

# HITACHI AIR-COOLED WATER CHILLERS – SCREW TYPE –

## HITACHI

### Nominal Capacity Range

**R407C:** 181kW to 1,089kW  
156,000kcal/h to 936,100kcal/h  
52 RT to 310 RT

**R22:** 191kW to 1,146kW  
164,230kcal/h to 985,400kcal/h  
54RT to 336 RT

### Technical Catalog I Design Information

Model:	R22	R407C
	RCU75AHYZ1	RCUG75AHYZ1
	RCU100AHYZ1	RCUG100AHYZ1
	RCU120AHYZ1	RCUG120AHYZ1
	RCU150AHYZ1	RCUG150AHYZ1
	RCU180AHYZ1	RCUG180AHYZ1
	RCU200AHYZ1	RCUG200AHYZ1
	RCU240AHYZ1	RCUG240AHYZ1
	RCU270AHYZ1	RCUG270AHYZ1
	RCU300AHYZ1	RCUG300AHYZ1
	RCU330AHYZ1	RCUG330AHYZ1
	RCU350AHYZ1	RCUG350AHYZ1
	RCU360AHYZ1	RCUG360AHYZ1
	RCU380AHYZ1	RCUG380AHYZ1
	RCU400AHYZ1	RCUG400AHYZ1



**New Series!** HITACHI H Series air-cooled water chillers which achieve to 400HP, are designed for all the conveniences of chilled water air-conditioning systems and modern manufacturing industries, these chillers can operate normally even at 43□ of the outdoor air temperature, that is why the chillers can apply for larger temperature range.

HITACHI air-cooled water chillers are equipped with newly-developed HITACHI A type semi-hermetic screw compressors which features are lower noise and vibration, reliable long period operation and used the higher performance air-cooled condenser that result in compact structure.

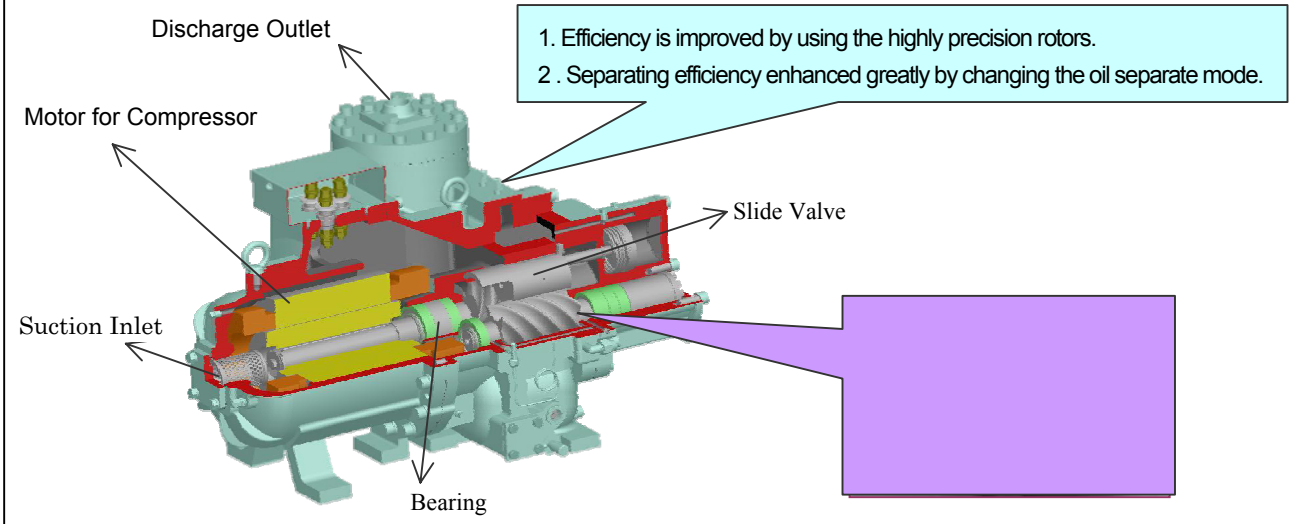
The units are composed of a compressor(s), a air-cooled condenser(s), a shell-tube type evaporator and auxiliary and control equipment, these parts are equipped in the metal cabinet for avoiding the climate influence, the shell plate is used the galvanize steel with oleoresin paint.

