Johnson Controls

HITACHI
Air conditioning solutions

air

Johnson Controls - Hitachi Air Conditioning

ADDRESS
New Pier Takeshiba South Tower
1-16-1, Kaigan Minato-ku, Tokyo 105-0022, JAPAN
Tel: +81-3-6721-5567
www.jci-hitachi.com

HITACHI. CERTIFIED QUALITY

Find the products Hitachi Cooling & Heating with the best service and conditions at your Hitachi Distributor.

WZY-C-1902

HITACHI

Water-cooled Screw Chiller

WZY SERIES

Cooling & Heating

Keep up with progress Incorporate proprietary cutting-edge technology

In 1972 we manufactured
the first semi-hermetic twin-screw
compressor in refrigeration areas.

In addition to high efficiency,
optimized refrigeration cycle,
greater accuracy and higher stability
our new water-cooled chillers adopt
G-type semi-hermetic twin-screw
compressors with the auxiliary
functions such as heat pumps,
cooling, total heat reclaiming and etc.

The water-cooled chiller is
designed to cover a broad
range of applications from
air conditioning of buildings
to cooling of factories such
as airports, hospitals,
schools and etc.

Until now Hitachi has been
selling hundreds of thousands
of units to the clients.

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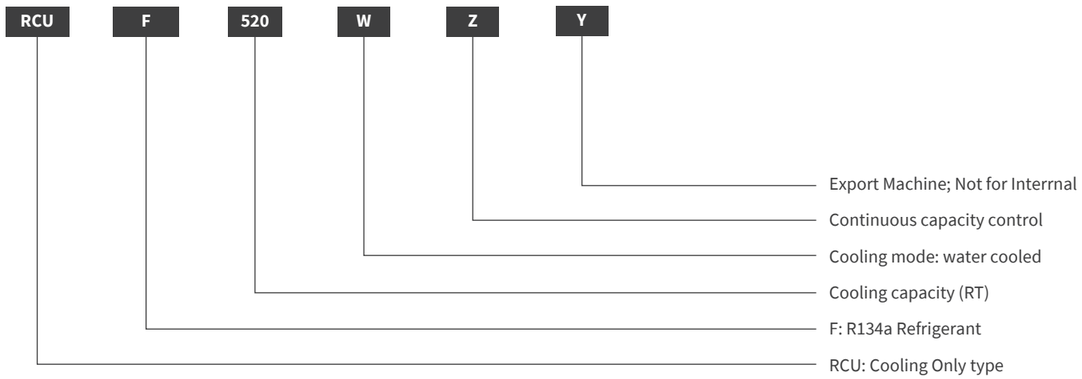
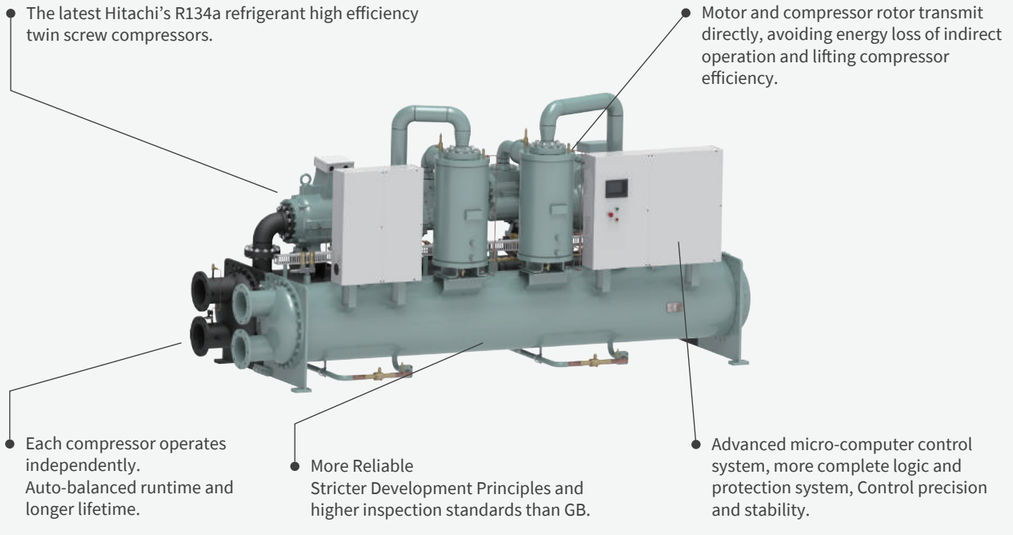
PRODUCT DESCRIPTION

MODEL CODE



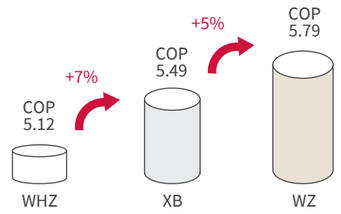
UNIT STRUCTURE

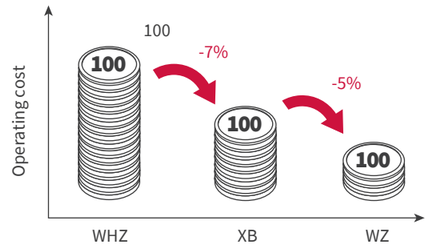


PRODUCT FEATURES

HIGH EFFICIENCY AND ECO-FRIENDLY

1. Adopt R134a environmental refrigerant without any destruction to ozone layer.
2. High efficiency units reduce electric energy consumption so as to lower the CO^2 discharge and greenhouse effect.
3. The whole series comply with RoHS directive.

