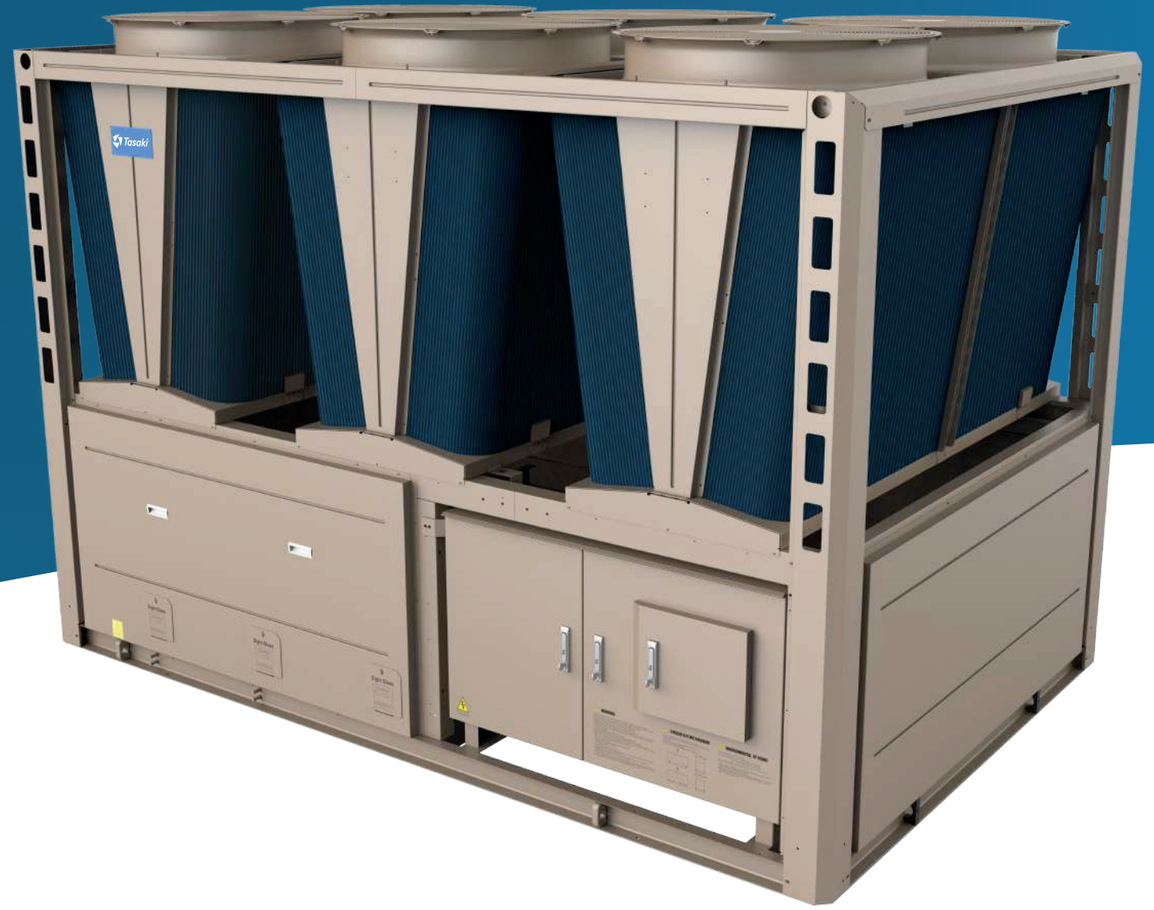
Tasaki **Large Capacity Air Cooled Scroll Chiller**



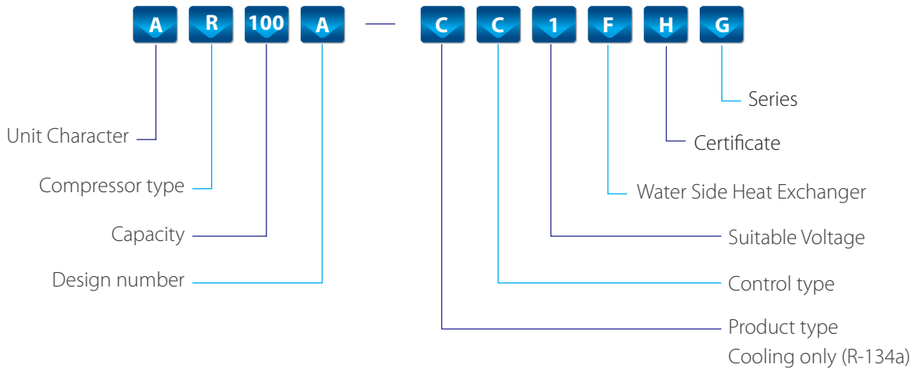
Overview

Tasaki large capacity air cooled scroll chiller adopts a modular design. Two basic modules: 340kW and 460kW. Maximum 8 units can be combined and the maximum cooling capacity is 3680kW. The unit can be widely used in various buildings, including hotels, hospitals, schools, factories, office buildings etc.

Core advantages

- Heat Pump/ Cooling Only
- Eco-Friendly
- Quiet Operation
- Flexible Installation
- Wide Operation Range
- Intelligent Control

Nomenclature



Operating range

Operating condition	Cooling	Heating
Ambient temperature	0~48℃	-15~35℃
Water outlet temperature	5~15℃	20~50℃

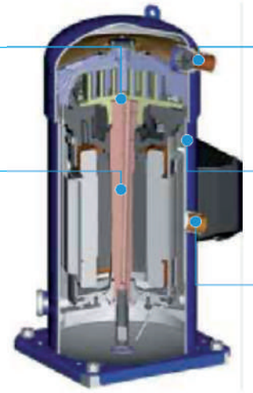
Features

Hermetic scroll compressor

High efficiency
Adopt the scroll design without contact and wear, reduce the friction inside the compressor, improve the efficiency.