# New HITACHI AIR-COOLED WATER CHILLERS... THAT'S THE ACHIEVEMENT OF TOTAL HITACHI TECHNOLOGE...

## • Reliable semi-hermetic screw type compressor

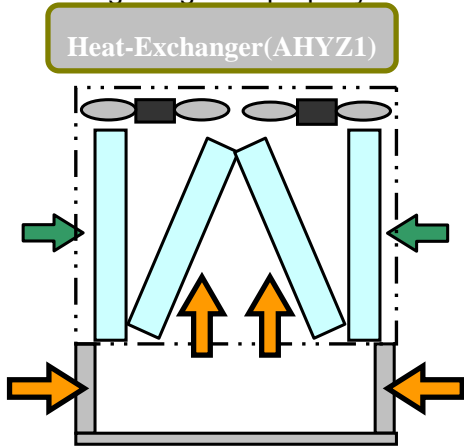
Adopting new screw rotor outline , HITACHI have developed the higher performance screw type compressor to improve the operation reliable and durable.

In this new century, people pay more attention to the change of the environment... HITACHI semi-hermetic screw type compressor ,which use the R407C directly, reduce the refrigerant leak greatly, and have been sold 140,000 in the world !



## •Highly Efficiency Operation

To combine highly performance fins in the air side heat exchanger, efficiently screw type compressor and water side heat exchanger together properly can achieve high efficiency operation.



Air side heat-exchanger used the converse M type distribution that the air velocity distribute equally , highly efficiency heat exchange is achieved, and improve defrost performance.

- 1 . Improve the air heat exchanger configure. 2 . Adopt highly efficiency inner thread tube 3. Improve Air velocity distribution to enhance efficiency and defrost performance

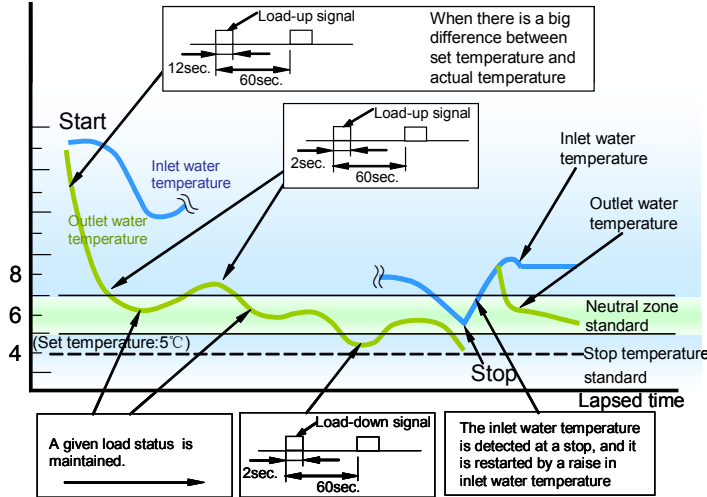
## •Smaller Vibration and Lower Operation Sound

Due to the combination of the HITACHI semi-hermetic screw compressors and smooth-air-flow propeller fans for air side heat exchangers, smaller vibration and lower sound operation has been achieved, Therefore, in most cases, special vibration absorbing curbs are not required by utilizing factory-supplied rubber mats.

## Capacity Control

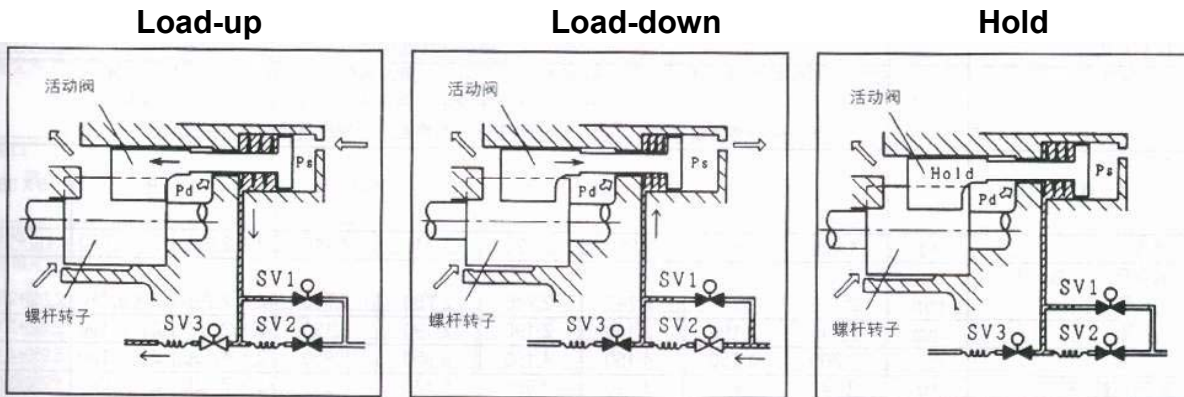
### Continuous Capacity Control

- Chilled water outlet temperature can be controlled precisely within  $\pm 0.5^\circ\text{C}$  of the setting temperature. This control is performed by applying a micro-computer to the continuous capacity control type screw compressor.
- This precise temperature control is not only suitable for air conditioning, but also for industrial use.