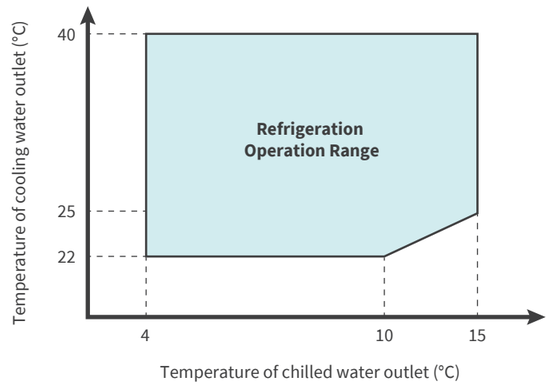




TECH INNOVATION AND CUTTING-EDGE DESIGN

1. Adopt the latest R134a high efficiency twin-screw compressor with great capability and higher stability.
2. Equip refrigerant distributors for both inlet and outlet of evaporator improving refrigerant distributions and heat exchanger efficiency. The sub cooler is installed in the condenser, which could increase condensate depression and cycle efficiency.
3. Flooded units equip with efficient oil + scavenge pump + oil level optoelectronic switch, which is simple, reliable and without operating risk of that the compressor is lack of oil.
   Flooded units equip with Application of Differential Pressure Flow Switches with effective anti-freezing capability.

WZY SERIES OPERATION RANGE

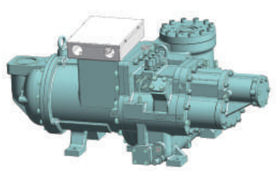


Note: It's the standard unit operation range above. Contact with Hitachi if the need is beyond the range.

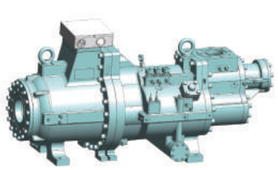
UNIT DESCRIPTION

In 1972 we manufactured the first semi-hermetic twin-screw compressor in refrigeration areas. Until now we have delivered more than 200000 Hitachi twin-screw compressors to countries around the world. WZ Series adopt the latest Hitachi G-type compressors, which provides greater service to clients.

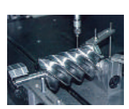
INDEPENDENTLY DEVELOPED HITACHI R134A REFRIGERANT G-TYPE SEMI-HERMETIC TWIN-SCREW COMPRESSOR



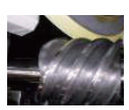
100 - 125RT Unit use



155 - 520RT Unit use



Accurate measurement. Advanced 3D positioning measurement technology.



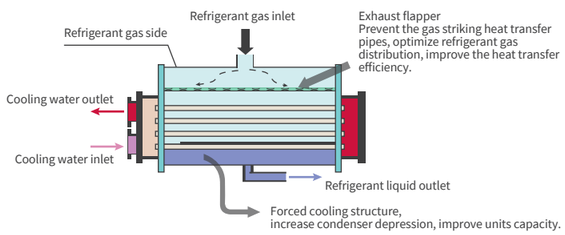
Precision machining. High precision grinding.

1. Independently developed new rotors decrease internal leakage of refrigerant during the compression process as possible.
2. The rotors are manufactured by the most advanced abrasive process equipment and 3d measurement technique with high precision, the best operating clearance, the least friction, high plot ratio under the film seal, which could operate efficiently and reduce the vibration and noises.
3. Capacity Control: Stepless Adjustment 100%~25%.
4. Double-Casing Design, reducing the operating noises.
5. Capacity Adjusting Valve automatically resets to the minimum load decreasing starting current.
6. Internal motor, without couplings, prevents discharge of refrigerant, using refrigerant cooling motor to lower fault rate and prolong the service life.
7. Installed thermostats, protecting the motor and lube.
8. Pressure differential oil supply (no oil pump), with the least components, ensuring operating reliability, easy to maintain.
9. Internal exhaust non-return valve, effectively preventing reversion of rotors caused by compressed air back surging when stopping.
10. Internal Suction Filter, filtering large grained impurity, protecting screw surface from damages.

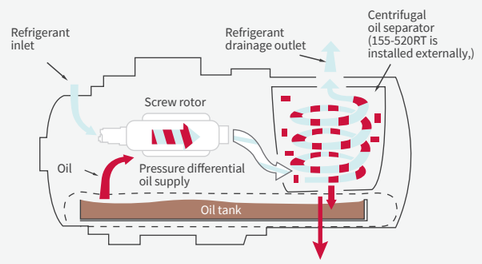
Compressor equipped with oil heater, oil sight glass, oil, repair hole and exhaust valve, convenient for maintaining.

CONDENSER

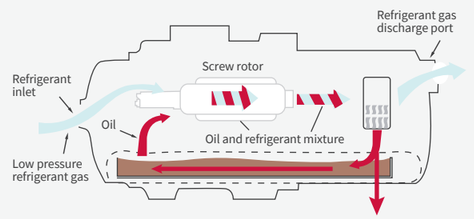
1. Perfect forced cooling design, enlarge cooling capacity, improve refrigerating efficiency.
2. High efficiency warping tube, enlarge heat exchange area, enhance refrigerant disturbed flow of tube, improving heat exchange rate.



CYCLONE OIL SEPARATOR



Hitachi New Model: Cyclone oil separator

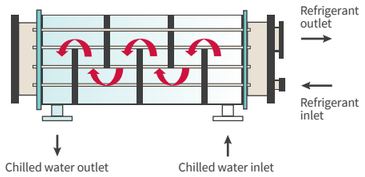


Traditional model: Filter type oil separator

The adoption of centrifugal oil separator is one of the major features of the Hitachi unit. Compared with the traditional filter type oil separator, there is no resistance produced by the oil filter net, and the energy consumption of the compressor is reduced.The oil separation efficiency is greatly improved, the oil entering the heat exchanger is greatly reduced, the COP of the unit is greatly improved, and the lubrication of the compressor is effectively ensured.

