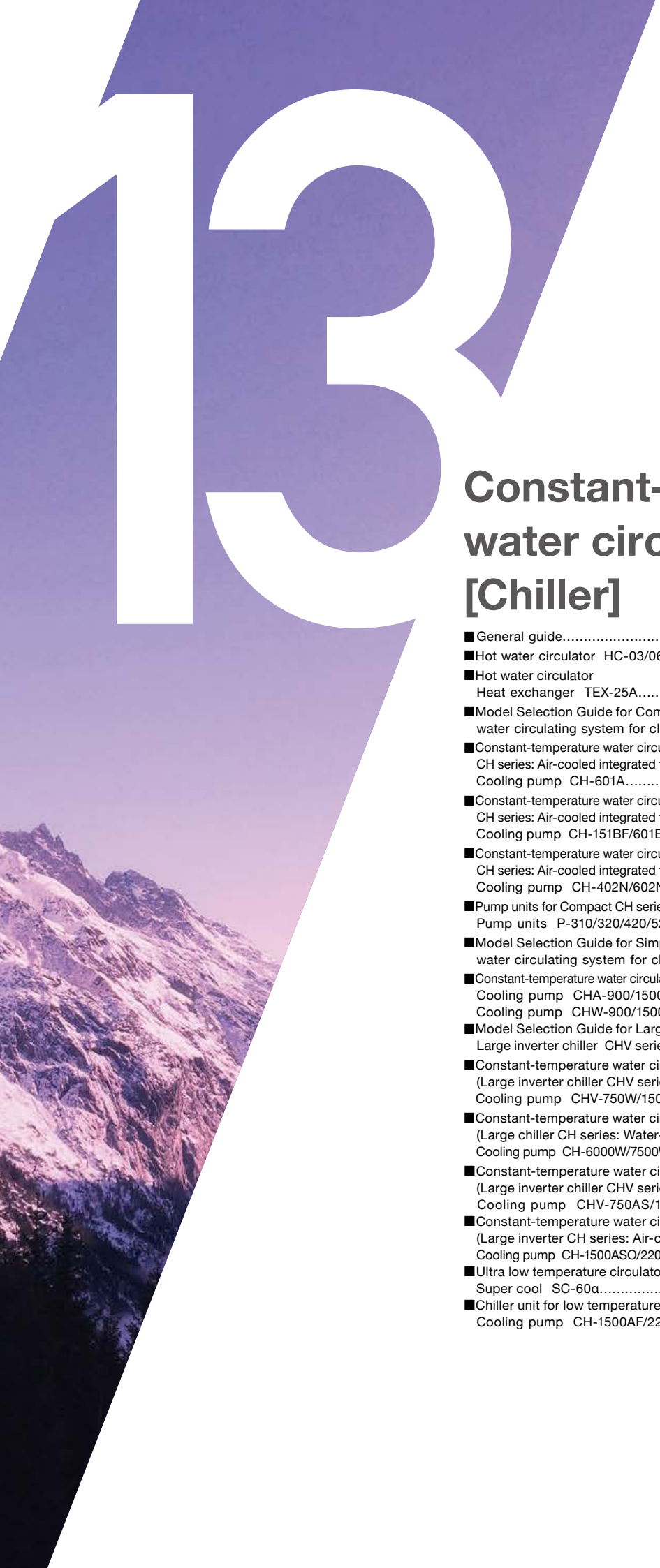


13

Constant-temperature water circulating system [Chiller]

For the heating control

Hot water circulator HC series

Heat exchanger

Circulation of hot water and the heating medium for high temp.

Page	Model	Circulation	Heater output	Heating medium	Temp. range
P.186	HC-03/06/09/12/15/24	Closed circuit	3.0 kW to 24 kW	Tap water	+40°C to +80°C
P.187	TEX-25A		2.5 kW	GALDEN® HT270	+70°C to +200°C

Compact & portable

Standard — Compact CH A-type

Precise — Compact CH B-type

The Standard Small Chiller unit "Compact CH series"

Page	Model	Circulation	Compressor output	Cooling capacity (*)	Temp. range
P.196	CH-601A	Closed circuit	Air-cooled, 600 W	1.0 kW	-10°C to +25°C
P.197	CH-151BF		Air-cooled, 150 W	0.29 kW	-10°C to +80°C
	CH-601B		Air-cooled, 600 W	1.0 kW	
P.198	CH-402N		Air-cooled, 400 W	0.7 kW	
	CH-602N		Air-cooled, 600 W	1.0 kW	
	CH-802B		Air-cooled, 750 W	1.3 kW	

Simple & various options

Air-cooled — Simple series

Water-cooled — Simple series

Simple chiller series can respond to various needs

Page	Model	Circulation	Compressor output	Cooling capacity (*)	Temp. range
P.204	CHA-900 to 2200	Closed circuit	Air-cooled, 0.5 to 2.2 kW	1.2 to 6.0 kW	+7°C to +25°C
P.205	CHW-900 to 2200		Water-cooled, 0.9 to 2.2 kW	2.8 to 9.4 kW	

Large inverter chiller

Air-cooled — Large inverter chiller CHV series

Water-cooled — Large inverter chiller CHV series

Large chiller "CH/CHV series" Can be customized

Page	Model	Circulation	Compressor output	Cooling capacity (*)	Temp. range
P.210	CHV-750AS to 4500AS	Closed circuit	Air-cooled, 0.75 to 6.0 kW	3 to 28 kW	+10°C to +25°C
P.208	CHV-750W to 3750W		Water-cooled, 0.75 to 3 kW	3 to 14.0 kW	

Large chiller

Air-cooled — Large chiller CH series (Outdoor use)

Water-cooled — Large chiller CH series

Page	Model	Circulation	Compressor output	Cooling capacity (*)	Temp. range
P.211	CH-1500ASO to 7500ASO	Closed circuit	Air-cooled, 1.5 to 7.5 kW	4.0 to 22.0 kW	+5°C to +25°C
P.209	CH-6000W to 18000W		Water-cooled, 6.0 kW to 9.0 kW × 2	22.8 to 57.4 kW	

Large size, Low temp./Ultra-low temp.

Supercool

Cooling pump

Ultra-low temperatures down to -60°C, Large chiller

Page	Model	Circulation	Compressor output	Cooling capacity	Temp. range
P.212	SC-60α	Closed circuit	Water-cooled, 1.5 kW	1.3 kW or higher (*1)	-60°C to +40°C
P.213	CH-1500AF		Air-cooled, 1.5 kW	0.5 kW (*2)	-20°C to +20°C
	CH-2200AF		Air-cooled, 2.2 kW	1.7 kW (*2)	
	CH-3750WF		Water-cooled, 3.75 kW	3.8 kW (*3)	
	CH-5500WF		Water-cooled, 5.5 kW	5.7 kW (*3)	

For accurately controlling the heating temperature.

	Control accuracy	Features	Applications	Page
	±0.5°C	Basic operating temperature range up to +80°C Available in cooling function by primary cooling water Heater output, pumping capacity and wetted part, etc. can be changed	Hot water circulation for molding machines, Semiconductor manufacturing equipment, air conditioners, etc. Temperature control of chocolate, etc. in fermentation tanks and production lines A source of heat load for equipment development and testing	P.186
	±0.5°C	Inverter controlled The pump is risk free from liquid leakage Temp. drop in a short time by making the cooling water flow into the cooling coil	Heating control in high temp. range for Semiconductor manufacturing equipment	P.187

	Control accuracy	Features	Applications	Page
	±2.0°C	The air-cooled integrated chiller does not require primary cooling water and plumbing The unit type pumps can be selected according to the purpose Can be used with 100 V power supply	Cooling of a machine in the facility equipped with a 100 V power supply	P.196
	±0.5°C	The air-cooled integrated chiller does not require primary cooling water and plumbing The unit type pumps can be selected according to the purpose Cooling in high temperature range, Various output and external sensors are available	Temperature control for a machine in the facility equipped with a 100 V power supply	P.197
		The air-cooled integrated chiller does not require primary cooling water and plumbing The unit type pumps can be selected according to the purpose Cooling in high temperature range	Temperature control for a machine in the facility equipped with a 200 V power supply Precise temperature control for a press working mold	P.198

(*)When circulating fluid is +10°C, 50 Hz.

by selecting various options.

	Control accuracy	Features	Applications	Page
	±2.0°C	The air-cooled integrated chiller does not require primary cooling water and plumbing The water-cooled integrated type is ideal for cleanroom Available in various optional pump units by select The enhancement for the precision of temperature control, stainless steel wetted parts, etc. are available as an option	The cooling for Semiconductor manufacturing equipment and Large analytical device For Injection molding machine and Conveyor belt line Temperature control for Chemical tanks, etc.	P.204 P.205

(*)When circulating fluid is +20°C, 50 Hz.

upon request.

	Control accuracy	Features	Applications	Page
	±0.1°C	The air-cooled separate type, no noise or vibration in the room The size of the equipped inverter is compact and can save energy Plumbing for the indoor unit and the outdoor unit is required	Temperature control for transmission electron microscope	P.210
		The water-cooled integrated type is ideal for cleanroom The size of the equipped inverter is compact and can save energy Customizable upon request	Temperature control for processing stage of semiconductor parts Temperature control for roller part of printing machine	P.208
	±2.0 to 3.0°C	The all-weather unit for outdoors Customizable upon request Can be operated by an indoor remote control panel	Temperature control for the raw material tank, etc. that is installed outdoors	P.211
		The water-cooled integrated type is ideal for cleanroom Customizable upon request The compressor output above 18 kW can be custom-made	Temperature control for processing stage of semiconductor parts	P.209

(*)When circulating fluid is +10°C or +20°C, 50 Hz.

for low temperature from -20°C to +20°C

	Control accuracy	Features	Applications	Page
	±0.5°C	Can be stable cooling even in ultra-low temperature range (Lowest temp. -60°C) Sealed Tank The pump is risk free from liquid leakage	Temperature control for Etching equipment Temperature control for Optical fiber production	P.212
	±2.0°C	The standard temperature range is -20°C to +20°C High cooling capacity at low temperatures Various customizations are possible, including Pumping capacity	The cooling for Processing machinery, Semiconductor manufacturing equipment, etc. Temperature control for Etching equipment	P.213

(*1)When circulating fluid is -40°C, 50 Hz. (*2)When circulating fluid is +20°C, 50 Hz. (*3)When circulating fluid is +10°C, 50 Hz.

Hot water circulator HC-03/06/09/12/15/24

Circulation of hot water up to +80°C with high accuracy ±0.5°C. Various customized options such as heater output and pump capacity are available upon request.

HC-12

Features

- Basic operating temperature range up to +80°C
- Available in cooling function by primary cooling water
- Heater output, pumping capacity and wetted part, etc. can be changed

Applications

- Hot water circulation for molding machines, Semiconductor manufacturing equipment, air conditioners, etc.
- Temperature control of chocolate, etc. in fermentation tanks and production lines
- A source of heat load for equipment development and testing

Hot water circulator with high accuracy. Various customized such as heater output and number of pumps, etc.

