

R407C TWIN SCREW COMPRESSOR TYPE  
HITACHI WATER-COOLED CHILLERS WU

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AQUA



 Hitachi Air Conditioning Systems Co., Ltd.

URL : <http://www.hitachiacs.co.jp>

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Inspire the Next

The High-efficiency water-cooled chiller WU series uses a new refrigerant, R407C. Reliability is higher due to a new screw compressor with a cyclone oil separator, Hitachi's unique technology. Many industrial applications are possible due to precise control of water temperature and wide range of operation.



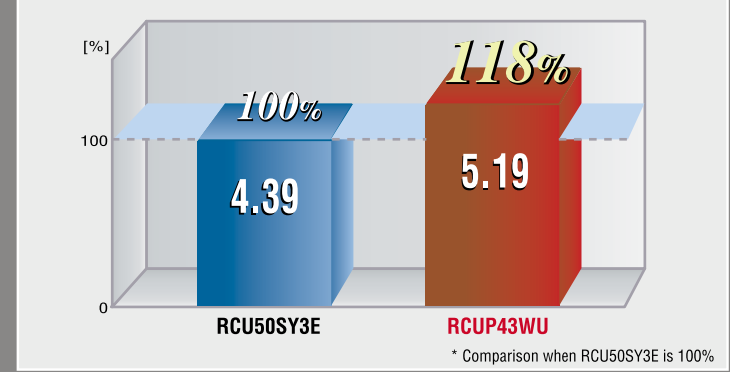
- Energy saving
- Environmentally considerate
- High efficiency
- High reliability
- Easy installation
- Many applications



Energy saving with high efficiency

COP is 5.19 on RCUP43WU of the new series, an increase of 18% from RCU50SY3E of the conventional series.

Example of COP comparison



Industry-leading partial load properties

High COP is possible even at minimum load.

Cooling operation

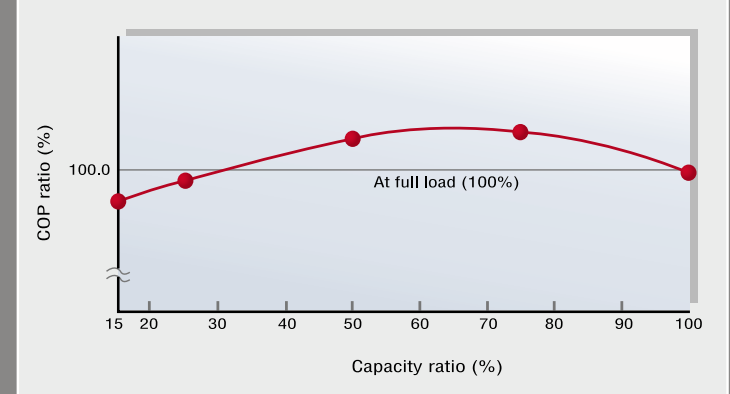
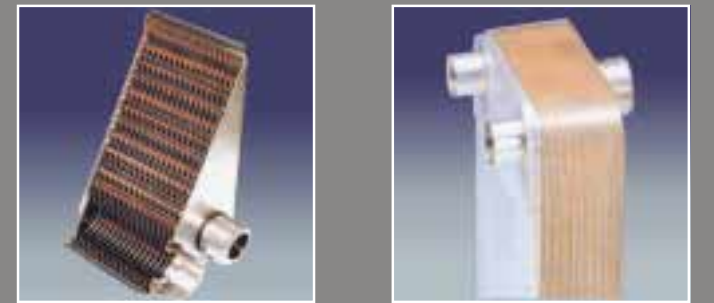