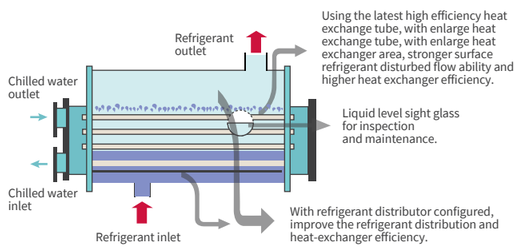
100-125RT EVAPORATOR

1. Dry Type evaporator, with low quantity of refrigerant sealed, has a good performance of oil return, dispensing with external oil pump or oil return filter. It has no easy damaged parts and has low costs of maintenance.
2. The outlet and inlet of the refrigerant appear asymmetric in distribution. By utilizing the refrigerant, it increases efficiency of heat transfer.
3. The inlet of the refrigerant, designed to mesh distributor, implement the most reasonable distribution of the refrigerant.
4. Multi-condensing units circulate independently, which makes good performance on standby application.



155-520RT EVAPORATOR

1. Flooded-evaporator, with the latest researched heat transfer tube, increases the refrigerant's capability of distributing, and improves the efficiency of heat transfer.
2. The outlet and inlet of the refrigerant appear asymmetric in distribution. By utilizing the refrigerant, it increases efficiency of heat transfer.
3. The refrigerant distributor in the evaporator implement the most reasonable distribution of the refrigerant.



UNIT DESCRIPTION

REFRIGERANT CIRCUIT

Each compressor can operate independently, with good standby application, including exhaust check valve, safety valve, pipe ball valve, filter, service valve, pressure switch, pressure sensor, thermistor and etc.

ACCORDING WITH RoHS **Ecological Eco-friendly Harmless**

"Management Measures for the Limited use of Harmful Substances in Electrical and Electronic Products" is the official standard in China which is issued in January 2016 and implemented at July 1st 2016, is also called Chinese RoHS.
It's intended to reduce and limit lead, cadmium, hexavalent chromium, mercury and other poisoned substances in electrical productions, which is good for the industry, environment and health.
All the productions of Hitachi comply with this standard.
Since July 1st 2016 the central air conditioning has been labeled with green flag.

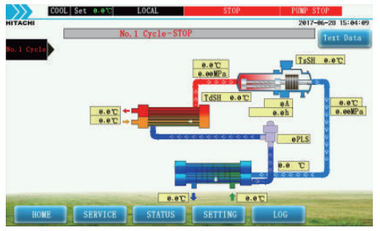
Testing method	RoHS Limit value	Typical test method
Lead	1000ppm	Wet chemical processing or x-ray fluorescence
Cadmium	1000ppm	Wet chemical processing or x-ray fluorescence
Hexavalent Chromium	1000ppm	Wet chemical processing or x-ray fluorescence
Mercury	1000ppm	Wet chemical processing or x-ray fluorescence
PBB/PBDE	1000ppm	GCMS, FTTR or x-ray fluorescence

INTELLIGENT CONTROL

ADVANCED MICROCOMPUTER CONTROL SYSTEM

Clear User-friendly LCD touch Console
1. 7-inch LCD touch console, visual, simple, intuitive.
2. The display makes it easy to view the current operating status and simplify the setting procedure.
Various parameters can be confirmed at a glance. Regardless of operating status, the console allows you to set a variety of operation modes.
3. A warning log function makes it possible to recall the latest 10 recent warning events.
4. The user interface is provided in both English and Chinese, suitable for domestic and international market demand.

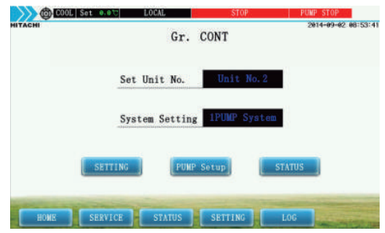
Display **"SYSTEM INITIALIZATION"**
When the sentence disappears,
click the screen and enter the main page.



Click the Compressor, Evaporator, Condenser respectively , check more specific paraments of each.

Paraments Settings:
Set water temperature, capacity control data , compressor delay time, etc.
Optional settings:
Choose functions you need
Clock Settings:
Set the current date
System Settings:
Set the data of the screen, contrast ratio, brightness, etc.
Protocol settings:
only for the units equipped with MODBUS RTU/BACnet protocol.

Main page:
The first page after the initial screen
Common Info:
Chilled Water inlet/outlet Temperature, Hot water inlet/outlet temperature, temperature setting and etc.
Click the screen, enter the status page.
(Example: 100-125RT)



One unit connects with at most another 8 units through H-LINK.

Function:
Automatically adjust the operating time according to the quantity of units, extending usage lifetime of the units.

INTELLIGENT CONTROL

ACCURATE UNIT CONTROL

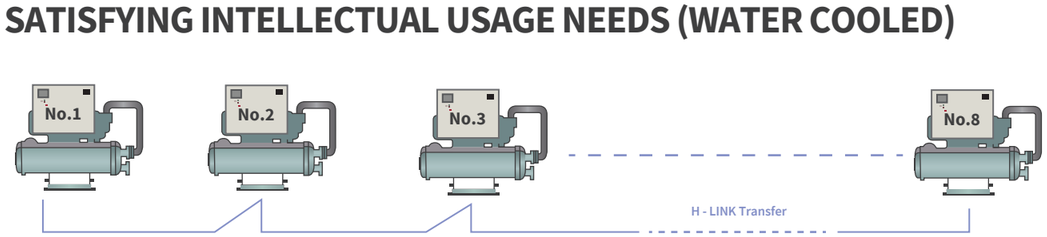
CONTINUOUS CAPACITY CONTROL
The combination of Microcomputer Control System and Continuous Compressor Technology makes continuous capacity control and temperature adjustment more stable, partial load regulation more accurate.