Low warranty cost
Eco-friendly lead-free polymer bearing, stable operation and help to reduce warranty cost.

The actual compressor maybe slightly different from the picture shown.



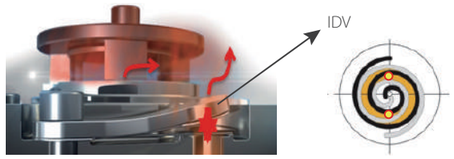
Stable performance
Compressor outlet is equipped with check valve to avoid backflow of refrigerant and high reliability.

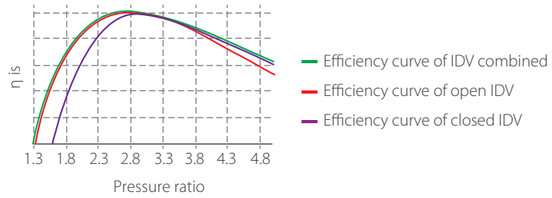
No need for maintenance
Hermetic design, no need for maintenance.

Long service life
Suction refrigerant cooled motor, higher efficiency and longer service life of compressor.

IDV (intermediate discharge valve)

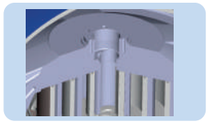
The compressor adopts an intermediate discharge valve design. The system can operate efficiently under full pressure ratio to achieve high operating efficiency.





Built-in discharge temperature sensor

Installed in the vantage point of the compressor, it can timely sense the discharge temperature and perform the function immediately when the operation state of the compressor exceeds the safety limit and send a signal to the motor protection system to protect the compressor.



Oil balance pipe

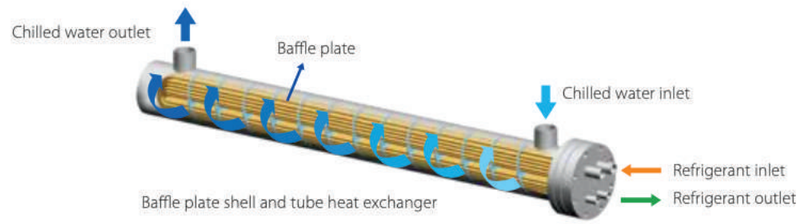
Under partial load conditions, the parallel compressor unit can store the lubricating oil in the unrunning compressor, thus greatly improving the reliability of the system. In addition, the oil stored in the compressor can improve the heat transfer effect in the evaporator, thus greatly improving the efficiency of the system.

Check valve

The top cover is kept in balance at the low pressure end after the compressor stops, so as to avoid excessive leakage at the high pressure end and ensure no-load start, which can improve the reliability of the compressor.

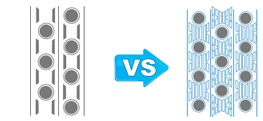
High efficiency water side heat exchanger

- The optimized design of simulation flow path and baffle plate are adopted to enhance heat transfer efficiency.
- The efficiency of the heat exchanger is increased by 10% compared with that of ordinary shell and tube heat exchanger.



High efficiency air side heat exchanger

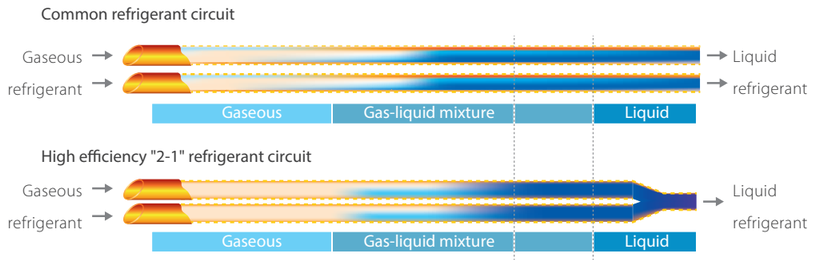
- Arc window structure hydrophilic aluminum fins, reduce pressure loss.
- High efficiency inner-threaded copper pipes greatly enhance heat exchange.
- The industry's original patented distribution method and the use of simulation flow optimization design, greatly improved heat exchange efficiency.



Common fin　Tasaki low pressure loss fin

Common smooth pipe　Inner-threaded copper pipe

High efficiency "2-1" refrigerant circuit design



Increase the proportion of liquid refrigerant in the heat exchanger and improve the heat transfer efficiency

High precision EXV, more accurate temperature control

- The EXV used is highly precise which takes only a few seconds to go from fully closed to fully open state.
- There is no static superheat phenomenon and can realize low load start. This reduces the heat loss in shutdown and enhances the stability and reliability of the unit.

High precision EXV　Traditional thermal expansion valve

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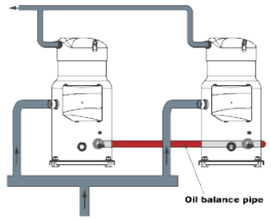
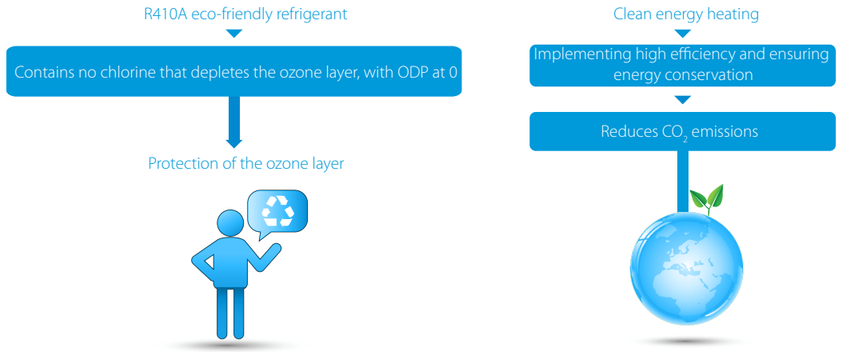
Reliable oil system

- Low pressure chamber compressor with vertical structure, oil tank is at the bottom of the compressor.
- For parallel compressor units, two compressors are in one group and connected by oil balance pipe. The oil balance pipe is located below the oil level to ensure the oil pressure balance for the compressors.
- The system pipeline is equipped with a gas-liquid separator, which can effectively prevent the liquid strike and make the compressor run more stably.
- With oil-collecting design in the suction pipe, it can effectively prevent the migration of oil and refrigerant to the compressor during shutdown under extreme low load conditions.