Plate heat exchangers

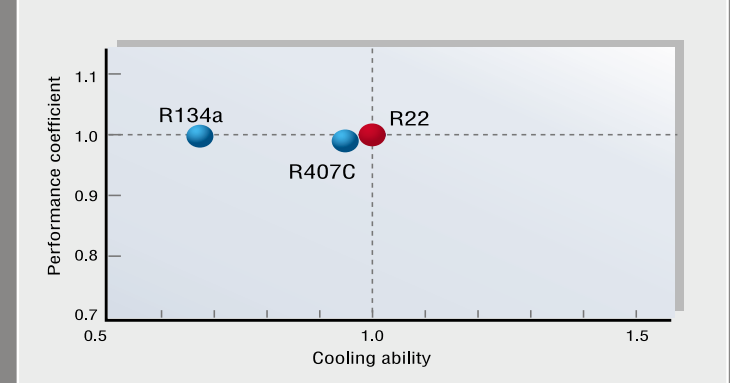
Hitachi uses less refrigerant to help protect the environment, such as by using plate heat exchangers.



Hitachi uses R407C

As shown in the drawing, refrigerant R22 and R407C deliver similar cooling performance. The use of R407C makes the size more compact than R134a refrigerant.

Refrigerant and COP

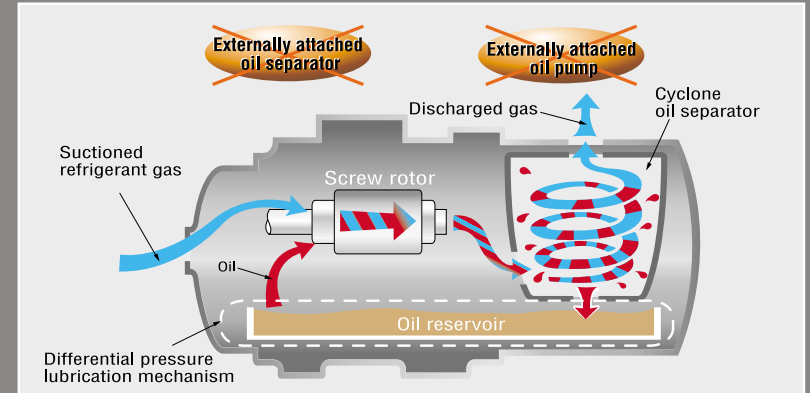


## A simple structured high-performance new twin screw compressor

- Hitachi's new screw compressor has the following features:
- Oil carry-out ratio is by less than 1% due to cyclone oil separator.
  - Working range is extended by 15%.
  - The number of parts is reduced to 1/10 of the reciprocating compressor.



■ New screw compressor operation image



## Low vibration

No exclusive vibration control equipment is necessary due to the low-vibration screw compressor.

■ 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
	At base frame	20
Vib. frequency	At leg of comp.	23.8/28.7
	At base frame	23.8/28.7
Acceleration energy	Screw: 1/5 of reciprocating type	

## Compact and light

As shown in the drawing on the right, the volume, installation space and weight are all reduced, making installation easy.

■ New models fit in the same space as conventional models

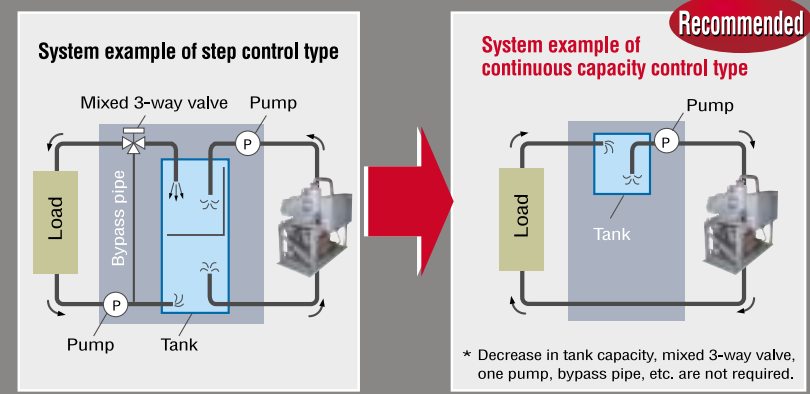
- Volume **21% decreased**
- Installation space **22% decreased**
- Net weight **21% decreased**