BALANCED COMPRESSOR OPERATION
Multiple compressors automatically balance operating time by each of themselves.

EXTENSIVE FUNCTIOINS
Support linkage between the main machine and water pumps. Ensure operating safety.

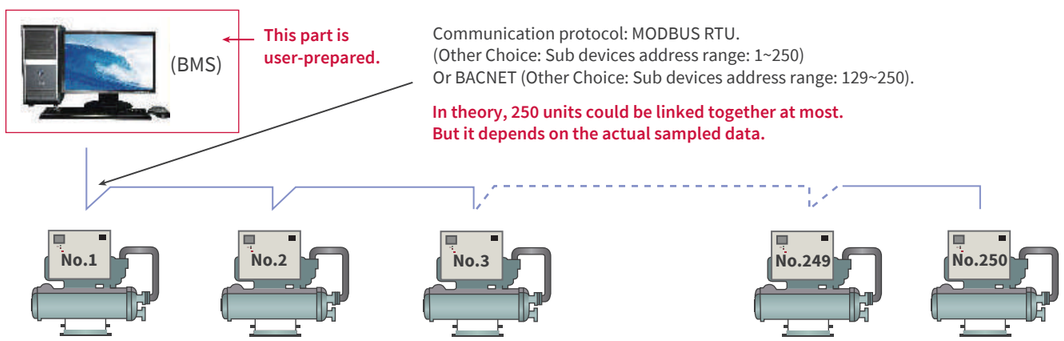
TEMPERATURE CONTROL
Available to choose the inlet or outlet water temperature. Set point of control accuracy: ±0.5°C Satisfied various needs.

CENTRALIZED-CONTROL SYSTEM SATISFYING INTELLECTUAL USAGE NEEDS (WATER COOLED)



One unit connects with another 8 units through H-LINK at most.

MODBUS-RTU IS ALTERNATIVE, WHICH CAN CONNECT WITH THE BUILD MANAGEMENT SYSTEM.



COMPLETE PROTECTIONS

SAFETY VALVE
If the pressure of condenser is too high, and all the other protectors are out of work, the safety valve will start to protect the units from being damaged.

OVER-HIGH EXHAUST TEMPERATURE PROTECTION
If the temperature of the exhausting is too high, the liquid-side refrigerant will start to protect the compressor.

COMPRESSOR MOTOR TEMPERATURE PROTECTION
The thermostat is installed into compressor motor and could shut the motor down when its temperature is higher than normal.

AVOIDING FREQUENTLY STARTING AND STOPPING OF COMPRESSORS
The thermostat delays the compressor starting time, avoiding starting frequently so as to protect the compressor.

HIGH - PRESSURE PROTECTION & LOW - PRESSURE PROTECTION
The protector turns on to make the compressor stop when the discharge pressure exceeds the set point or suction pressure is lower than set point.

REVERSING PROTECTING DEVICE
The device inducts the phases of power supply, which protects compressors from reversing operation caused by wrong phase of the power supply.

THREE-SECTION OVER-CURRENT PROTECTION
When the current of the compressor is higher than its set value, the overcurrent relay will turn off the circuit and the compressor will stop the service.

DIFFERENTIAL WATER PRESSURE SWITCH PROTECTION (THE FLOODED TYPE ONLY)
When the chilled water flow is too low or even cutoff, the water pressure differential will start to work and the unit will stop working. It will protect the evaporator from being frozen.

OIL HEATER
Ensure the great lubricating performance. Prevent the oil foaming induced by Starting.

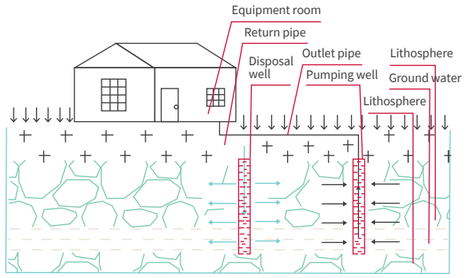
PROTECTION FOR OPTOELECTRICAL OIL LEVEL SWITCH (THE FLOODED TYPE ONLY)
Stop and alarm when the compressor operates beyond 1min with oil shortage, which avoids risks caused by oil shortage.

ANTI-FREEZING PROTECTION
The anti-freezing protector turns on when the compressor temperature is lower than the set point, which avoids crystallization of refrigerating fluid in evaporator.

UNIT DESCRIPTION

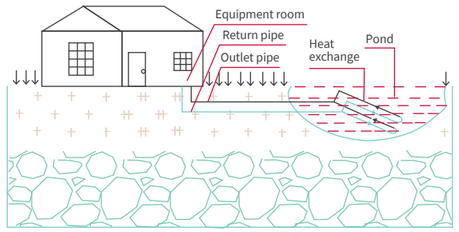
WATER CHILLING/HEAT PUMP - GROUND WATER CONDITION

Groundwater Heat Pumps, GWHPs: Using groups of pumping wells to draw ground water. Using the secondary heat transfer or directly sending water to chilling/heat pump. After extracting or releasing heat, the water will be sent back.