### -Principle of Continuous Capacity Control-

Continuous capacity control is performed by adjusting the slide valve position as shown below. The slide position can be changed freely between 100% and 15% in accordance with cooling load.



Pd: Discharge Pressure,

Ps: Suction Pressure

S<sub>1,2,3</sub>: Solenoid Valve

### Micro-Processor Control for Various Functions

- Alarm Indication for each cycle by 7-Segment
- Rotating control of compressor starting order
- Current limitation control
- Automatic start after instantaneous power failure

### Complete Standard Accessory

- Water connection companion flange
- Vibration-proof Mat
- Foundation Bolt, Nut, Washer and Bushing
- Spreader bar for rigging
- Noise-proof pan for compressor

### Other Option

The following specifications are available on order basis. Please contact local Hitachi's distributors if required.

- G/W communication adapter or RS485 physics connector.
- High static pressure fan (Outside static pressure:150Pa)
- Remote control box
- Liquid crystal touch panel with big screen
- HITACHI water chillers group control system

**GENERAL DATA**

**General Data (R22 and R407C)**

Model		R22	RCU75AHYZ1	RCU100AHYZ1	RCU120AHYZ1	RCU150AHYZ1	RCU180AHYZ1	RCU200AHYZ1	RCU240AHYZ1	
		R407C	RCUG75AHYZ1	RCUG100AHYZ1	RCUG120AHYZ1	RCUG150AHYZ1	RCUG180AHYZ1	RCUG200AHYZ1	RCUG240AHYZ1	
Nominal Cooling Capacity <sup>*1</sup>	R22	kW	191	286	358	382	537	573	716	
		kcal/h	164,230	245,916	307,825	328,461	461,737	492,691	615,649	
		RT	54.3	81.3	101.8	108.6	152.7	163.0	203.6	
Nominal Cooling Capacity <sup>*1</sup>	R407C	kW	181	272	340	363	510	544	680	
		kcal/h	156,019	233,620	292,433	312,038	438,650	468,057	584,866.7	
		RT	51.6	77.3	96.7	103.2	145.1	154.8	193.4	
Capacity Control		—	Continuous Capacity Control							
		%	100~15, 0	100~15(7.5) <sup>2</sup> ,0			100~15(5) <sup>2</sup> , 0		100~15(7.5) <sup>2</sup> , 0	
Outer Dimension	Width	mm	2,390	4,490	4,490	4,490	6,590	6,590	9,080(Minimum)	
	Depth	mm	1,940	1,940	1,940	1,940	1,940	1,940	1,940	
	Height	mm	2,170	2,170	2,170	2,170	2,170	2,170	2,170	
Net Weight		kg	2,057	3,822	4,017	4,103	5,688	5,827	2×4,017	
Refrigerant	Standard	—	R22							
	R407C	—	R407C							
	Flow Control	—	Thermal Expansion Valve							
	Number of Circuit	—	1	2			3		4	
Compressor	Type	—	Semi-Hermetic Screw Type							
	Model	—	60ASCC-Z	50ASCC-Z	60ASCC-Z	60ASCC-Z	60ASCC-Z	60ASCC-Z	60ASCC-Z	
	Quantity	—	1	2			3		4	
Heat-Exchanger	Condenser		Cross Fin Type							
	Fan Motor	Condenser Fan	Direct drive Propeller Fan							
		Power Input	kW	1.1	1.1	1.1	1.1	1.1	1.1	1.1
		Quantity	—	4	8	8	8	12	12	2×8
		Air Discharge	m <sup>3</sup> /min	930	1,860	1,860	1,860	2,790	2,790	3,720
	Evaporator		—	Shell and Tube Type						
Safety Devices		—	Overcurrent Relay for Compressor, Internal Thermostat for Compressor, Reverse Phase Protection Device for Compressor, Thermal Overcurrent Relay for Fan Motor, High Pressure Switch, Low Pressure Control, Suction Gas Temperature Control, Freeze Protection Thermistor control, Oil Heater, Discharge Gas Thermistor, Fusible Plug, Fuse for Control Circuit and Pressure Relief Valve							
Piping Connections for Water-Side Heat Exchanger(In/Outlet)		—	With φ90 Inner Diameter Companion Flange	With φ142 Inner Diameter Companion Flange						
Connection Hole	Main Power (square orifice)	mm	500×200						2×500×200	
	Circuit	mm	2×φ64.5; φ102; φ52	3×φ64.5; φ102; φ52			4×φ64.5; φ102; φ52		6×φ64.5; 2×φ102; 2×φ52	
Shipping Weight <sup>*3</sup>		kg	2,524	4,442	4,635	4,745	6,813	6,956	2×4,635	
Shipping Dimension	Width	mm	2,600	4,700	4,700	4,700	6,800	6,800	2×4,700	
	Depth	mm	2,190	2,190	2,190	2,190	2,190	2,190	2,190	
	Height	mm	2,510	2,510	2,510	2,510	2,510	2,510	2,510	