Heating temperature control with high accuracy ±0.5°C in temperature range +40°C to +80°C.
Various customized options such as heater output, number of pumps, piping material, etc. based on the following models. Please feel free to contact us.

Model		HC-03	HC-06	HC-09	HC-12	HC-15	HC-24
Temperature range (*1)		+40°C to +80°C					
Control accuracy (*2)		PID controller, ±0.5°C					
Heater output		3.0 kW	6.0 kW	9.0 kW	12.0 kW	15.0 kW	24.0 kW
Pumping capacity (50/60 Hz)	Max. discharge pressure [MPa]	0.52			0.59		
	Flow rate [L/min] (*3)	22/31			42/55		
	Motor output [kW]	0.4			0.75		
Water bath capacity (at 80% water level)		28 L			110 L		
Safety device/function		Short/Over current breaker, Phase-reversal relay, Warning and Cut off for low water, Circulating water high temperature, Pump overcurrent, Overheating protection					
Connecting pipe diameter (Circulating fluid in/out)		Rc3/4			Rc1		
Dimensions (W×D×H)		386 × 512 × 865 mm			627 × 772 × 1130 mm		
Weight		approx. 90 kg	approx. 95 kg	approx. 105 kg	approx. 120 kg	approx. 130 kg	approx. 140 kg
Power Supply (three phase AC 200 V, 50/60 Hz)(*4)		15 A	30 A	40 A	50 A	60 A	100 A
Operation current (50/60 Hz)		12 A	21 A	29 A	38 A	46 A	72 A

(*1)The lower limit may change depending on operating conditions. Cannot be used for applications on circulating water returns for temperature increases. (*2)Cooling water is required up to approx. +60°C.
(*3)Capacity when using tap water. The value when the discharge pressure at 0.3 MPa. (*4)Need a step-down transformer outside when used.
•The sensitivity current in ELCB should be set larger than 30 mA. •The primary cooling water is required when the cooling function is added. The cooling capacity depends on the cooling water conditions (Water temperature and Flow rate).

Examples of Customization

Primary cooling water IN & OUT nozzle outlets

•The primary cooling water is required when cooling function added.

The hot water circulators in the HC series are not equipped with compressors and use heaters to heat the water.
When operating at temperatures below 60°C or when the temperature of the return water rises, a heat-absorbing mechanism with primary cooling water circulation must be added. The photo on the left shows an example of the specification with an additional cooling water circulation port.

*The primary cooling water is required when the cooling function added. The cooling capacity depends on the cooling water conditions (Water temperature and Flow rate).

To maintain circulation at high temperatures, connect with hoses, etc. with specifications that are heat resistant or insulated.

•Addition of Pump (up to 4 units)

Modified HC-06

Back side

The standard is One unit. Up to 4 units as an option.

*The external dimensions may be changed depending on the number of pumps. Please ask us for details.

Example of Pump 2 units mounted

Heat exchanger TEX-25A

Specialized in using fluorine-based heating medium for the heating control in high temperature range.

Features

- Can accurately control the heating temperature in a wide high temperature range
- Inverter controlled

The pump is risk free from liquid leakage

- Temp. drop in a short time by making the cooling water flow into the cooling coil

Applications

- Heating control in high temp. range for Semiconductor manufacturing equipment

TEX-25A

Hot medium circulator specializes in the heating temperature control.

Designed to be used with fuorine-based heating medium (Galden® HT270) for the heating control in high temperature range (+70°C to +200°C). Please note that this product cannot be used for cooling applications.

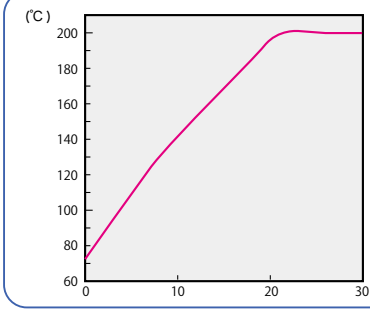
Temperature drop quickly for Maintenance.

To lower the temperature quickly in case of maintenance, etc. that requires access to the internal structure, make the cooling water flow into the cooling coil. For example, in the case of cooling water +20°C, it takes approx. 25 minutes to lower to +70°C from +200°C.

Model		TEX-25A
Temperature range		+70°C to +200°C
Control accuracy (*1)		PID controller, ±0.5°C
Heater output		2.5 kW
Pumping capacity	Flow rate [L/min]	14 (0.2 MPa, when circulating fluid is +150°C)
	Motor output [kW]	1.1
Temp. rise and drop time (*2)		Temp. rise time (+70°C --> +200°C): approx. 30 min (cooling water OFF) Temp. drop time (+200°C --> +70°C): approx. 25 min (cooling water ON), Cooling water condition: approx. 8 L/min at +20°C
Safety device/function		Short/Over current breaker, Circulating fluid high temperature, Temperature abnormal, Low fluid cut off, Liquid high-level, Pump overload
INPUT/OUTPUT functions		Remote temperature control connector, Heater ON/OFF input, Cooling water ON/OFF input, Temp. monitor signal output, Safety device actuation signal output
Heating medium (Circulating fluid)		GALDEN® HT270 or HT200 (cannot be mixed in)
Fluid tank capacity		approx. 3 L (+Reserve tank: approx. 7 L)
Connecting pipe diameter		Circulating fluid in/out: Rc1/2, Primary cooling water in/out: Rc1/2
Dimensions (W×D×H) / Weight		406 × 761 × 924 mm, approx. 115 kg
Power Supply (three phase AC 200 V, 50/60 Hz)		15 A (Need a step-down transformer outside when used.)
Operation current		12 A
Standard accessories		Signal connector, power connector

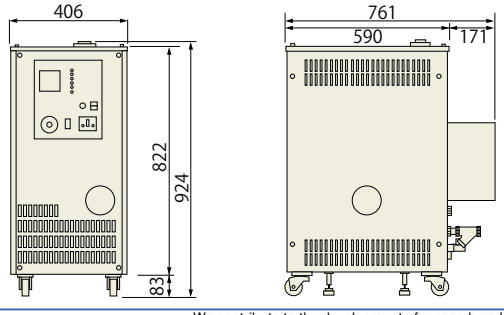
(*1)When the circulation flow rate is less than 5 L/min at no load. (*2)The unit alone at no-load.
- Ambient temperature range for this product is +7°C to +35°C.
- The fee for Delivery, Installing, Piping work, and Wiring work are quoted separately.

Temp. rise curve (Reference)



[Test conditions]
Heating medium: GALDEN® HT270
Fluid volume: Fluid tank, approx. 3 L + Reserve tank, approx. 7 L
Ambient temperature: +27°C (average)
Power supply: AC 200 V

External dimensions



We contribute to the development of research and industry.
[General Catalog] TAITEC

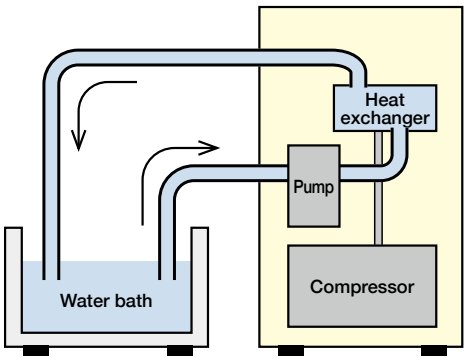
TAITEC Chiller:
We are proud to be a supplier of over 18,000 Chiller units, from Laboratories to Various industries

A Chiller is a machine that circulates water or a heating medium to equipment while in temperature control. It is widely used among Measuring equipment, Food processing equipment, Scientific equipment, etc. It is not only a "Chiller = Chilling" but also a "Hot water Circulator" and "Heat Exchanger" that control the temperature by giving heat to the object.
TAITEC offers various Chiller units to meet user's needs such as Ultra-low temperature circulating fluid -60°C to High temperature circulating fluid 200°C, Customizable cooling capacity and circulating fluid amount, etc.
Taking advantage of our supply record as many as 18,000 TAITEC Chiller units, we offer various kinds of Chiller units in different applications that require cooling water circulation. Hence, TAITEC Chiller units are suitable to respond to your intended usage needs.

For Open circuit and Closed circuit

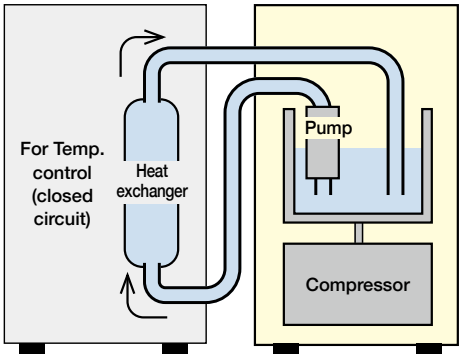
Chiller for open circuit

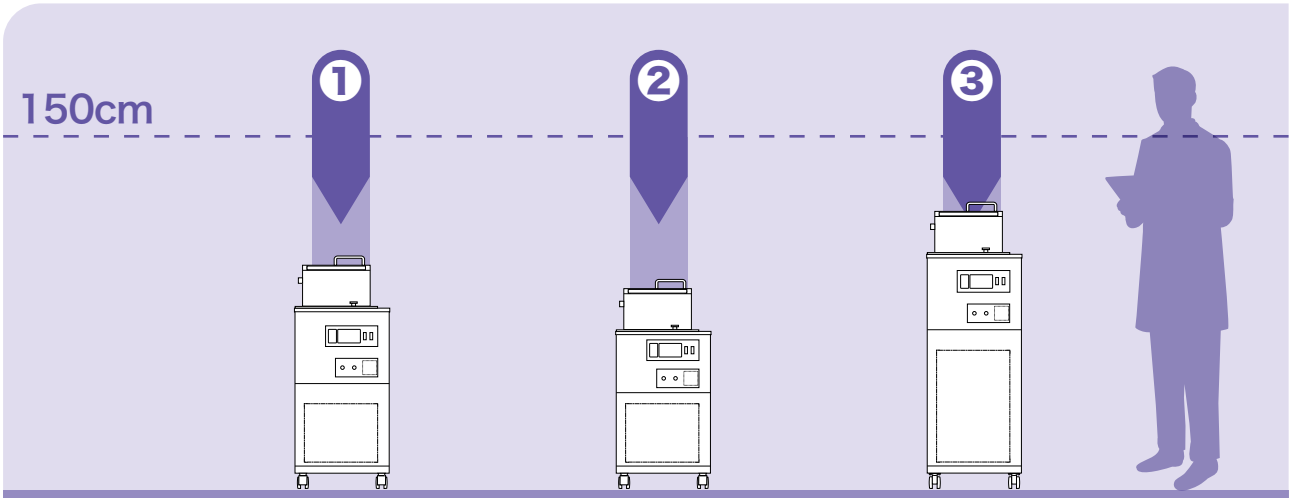
This Chiller unit for open circuit does not have a water bath, but can be used for circulation to an outside water bath. It can also be used for close circuit.