Conventional model (HP)	Mountable new models (HP)
40	60
50	80
60	80
80	150
100	150
120	150
150	180
180	180
200	240

\* Comparison with RCU-SY3E series

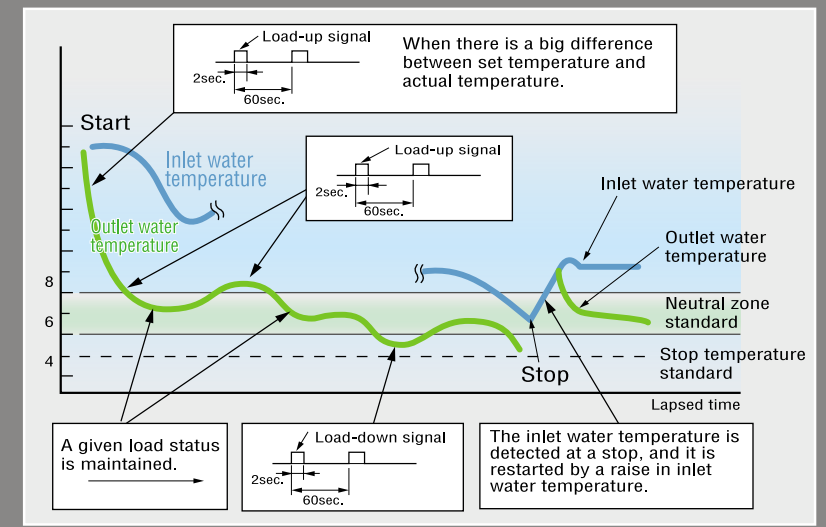
## Decreased holding water quantity

As Hitachi's new type of water-cooled chiller holds less water, so fewer facilities are necessary.



## Continuous capacity control

The temperature of the chilled water outlet can be kept at the set temperature  $\pm 1^\circ\text{C}$  by continuous capacity control, so it is suitable for industrial use.



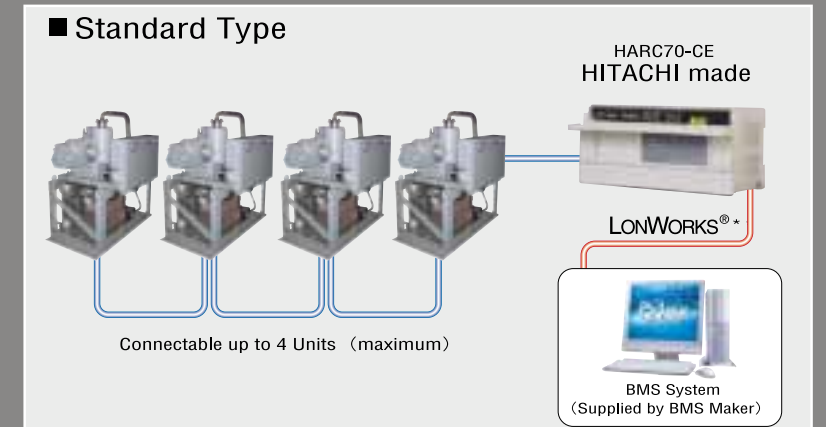
## Many applications

Hitachi uses Building Management System through LONWORKS®. For chiller air-conditioning, Hitachi provides its own central station system. Simply connect chiller and LONWORKS® via a HARC70-CE. No complicated work is necessary.