**NOTE:**

- The nominal cooling capacities are based on GB/T 18430.1-2001(\*1)  
Chilled Water Inlet/Outlet Temperature: 12/7°C  
Condensate Air Inlet Temperature: 35°C(DB)
- Applicable Power Supply  
Main Power Source (AC3φ) 380V, 50HZ  
Control Power Source (AC1φ) 220V, 50HZ
- The units greater than 240AHYZ1 including 240AHYZ1 consist of two modules and are separately shipped.(\*3).  
The common chilled water piping (Filed-Supplied) between each water cooler shall be directly connected at site.

**4. Water Flow**

- RCU(G)240,300,360,400AHYZ1  
It is necessary to control the same water quantity to each cooler.
- RCU(G)270,330,350,380AHYZ1  
The chilled water flow rate is different between No.1 & No.2 units. It is necessary to control the water quantity of each unit with adjusting valves(Filed-Supplied).
- It is required to connect electrical control wires between No.1 and No.2 units for the unit greater than 240AHYZ1 including 240AHYZ1.
- ( ) marked with \*2 is available by selection switch.

**Working Range**

Item	Standard
Chilled Water Outlet Temperature	5~15°C
Condenser Air Inlet Temperature(DB)	5~43°C

### General Data (R22 and R407C)

Model		R22	RCU270AHYZ1	RCU300AHYZ1	RCU330AHYZ1	RCU350AHYZ1	RCU360AHYZ1	RCU380AHYZ1	RCU400AHYZ1	
		R407C	RCUG270AHYZ1	RCUG300AHYZ1	RCUG330AHYZ1	RCUG350AHYZ1	RCUG360AHYZ1	RCUG380AHYZ1	RCUG400AHYZ1	
Nominal Cooling Capacity <sup>1</sup>	R22	kW	740	764	919	955	1,074	1,110	1,146	
		kcal/h	636,285	656,922	790,198	821,152	923,474	954,428	985,383	
		RT	210.5	217.3	261.4	271.6	305.5	315.7	325.9	
Nominal Cooling Capacity <sup>1</sup>	R407C	kW	703	726	873	907	1,020	1,055	1,089	
		kcal/h	604,471	624,076	750,688	780,095	877,300	906,707	936,113	
		RT	199.9	206.4	248.2	258.0	290.1	299.8	309.6	
Capacity Control		—	Continuous Capacity Control							
		%	100~15(7.5) <sup>2</sup> , 0		100~15(6) <sup>2</sup> , 0		100~15(7.5) <sup>2</sup> , 0			
Outer Dimension	Width	mm	9,080(Minimum)	9,080(Minimum)	11,180(Minimum)	11,180(Minimum)	13,280(Minimum)	13,280(Minimum)	13,280(Minimum)	
	Depth	mm	1,940	1,940	1,940	1,940	1,940	1,940	1,940	
	Height	mm	2,170	2,170	2,170	2,170	2,170	2,170	2,170	
Net Weight		kg	4,103+4,017	2×4,103	5,688+4,103	5,827+4,103	2×5,688	5,827+5,688	2×5,827	
Refrigerant	Standard	—	R22							
	R407C	—	R407C							
	Flow Control	—	Thermal Expansion Valve							
	Number of Circuit	—	4		5		6			