Chiller for closed circuit

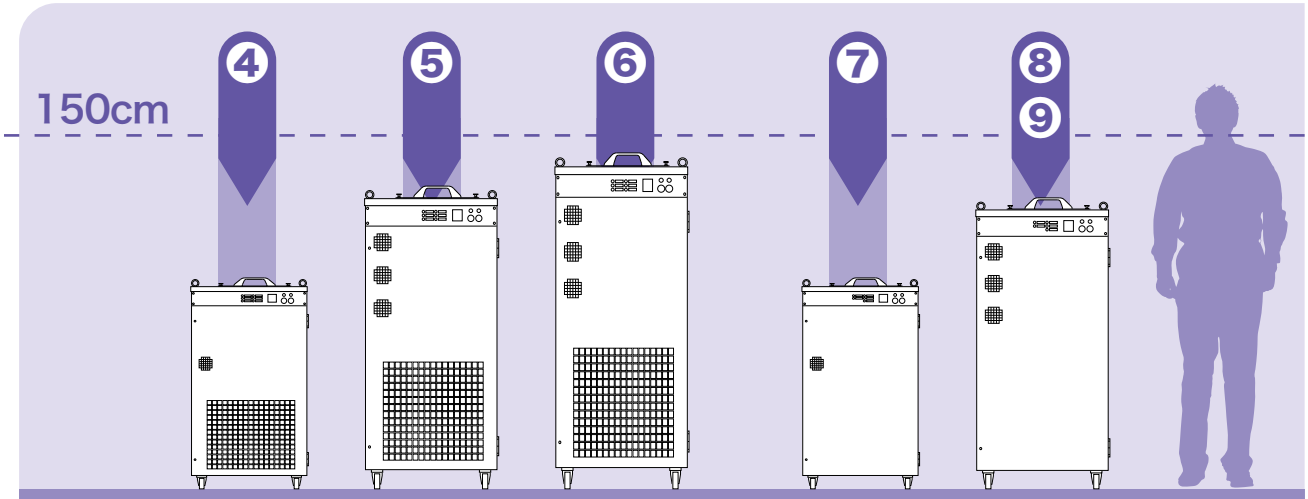
This Chiller unit for closed circuit has a water bath and can be used for circulation to the analytical instruments, etc.





Compact CH series

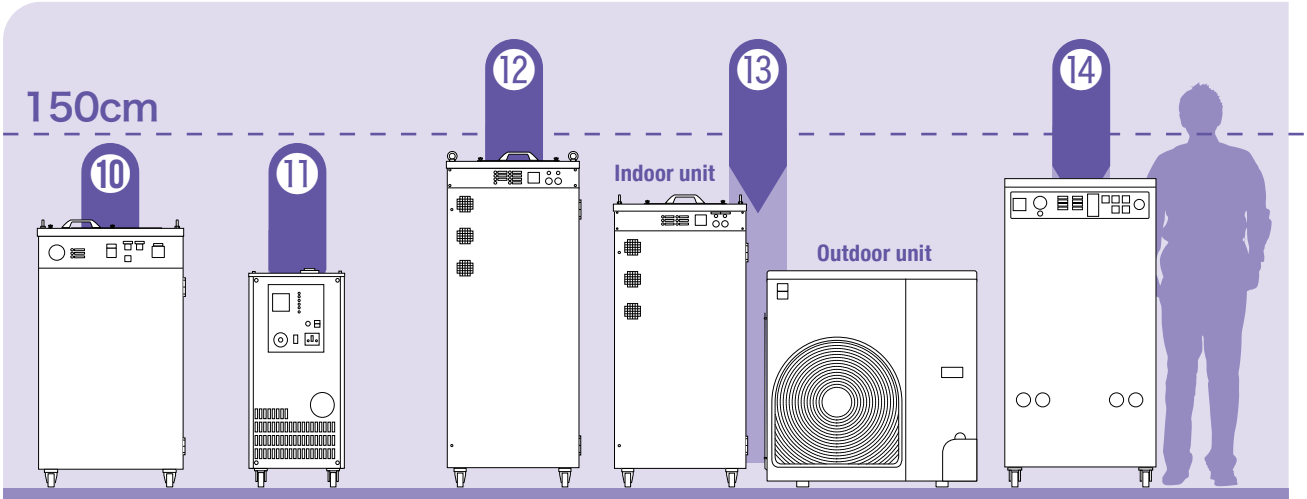
❶ CH-601A/601B/402N/602N　❷ CH-151BF　❸ CH-802B



Simple series

Air-cooled type
❹ CHA-900
❺ CHA-1500
❻ CHA-2200

Water-cooled type
❼ CHW-900
❽ CHW-1500
❾ CHW-2200



Hot water circulator

❿ HC-12

The high temperature circulator

⓫ TEX-25A

Large CH/CHV series

Water-cooled type
⓬ CHV-1500W

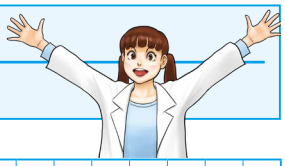
Air-cooled type
⓭ CHV-1500AS

Ultra low temperature circulator
⓮ SC-60α

Note

Date Author

Title



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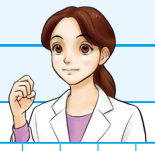

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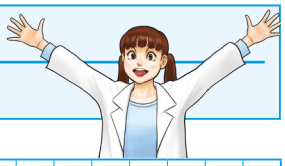

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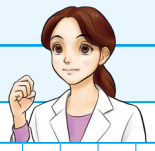


The Standard Small Chiller unit "Compact CH series" supports various industries!

Features

Cooling in High Temp. Range
The compressor continues to operate even at high temp. range to quickly cool the circulating fluid in high temp. range (200 V Precise Temp. control type).

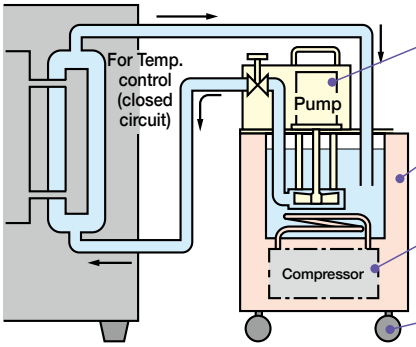
Can be made of stainless steel
The wetted parts of the chiller unit and pump can be made of stainless steel and used with pure water. These modifications are standard equipment in some models and optional in other Custom order models.

Portable & Compact design
Its compact design with casters and Air-cooled compressor (including 1 model of Water-cooled) enable installation and movement with ease.

The attachment/detachment pump enables replacement with ease.
The unit type pump is sold separately and can easily be removed from the chiller unit that controls the temperature for circulating fluid.

TAITEC VOICE
Please note the following matters.

Excellent portable design



The unit type pump is easy to maintain.
Original vertical leak-less pump (See the right page).

Compact size
Even with the largest CH-802B, 407 × 565 × 996H mm

Mainly Air-cooled type, easy to install (including 1 model of Water-cooled).
Easy to install and move it as primary cooling water.
Piping connections are not required.

The casters enable movement with ease.
The metal fittings can be fastened to the floor if necessary (Metal fittings are available in some models).

Standard Temp. Control (Control accuracy : ±2.0°C)

•Air-cooled type for 100 V
•Ideal for using for cooling and cold water production when calorific values are known.

CH-601A --> P.196
•Temperature range: -10°C to +25°C
•Cooling capacity (at 50 Hz): approx. 1.0 kW
•External dimensions (W×D×H): 407 × 565 × 766 mm
•Power supply : Single-phase 100 V

Precise Temp. control (Control accuracy : ±0.5°C)

•Air-cooled type for 100 V
•Precise Temp. control by heater
•Various output and external temperature sensors

CH-151BF

CH-151BF --> P.197
•Temperature range: -10°C to +80°C
•Cooling capacity (at 50 Hz): approx. 0.29 kW
•External dimensions (W×D×H): 407 × 485 × 676 mm
•Power supply: Single-phase 100 V

CH-601B --> P.197
•Temperature range: -10°C to +80°C
•Cooling capacity (at 50 Hz): approx. 1.0 kW
•External dimensions (W×D×H): 407 × 565 × 766 mm
•Power supply: Single-phase 100 V

Precise Temp. control (Control accuracy : ±0.5°C, Air-cooled type for 200 V)

•Air-cooled type for 200 V •Precise Temp. control by heater •Various output and external temperature sensors

CH-402B

CH-402B/602B --> P.198
•Temperature range: -10°C to +80°C
•Cooling capacity (at 50 Hz): approx. 0.7/1.0 kW
•External dimensions (W×D×H): 407 × 565 × 766 mm
•Power supply: Three-phase 200 V

CH-802B --> P.198
•Temperature range: -10°C to +80°C
•Cooling capacity (at 50 Hz): approx. 1.3 kW
•External dimensions (W×D×H): 407 × 565 × 966 mm
•Power supply: Three-phase 200 V

The pump unit can be selected according to required capacity. See the correspondence table for optional pump unit.

Types and abilities of the pump unit (Optional/sold separately)

Pump unit P-310 

Pump unit P-320 

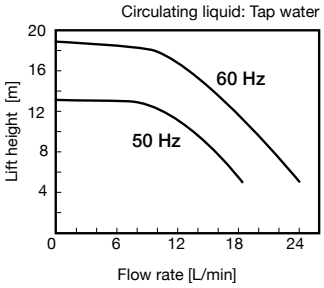
Pump unit P-420 

Pump unit P-520 

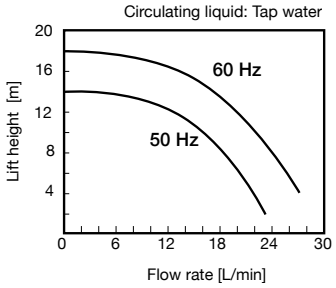
Discharge pressure	Model	Max. head (at 50 Hz)	Max. flow (at 50 Hz)	Number of circuit	Power supply	Applicable model	Remarks	Page
Low ↑ ↓ High	P-310	12.5 m	19 L/mim	1	100 V	CH-601A CH-601B	The wetted parts are made of stainless steel.	P.200
	P-320	14 m	23 L/mim	1	200 V	CH-402B/602B/802B	The wetted parts are made of stainless steel.	
	P-420	20 m	25 L/mim	1				
	P-520	13 m (Tap water)	23 L/mim (Tap water)	1			The wetted parts are made of stainless steel. Usable heating medium: Tap water, Antifreeze (Show Brine Blue) and Galden®.	

Pump ability curve Our original vertical leakless pump --> P.200

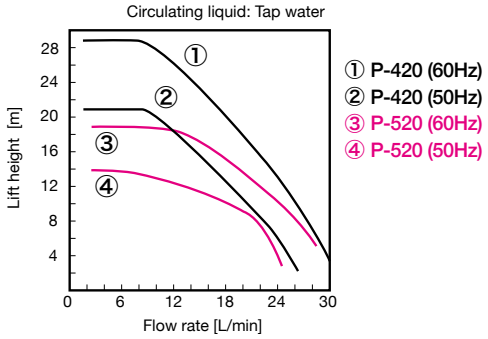
[P-310]



[P-320]



[P-420/520]



Easy attachment/detachment, Power supply from the main unit can be attached up to 2 units (Except for P-310/520)

The connector for the pump unit (Power・Signal)

Used for the second pump unit

Up to 2 sets of pump units can be mounted on the Compact CH series. *The second pump unit can be mounted for an extra cost if the chiller unit has enough cooling capacity.

