HITACHI

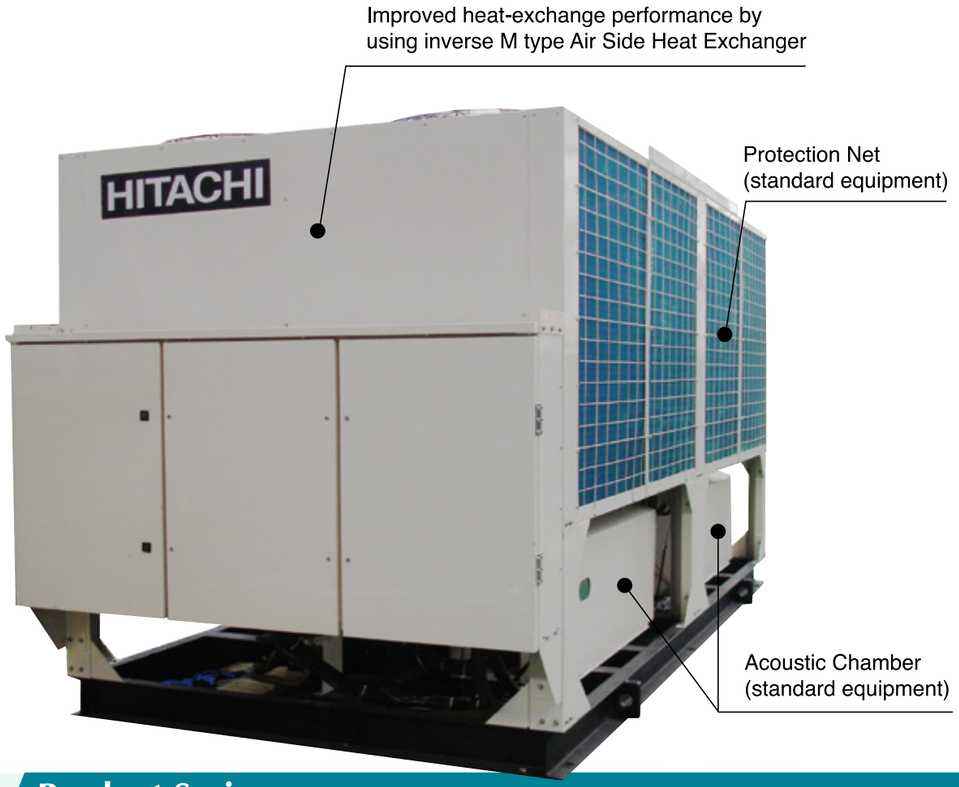
TWIN SCREW COMPRESSOR TYPE HITACHI AIR-COOLED CHILLERS

H Series

R407C

The High-efficiency Air-cooled Chiller "H series"

The air-cooled chiller "H series" with improved efficiency and functionality by several advanced technologies.
This series with the world's best standard A-type screw compressor and newly designed shell and tube heat exchanger that have powerful cooling ability, low noise, low vibration, high efficiency and high reliability is the perfect answer to all your needs!!



Product Series

RCUG-AHYZ1

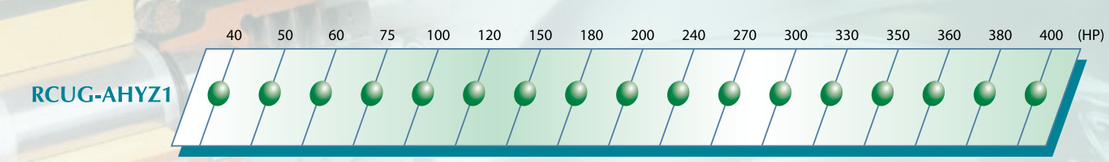
Nominal Capacity Range (50Hz)

110 kW to 1,089 kW
31 USRT to 310 USRT
94,600 kcal/h to 936,540 kcal/h

R407C

Wide Line-up

To meet the need for air conditioning systems for large facilities and the demand for higher capacity industrial cooling systems.