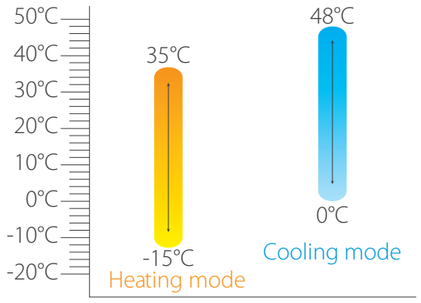
Eco-friendly

- R410A does not contain chlorine that depletes the ozone layer and its Ozone Depletion Potential (ODP) value is 0, fully protecting the environment.
- Helpful to obtain green building, LEED and other building certifications.



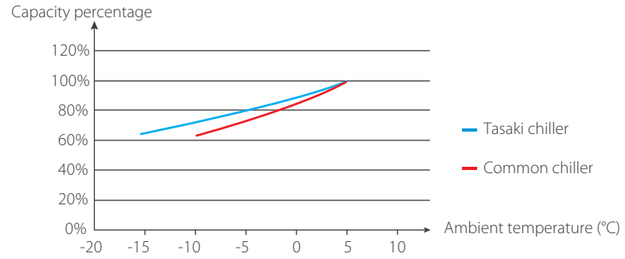
Wide operation range

Cooling mode: 0°C to 48°C. Heating mode: -15°C to 35°C.



Comfortable heating

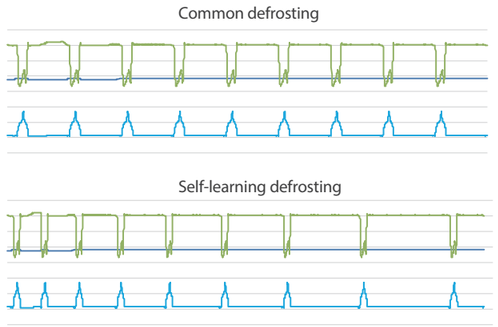
- Powerful low-temperature heating performance and advanced pressure ratio control technology ensures efficient and stable heating operation in low temperature environment.
- The heating attenuation at -15°C is less than 35%.
- Intelligent defrosting avoids wasting energy when there is no need for defrosting.



Patented online self-learning defrosting technology based on fuzzy logic

It can automatically determine defrosting, reduce heating capacity attenuation caused by frequent defrosting, reduce water temperature fluctuation and improve system reliability.

In high humidity condition, frost formation is fast and thick.
By timely defrosting, the unit can keep running in high capacity.

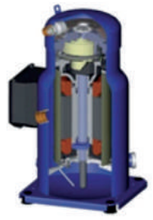


In low humidity condition, the frosting of the unit is slow and less frost.
By extending the heating interval, the frosting times can be reduced.

Quiet operation

- High efficiency and low noise fan design.
- The fan impeller is optimized with professional flow field software to ensure good aerodynamics and a larger air flow with less noise, improving the heat exchange on the air side.
- The noise reduction box for the compressor makes the running noise of the unit greatly reduced.

Low noise fan

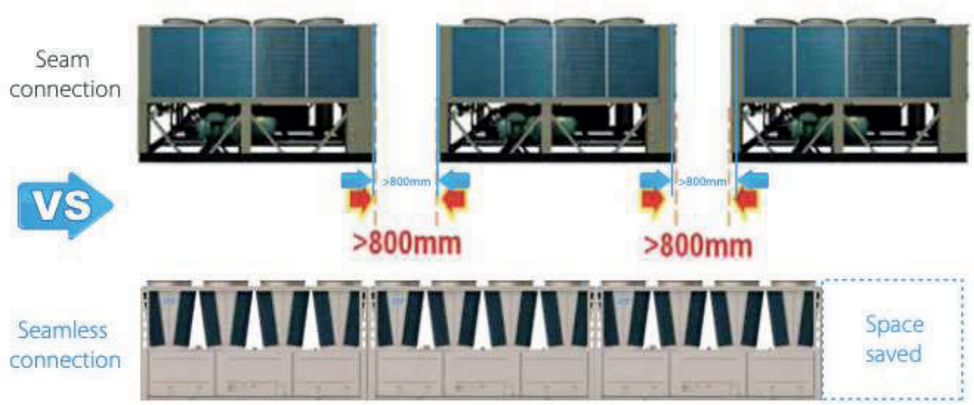


Low noise compressor

Noise reduction box for compressor (optional)

Seamless connection

- Modular design concept, free combination to meet different capacity requirements. Possible to increase capacity in the future expansion.
- The "V" module design allows lateral ventilation and heat exchange. Multiple modules can be seamlessly connected to reduce the installation area.



Advanced microcomputer control

Independently developed advanced microcomputer control panel, with multiple functions such as product operation control function and safety protection. Among them, the high-speed processing chip can quickly obtain the operating parameters of the chiller system and timely issue control instructions for rapid processing, so as to realize the intelligent control of the unit and ensure the stable operation of the unit.

Colorful Touch Screen

- Complete control functions

  The control functions that can be realized include:
  self-set outlet water control temperature, load intelligent control, self-equipped Master&Slave control, intelligent defrosting, intelligent low temperature control etc.