Compressor	Type	—	Semi-Hermetic Screw Type							
	Model	—	60ASCC-Z	60ASCC-Z	60ASCC-Z	60ASCC-Z	60ASCC-Z	60ASCC-Z	60ASCC-Z	
	Quantity	—	4		5		6			
Heat-Exchanger	Condenser	—	Cross Fin Type							
	Fan Motor	Condenser Fan	—	Direct Drive Propeller Fan						
		Power Input	kW	1.1	1.1	1.1	1.1	1.1	1.1	1.1
		Quantity	—	8+8	2×8	12+8	12+8	2×12	12+12	2×12
		Air Discharge	m <sup>3</sup> /min	3,720	3,720	4,650	4,650	5,580	5,580	5,580
Evaporator		—	Shell and Tube Type							
Safety Devices		—	Overcurrent Relay for Compressor , Internal Thermostat for Compressor, Reverse Phase Protection Device for Compressor,Thermal Overcurrent Relay for Fan Motor,High Pressure Switch, Low Pressure Control, Suction Gas Temperature Control,Freeze Protection Thermistor control,Oil Heater, Discharge Gas Thermistor, Fusible Plug, Fuse for Control Circuit and Pressure Relief Valve							
Piping Connections for Water-Side Heat Exchanger(In/Outlet)		—	With φ142 Inner Diameter Companion Flange							
Connection Hole	Main Power (square orifice)	mm	2×500×200							
	Circuit	mm	φ64.5;		7×φ64.5 ; 2×φ102 ; 2×φ52		8×φ64.5 ; 2×φ102 ; 2×φ52			
Shipping Weight <sup>3</sup>		kg	4,745+4,635	2×4,745	6,813+4,745	6,956+4,745	2×6,813	6,956+6,813	2×6,956	
Shipping Dimension	Width	mm	2×4,700	2×4,700	6,800+4,700	6,800+4,700	2×6,800	2×6,800	2×6,800	
	Depth	mm	2,190	2,190	2,190	2,190	2,190	2,190	2,190	
	Height	mm	2,510	2,510	2,510	2,510	2,510	2,510	2,510	

**NOTE:**

1. The nominal cooling capacities are based on GB/T 18430.1-2001(\*1)

Chilled Water Inlet/Outlet Temperature: 12/7°C

Condensate Air Inlet Temperature: 35°C(DB)

2. Applicable Power Supply

Main Power Source (AC3φ) 380V, 50HZ

Control Power Source (AC1φ) 220V, 50HZ

3. The units greater than 240AHYZ1 including 240AHYZ1 consist of two modules and are separately shipped.(\*3).

The common chilled water piping (Filed-Supplied) between each water cooler shall be directly connected at site.

4. Water Flow

1) RCU(G)240,300,360,400AHYZ1

It is necessary to control the same water quantity to each cooler.

2) RCU(G)270,330,350,380AHYZ1

The chilled water flow rate is different between No.1 & No.2 units. It is necessary to control the water quantity of each unit with adjusting valves (Filed-Supplied) .

5. It is required to connect electrical control wires between No.1 and No.2 units for the unit greater than 240AHYZ1including 240AHYZ1.