Enhanced Line-up ～up to 400 HP～

High-performance A-type Screw Compressor

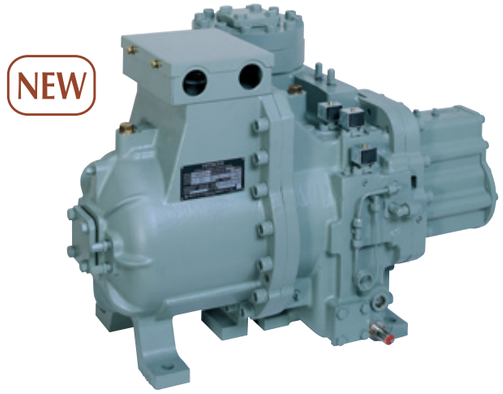
Precise Capacity Control Technology

Excellent Control Function

Highly Reliable Shell and Tube Heat Exchanger

Technical Features

High-performance A-type Screw Compressor ～Newly Designed～



No outside pump is required due to the reliable differential-pressure oil-feeding system.

This oil-feeding system, which does not use any electrical mechanism, prevents the compressor from being damaged and maintains long-term stable operation.

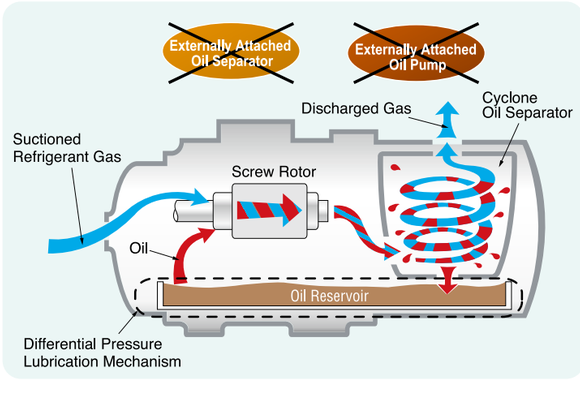
Built-in Cyclone Oil Separator

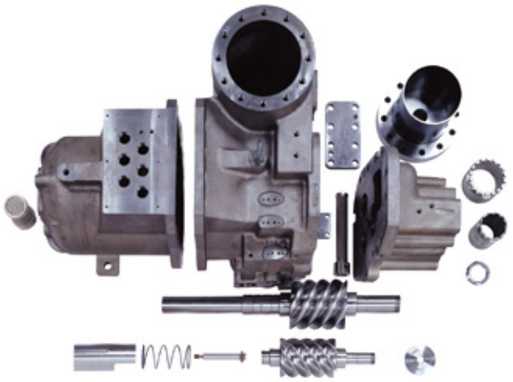
Low oil carrying-out is realized and reduction of heat transfer efficiency is minimized.

High Technology by Internal Manufacture

Because all manufacturing processes, from rotor manufacturing to unit assembly, are done internally, exceptional reliability is achieved.

☐ New Screw Compressor Operation Image





Low Vibration Level

No exclusive vibration control equipment is necessary by using low-vibration screw compressor.

Simple Structure with a Small Number of Parts

Whereas the number of main parts for the casing, compression mechanism and capacity control mechanism of a reciprocating compressor is **268**, that of a screw compressor is only **27**, just one tenth of the number !
A structure with so few parts offers high reliability and easy maintenance.

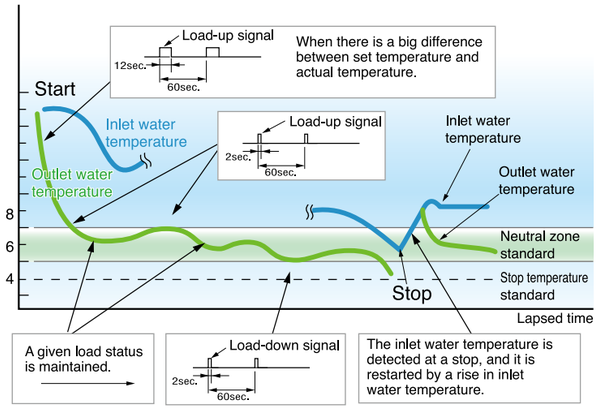
☐ Vibration Comparison

Type		Reciprocating	Screw
Comp. speed (rpm) 50/60Hz		1,430 / 1,720	**2,880 / 3,470**
Full amplitude	At leg of comp.	20−30	**5−8**
	At base frame	20	**Less than 10**
Vib. frequecy	At leg of comp.	23.8 / 28.7	**48.5 / 57.8**
	At base frame	23.8 / 28.7	**48 / 57.8**
Acceleration energy		Screw: 1/5 of reciprocating type	