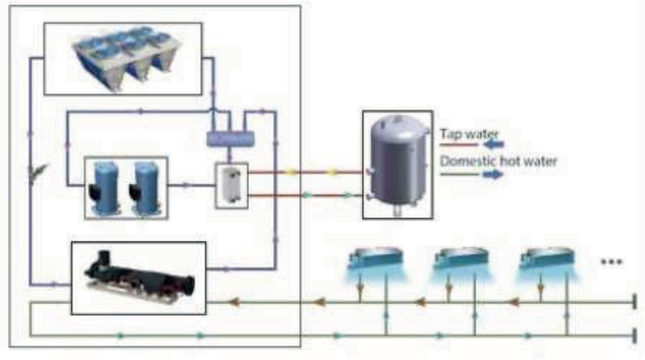
- Complete protection functions

  High pressure protection, low pressure protection, overload protection, discharge temperature protection, water flow protection, pressure ratio protection, discharge superheat protection etc.

Optional applications

Heat recovery

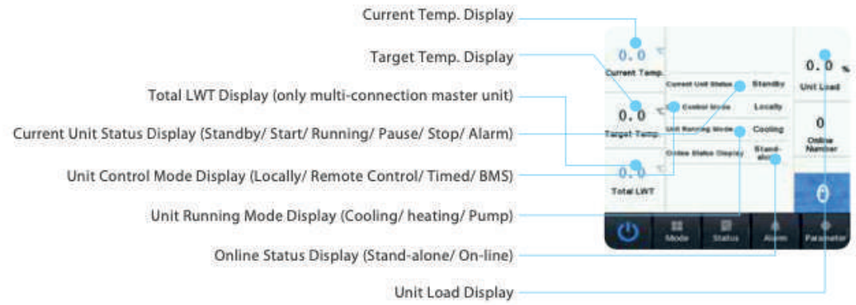
- Air cooled chiller discharges a lot of condensation heat to the air during cooling, leading to great energy wastage. The heat recovery unit can provide "free" domestic hot water at up to 60℃ during cooling, making full use of energy, reducing waste heat emissions and costs.
- The unit especially suits hotels, hospitals, bath centers, factories and so on, where users require cooling and hot water for living or processes at the same time.



Built-in hydraulic module

- The built-in hydraulic module integrates all the necessary components such as the water pump, filter, expansion water tank, flow switch, safety valve, air discharge valve, pressure gauge and flow control valve, to greatly reduce initial system investment and design and installation workloads, saving time, effort and money.
- The Victaulic water pipe connection is more convenient and reliable, not only simplifying installation but also isolating vibrations.
- The high lift and ultra high lift options are provided to meet different requirements.

Wired controller



Specifications

Cooling only

Model			Unit	AR100A-CC1FHG	AR130A-CC1FHG	AR200A-CC1FHG	AR230A-CC1FHG	AR260A-CC1FHG
Nominal parameter	Cooling capacity		kW	340.0	460.0	680.0	800.0	920.0
	Cooling power input		kW	105.5	142.5	211.0	248.0	285.0
	Cooling COP		W/W	3.22	3.22	3.22	3.22	3.22
	IPLV		W/W	4.527	4.512	4.527	4.518	4.512
	Partial heat recovery*		kW	102.0	138.0	204.0	240.0	276.0
Compressor	Type		/	Hermetic scroll compressor				
	Quantity	System 1	/	2	2	2	2	2
		System 2	/	1	2	1	1	2
		System 3	/	-	-	2	2	2
		System 4	/	-	-	1	2	2
Energy regulation mode			/	Adaptive energy regulation				
Refrigerant	Type		/	R410A				
	Charge amount	System 1	kg	47	45	47	47	45
		System 2	kg	23	45	23	23	45
		System 3	kg	-	-	47	45	45
		System 4	kg	-	-	23	45	45
Power supply			/	380V-3Ph-50Hz				
Rated current			A	180.5	243.8	180.5/180.5	180.5/243.8	243.8/243.5
Start current			A	589.0	673.0	589.0/589.0	589.0/673.0	673.0/673.0
Max. operating current			A	258.0	344.0	258.0/258.0	258.0/344.0	344.0/344.0
Air side heat exchanger	Type		/	High efficiency inner-threaded pipe + hydrophilic aluminum fin				
	No. of fan		/	6	8	12	14	16
	Air flow rate		m^3/h	20000×6	20000×8	20000×12	20000×14	20000×16
	Motor power input		kW	2.0×6	2.0×8	2.0×12	2.0×14	2.0×16
Water side heat exchanger	Type		/	Shell and tube				
	Water flow rate		m^3/h	58.48	79.12	117.0	137.6	158.2
	Pressure drop		kPa	63.0	63.0	63.0	63.0	63.0
	Water pipe connection		mm	DN125	DN125	DN125/DN125	DN125/DN125	DN125/DN125
	Max. working pressure		kPa	1000				
	Fouling factor		m^2. °C/kW	0.018				
Built-in hydraulic module (optional)*	Pump type		/	Single-stage piping centrifugal pump				
	No. of pump		/	1	1	-	-	-
	Pump power input (high lift)		kW	7.5	11	-	-	-
	Pump power input (ultra high lift)		kW	11	15	-	-	-
	External water head (high lift/nominal flow)		kPa	198	223	-	-	-
	External water head (ultra high lift/nominal flow)		kPa	305	309	-	-	-
	Expansion tank capacity		L	80	80	-	-	-
	Max. water side pressure (with built-in hydraulic module)		kPa	1000	1000	-	-	-
	Inlet and outlet pipe (with built-in hydraulic module)		mm	DN125	DN125	-	-	-
Partial heat recovery heat exchanger (optional)*	Type		/	Plate heat exchanger				
	Water flow		m^3/h	5.8	7.9	5.8/5.8	5.8/7.9	7.9/7.9
	Water side pressure drop		kPa	11.3	12.8	11.3/11.3	11.3/12.8	12.8/12.8
	Connecting pipe diameter		mm	DN50	DN50	DN50/DN50	DN50/DN50	DN50/DN50
Unit dimensions	Length		mm	3530	4700	7060	8230	9400
	Width		mm	2300	2300	2300	2300	2300
	Height		mm	2500	2500	2500	2500	2500
Unit weight			kg	3050	3800	6100	6850	7600
Operating weight			kg	3150	3950	6300	7100	7900

Note:

1. Cooling: chilled water outlet temperature 7°C, water flow=cooling capacity×0.172m^3/(h•kW), outdoor ambient temperature 35°C DB; Partial heat recovery: hot water inlet/outlet temperature=40°C/55°C, chilled water outlet temperature 7°C, water flow=cooling capacity×0.172m^3/(h•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.