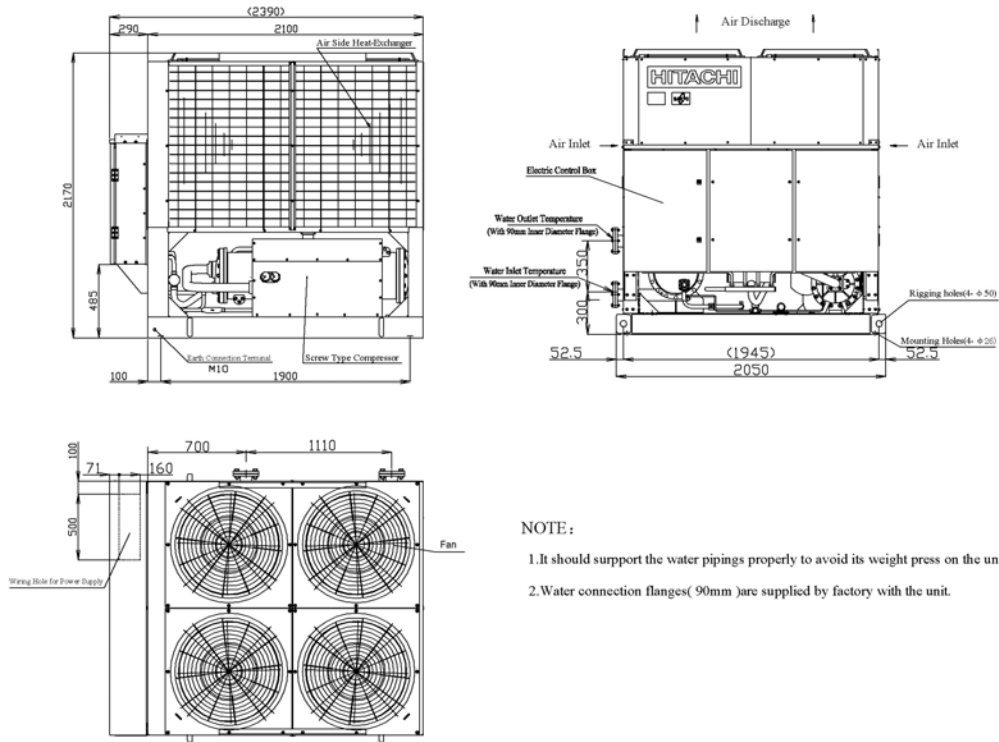
6. ( ) marked with \*2 is available by selection switch.

Working Range

Item	Standard
Chilled Water Outlet Temperature	5~15°C
Condenser Air Inlet Temperature(DB)	5~43°C

**Unit Dimensions**

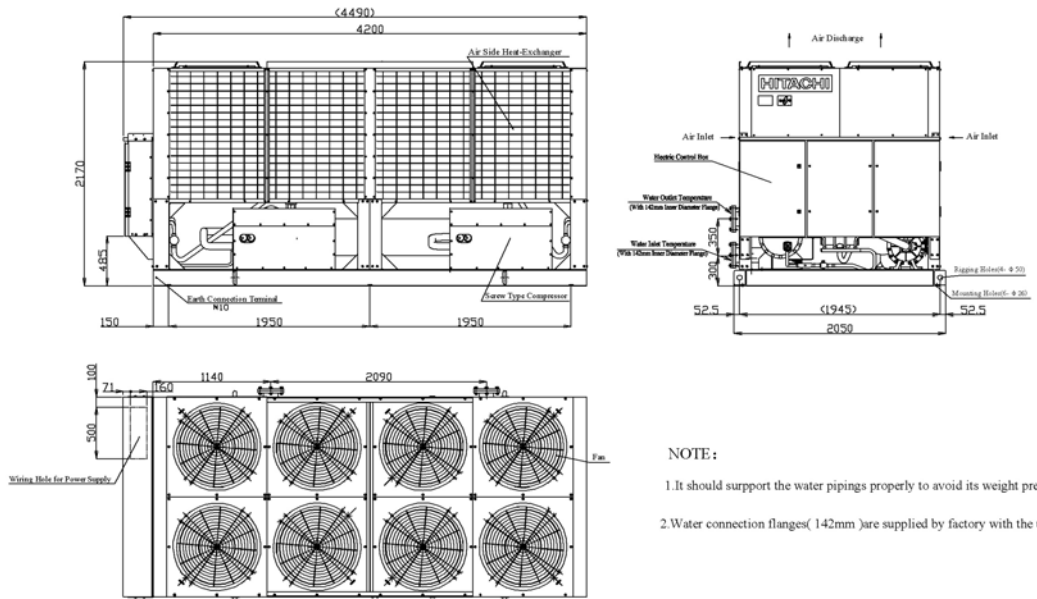
**RCU(G)75AHYZ1**



**NOTE :**

1. It should support the water pipings properly to avoid its weight press on the unit directly.
2. Water connection flanges( 90mm )are supplied by factory with the unit.