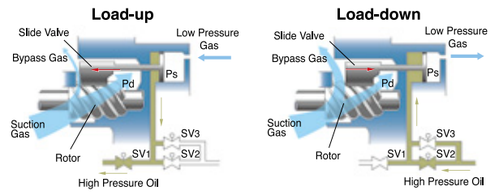
Precise Capacity Control Technology

Continuous Capacity Control

The temperature of the chilled water outlet can be kept at the set temperature ±1˚C by continuous capacity control, so it is suitable for industrial use.



☐ Capacity Controller Structural Outline
(HITACHI Patented System)

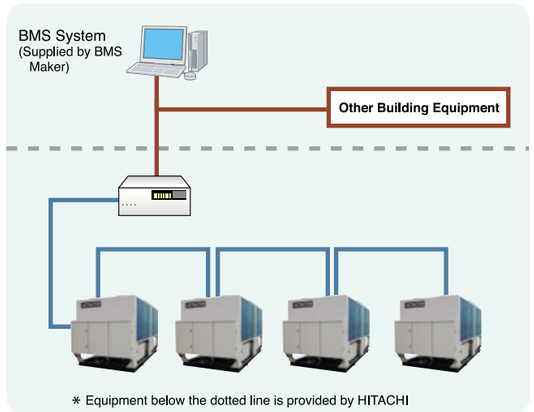


Pd: Discharge pressure, Ps: Suction pressure,
SV1,2,3 : Solenoid valve : Valve open : Valve close

Excellent Control Function

Building Management System (BMS)

Hitachi uses Building Management System for chiller air-conditioning,
Hitachi provides its own central station system. No complicated work is necessary.



＊ Equipment below the dotted line is provided by HITACHI

☐ List of Functions

Remote Setting

- ON / OFF Operation
- Chilled Water Temperature (Inlet or Outlet)

Remote Monitor

- ON / OFF Status
- Setting Chilled Water Temperature (Inlet or Outlet)
- Current Water Temperature of Inlet and Outlet
- Alarm Code

Highly Reliable Shell and Tube Heat Exchanger ～Newly Designed～

- Dry expansion cooler system
- Low environmental impact: refrigerant quantity reduced by 60% from the current unit
- Perfect matching with the chiller unit due to our own design
  - Downsized by redesigned heat-transfer tube
  - Improved efficiency by optimized refrigerant distribution