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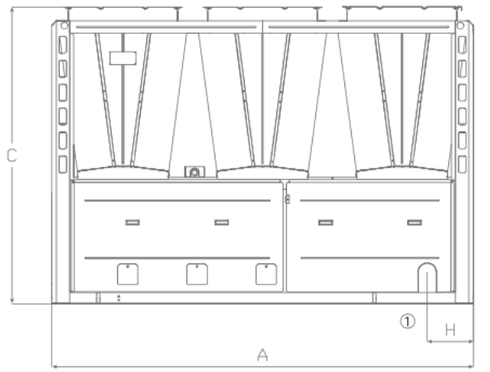
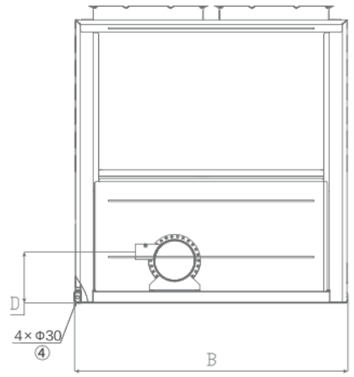
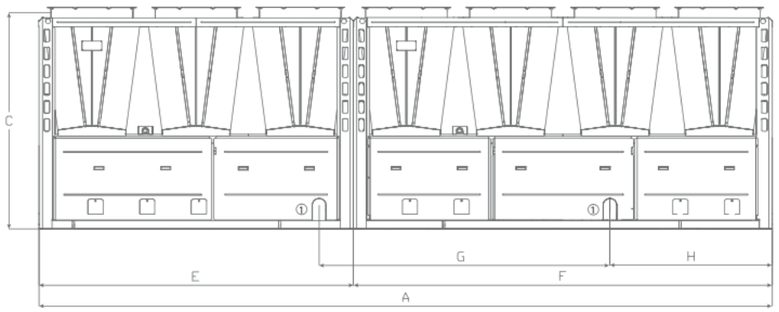
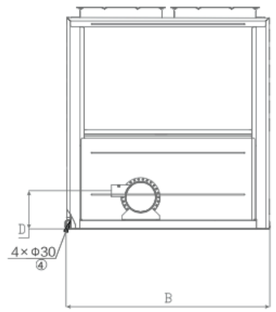
Dimensions and base diagrams

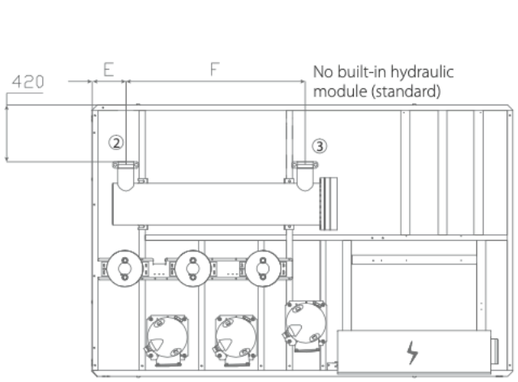
Dimensions

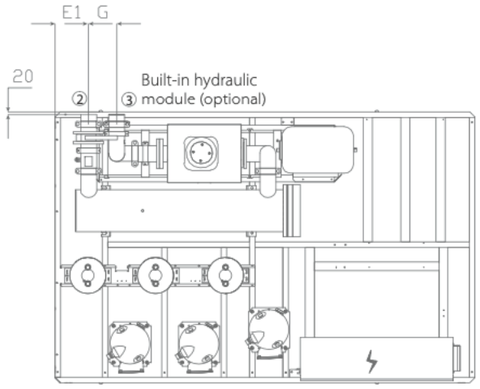






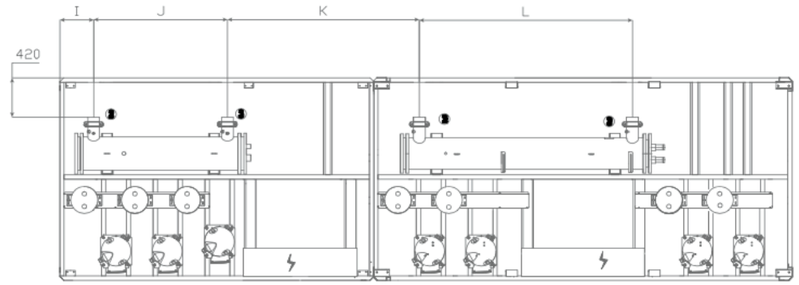






Note: ① Power incoming line ② Chilled water outlet Victaulic connection ③ Chilled water inlet Victaulic connection ④ Lifting point

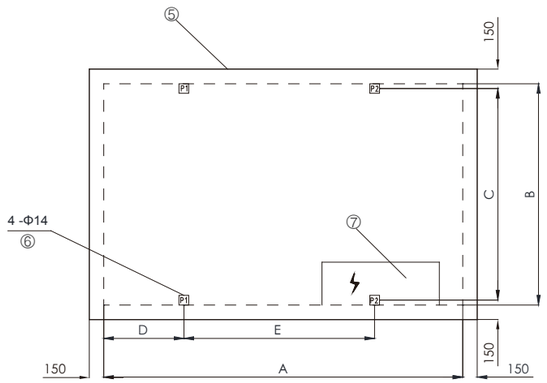
Model	Dimensions (unit: mm)								
	A	B	C	D	E	E1	F	G	H
AR100A-CC1FHG	3530	2300	2500	430	280	280	1500	235	385
AR130A-CC1FHG	4700	2300	2500	430	1080	420	1730	925	1820



