAF	A	B	C	D	E	F	G	H
205	7250	2300	2180	635	1800	1800	1050	1200

Spring isolator at all points

Model, SCAF	P1	P2	P3	P4	P5
205	MHD-850	MHD-850	MHD-850	MHD-850	MHD-850

Note:
1. The spring isolator is optional.
2. The value in the spring isolator model indicates the bearable weight (unit: kg). For example, "1050" in "MHD-1050" indicates 1050kg.

⑥ Installation foundation
⑦ Spring isolator installation hole
⑧ Electric control box



Dimensions (unit: mm)

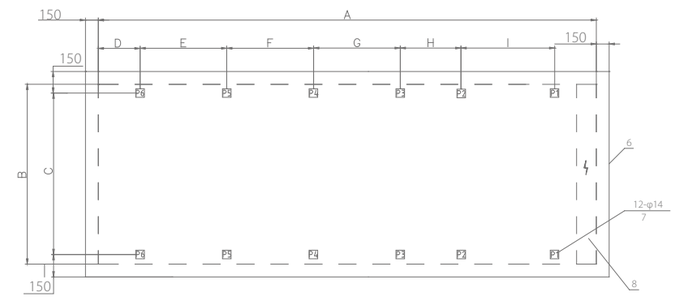
Model, SCAF	A	B	C	D	E	F	G	H	I
240	8255	2300	2180	440	1200	1800	1800	1050	1200

Spring isolator at all points

Model, SCAF	P1	P2	P3	P4	P5	P6
240	MHD-850	MHD-850	MHD-850	MHD-850	MHD-850	MHD-850

Note:
1. The spring isolator is optional.
2. The value in the spring isolator model indicates the bearable weight (unit: kg). For example, "1050" in "MHD-1050" indicates 1050kg.

⑥ Installation foundation
⑦ Spring isolator installation hole
⑧ Electric control box



Dimensions (unit: mm)

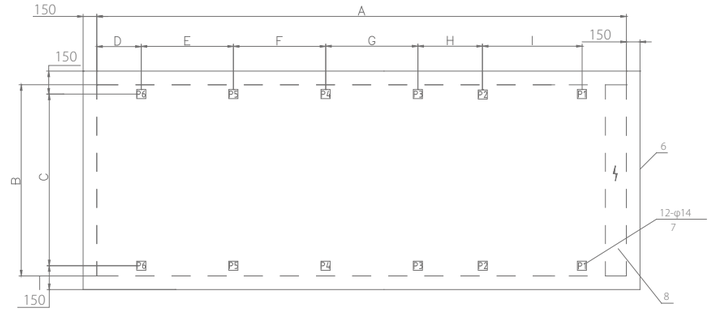
Model, SCAF	A	B	C	D	E	F	G	H	I
275	9260	2300	2180	845	1800	1800	1800	1050	1200

Spring isolator at all points

Model, SCAF	P1	P2	P3	P4	P5	P6
275	MHD-850	MHD-850	MHD-850	MHD-850	MHD-850	MHD-850

Note:
1. The spring isolator is optional.
2. The value in the spring isolator model indicates the bearable weight (unit: kg). For example, "1050" in "MHD-1050" indicates 1050kg.

⑥ Installation foundation
⑦ Spring isolator installation hole
⑧ Electric control box



Dimensions (unit: mm)

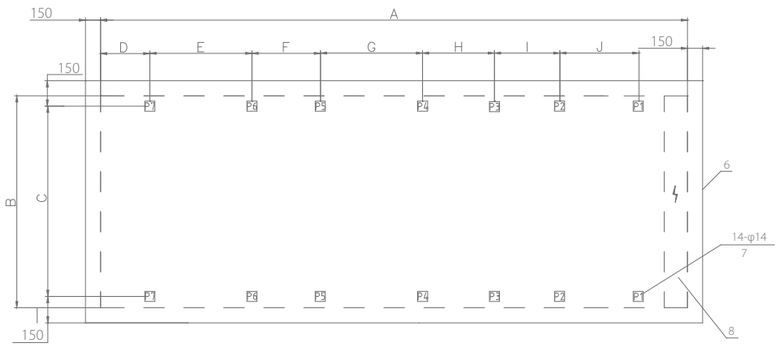
Model, SCAF	A	B	C	D	E	F	G	H	I
330	10265	2300	2180	1100	2000	2000	2000	1200	1200

Spring isolator at all pionts

Model, SCAF	P1	P2	P3	P4	P5	P6
330	MHD-1050	MHD-1050	MHD-1050	MHD-1050	MHD-1050	MHD-1050

Note:
1. The spring isolator is optional.
2. The value in the spring isolator model indicates the bearable weight (unit: kg). For example, "1050" in "MHD-1050" indicates 1050kg.