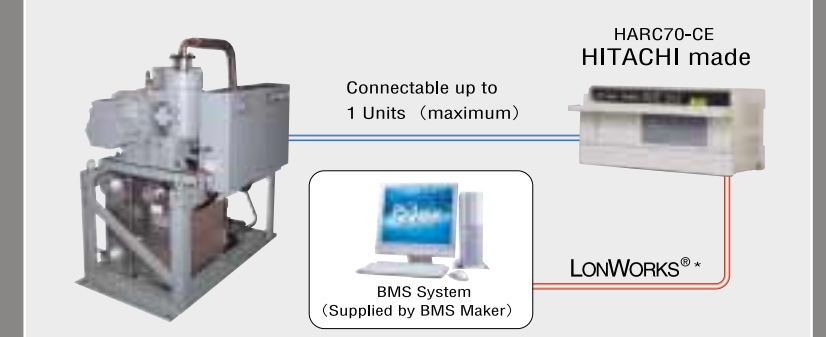
Hitachi's CSC-5S central station system newly developed for the Hitachi screw chiller provides monitoring as well as individual and quantity control. It can control up to 8 chillers and be installed according to the customer's air-conditioning environment needs. Unlike conventional machines, the functions can be checked from the control room via remote control, thus reducing the need to visit the machine room for manual checking.

## Building Management System



- | Remote Setting  | Remote Monitor   |
|---|--|
| <ul style="list-style-type: none"> <li>■ ON / OFF operation</li> <li>■ Chilled water temperature (inlet or outlet)</li> </ul> | <ul style="list-style-type: none"> <li>■ ON / OFF status</li> <li>■ Setting chilled water temp.(inlet or outlet)</li> <li>■ Current water temp. of inlet and outlet</li> <li>■ Alarm code</li> </ul> |

## Option Type



- | Remote Setting  | Remote Monitor  |
|---|---|
| <ul style="list-style-type: none"> <li>■ ON / OFF operation</li> <li>■ Chilled water temperature (inlet or outlet)</li> </ul> | <ul style="list-style-type: none"> <li>■ ON / OFF status</li> <li>■ Setting chilled water temp.(inlet or outlet)</li> <li>■ Current water temp. of inlet and outlet</li> <li>■ Alarm code</li> <li>■ Operating status : Discharge gas pressure (each cycle)</li> <li>                          Suction gas pressure (each cycle)</li> <li>                          Discharge gas temperature (each cycle)</li> <li>                          Suction gas temperature (each cycle)</li> </ul> |

\* "LONWORKS" "LONMARK" are trademarks of Echelon Corporation registered in the United States and other countries.