Note: ① Power incoming line ② Chilled water outlet Victaulic connection ③ Chilled water inlet Victaulic connection ④ Lifting point

Model	Dimensions (unit: mm)											
	A	B	C	D	E	F	G	H	I	J	K	L
AR200A-CC1FHG	7060	2300	2500	430	3530	3530	3530	385	280	1500	2030	1500
AR230A-CC1FHG	8230	2300	2500	430	3530	4700	3265	1820	280	1500	2830	1730
AR260A-CC1FHG	9400	2300	2500	430	4700	4700	4700	1820	1080	1730	2970	1730

Base diagrams

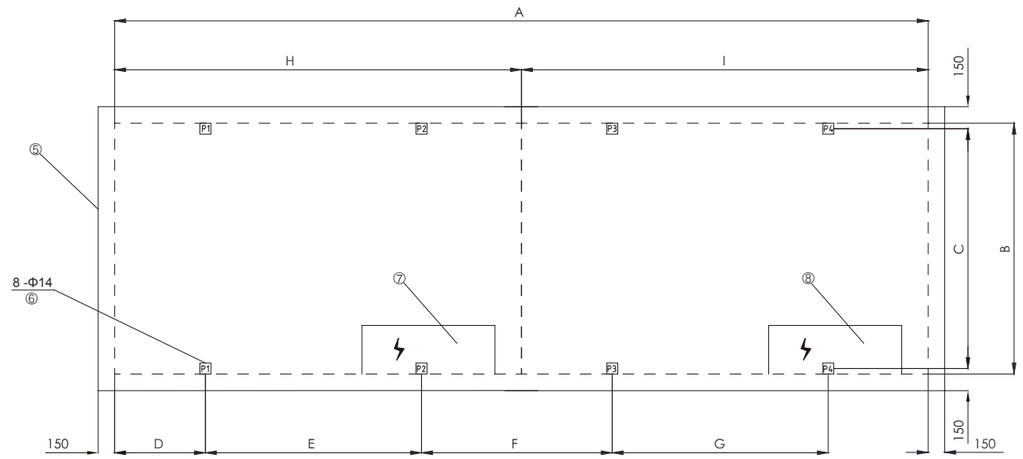


⑤ Installation foundation
⑥ Spring isolator installation hole
⑦ Electric control box

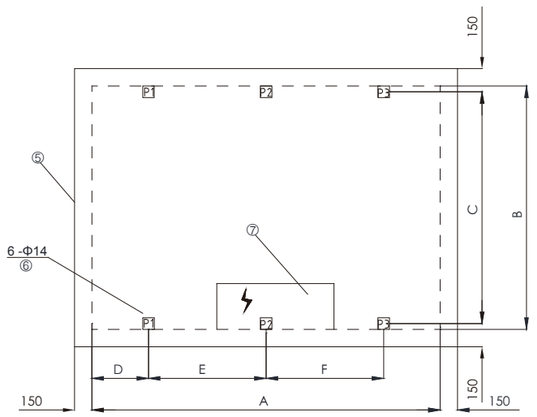
Model	Dimensions (unit: mm)				
	A	B	C	D	E
AR100A-CC1FHG	3530	2300	2220	644	2200

Model	Spring isolator at all points	
	P1	P2
AR100A-CC1FHG	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 1,050kg.



⑤ Installation foundation
⑥ Spring isolator installation hole
⑦ Main electric control box
⑧ Auxiliary electric control box



⑤ Installation foundation
⑥ Spring isolator installation hole
⑦ Electric control box

Model	Dimensions (unit: mm)					
	A	B	C	D	E	F
AR130A-CC1FHG	4700	2300	2220	844	1412	1600

Model	Spring isolator at all points		
	P1	P2	P3
AR130A-CC1FHG	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, "850" in "MHD-850" indicates 850kg.

Model	Dimensions (unit: mm)								
	A	B	C	D	E	F	G	H	I
AR200A-CC1FHG	7060	2300	2220	644	2200	1330	2200	3530	3530

Model	Spring isolator at all points			
	P1	P2	P3	P4
AR200A-CC1FHG	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 1,050kg.