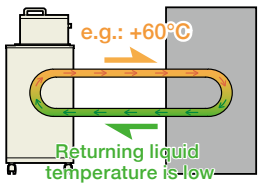
A modified pump unit with further capacities (Pump head and Flow rate) can be mounted.

Modified pump unit that can meet the required specs is available. (Please ask us the price and more information).

◀ Example of a mounted Modified pump unit

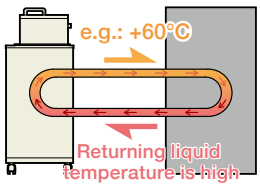
Cooling in high temperature range

[Heating control]



For temperature control in high temperature range. The general chiller is only for heating control.

[Cooling control]



Cooling in high temperature range is required in this temperature control.

Example of external input/output

Terminals on the side of CH-602B

The external sensor (sold separately) is a rod type of ϕ4 mm × 250 L mm (with D-sub connector). Custom-made type is also available. When setting temperature externally, connect it to the terminal of the D-sub connector so that the voltage value of the set value can be input. In addition, the minus sides of the remote temperature setting and the temperature monitor output should be wired separately.

Cooling pump CH-601A

Air-cooled type CH series with excellent portability for 100 V power supply. Ideal to use for cooling and cold water production when calorific values are known.

•Pump unit (Sold separately) --> P.200 •External dimensions --> P.201

CH-601A

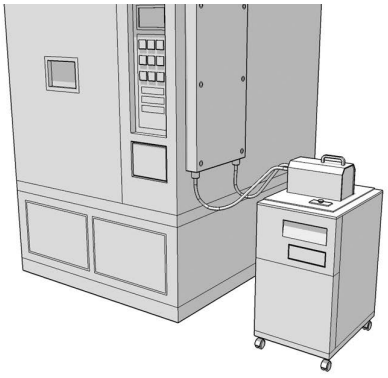
The pump unit is sold separately.

Features

•The air-cooled integrated chiller does not require primary cooling water and plumbing
•The unit type pumps can be selected according to the purpose
•Can be used with 100 V power supply

Applications

•Cooling of a machine in the facility equipped with a 100 V power supply



Ideal for simple circulation to heat sink, etc.

For standard temperature adjustment type and cold water-producing equipment

Temperature control is simple control by ON / OFF of compressor. Designed to demonstrate the most cooling capacity in the temperature range from -10°C to room temperature. Ideal for cold water production etc. Ideal for when calorific values are known.

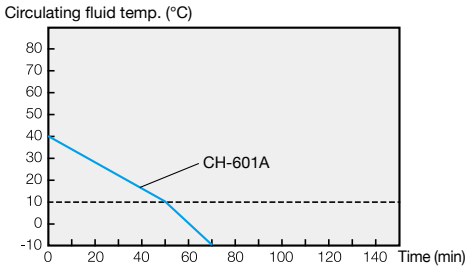
Optional pump is the unit type that shortens maintenance time.

Our original vertical leakless pump. The unit type shortens maintenance time due to its easy attachment/detachment.

Model	CH-601A
Temperature range (*1)	-10°C to +25°C
Ambient temperature range	+5°C to +35°C
Control accuracy (*2)	±2.0°C, Compressor On-Off control
Compressor output, Refrigerant	600 W, R404A
Cooling capacity (at 50 Hz) (*3)	approx. 1.0 kW
Temperature setting display	Digital system (setting/display switching system)
Safety device/function	Short/Over current breaker, High temperature cutout, Alarm and warning for compressor, Phase-reversal relay, Alarm and warning for pump motor, Abnormal temperature sensor diagnosing circuits
Other Functions	Temperature check monitor, Freezer pause timer
Water bath capacity (water level 80%) (*4)	approx. 26 L
Applicable pump unit (*5)	P-310
Dimensions (W×D×H) (Pump unit is not included)	407 × 565 × 766 mm
Weight (Pump unit is not included)	approx. 69 kg
Power Supply (*6) (Pump unit is not included)	AC100V/20A MAX25A (Need a step-down transformer)
	20 A
Operation current (Pump unit is included)	25 A
Standard accessories	Power cord, Drain hose × 1 pc

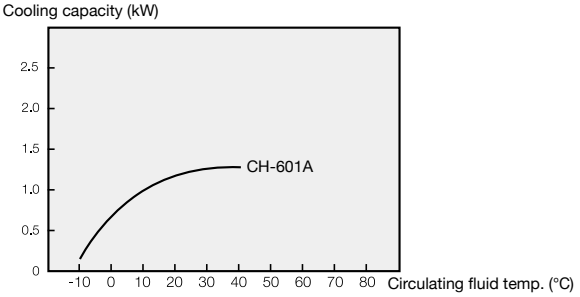
(*1)When setting below +7°C, please be sure to use antifreeze (Please ask us for details).
(*2)Performance may not be maintained due to the heating medium, environmental temperature, heat load, circulation pipe distance, etc.
(*3)Capacity when using tap water and the circulating fluid temperature at 10°C. The capacity varies with the pump unit mounted. The capacity decreases when the ambient temperature is above +30°C.
(*4)Due to the structure not being sealed, the circulating fluid may evaporate and reduce depending on the set temperature and heating medium type.
(*5)Please refer the pump units on P.200.
(*6)Need a step-down transformer outside when used.

Cooling curve



(Conditions) Circulating fluid : Tap water, Methanol (below +10°C)
Liquid measure : CH-601A --> 26 L
Environmental temp. : 25°C average
Power supply: AC 100 V, 50 Hz

Cooling capacity curve



(Conditions) Circulating fluid : Tap water, Methanol
Liquid measure : CH-601A --> 26 L
Environmental temp. : 25°C average
Power supply : AC 100 V, 50 Hz

Note: Methanol was used for the circulating fluid for testing purposes and is not recommended for actual use.

Cooling pump CH-151BF/601B

Air-cooled type CH series with excellent portability for 100 V power supply. Built-in heater makes precise temperature control. Various output and external sensors are available.

•Pump unit (Sold separately) --> P.200 •External dimensions --> P.201

Features

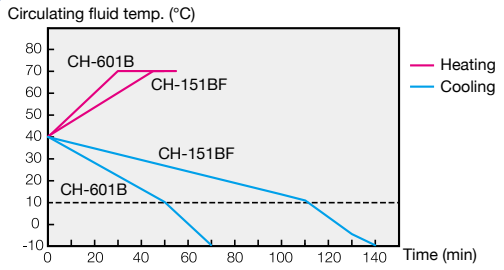
- The air-cooled integrated chiller does not require primary cooling water and plumbing
- The unit type pumps can be selected according to the purpose
- Can be used with 100 V power supply, External temperature sensors are available

Applications

- Temperature control for the machine in the facility equipped with a 100 V power supply

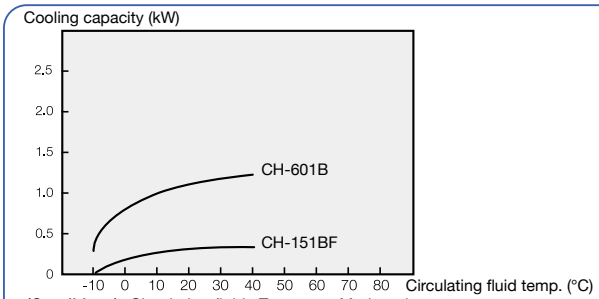
Since this unit is for AC 100 V, even if there is no AC 200 V facility, it can be used as the authentic chiller unit.

Heating/Cooling curve



(Conditions) Circulating fluid : Tap water, Methanol (below +10°C)
Liquid measure : CH-151BF --> 14 L
CH-601B --> 26 L
Environmental temp. : 25°C average
Power supply : AC 100 V, 50 Hz

Cooling capacity curve



(Conditions) Circulating fluid : Tap water, Methanol
Liquid measure : CH-151BF --> 14 L
CH-601B --> 26 L
Environmental temp. : 25°C average
Power supply : AC 100 V, 50 Hz

*The compressor is stopped when the circulating fluid temperature is above 40°C.

Note: Methanol was used for the circulating fluid for testing purposes and is not recommended for actual use.

CH-151BF

CH-601B

The pump unit is sold separately.

Various output and external sensors can be used.

Temperature setting can be the range of -10°C to + 80°C.
The constant temperature circulation can be with stable and high accuracy as the compressor is operated continuously and the temperature is controlled by the heater. It can be used with a 100 V power supply. Remote temperature setting and external sensor (Optional) can be used. Various safety devices equipped are output actuation signals.

Model	CH-151BF	CH-601B
Temperature range (*1)	-10°C to +80°C	
Ambient temperature range	+5°C to +35°C	
Control accuracy (*2)	±0.5°C, Heater PID control	
Compressor output, Refrigerant	150 W, R134a	600 W, R404A
Cooling capacity (at 50 Hz) (*3)	approx. 0.29 kW	approx. 1.0 kW
Heater output	0.6 kW	1.8 kW
Temperature setting display	Digital system (setting/display switching system)	
Safety device/function	Short/Over current breaker, Alarm and warning for compressor, High and Low temperature, Alarm and warning for pump motor, Abnormal temperature sensor diagnosing circuits, Alarm for replenishing liquid, Lowwater cut off, Phase-reversal relay	
Other Functions	Temperature check monitor, Remote temperature setting, Safety signal for safety devise, External temperature sensor connection (*4)	
Water bath capacity (water level 80%) (*5)	approx. 14 L	approx. 26 L
Applicable pump unit (*6)	Contact us	P-310
Dimensions (W×D×H) (Pump unit is not included)	407 × 485 × 676 mm	407 × 565 × 766 mm
Weight (Pump unit is not included)	approx. 46 kg	approx. 75 kg
Power Supply (*7) (Pump unit is not included)	AC100V/15A MAX20A(Need a step-down transformer)	AC100V/40A MAX45A(Need a step-down transformer)
	15 A	40 A
Operation current (Pump unit is included)	20 A	45 A
Standard accessories	Power cord, Drain hose × 1 pc, Connector for signal × 1 pc	

(*1)When setting below +7°C, please be sure to use antifreeze (Please ask us for details). The compressor is stopped when the circulating fluid temperature is above 40°C.
(*2)Performance may not be maintained due to the heating medium, environmental temperature, heat load, circulation pipe distance, etc.
(*3)Capacity when using tap water and the circulating fluid temperature at 10°C. The capacity varies with the pump unit mounted. The capacity decreases when the ambient temperature is above +30°C.
(*4)External temperature sensor (φ4 × 250 mm) is available as an option.
(*5)Due to the structure not being sealed, the circulating fluid may evaporate and reduce depending on the set temperature and heating medium type.
(*6)Please refer the pump units on P.200. (*7)Need a step-down transformer outside when used.