RCUG-AHYZ1 General Data

Model			RCUG40AHYZ1	RCUG50AHYZ1	RCUG60AHYZ1	RCUG75AHYZ1	RCUG100AHYZ1	RCUG120AHYZ1	RCUG150AHYZ1	RCUG180AHYZ1	RCUG200AHYZ1	RCUG240AHYZ1
Power Source			Main (AC 3 ϕ) 380, 415V / 50Hz, Control (AC 1 ϕ) 220, 240V / 50Hz				Main (AC 3 ϕ) 380, 415V / 50Hz, Control (AC 1 ϕ) 220, 240V / 50Hz					
Nominal Cooling Capacity*1		kW	110	136	170	181	272	340	363	510	544	680
		USRT	31	39	48	51	77	97	103	145	155	193
		kcal/h	94,600	116,960	146,200	155,660	233,920	292,400	312,180	438,600	467,840	584,800
Capacity Control			Continuous Capacity Control				Continuous Capacity Control					
		%	100—15, 0				100—15(7.5)*2, 0			100—15(5)*2, 0		100—15(7.5)*2, 0
Outer Dimensions	Height	mm	2,170	2,170	2,170	2,170	2,170	2,170	2,170	2,170	2,170	2,170
	Width	mm	2,057	2,057	2,057	2,057	2,057	2,057	2,057	2,057	2,057	2,057
	Depth	mm	2,390	2,390	2,390	2,390	4,490	4,490	4,490	6,590	6,590	9,080(min.)
Net Weight		kg	1,790	1,830	1,870	1,890	3,210	3,280	3,320	4,865	4,900	2 x 3,280
Refrigerant	Type		R407C				R407C					
	Flow Control		Thermal Expansion Valve				Thermal Expansion Valve					
	Number of Circuits		1				2			3		4
Compressor	Type		Semi-Hermetic Screw Type				Semi-Hermetic Screw Type					
	Model		ASCCW-40Z	ASCCW-50Z	ASCCW-60Z	ASCCW-60Z	ASCCW-50Z	ASCCW-60Z	ASCCW-60Z	ASCCW-60Z	ASCCW-60Z	ASCCW-60Z
	Quantity		1				2			3		4
Heat Exchanger	Condenser		Cross Fin Type				Cross Fin Type					
	Fan Motor Condenser Fan		Direct Drive Propeller Fan				Direct Drive Propeller Fan					
	Fan Motor Power Intput	kW	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
	Fan Motor Quantity		4	4	4	4	8	8	8	12	12	2 x 8
	Evaporator		Shell-and-Tube Type				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				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					
Shipping Dimensions	Height	mm	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510	2,510
	Width	mm	2,190	2,190	2,190	2,190	2,190	2,190	2,190	2,190	2,190	2,190
	Depth	mm	2,600	2,600	2,600	2,600	4,700	4,700	4,700	6,800	6,800	2 x 4,700
Shipping Weight		kg	2,000	2,040	2,080	2,100	3,610	3,680	3,720	5,500	5,535	2 x 3,680
Piping Connections for Water Side Heat Exchanger	Inlet		With DN80 Flange				With DN125 Flange					
	Outlet											
Connection Hole	Main Power (square orifice)	mm	233 x 140				233 x 140					2 x 233 x 140
	Circuit	mm	3 x ϕ 48; 2 x ϕ 75				3 x ϕ 48; ϕ 64; ϕ 52; 2 x ϕ 75					6 x ϕ 48; 2 x ϕ 64; 2 x ϕ 52; 4 x ϕ 75