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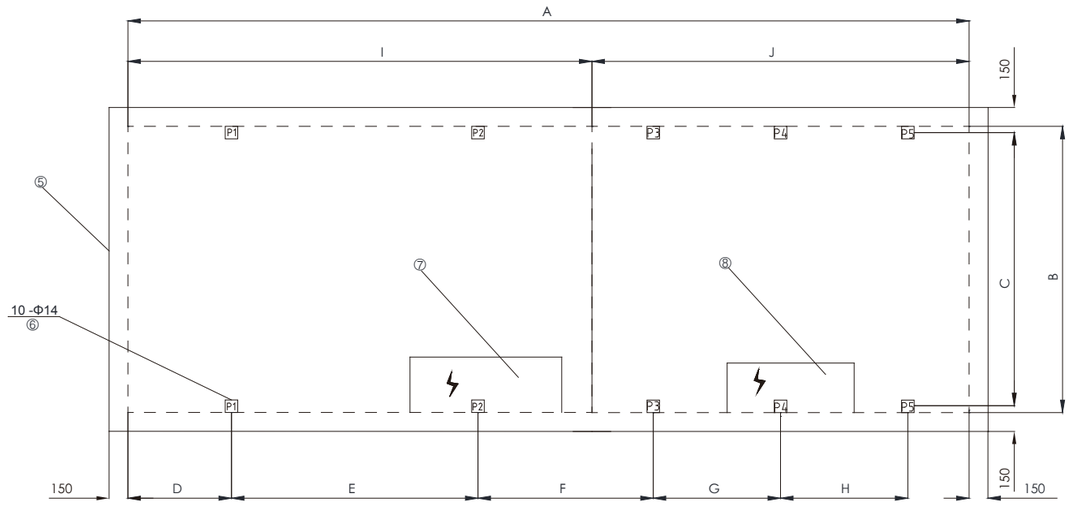
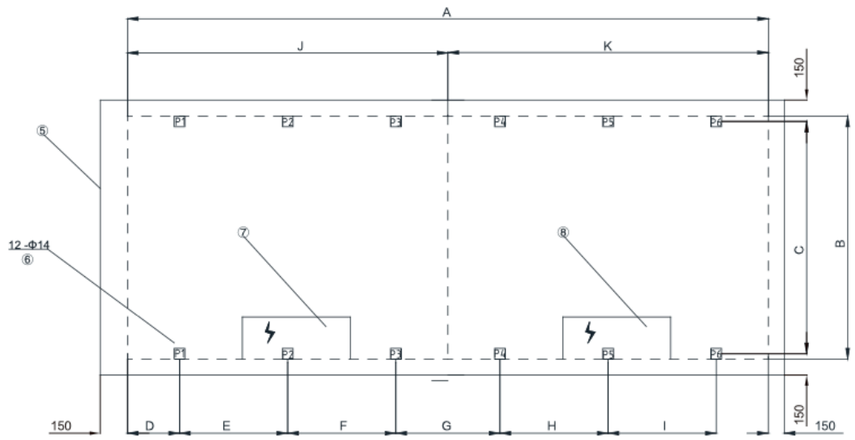


⑤ Installation foundation
⑥ Spring isolator installation hole
⑦ Main electric control box
⑧ Auxiliary electric control box

Model	Dimensions (unit: mm)									
	A	B	C	D	E	F	G	H	I	J
AR230A-CC1FHG	8230	2300	2220	644	2200	1530	1412	1600	3530	4700

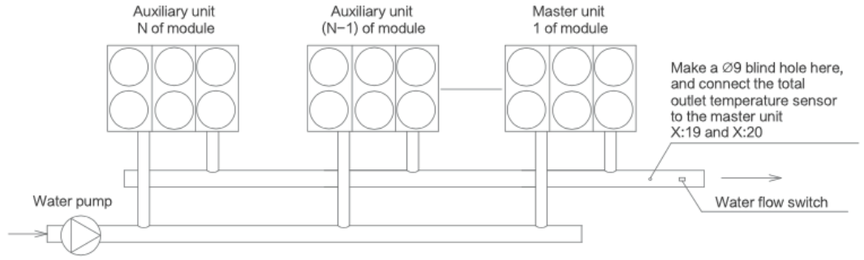
Model	Spring isolator at all points				
	P1	P2	P3	P4	P5
AR230A-CC1FHG	MHD-1050	MHD-1050	MHD-850	MHD-850	MHD-850

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 1,050kg.



⑤ Installation foundation
⑥ Spring isolator installation hole
⑦ Electric control box
⑧ Electric control box

When several modular units are combined for use, the total water outlet temperature sensor must be added to the general water outlet pipe. The specific operations are as follows: (Remarks: The total water temperature sensor is a unit accessory.)



Model	Dimensions (unit: mm)										
	A	B	C	D	E	F	G	H	I	J	K
AR260A-CC1FHG	9400	2300	2220	844	1412	1600	1688	1412	1600	4700	4700

Model	Spring isolator at all points					
	P1	P2	P3	P4	P5	P6
AR260A-CC1FHG	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, "850" in "MHD-850" indicates 850kg.

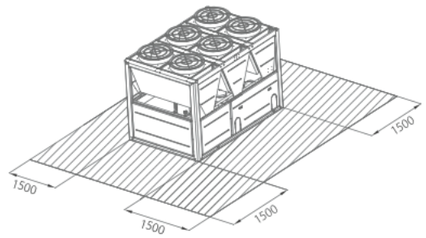
Options

Items	Standard	Optional
Power supply	380V-3Ph-50Hz	50Hz: 400V, 415V (Cooling only and Heat pump)
Water side pressure	1.0MPa	1.6MPa, 2.0MPa
Anti-corrosion treatment	×	√
Communication	Modbus-RTU (RS485 port)	BACnet IP, BACnet MS/TP (RJ-45 port)
Water pipe connection	Victaulic	Flange
Spring isolator	×	√
Water flow switch	×	√
Insulation	20mm	40mm
Noise reduction box for compressor	×	√
Built-in hydraulic module	×	√
Heat recovery	×	Hot water inlet/outlet temperature 40/55°C
Low ambient temperature cooling	×	-20°C
Low water outlet temperature (cooling)	×	-6°C(with ethylene glycol or propylene glycol)
High water outlet temperature (cooling)	×	15~20°C
Remote control panel	×	√
Tasaki Chiller Plant Control	×	√
Tasaki Smart Cloud platform	×	√
QuickView	×	√
Wired controller	×	√

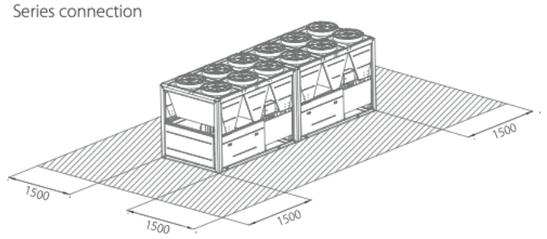
Note: For other options, please contact with our engineers.