Cooling pump CH-402N/602N/802B

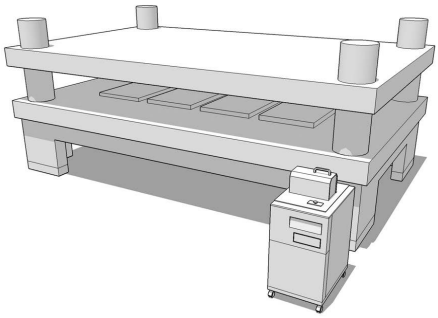
Air-cooled type CH series with excellent portability for 200 V power supply. Built-in heater makes precise temperature control. Cooling in high temperature range, Wide temperature range, Various outputs, and external sensors are available.

•Pump unit (Sold separately) --> P.200 •External dimensions --> P.201

CH-402N/602N

CH-802B

The pump unit is sold separately.



Features

- The air-cooled integrated chiller does not require primary cooling water and plumbing
- The unit type pumps can be selected according to the purpose
- Cooling in high temperature range

Applications

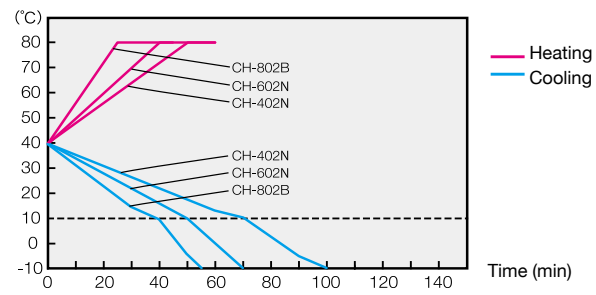
- Temperature control for a machine in the facility equipped with a 200 V power supply
- Precise temperature control for a press working mold

Precise temperature control for the upper and lower stages of the press working mold. Circulate two with one unit is availale as an option. It can control the temperature of the upper and lower stages of the press working mold (within the capability).

Model	CH-402N	CH-602N	CH-802B
Temperature range (*1)	-10°C to +80°C		
Ambient temperature range	+5°C to +35°C		
Control accuracy (*2)	±0.5°C, Heater PID control		
Compressor output, Refrigerant	400 W, R404A	600 W, R404A	750 W, R404A
Cooling capacity (at 50 Hz) (*3)	approx. 0.7 kW	approx. 1.0 kW	approx. 1.3 kW
Heater output	1.8 kW	2.25 kW	3 kW
Temperature setting display	Digital system (setting/display switching system)		
Safety device/function	Short/Over current breaker, Alarm and warning for compressor, High and Low temperature, Alarm and warning for pump motor, Temperature sensor abnormality diagnosis circuit, Alarm for replenishing liquid, Low-water cut off, Phase-reversal relay		
Other Functions	Temperature check monitor, Remote temperature setting, Temperature monitor signal output, Safety device actuation signal output, External temperature sensor connection (*4)		
Water bath capacity (water level 80%) (*5)	approx. 26 L		
Applicable pump unit (*6)	P-320, P-420, P-520		
Dimensions (W×D×H) (Pump unit is not included)	407 × 565 × 766 mm		407 × 565 × 996 mm
Weight (Pump unit is not included)	approx. 66 kg	approx. 68 kg	approx. 75 kg
Power Supply (*7) (Pump unit is not included)	Three-phaseAC200V/10A 50/60Hz, MAX12A: Need a step-down transformer	Three-phaseAC200V/15A 50/60Hz, MAX17A: Need a step-down transformer	Three-phaseAC200V/20A 50/60Hz, MAX22A: Need a step-down transformer
	10 A	15 A	20 A
Operation current (Pump unit is included)	12 A	17 A	22 A
Standard accessories	Power cord, Drain hose × 1 pc, Connector for signal × 1 pc, Metal fittings (only for 802B)		

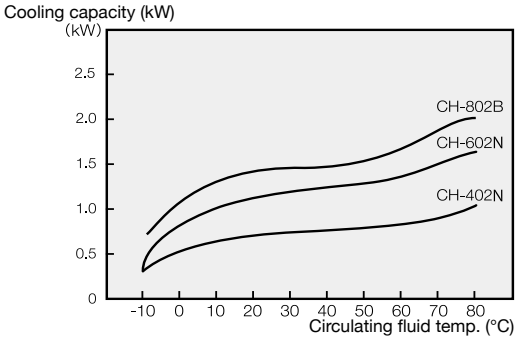
(*1)When setting below +7°C, please be sure to use antifreeze (Please ask us for details).
(*2)Performance may not be maintained due to the heating medium, environmental temperature, heat load, circulation pipe distance, etc.
(*3)Capacity when using tap water and the circulating fluid temperature at 10°C. The capacity varies with the pump unit mounted. The capacity decreases when the ambient temperature is above +30°C.
(*4)External temperature sensor (φ4 × 250 mm) is available as an option.
(*5)Due to the structure not being sealed, the circulation liquid may evaporate and reduce depending on the set temperature and heating medium type.
(*6)Please refer the pump units on P.200.
(*7)Need a step-down transformer outside when used.

Heating/Cooling curve



(Conditions)
Circulating fluid : Tap water, Methanol (below +10°C)
Liquid measure : 26 L
Environmental temp. : 25°C average
Power supply : AC 200 V, 50 Hz

Cooling capacity curve

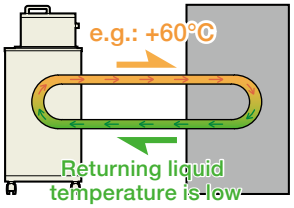


(Conditions) Circulating fluid : Tap water, Methanol
Liquid measure : 26 L
Environmental temp. : 25°C average
Power supply : AC 200 V, 50 Hz

Note: Methanol was used for the circulating fluid for testing purposes and is not recommended for actual use.

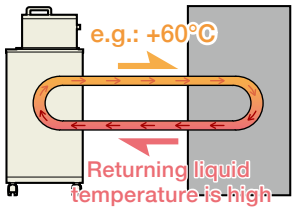
Cooling in high temperature range

[Heating control]



For temperature control in high temperature range. The general chiller is only for heating control.

[Cooling control]



Cooling in high temperature range is required in this temperature control.

Chillers

CHW-1500

HC-12

TEX-25A

P-310 for Compact CH series (AC 100 V)

Original vertical leakless pump.

•Compact CH series (AC 100 V) --> P.196-197

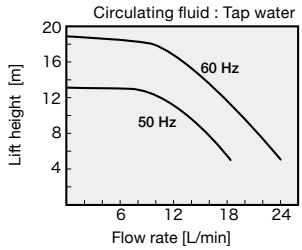
P-310
Left side view

Model	P-310
Applicable units	CH-601A, CH-601B
Max. lift height [m] (50/60 Hz)	12.5/17
Max. flow rate [L/min] (50/60 Hz)	19/23
Connection diameter	Rc3/8
Circulatory circuit	1
Motor output	250 W
Safety device/function	Thermal protector
Materials of wetted parts	Stainless
Weight	approx. 13 kg
Power Supply (from the main unit)	AC 100 V 50/60 Hz 3.9/4.1 A
Standard accessory	Fixing screws

•Please refer to the right page for the dimensions. •P-310 should be used with tap water or solution antifreeze (Show Brine Blue) and water mixed and cannot be used with silicon oil.

Pumping capacity curve

P-310



Optional Accessories (Common in Pump units)

Antifreeze Show Brine Blue

P-320/420/520 for Compact CH series (AC 200 V).

Available the model used with not only tap water also antifreeze.

•Compact CH series (AC 100 V) --> P.198

For optional parts refer to the above.

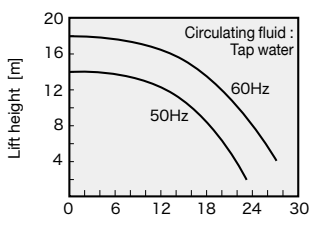
P-520
Left side view

Model	P-320	P-420	P-520
Applicable units	CH-402B/602B/802B/802W		
Max. lift height [m] (50/60 Hz)	14/18	20/28	Tap water: 13/19, Antifreeze: 14/20, Galden®: 23/33
Max. flow rate [L/min] (50/60 Hz)	23/27	25/29	Tap water: 23/27, Antifreeze: 23/27, Galden®: 24/28
Nozzle diameter/Circulatory circuit	Nozzle diameter: Rc3/8, Circulatory circuit: 1		
Motor output	300 W		
Safety device/function	Thermal protector		
Materials of wetted parts	Stainless		
Weight	approx. 10 kg	approx. 12.5 kg	approx. 13.5 kg
Power Supply (from the main unit)	Three-phase, AC 200 V 50/60 Hz 1.4 A	Three-phase, AC 200 V 50/60 Hz 1.7/1.6 A	Three-phase, AC 200 V 50/60 Hz 1.8/1.6 A
Standard accessory	Fixing screws		

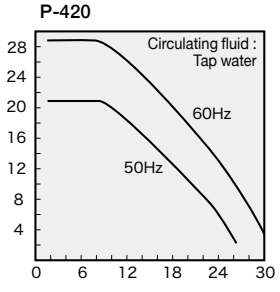
•Please refer to the right page for the dimensions. •The above data for P-520 was recorded when the tap water/antifreeze/Galden® was at 20°C/no load. •P-320 should be used with circulating fluid below specific gravity 1.06 and kinetic viscosity 8.5 mm^2/s. •P-420 cannot be used with circulatory liquid with higher specifi c gravity and kinetic viscosity than water. •For P-520, antifreeze should be with "Show Brine Blue (we designate)", and Galden® should be used with below kinetic viscosity 4 cSt.

Pumping capacity curve

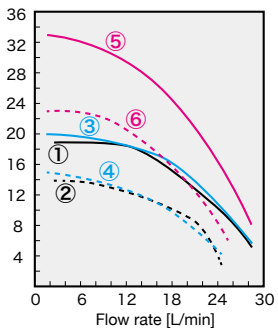
P-320



P-420



P-520



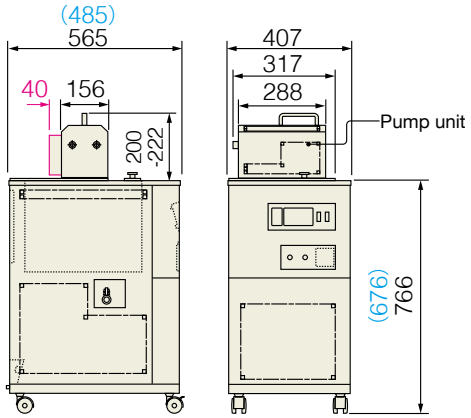
Tap water at 25°C
①60 Hz ②50 Hz
Antifreeze at 20°C
③60 Hz ④50 Hz
Galden® at 20°C
⑤60 Hz ⑥50 Hz

External dimensions for Simple/Compact CH series

•Compact CH series --> P.196-200 •Simple series --> P.204-205

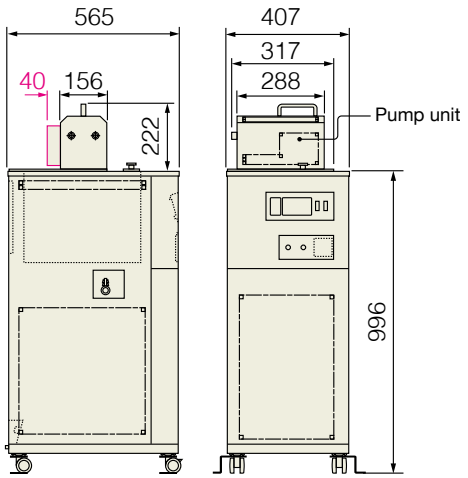
CH-601A/151BF/601B/402B/602B

Black CH-601A/601B/402B/602B
(Blue) CH-151BF
The height (200-220) and width (As shown in red [40]: P-310/520) differ with the mounted pump.