Model			RCUG270AHYZ1	RCUG300AHYZ1	RCUG330AHYZ1	RCUG350AHYZ1	RCUG360AHYZ1	RCUG380AHYZ1	RCUG400AHYZ1
Power Source			Main (AC 3 ϕ) 380, 415V / 50Hz, Control (AC 1 ϕ) 220, 240V / 50Hz				Main (AC 3 ϕ) 380, 415V / 50Hz, Control (AC 1 ϕ) 220, 240V / 50Hz		
Nominal Cooling Capacity*1		kW	703	726	873	907	1,020	1,055	1,089
		USRT	200	206	248	258	290	300	310
		kcal/h	604,580	624,360	750,780	780,020	877,200	907,300	936,540
Capacity Control			Continuous Capacity Control				Continuous Capacity Control		
		%	100—15(7.5)*2, 0		100—15(6)*2, 0		100—15(7.5)*2, 0		
Outer Dimensions	Height	mm	2,170	2,170	2,170	2,170	2,170	2,170	2,170
	Width	mm	2,057	2,057	2,057	2,057	2,057	2,057	2,057
	Depth	mm	9,080(min.)	9,080(min.)	11,180(min.)	11,180(min.)	13,280(min.)	13,280(min.)	13,280(min.)
Net Weight		kg	3,320 + 3,280	2 x 3,320	4,865 + 3,320	4,900 + 3,320	2 x 4,865	4,900 + 4,865	2 x 4,900
Refrigerant	Type		R407C				R407C		
	Flow Control		Thermal Expansion Valve				Thermal Expansion Valve		
	Number of Circuits		4		5		6		
Compressor	Type		Semi-Hermetic Screw Type				Semi-Hermetic Screw Type		
	Model		ASCCW-60Z	ASCCW-60Z	ASCCW-60Z	ASCCW-60Z	ASCCW-60Z	ASCCW-60Z	ASCCW-60Z
	Quantity		4		5		6		
Heat Exchanger	Condenser		Cross Fin Type				Cross Fin Type		
	Fan Motor Condenser Fan		Direct Drive Propeller Fan				Direct Drive Propeller Fan		
	Fan Motor Power Intput	kW	1.1	1.1	1.1	1.1	1.1	1.1	1.1
	Fan Motor Quantity		8 + 8	2 x 8	12 + 8	12 + 8	2 x 12	12 + 12	2 x 12
	Evaporator		Shell-and-Tube Type				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				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		
Shipping Dimensions	Height	mm	2,510	2,510	2,510	2,510	2,510	2,510	2,510
	Width	mm	2,190	2,190	2,190	2,190	2,190	2,190	2,190
	Depth	mm	2 x 4,700	2 x 4,700	6,800 + 4,700	6,800 + 4,700	2 x 6,800	2 x 6,800	2 x 6,800
Shipping Weight		kg	3,720 + 3,680	2 x 3,720	5,500 + 3,720	5,535 + 3,720	2 x 5,500	5,535 + 5,500	2 x 5,535
Piping Connections for Water Side Heat Exchanger	Inlet		With DN125 Flange				With DN125 Flange		
	Outlet								
Connection Hole	Main Power (square orifice)	mm	2 x 233 x 140				2 x 233 x 140		
	Circuit	mm	6 x ϕ 48; 2 x ϕ 64; 2 x ϕ 52; 4 x ϕ 75				6 x ϕ 48; 2 x ϕ 64; 2 x ϕ 52; 4 x ϕ 75		

NOTES:

1. The nominal cooling capacities are based on the following conditions. (*1)
   Chilled Water Inlet / Outlet Temperature: 12˚C / 7˚C
   Condenser Air Inlet Temperature: 35˚C(DB)

2. The units greater than 240AHYZ1 including 240AHYZ1 consist of two modules and are separately shipped. The common chilled water piping (Filed-Supplied) between each water cooler shall be directly connected at site.

3. Water Flow
   1) RCUG240, 300, 360, 400AHYZ1
      It is necessary to control the common water flow volume to each cooler.
   2) RCUG270, 330, 350, 380AHYZ1
      The chilled water flow rate is different between No.1 & No.2 units. It is necessary to control the water flow volume of each unit with adjusting valves (Filed-Supplied).

4. It is required to connect electrical control wires between No.1 & No.2 units for the unit greater than 240AHYZ1 including 240AHYZ1.

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

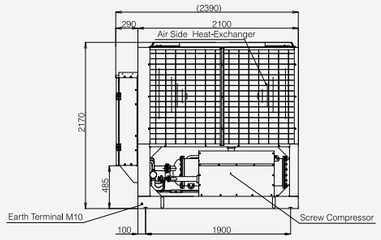
Working Range

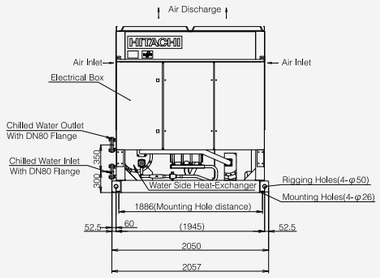
Item	Standard
Chilled Water Outlet Temperature	5—15˚C
Condenser Air Inlet Temperature (DB)	5—43˚C

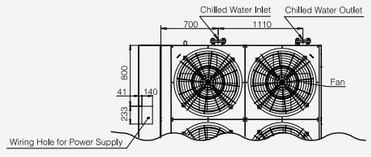
Dimensional Data

RCUG40, 50, 60 and 75AHYZ1

(Unit: mm)