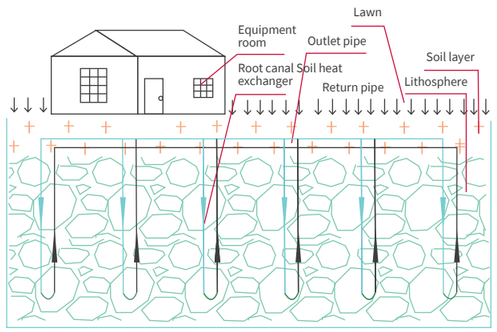
WATER CHILLING/HEAT PUMP - SURFACE WATER CONDITION

Using direct or indirect heat exchange to take water from seas, rivers, lakes or reservoir as cold and heat sources.
In order to avoid erosion or blocking, indirect heat exchange is recommended. And a heat exchange shall be used.

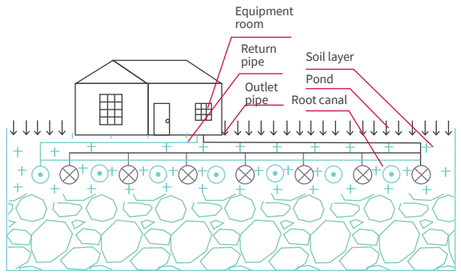


WATER CHILLING/HEAT PUMP - GROUND SOURCE CONDITION

A closed system uses participating media as a carrier to circulate. Participating media can be buried into ground and circulate in a closed system to realize heat exchange with ground.



Vertical ground-coupled heat pump



Horizontal ground-coupled heat pump

SPECIFICATIONS

WZY SERIES

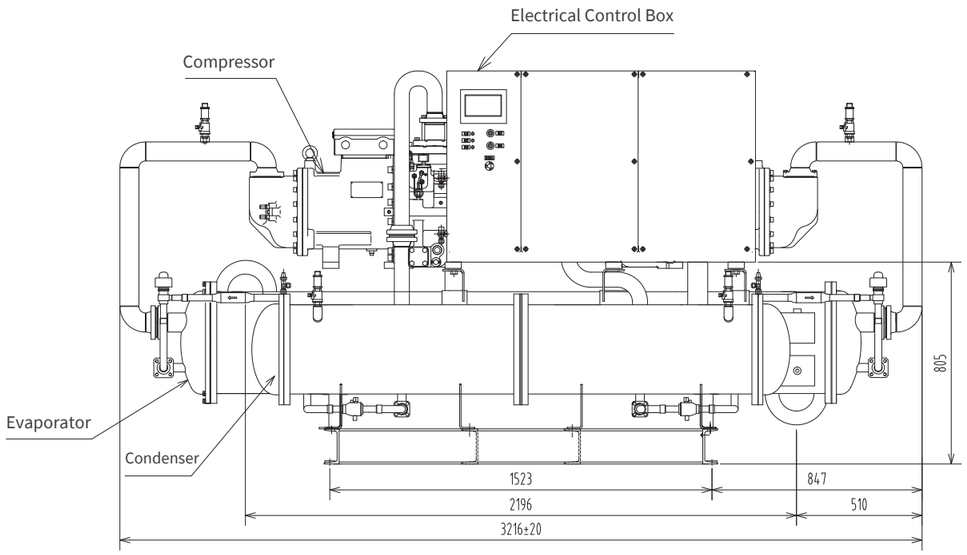
Model			100RT RCUF 100WZY	125RT RCUF 125WZY	155RT RCUF 155WZY	210RT RCUF 210WZY	260RT RCUF 260WZY	310RT RCUF 310WZY	365RT RCUF 365WZY	420RT RCUF 420WZY	470RT RCUF 470WZY	520RT RCUF 520WZY
Nominal Cooling Capacity		kW	358	443	549	732	915	1,098	1,281	1,464	1,647	1,830
		RT	102	126	156	208	260	312	364	416	468	520
Compressor	Quantity	A	2	2	1	1	1	2	2	2	2	2
	Starting current	A	211/211	211/211	392	509	599	392/392	509/392	509/509	599/509	599/599
	Rated current	A	125	155	176	234	293	351	395	452	509	565
	Total power	kW	70.2	86.9	98.2	130.9	163.7	196.4	221.2	252.8	284.5	316.1
Maximum current		A	188	233	263	351	439	527	593	678	763	848
Condenser	Chilled water flow	m^3/h	77.0	95.2	118.0	157.4	196.7	236.1	275.4	314.8	354.1	393.5
	Water-side pressure drops	kPa	32	39	78	80	82	78	80	82	84	86
Evaporator	Chilled water flow	m^3/h	61.6	76.2	94.4	125.9	157.4	188.9	220.3	251.8	283.3	314.8
	Water-side pressure drops	kPa	65	70	30	32	34	59	61	63	65	67
Unit capacity range		%	0,25-100	0,25-100	0,25-100	0,25-100	0,25-100	0,25-100	0,25-100	0,25-100	0,25-100	0,25-100
Refrigerant	Type	-	R134a									
	Quantity of circuit	-	2	2	1	1	1	1	1	1	1	1
Dimensional data	Length	mm	3,216	3,216	3,280	3,280	3,280	4,693	4,693	4,693	4,693	4,693
	Width	mm	1,097	1,097	1,700	1,700	1,700	1,766	1,766	1,766	1,766	1,766
	Height	mm	1,568	1,568	2,258	2,258	2,258	2,318	2,318	2,318	2,318	2,318
Dry weight		kg	2,100	2,200	3,774	4,180	4,340	6,530	6,845	7,160	7,425	7,690