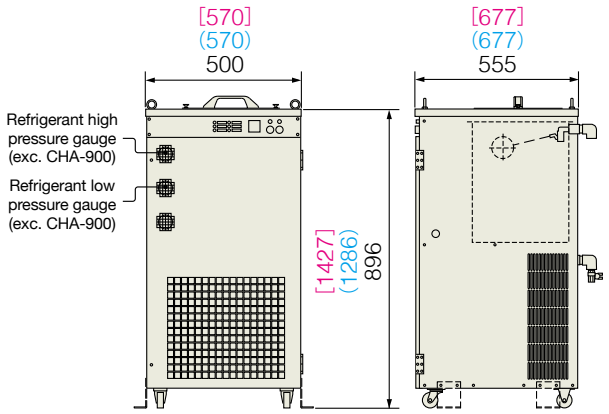
CH-802B

The width differs with the mounted pump.
(As shown in red [40]: P-520)



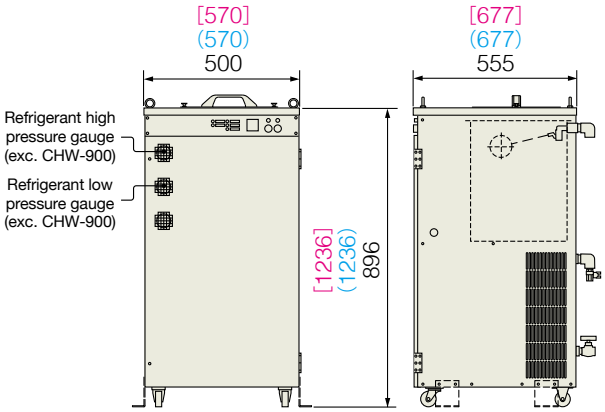
CHA-900/1500/2200

Black CHA-900 (Blue) CHA-1500 [Red] CHA-2200



CHW-900/1500/2200

Black CHW-900 (Blue) CHW-1500 [Red] CHW-2200



"Simple series" created from various supply records and requests

Features and Advantages ~ Various Pump Capacity ~

Diverse optional accessories

All options except the standard specifications are available. Diverse pump unit specifications depending on the Flow rate, Pump head, and Materials (see the right page) are available to user's various needs. Also, Upgrade for Stainless steel wetted parts, Precise temp control, etc. are available.
The Simple series can reduce wasteful spending by adding the minimum necessary upgrades.

Space saving

Save installation space by 65% compared with a conventional one.
Contributes to installation space saving and flexibility in the factory layout while remaining at cooling capacity.

We will take care of your problems and requirements

Diverse Options help your problems and respond to your requirements.

- Want to save on a water rate for the Chiller unit.
- Want to secure a stable temperature cooling water.
- Want to operate several Chiller units.
- Want to prevent Red water from the Chiller unit.
- Want to use circulating fluid in the cleanroom.
- Want to use a Chiller with High-powered pump unit.

Safety operation thanks to the warning indicator

The warning indicator that is equipped in all models will be activated individually in case of an emergency in order to deal with it promptly.

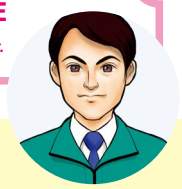
The details of Diverse options

The lineup of the "Simple series Chiller unit" are Four types of air-cooled and Three types of water-cooled. The series consists of basic functions and capabilities that can be extended per the customer's request as an option. The functions and usage can be customized to your preference in order to prevent waste spending by adding the minimum upgrades as necessary. This is the concept for the "Simple series".
The variations of pumping capacities for the standard 7 models are as shown on the right depending on the options.

Optional Accessories	
Enhancement for the precision of temperature control	Heater
Enhancement for the pumping capacity	High flow/High pump head/Stainless steel, Bronze Casting (See the right page for more details on pumping capacity)
Safety devices/functions added	No-fuse breaker
	Short circuit breaker
Materials of wetted part changed	Stainless steel wetted parts
	Piping for Antifreeze
	Ball tap
CUSTOM-MADE	Remote control box
	Fan speed controller (Noise reduction by revolving speed control for cooling fan)
Safety measure	Fixing brackets

Delivery, Installing, and Piping work

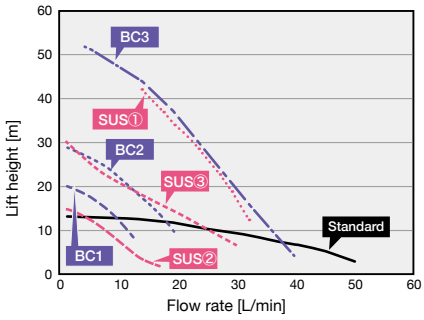
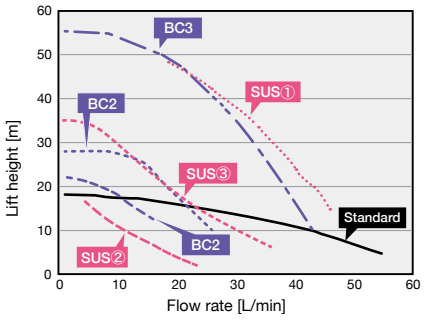
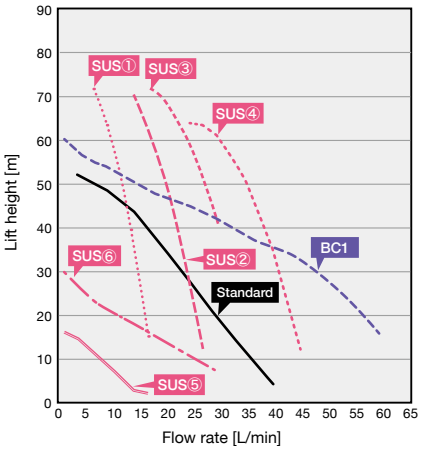
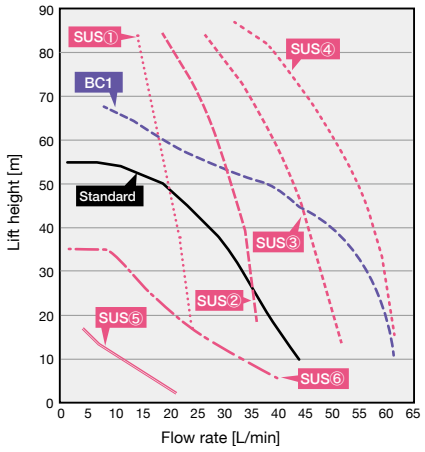
TAITEC VOICE
Please note the following matter.



- The fee for Delivery, Installing, Piping work, and Wiring work are quoted separately.

Model Selection by Pump Characteristic Curves

The "Standard" showed below is the standard pump characteristic mounted on the chiller unit. Each of the "BC1-3" "SUS①-⑥" has an the optional pump characteristic.

Air-cooled type	Water-cooled type	Pump Characteristic Curves	
CHA-900	CHW-900	at 50 Hz	at 60 Hz
P.204	P.205		
			
CHA-1500	CHW-1500	at 50 Hz	at 60 Hz
P.204	P.205		
			
CHA-2200	CHW-2200		
P.204	P.205		
			

Pump variations of CHA-1500/2200 and CHW-1500/2200 are common.

Cooling pump CHA-900/1500/2200/CHW-900/1500/2200

The Simple chiller series can respond to various needs from consumers by selecting various options. We are proud of our various kinds of pump abilities that are available to meet a high flow rate and a high pump head. Stainless steel wetted parts, etc. are available as an option.

•External dimensions --> P.201

CHA-900 CHA-1500 CHA-2200

CHW-900 CHW-1500 CHW-2200

Features and Applications

- The air-cooled integrated chiller does not require primary cooling water and plumbing
- The water-cooled integrated type is ideal for cleanroom
- Available in various optional pump units by select
- The enhancement for the precision of temperature control, stainless steel wetted parts, etc. are available as an option

Optional Accessories (See also "★ mark" in the specification table below)

① For the precision of temperature control	Heater
② Enhancement for the pumping capacity	High flow/High pump head/Stainless steel, Bronze Casting
③ Safety devices/ functions added	No-fuse breaker
	Short circuit breaker
④ Materials of wetted part changed	Stainless steel wetted parts
	Piping for Antifreeze
	Ball tap
⑤CUSTOM-MADE	Remote control box
	Fan speed controller (Noise reduction by revolving speed control for cooling fan)
Safety measure	Fixing brackets

Standard specifications: Air-cooled type (Specifications can be modified as an option)

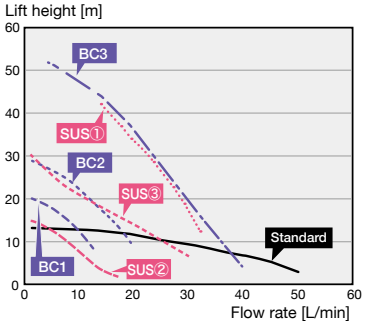
Model		CHA-900	CHA-1500	CHA-2200
Temperature range		+7°C to +25°C		
Ambient temperature range		+5°C to +35°C		
Control accuracy (*1) ★		±2.0°C Compressor On-Off control		
Compressor output, Refrigerant		0.9 kW, R407C	1.5 kW, R407C	2.2 kW, R407C
Cooling capacity [kW] (50/60 Hz) (*2)	Circulation temperature at 10°C	1.7/2.1	4.0/4.3	5.2/5.8
	Circulation temperature at 20°C	2.7/2.9	4.5/4.7	6.0/6.5
Pumping capacity ★ (50/60 Hz) (*3)	Max. discharge pressure [MPa]	0.14/0.19	0.52	
	Flow rate [L/min]	15/27	22/31	
	Motor output [kW]	0.1/0.15	0.4	
Water bath capacity (at 80% water level)		26 L	56 L	
Safety device/function ★		Alarm and warning for water shortage, Compressor pressure abnormal, Compressor overload, Pump overcurrent, Water temperature abnormal, Warning indicator lamp		
Connecting pipe diameter (Circulating fluid in/out)		Rc 1/2	Rc 1	
Dimensions (W×D×H)		500 × 555 × 896 mm	570 × 677 × 1286 mm	570 × 677 × 1427 mm
Weight		approx. 110 kg	approx. 178 kg	approx. 190 kg
Power Supply (three phase AC 200 V, 50/60 Hz) (*4)		15 A	20 A	30 A
Operation current [A] (50/60 Hz)		4.7/5.3	8.2/8.6	10.5/10.9