□ GENERAL DATA

Model	Step Control Type	RCUP34WU	RCUP43WU	RCUP51WU	RCUP67WU	RCUP85WU	RCUP101WU	RCUP128WU	RCUP151WU	RCUP171WU	RCUP202WU		
	Continuous Control Type	RCUP34WUZ	RCUP43WUZ	RCUP51WUZ	RCUP67WUZ	RCUP85WUZ	RCUP101WUZ	RCUP128WUZ	RCUP151WUZ	RCUP171WUZ	RCUP202WUZ		
Nominal Cooling Capacity	50Hz	kW	118	150	180	236	300	355	450	530	600	710	
		kcal/h	101,480	129,000	154,800	202,960	258,000	305,300	387,000	455,800	516,000	610,600	
	60Hz	USRT	33.6	42.7	51.2	67.1	85.3	101.0	128.0	150.7	170.6	201.9	
		kW	132	170	200	265	335	400	510	600	670	800	
	USRT	kcal/h	113,520	146,200	172,000	227,900	288,100	344,000	438,600	516,000	576,200	688,000	
			37.5	48.3	56.9	75.4	95.3	113.8	145.0	170.6	190.5	227.5	
Capacity Control													
Step Control Type		%	100, 75, 50, 0				100, 75, 50, 25, 0			100, 66, 33, 17, 0			
Continuous Control Type		%	100-15, 0										
Outer Dimension													
Height		mm	1,524	1,524	1,524	1,524	1,672	1,672	1,672	1,646	1,646	1,646	
Width		mm	1,225	1,225	1,225	1,400	1,260	1,260	1,260	1,207	1,300	1,300	
Depth		mm	934	934	934	934	1,661	1,661	1,661	2,466	2,466	2,466	
Net Weight		Kg	750	765	830	950	1,550	1,650	1,750	2,470	2,550	2,670	
Refrigerant			R407C										
Flow Control			Electronic Expansion Valve										
Number of Circuits			1			2			3				
Compressor Type			Semi-Hermetic Screw Type										
Model													
Step Control Type			30ASCP-H	40ASCP-H	50ASCP-H	60ASCP-H	40ASCP-H	50ASCP-H	60ASCP-H	50ASCP-H	50ASCP-H	60ASCP-H	
Continuous Control Type			30ASCP-Z	40ASCP-Z	50ASCP-Z	60ASCP-Z	40ASCP-Z	50ASCP-Z	60ASCP-Z	50ASCP-Z	50ASCP-Z	60ASCP-Z	
Quantity			1			2			3				
Condenser			Plate Type										
Water Cooler			Plate Type										
Safety Devices			Thermal Overcurrent Relay for Compressor (R,T Phase), High-Pressure Switch, Low-Pressure Control, Oil Heater, Internal Thermostat for Compressor, Fusible Plug, Freeze Protection Device, Reverse Phase Protection Device, Operation Hour-Meter										
Piping Connections for Condenser			Victaulic Type										
Inlet			3B	3B	3B	3B	3B	3B	3B	3B × 3	3B × 3	3B × 3	
Outlet			3B	3B	3B	3B	3B	3B	3B	3B × 3	3B × 3	3B × 3	
Piping Connections for Water Cooler			Victaulic Type										
Inlet			3B	3B	3B	3B	3B	3B	3B	3B × 3	3B × 3	3B × 3	
Outlet			3B	3B	3B	3B	3B	3B	3B	3B × 3	3B × 3	3B × 3	

NOTE :

- The nominal cooling capacities are based on the following conditions.  
**Temperature Conditions**  
 Chilled Water Inlet Temperature : 12°C      Condenser Water Inlet Temperature : 30°C  
 Chilled Water Outlet Temperature : 7°C      Condenser Water Outlet Temperature : 35°C
- Applicable Power Supplies  
**Main Power Source (3φ) :** 220V 60Hz, 380V 50Hz, 415V 50Hz  
**Control (1φ) :** 220V 60Hz, 220V 50Hz, 240V 50Hz
- Working Range  
 Condenser Water Outlet Temperature : 22°C to 37°C  
 Condenser Water Temperature Difference : 3.5°C to 10°C at 50Hz, 4.2°C to 10°C at 60Hz  
 Chilled Water Outlet Temperature : 5°C to 20°C  
 Chilled Water Temperature Difference : 2.5°C to 10°C at 50Hz, 3.0°C to 10°C at 60Hz
- The common chilled water piping (field-supplied) between each water cooler shall be connected directly at site. The water coolers in the same unit shall be connected to the same common piping.
- Provide a 20 mesh water strainer at the chilled and condenser water inlet. The 20 mesh strainer is available by Hitachi as an optional accessory.
- Support the water pipes with stay not to give the weight of water pipes directly to the unit.
- Specifications in the above table are subject to change without notice in order that Hitachi may bring the latest innovations their customers.