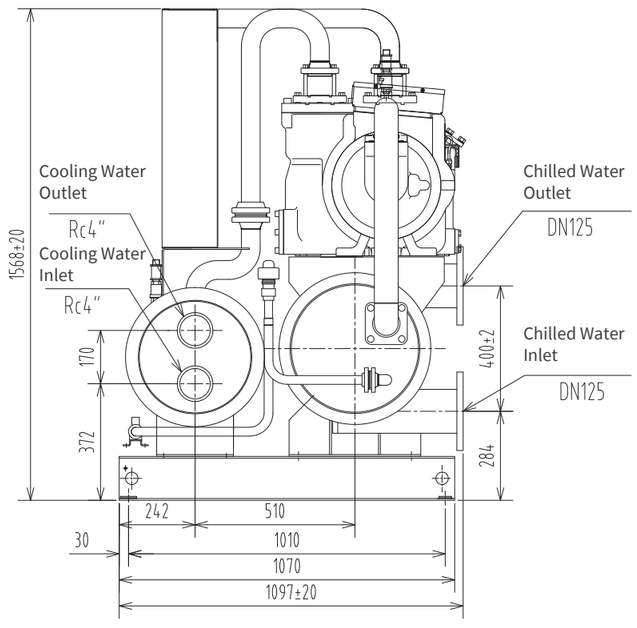
Notes:
1. The nominal cooling capacities are based on the GB/T18430.1
Evaporator Water outlet temperature/water flow rate: 7°C.0.172m^3/(h.kW)
Condenser Water inlet temperature/water flow rate:30°C/0,215m^3/(h.KW)
The fouling factor of evaporator is 0.018m^2.°C/kW,
the fouling factor of condenser is 0.044m^2.°C/kW.