**RCU(G)100AHYZ1, RCU(G)120AHYZ1 and RCU(G)150AHYZ1**

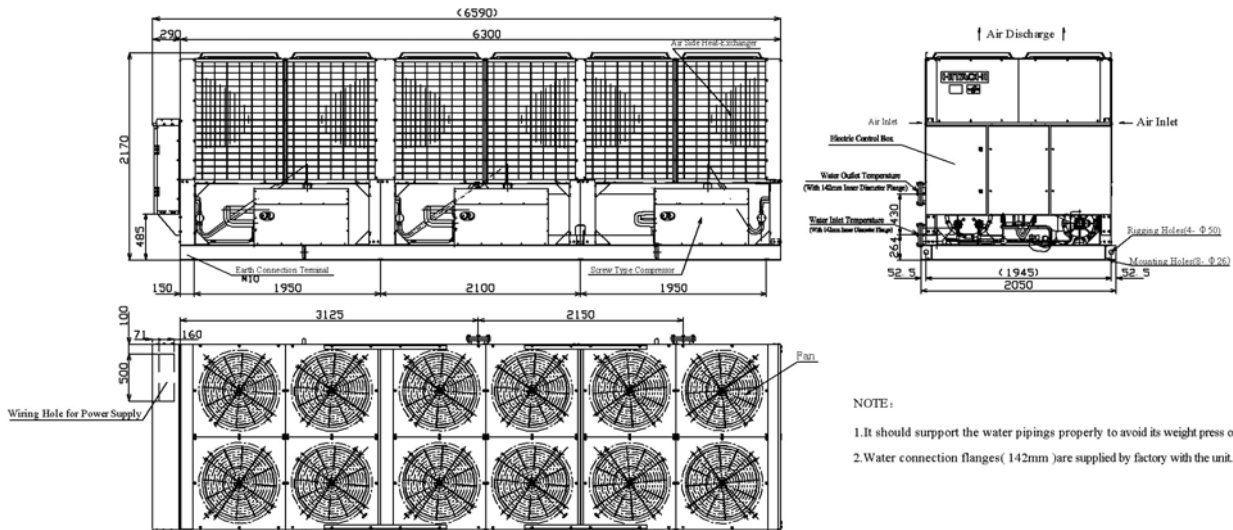


**NOTE :**

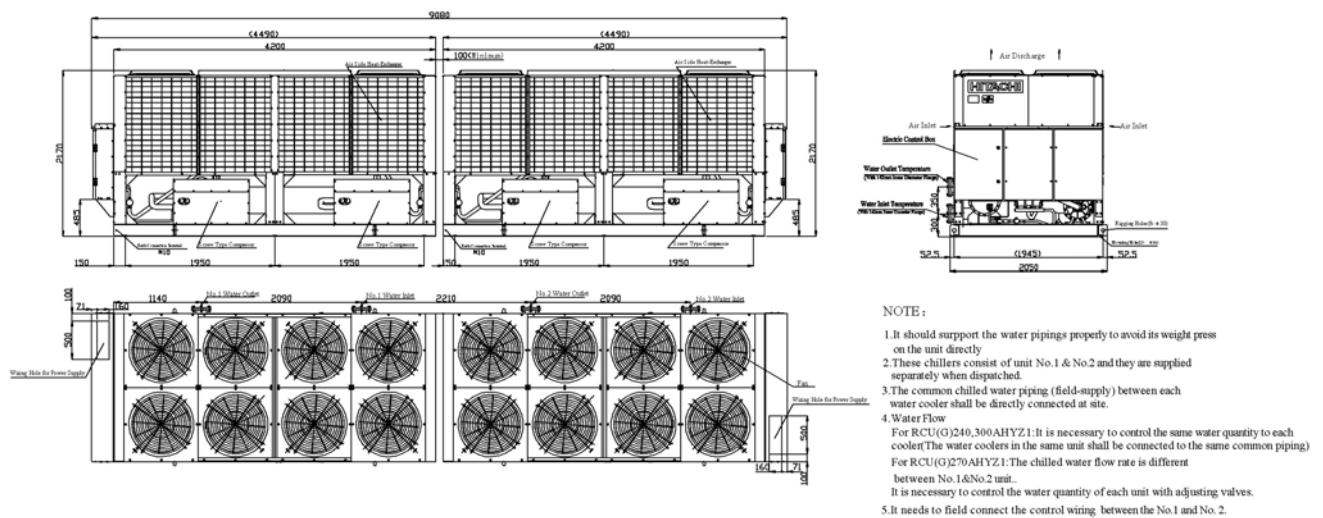
1. It should support the water pipings properly to avoid its weight press on the unit directly.
2. Water connection flanges( 142mm )are supplied by factory with the unit.