(*1)There may be a case where the temperature performance cannot be maintained due to environmental temperature, heat load, circulation pipe distance, etc. (*2)Capacity when the ambient temperature below +25°C. (*3)Capacity when using tap water. Flow rate when the discharge pressure of CHA-500/900 is at 0.125 MPa and of CHA-1500/2200 at 0.3 MPa. •Power cable is not included. •Standard products cannot use pure water as circulating fluid. •The cooling capacity may not be maintained if the unit is placed in direct sunlight and hindrance of exhausting. •Please ask us when mixing chemicals for water treatment to circulating fluid. •The fee for Delivery and Installing are quoted separately.
(*4)Need a step-down transformer outside when used.
★Can upgrade the abilities and add some functions by selecting the following options. ①To improve accuracy of temperature adjustment (Heater added) ②To improve capacity of the pump unit (changes to Large flow rate/High head; Several types) ③To add safety devices (No-fuse breaker and Earth leakage breaker) ④To change materials such as the stainless steel wetted parts, the circulating fluid piping for the antifreeze, and the ball tap ⑤Additional functions (Special order/Option: Remote control box, To reduce noise by fan speed controller) ⑥Other (Device fixing brackets)

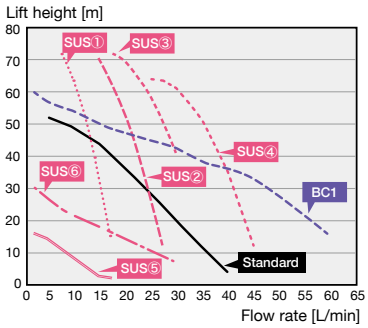
Pump Characteristic Curves and Cooling Capacity

•External dimensions --> P.201

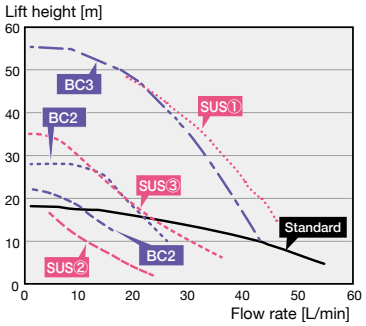
CHA/CHW-900 (50Hz)



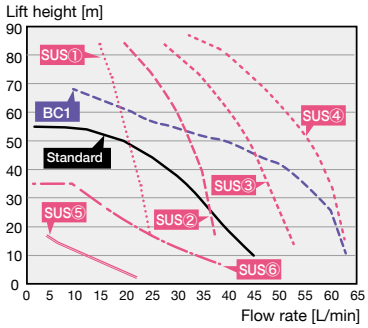
CHA/CHW-1500/2200 (50Hz)



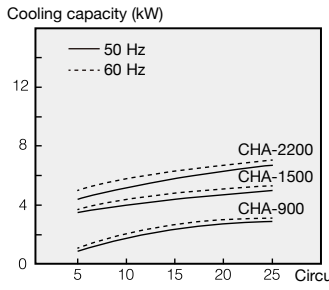
CHA/CHW-900 (60Hz)



CHA/CHW-1500/2200 (60Hz)

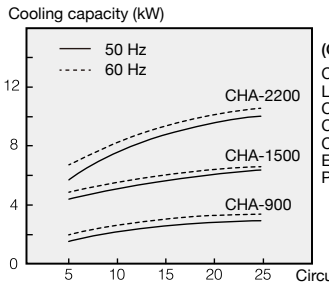


Cooling capacity curve (Air-cooled type)



(Conditions)
Circulating fluid : Tap water
Environmental temp. : 25°C average
Power supply: AC 200 V

Cooling capacity curve (Water-cooled type)



(Conditions)
Circulating fluid : Tap water
Liquid measure :
CHW-900 --> 5 L/min
CHW-1500 --> 25 L/min
CHW-2200 --> 35 L/min
Environmental temp. : 25°C average
Power supply : AC 200 V

Standard specifications: Water-cooled type (Specifications can be modified as an option)

Model		CHW-900	CHW-1500	CHW-2200
Temperature range/Ambient temperature range		Temperature range: +7°C to +25°C, Ambient temperature range: +5°C to +35°C		
Control accuracy (*1) ★		±2.0°C Compressor On-Off control		
Compressor output, Refrigerant		0.9 kW, R407C	1.5 kW, R407C	2.2 kW, R407C
Cooling capacity [kW] (50/60 Hz) (*2)	Circulation temperature at 10°C	2.4/2.8	4.8/5.3	7.4/8.2
	Circulation temperature at 20°C	2.8/3.3	5.8/6.1	9.4/10.2
Pumping capacity ★ (50/60 Hz) (*3)	Max. discharge pressure [MPa]	0.14/0.19	0.52	
	Flow rate [L/min]	15/27	22/31	
	Motor output [kW]	0.1/0.15	0.4	
Water bath capacity (at 80% water level)		26 L	56 L	
Safety device/function ★		Alarm and warning for water shortage, Compressor pressure abnormal, Compressor overload, Pump overcurrent, Water temperature abnormal, Warning indicator lamp		
Required primary cooling water rate [L/min] (*4) (cooling water temperature: +25/+30°C)		5/10	25/50	35/60
Connecting pipe diameter (circulating fluid in/out, primary cooling water in/out)		Rc1/2, Rc1/2 (with valve)	Rc1, Rc1/2 (with valve)	Rc1, Rc3/4 (with valve)
Dimensions (W×D×H)		500 × 555 × 896 mm	570 × 677 × 1236 mm	570 × 677 × 1236 mm
Weight		approx. 89 kg	approx. 170 kg	approx. 172 kg
Power Supply (three phase AC 200 V, 50/60 Hz) (*5)		15 A	20 A	30 A
Operation current [A] (50/60 Hz)		4.4/4.7	7.8/8.0	9.5/10.7

(*1)There may be a case where the temperature performance cannot be maintained due to environmental temperature, heat load, circulation pipe distance, etc. (*2)Capacity when the cooling water temperature below +25°C. (*3)Capacity when using tap water. Flow rate when the discharge pressure of CHW-900 is at 0.12 MPa and of CHW-1500/2200 at 0.3 MPa. (*4)Capacity varies with the water temperature. Please note it may cause a defect if the flow rate does not increase at high temperature, so please confirm if the required flow rate is secured in advance. •Power cable is not included. •Standard products cannot use pure water as circulating fluid. •Please ask us when mixing chemicals for water treatment to circulating fluid. •The fee for Delivery and Installing are quoted separately. (*5)Need a step-down transformer outside when used.
★Can upgrade the abilities and add some functions by selecting the following options. ①To improve accuracy of temperature adjustment (Heater added) ②To improve capacity of pump unit (changes to Large flow rate / High head; Several types) ③To add safety devices (No-fuse breaker and Earth leakage breaker) ④To change materials such as the stainless steel wetted parts, the circulating fluid piping for the antifreeze, and the ball tap. ⑤Additional functions (Special order/Option: Remote control box, To reduce noise by fan speed controller) ⑥Other (Device fixing brackets).

"Large CH/CHV series" responds user's various needs.

Features and Advantages

Built-in Inverter that realizes Energy savings, Low noise operation, and Compact size (CHV series).

"Water-cooled integrated type" & "Air-cooled separate type" are renewed!

Save energy by 65% compared with a conventional one thanks to the Built-in Inverter!
It is possible that stable cold water can be supplied at the preset temp. ±0.1°C when there is no stable load.

The lineup for Separate type and Outdoor type

The installation style for a Chiller unit and the type of compressor is various and can be selected depending on the installation environment. Air-cooled integrated type, Separate type, and Outdoor type are available.

Various Customizations (Large CH Series)

The Large CH Series is designed to provide "customer-specific Chillers" by customizing the models (base models) shown in this catalog to suit your applications. This series is recommended in cases where the simple series (refer to page 204) is not suitable for your application.

Capacity expansion is available.

The compressor output can be expanded to more than 6 kW or 7.5 kW that is listed in this catalog as per request such as 11 kW, 15 kW, 13 kW or so. Please ask us for details.

Various customizations are available as per request.

Diverse customizations are available in the Large CH/CHV series based on the standard model as per your request.
Please ask us about customization with your request specifications.

- **The wetted parts can be made of stainless steel**
- **Built-in filter for the circulating fluid = Prevents clogging of pump, etc.**
- **Large Inverter Chiller CHV series with High precision temperature control system = Enables Control accuracy ±0.05°C.**
- **A large capacity circulation pump is amounted = Limited installation space is relieved.**
- **Remote control box = Operates the unit by remote control.**

Example of Customization

Actual examples of customization for large capacity Chillers below.

Precise temperature control Chiller for low temperature range

•Large cooling capacity in the minus temperature range was required!

This Chiller unit is ideal for a circulating fluid required be controlled for the temp in the minus temprature range.
The built-in heater quickly brings back the ordinary temperature fluid from low temperature for maintenance.

Based on the Modified CH-3750WFH --> P.213

•Cooling capacity (circulating temperature at -10°C, 50 Hz): approx. 3.8 kW
•Temp. range: -20°C to +20°C
•Control accuracy: ±0.5°C
•Note: Water-cooled integrated type

Large capacity air-cooled Chiller unit

•Cooled separate type with Large cooling capacity was required.

The built-in Inverter compressor realizes Energy savings compared with a conventional one.
The service temperature can be from +5°C (antifreeze is required for use at below +7°C).

Based on the Modified CHV-4500AS --> P.210

•Cooling capacity (circulating temperature at +20°C, 50 Hz): approx. 23 kW
•Temp. range: +5°C to +25°C
•Control accuracy: ±0.5°C
•Note: Air-cooled separate type

Extra-large capacity air-cooled Chiller unit

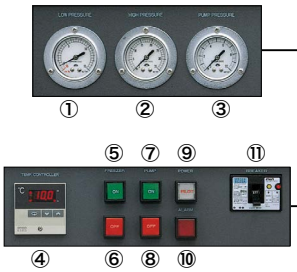
•The circulating water was unable to be drawn from the Cooling tower, but somehow a Larger cooling capacity was required!

Generally, a Chiller unit with a large cooling capacity is a water-cooled type. This Extralarge cooling capacity air-cooled Chiller unit is ideal for places where cooling towers cannot be installed.

Based on the Modified CH-15000ASO --> P.211

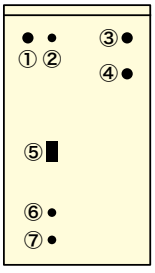
•Temp. range: +10°C to +25°C
•Control accuracy: ±3°C
•Note: Air-cooled integrated type, Outdoor use

Complete indicators and Simple controls. The piping is positioned on the backside.