2. Power Source:
Main Power Source (AC3Φ) 380V, 50Hz.
Control Power Supplies (AC1Φ) 220V, 50Hz.

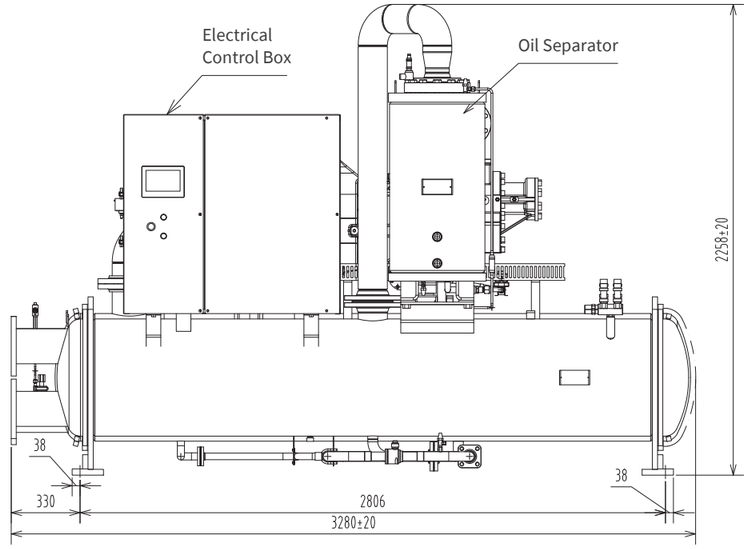
DIMENSIONS

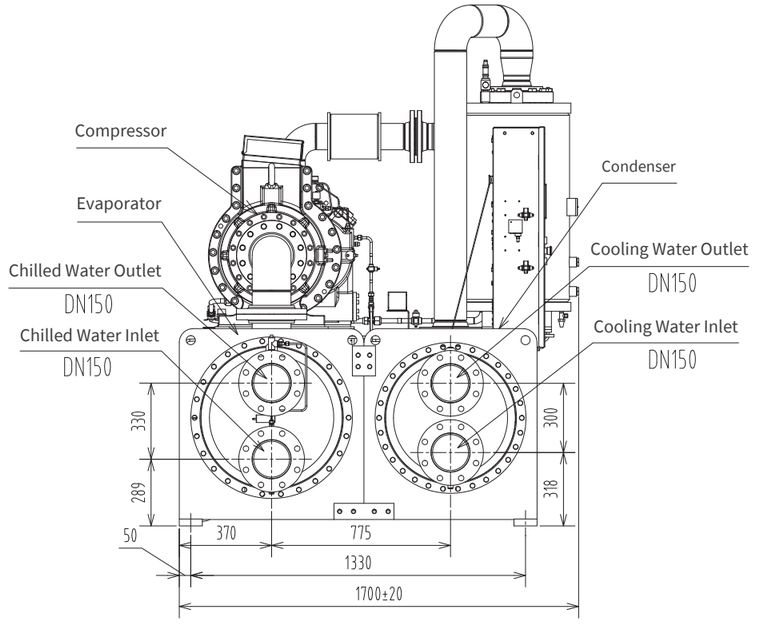
RCUF100/125WZY DIMENSIONAL DATA





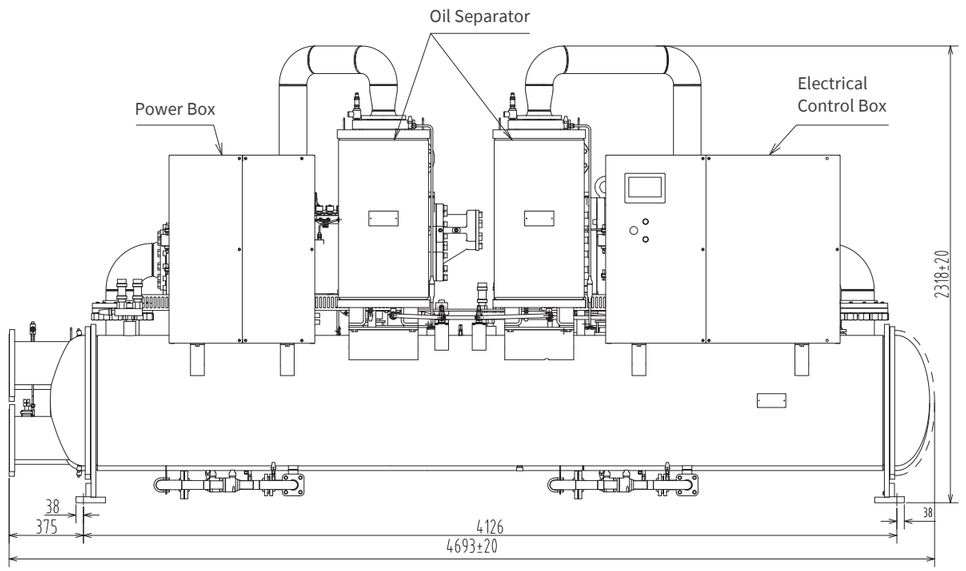
RCUF155/210/260WZY DIMENSIONAL DATA

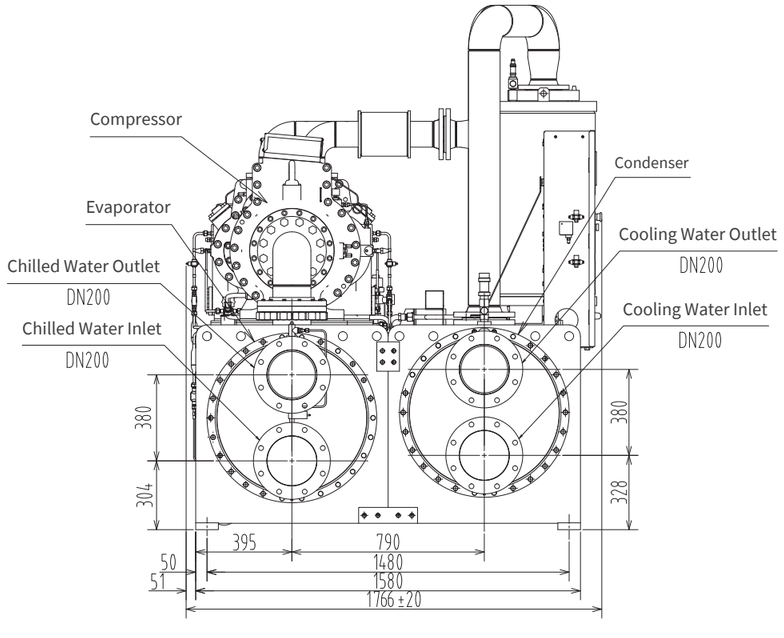




DIMENSIONS

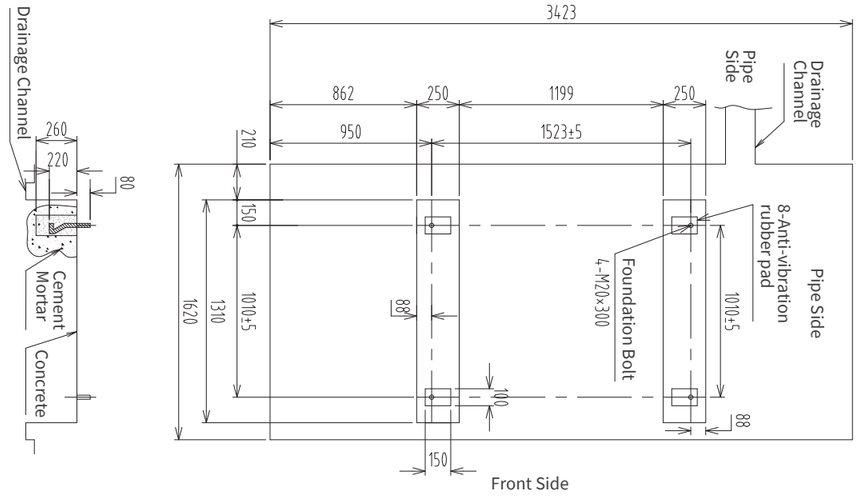
RCUF310/365/420/470/520WZY DIMENSIONAL DATA