## Unit Dimensions

### RCU(G)180AHYZ1 and RCU(G)200AHYZ1

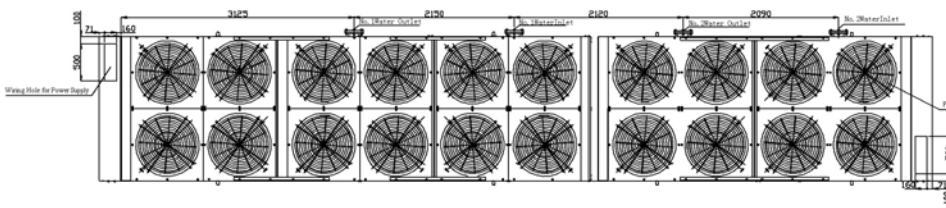
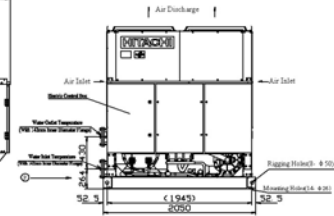
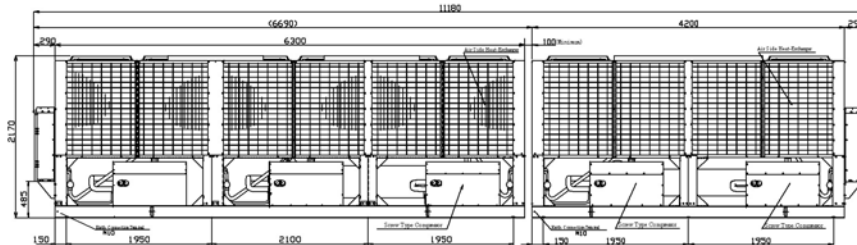


### RCU(G)240AHYZ1、RCU(G)270AHYZ1 and RCU(G)300AHYZ1



**Unit Dimensions**

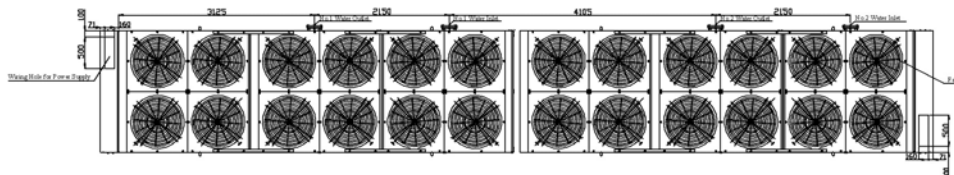
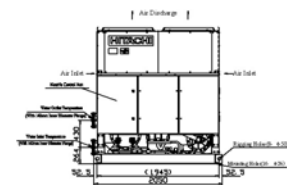
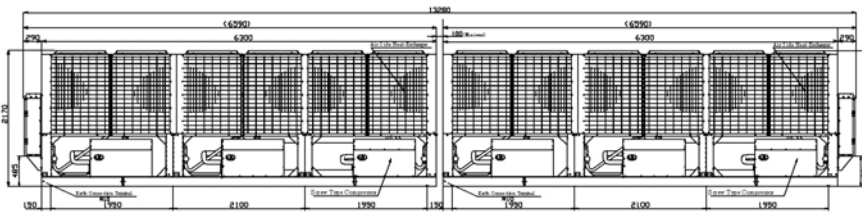
**RCU(G)330AHYZ1 and RCU(G)350AHYZ1**



**NOTE:**

1. It should support the water pipings properly to avoid its weight press on the unit directly
2. These chillers consist of unit No.1 & No.2 and they are supplied separately when dispatched.
3. The common chilled water piping (field-supply) between each water cooler shall be directly connected at site.
4. Water Flow  
For RCU(G)30,350AHYZ1: The chilled water flow rate is different between No.1&No.2 unit.  
It is necessary to control the water quantity of each unit with adjusting valves.
5. It needs to field connect the control wiring between the No.1 and No. 2.
6. In the No.2 unit, the data with the  $\odot$  mark is 300mm

**RCU(G)360AHYZ1, RCU(G)380AHYZ1 and RCU(G)400AHYZ1**



**NOTE:**

1. It should support the water pipings properly to avoid its weight press on the unit directly
2. These chillers consist of unit No.1 & No.2 and they are supplied separately when dispatched.
3. The common chilled water piping (field-supply) between each water cooler shall be directly connected at site.
4. Water Flow  
For RCU(G)360,400AHYZ1: It is necessary to control the same water quantity to each  
(The water coolers in the same unit shall be connected to the same common piping)  
For RCU(G)380AHYZ1: The chilled water flow rate is different between No.1&No.2 unit.  
It is necessary to control the water quantity of each unit with adjusting valves.
5. It needs to field connect the control wiring between the No.1 and No. 2.