⑥ Installation foundation
⑦ Spring isolator installation hole
⑧ Electric control box



Dimensions (unit: mm)

Model, SCAF	A	B	C	D	E	F	G	H	I	J
385	11270	2300	2180	405	1700	2000	2000	2000	1200	1200
410	11270	2300	2180	405	1700	2000	2000	2000	1200	1200

Spring isolator at all points

Model, SCAF	P1	P2	P3	P4	P5	P6	P7
385	MHD-1050	MHD-1050	MHD-1050	MHD-1050	MHD-1050	MHD-1050	MHD-1050
410	MHD-1050	MHD-1050	MHD-1050	MHD-1050	MHD-1050	MHD-1050	MHD-1050

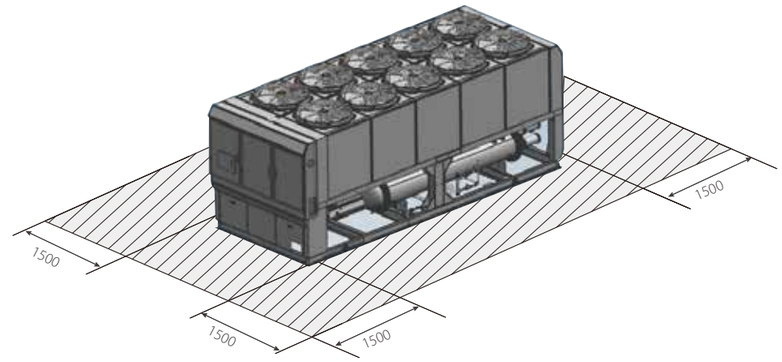
Note:

1. The spring isolator is optional.

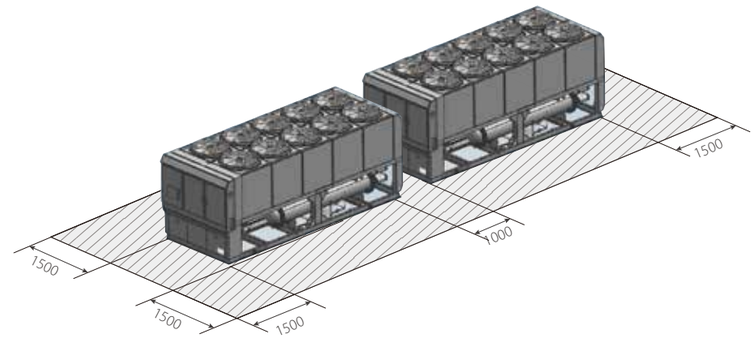
2. The value in the spring isolator model indicates the bearable weight (unit: kg). For example, "1050" in "MHD-1050" indicates 1050kg.

Installation and maintenance

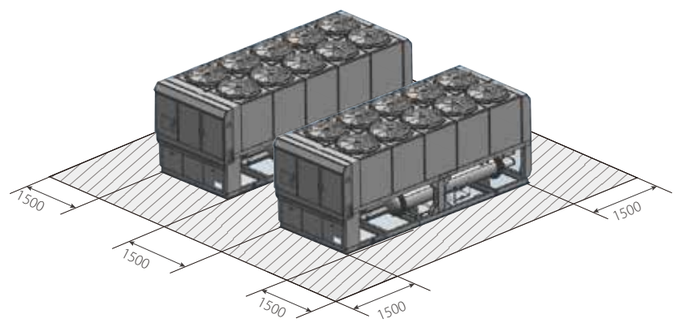
Single installation



Horizontal placement



Vertical placement



Options

Items	Standard
Power supply	380V-3Ph-50Hz
Water side pressure	1.0MPa
Heavy anti-corrosion treatment	×
Communication	Modbus-RTU (RS485 port)
Water pipe connection	Victaulic
Spring isolator	×
Water flow switch	×
Insulation	20mm
Super low noise fan	×
Double layer compressor sound insulation material	×
Hydraulic module	×
High water outlet temperature (cooling)	5~15℃
Large temperature difference	×
Inverter fan	×
Free cooling	×
T3 series	×
All year round cooling	×
Vessel code	GB
Remote control panel	×
Tasaki Chiller Plant Control	×
Tasaki smart cloud platform	×
QuickView	×

Note: for other options, please contact with our engineers.