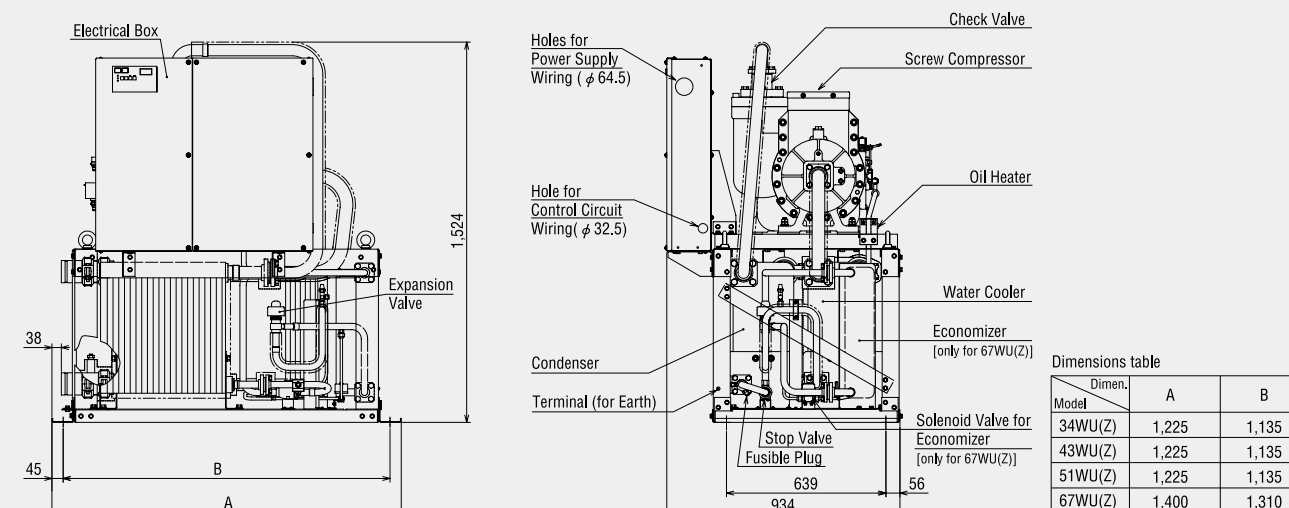
□ Options

- Water Strainer
- HARC70-CE
- CSC-5S
- Pressure Gauge for Low and High Pressure

□ DIMENSIONAL DATA

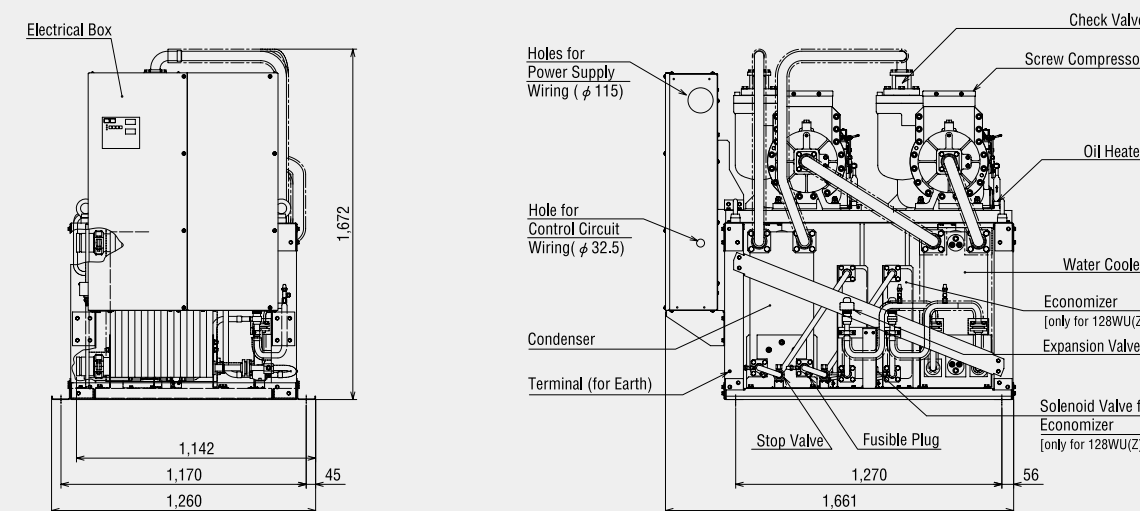
■ RCUP34WU(Z), 43WU(Z), 51WU(Z) and 67WU(Z)

Units : mm



■ RCUP85WU(Z), 101WU(Z) and 128WU(Z)

Units : mm



■ RCUP151WU(Z), 171WU(Z) and 202WU(Z)

Units : mm