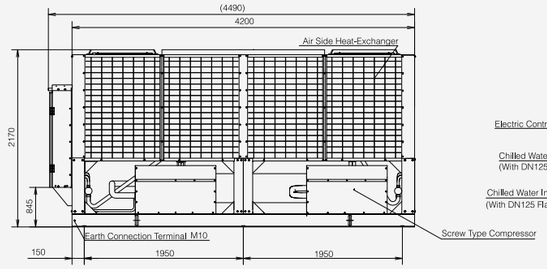


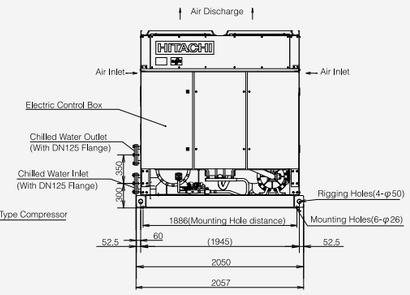


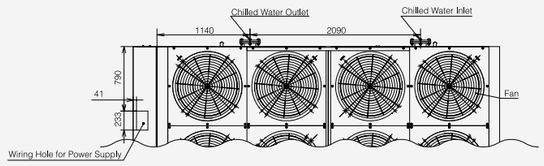
NOTES:
1. It should surpport the water pipings properly to avoid its weight press on the unit directly

RCUG100, 120 and 150AHYZ1

(Unit: mm)



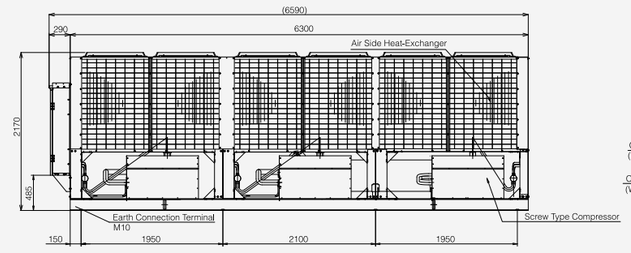


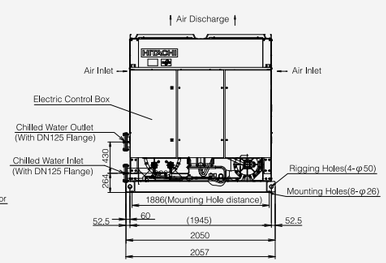


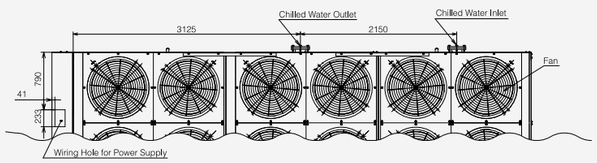
NOTES:
1. It should surpport the water pipings properly to avoid its weight press on the unit directly

RCUG180 and 200AHYZ1

(Unit: mm)



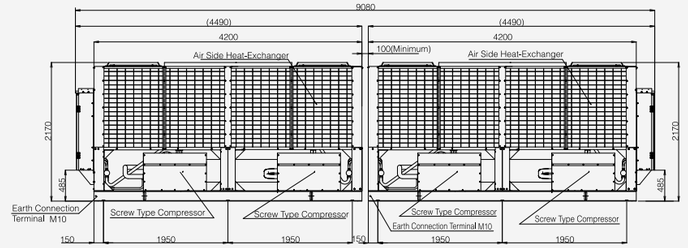


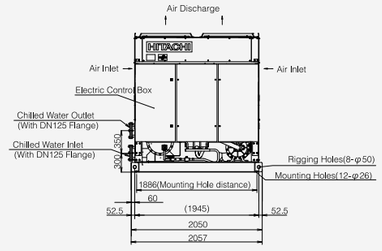


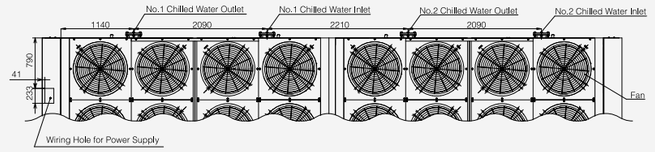
NOTES:
1. It should surpport the water pipings properly to avoid its weight press on the unit directly