Installation and Maintenance

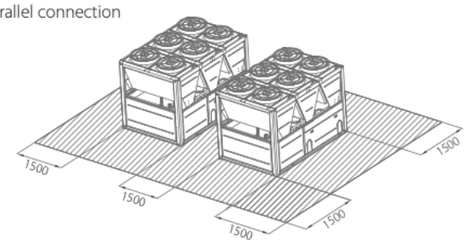
Single installation



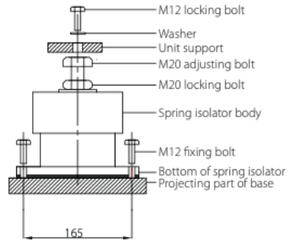
Series connection



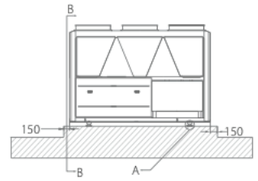
Parallel connection

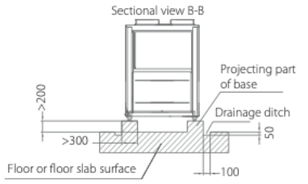


Layout A



Note: The distance is 165 mm when the optional spring isolator provided by Tasaki is used.

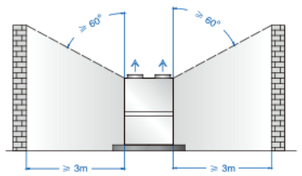




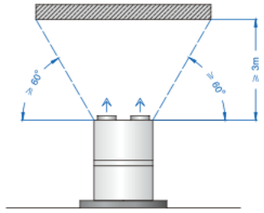
Notes:1. The unit should be installed on the base due to vibration, and the base should be strong enough to bear the operating weight of the unit.
2. When the concrete base is constructed, it is necessary to build drainage ditches around the base to facilitate drainage.
3. When the unit is installed, a spring isolator is required. See the unit base diagram for the size and location of the spring isolator.
4. The standard products do not come with ground bolts. Custom-ers may buy and install bolts according to the situation on site. The ground bolts can be installed in the reserved holes, or expansion bolts can be used.

Special installation spaces

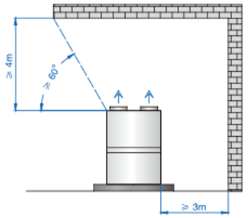
- The unit should be installed at a well-ventilated outdoor location. If it is installed close to a wall, the minimum installation distances are shown below:



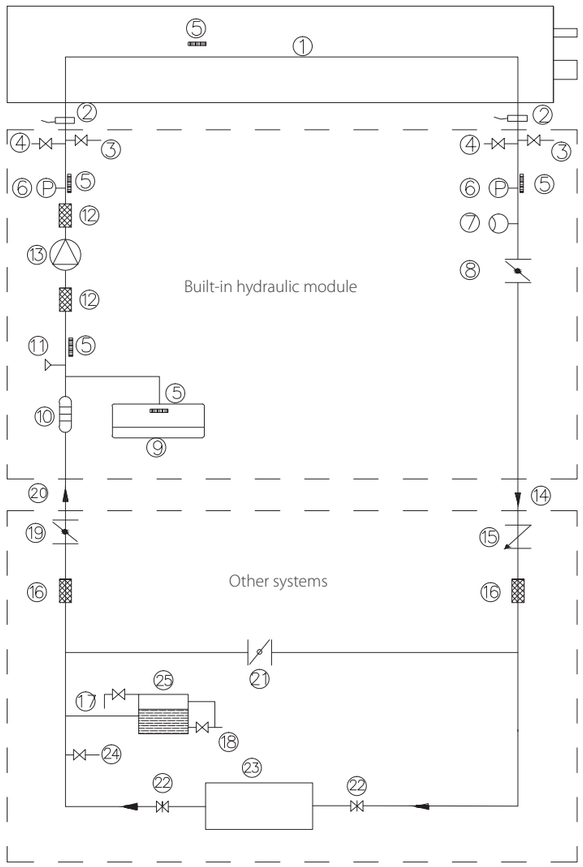
- If there are facilities such as a canopy above the unit, the distances from the facilities to the unit top must meet the requirements of the following diagram (without enclosing wall around the unit).



- When the unit needs to be installed under the eaves, the distances must meet the requirements of the following diagram:



Built-in hydraulic module



Built-in hydraulic module
Component

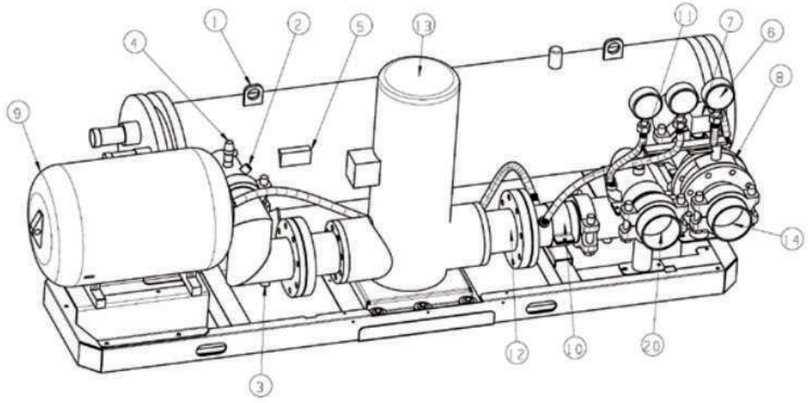
1. Shell-and-tube heat exchanger
2. Water temperature sensor
3. Drain valve
4. Air discharge valve
5. Antifreeze electric heater
6. Water pressure gauge
7. Electronic flow switch
8. Butterfly valve
9. Expansion tank
10. Filter (Victaulic fixing)
11. Safety valve
12. Rubber soft joint
13. Water pump

Flow direction

14. Water outlet of hydraulic module
20. Water inlet of hydraulic module

Other system components
(Installed by customer)

15. Check valve
16. Rubber soft joint
17. Water replenishing valve
18. Drain valve
19. Butterfly valve
21. Bypass valve
22. Stop valve
23. Air conditioning terminal
24. Air discharge valve
25. Expansion tank



Effective external pump lift