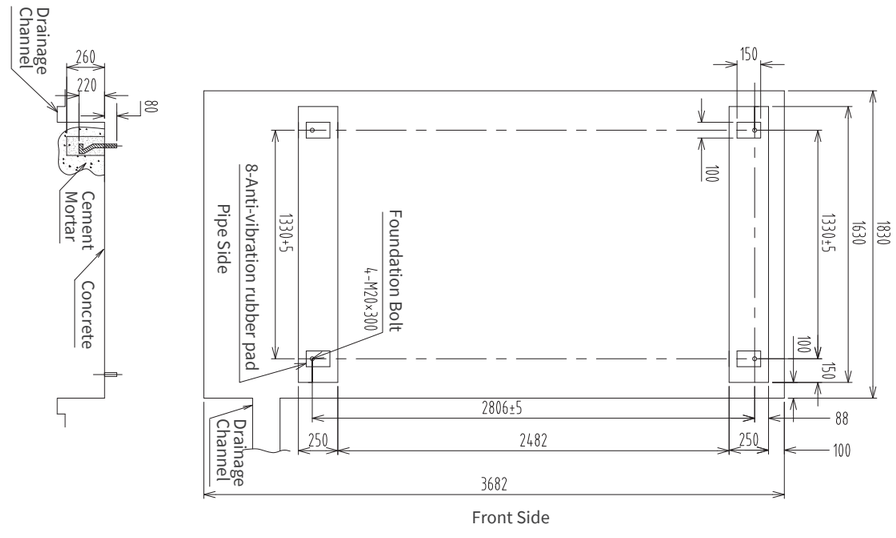


FOUNDATION

RCUF100/125WZY UNIT FOUNDATION FIGURE

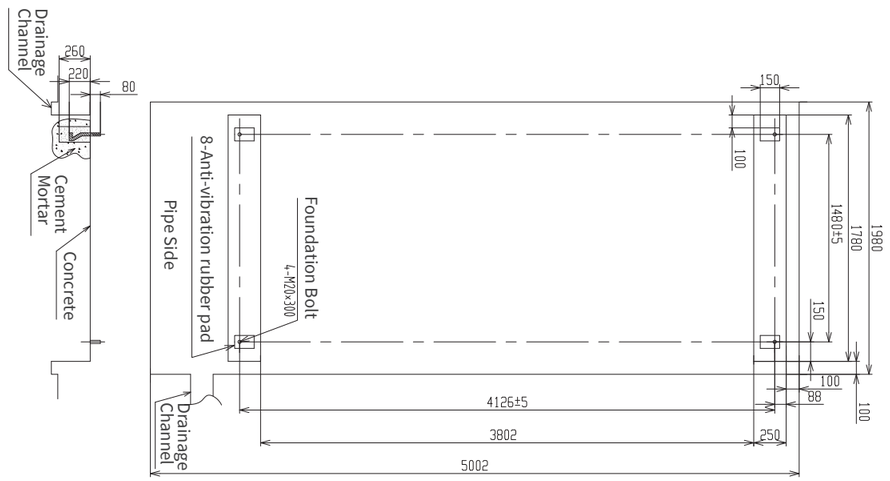


RCUF155/210/260WZY UNIT FOUNDATION FIGURE



FOUNDATION

RCUF310/365/420/470/520WZY UNIT FOUNDATION FIGURE



Front Side

SLING ATTENTIONS

1. Check and Guarantee if the unit is fixed with lifting hock.
   The sling angle should be at least 60 degrees.
2. Don’t stand under the unit while slinging
3. Add fabrics between the unit and lifting hock, avoiding damages.

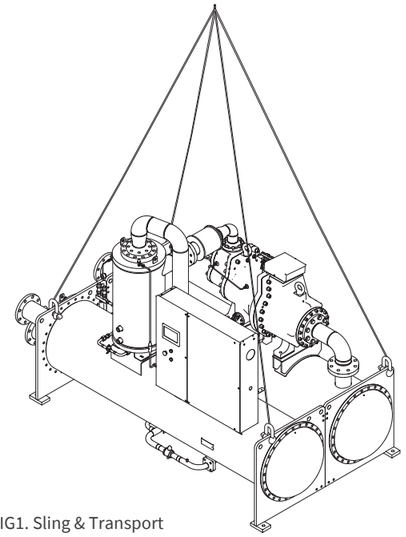
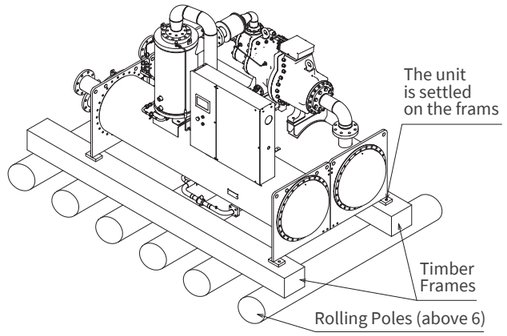


FIG1. Sling & Transport

PREPARATORY WORK

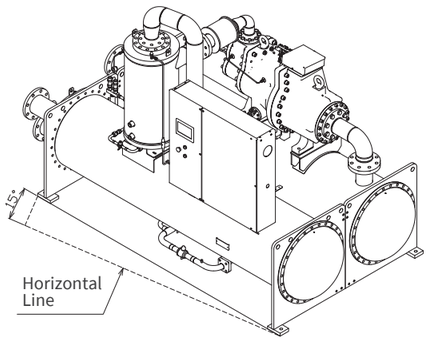
ROLLING TRANSPORT

Put multiple rolling poles in the same size under the units, and every pole needs to support the two timber frames and keep balance.



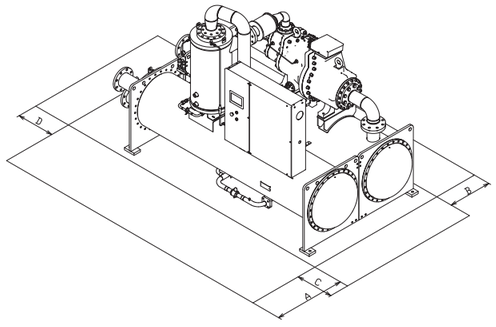
ANGLE OF INCLINATION

The angle cannot be greater than 15 degrees.
If ＞15 degrees, the unit may fall down.



ANGLE OF INCLINATION

Direction	Recommended operating space
A	≥ 1200
B	≥ 600
C	≥ 600
D	≥ 600



Notes:
1. Inquiry the unit Installation and maintenance space according to the list above.
2. Leave enough space for the unit Installation and maintenance.
3. As shown, the display screen is in front of the electrical control box.
4. The graphics above are based on standard configuration unit.
   Contact local sales offices if you have special needs.