RCUG240, 270 and 300AHYZ1

(Unit: mm)



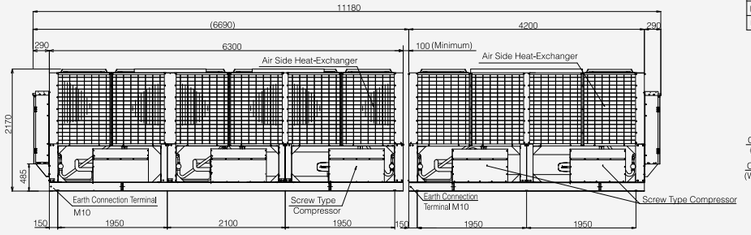




NOTES:
1.It should surpport the water pipings properly to avoid its weight press on the unit directly .
2.These chillers consist of unit No.1 & No.2 and they are supplied separately when dispatched.
3.The common chilled water piping (field-supply) between each water cooler shall be directly connected at site.
4.Water Flow
For RCUG240,300A(T)HYZ1:It is necessary to control the same water quantity to each cooler (The water coolers in the same unit shall be connected to the same common piping)
For RCUG270A(T)HYZ1: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.

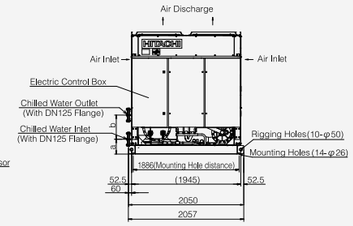
RCUG330 and 350AHYZ1

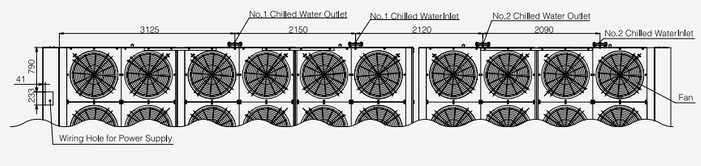
(Unit: mm)



Dimension by Unit

	a	b
Unit No.1	264	430
Unit No.2	300	350

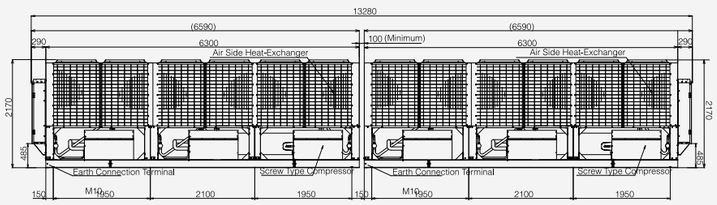


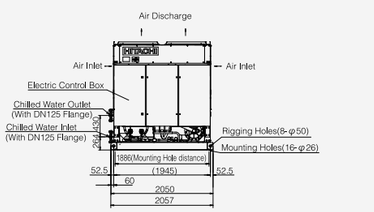


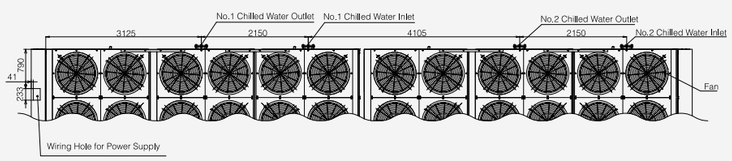
NOTES:
1.It should surpport the water pipings properly to avoid its weight press on the unit directly .
2.These chillers consist of unit No.1 & No.2 and they are supplied separately when dispatched.
3.The common chilled water piping (field-supply) between each water cooler shall be directly connected at site.
4.Water Flow
For RCUG330,350A(T)HYZ1:
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.

RCUG360, 380 and 400AHYZ1

(Unit: mm)







NOTES:
1.It should surpport 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 RCUG360,400A(T)HYZ1:
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 RCUG380A(T)HYZ1:
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.

Johnson Controls-Hitachi Air Conditioning

http://www.jci-hitachi.com

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