①Refrigerant pressure gauge (Low pressure)
②Refrigerant pressure gauge (High pressure)
③Pump pressure gauge
④Temperature controller
⑤Compressor operation switch (indicator)
⑥Compressor stop switch
⑦Pump operation switch (indicator)
⑧Pump stop switch
⑨Power supply input indicator
⑩Warning indicator
⑪Short/Over current breaker

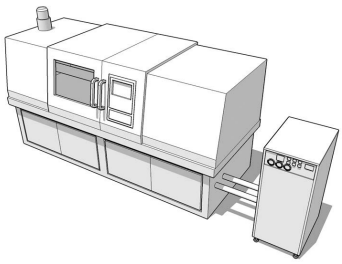
Schematic diagram for the Back side



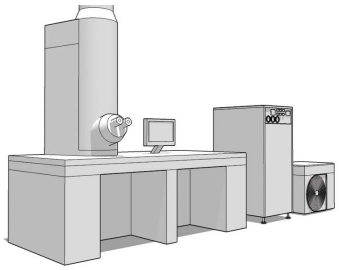
①Overflow
②Water inlet
③Circulating fluid return port
④Circulating fluid discharge port
⑤Drain valve
⑥Primary cooling water outlet (water-cooled type)
⑦Primary cooling water inlet (water-cooled type)

Main application of large chiller CH/large inverter chiller CHV series

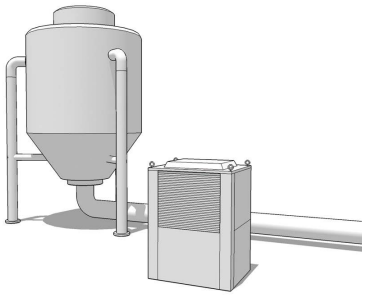
Temperature control for the Injection molding machine



Temperature control for transmission electron microscope



Temperature control for raw material tank installed outdoors



Hot Water Circulator/The high temperature circulator

Specialized for heating control

Hot Water Circulator

•The heating control in high temperature range for Semiconductor manufacturing equipment

Hot water circulator (hot water machine) using water as circulating fluid is also available. Various customizations such as heaters and pump capacity are supported.

HC-06 --> P.186

- Temperature range: +40°C to +80°C
- Control accuracy: ±0.5°C
- Heater: 6.0 kW
- Note: Available in Cooling function by Primary cooling water

The high temperature circulator
Designed to be used with a Fluorine-based heating medium

•The heating control in high temperature range for Semiconductor manufacturing equipment

Designed to be used with a Fluorinebased heating medium (Galden® HT270 or HT200, cannot be mixed in) for the heating control in high temperature range (+70°C to +200°C).

TEX-25A --> P.187

- Temperature range: +70°C to +200°C
- Control accuracy: ±0.5°C
- Heater: 2.5 kW
- Note: Designed to be used with a Fluorine-based heating medium

Ultra-low temperature circulator/Chiller unit for low temperature range

Specialized for heating control in low temperature range

Ultra-low temperature circulator
Designed to be used with a Fluorine-based heating medium

•Temperature control for Etching equipment

This model is an Ultra-low temperature circulator for the cooling Etching equipment, Optical fiber production, etc. Designed being used with Fluorine-based heating medium (Galden® HT110).

SC-60α --> P.212

Temperature range: -60°C to +40°C
- Control accuracy: ±0.5°C
- Cooling capacity (circulation temperature at -40°C): 1.3 kW
- Note: Designed to be used with a Fluorine-based heating medium

Chiller unit for low temperature range (Brine chiller)

•Temperature control for Etching equipment

This Chiller unit is ideal for circulating fluid that is required to control temp. in the minus temp. range.

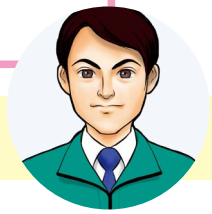
Based on Modified CH-3750WF --> P.213

- Temperature range: -20°C to +5°C
- Control accuracy: ±3°C
- Cooling capacity (circulation temperature at -10°C): approx. 3.8 kW
- Note: Water-cooled integrated type

Delivery, Installing and Piping work

TAITEC VOICE

Please note the following matter.



- The fee for Delivery, Installing, Piping work, and Wiring work are quoted separately.

Cooling pump CHV-750W/1500W/2200W/3750W

The equipped inverter can save energy and realize high accuracy. Water-cooled integrated standard model. Can be customized upon request.

CHV-3750W
*The appearance is subject to change.

Inverter chiller

Features

- The water-cooled integrated type is ideal for cleanroom
- The size of the equipped inverter is compact and can save energy
- Customizable upon request as a special order

Applications

- The temperature control for Semiconductor manufacturing equipment, roller part of printing machine, etc.

The equipped inverter can save energy and realize low operation noise and small consumption current.

Saves energy up to Max. 62% of operating current. Realizes high accuracy of ±0.1°C and a significant reduction in noise compared to our conventional products.

Customizable upon request as a special order

Can be customized based on the following specifications upon request. Please feel free to ask us. Cooling capacities other than the notation (see below) and precision temperature control ±0.05°C are available as an option.

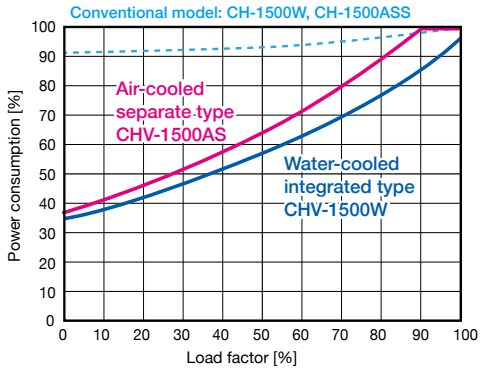
The water-cooled integrated type is ideal for cleanroom.

No exhaust heat from the compressor and no influence in the room. Primary cooling water and its piping construction (a separate fee) are required.

Equipped with a Warning indicator lamp

Failure diagnosis can be performed quickly to shorten the time required for recovery.

Comparison of power consumption between our conventional products (For reference)



Model		CHV-750W	CHV-1500W	CHV-2200W	CHV-3750W
Temperature range		+10°C to +25°C			
Control accuracy (*1)		±0.1°C			
Cooling capacity [kW] (*2) (Circulation temperature at 10°C)		3.0	6.0	9.0	14.0
Compressor output, Refrigerant		0.75 kW, R407C	1.1 kW, R407C	1.9 kW, R407C	3.75 kW, R407C
Pumping capacity (50/60 kHz) (*3)	Max. discharge pressure [MPa]	0.52			0.59
	Flow rate [L/min]	22/31			42/55
	Motor output [kW]	0.4			0.75
Safety device/function		Short/Over current breaker, Warning and Cut off for low water, Pump overcurrent, Water temperature abnormal, Refrigerant high pressure, Compressor unit abnormal			
Water bath capacity (at 80% water level)		26 L	56 L		110 L
Required primary cooling water rate [L/min] (cooling water temperature: +20/+30°C) (*4)		9/22	16/36	23/50	40/86
Connecting pipe diameter (circulating fluid in/out, primary cooling water in/out)		Rc1/2, Rc1/2 (with valve)	Rc1, Rc3/4 (with valve)		Rc1-1/4, Rc1 (with valve)
Dimensions (W×D×H) (Not include plumbing and protuberance)		450 × 573 × 1220 mm	570 × 680 × 1420 mm		720 × 900 × 1420 mm
Weight		130 kg	200 kg	210 kg	280 kg
Power Supply (three phase AC 200 V, 50/60 Hz) (*5)(*6)		10 A		15 A	30 A
Operation current		6 A	8 A	10 A	20 A

(*1)Performance may not be maintained due to environmental temperature, heat load, circulation pipe distance, etc. When the thermal load becomes below approx. 30% of the cooling capacity, the control accuracy changes to ± 2.0 to 3.0°C due to the compressor On-Off control. (*2)Capacity when the ambient temperature at below +30°C. (*3)Capacity when using tap water. Flow rate when the discharge pressure at 0.3 MPa. (*4)The required cooling water flow increases and decreases by the temperature. Please note that if the flow rate does not increase when the temperature is high, it may cause problems. (*5)The sensitivity current in ELCB should be set larger than 30 mA. (*6)Need a step-down transformer outside when used.
•Since the water-cooled type requires primary cooling water for cooling, please make sure the specified flow rate is secured. •Standard products cannot use pure water as circulating fluid. •Please ask us when mixing chemicals for water treatment to circulating fluid. •The fee for Delivery and Installing are quoted separately.

Cooling pump CH-6000W/7500W/9000W/11000W/15000W/18000W

The water-cooled integrated type and ideal for cleanroom.
Can be customized based on the following specifications upon request such as compressor output up to 18 kW, etc. from a wide range of options.

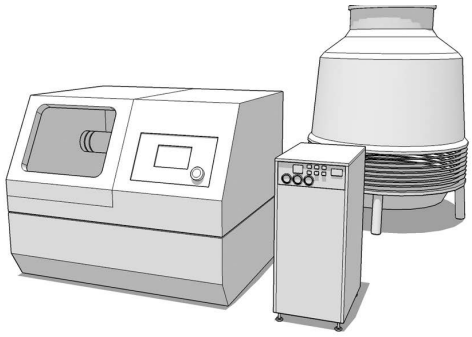
Features

- The water-cooled integrated type is ideal for cleanroom
- Customizable upon request as a special order
- The compressor output above 18 kW can be custom-made

Applications

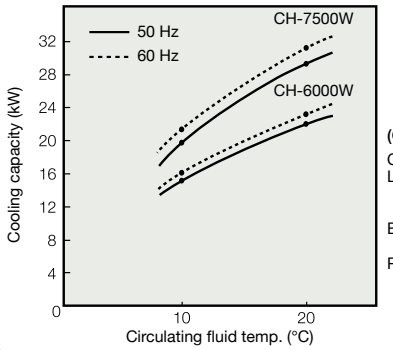
- The temperature control for Semiconductor manufacturing equipment

CH-15000W
*The appearance is subject to change.



When the water temperature of the cooling tower is not stable during the summer hot season, and by using it as the primary cooling water of water-cooled chiller, a stable temperature cooling water can be obtained. (The cooling tower is actually installed outdoors).

Cooling capacity curves (Reference)



*Reference values for 6000W and 7500W

(Conditions)
Circulating fluid: Tap water
Liquid measure:
CH-6000W --> 280 L
CH-7500W --> 315 L
Environmental temp. :
25°C average
Power supply : AC 200 V

Model		CH-6000W	CH-7500W	CH-9000W	CH-11000W	CH-15000W	CH-18000W
Temperature range		+5°C to +25°C					
Control accuracy (*1)		±2.0 to 3.0°C, Compressor On-Off control					
Cooling capacity [kW] (50/60 kHz, Circulation temperature at +20°C) (*2)		22.8/24.4	27.4/29.2	31.9/34.1	40.4/43.1	46.4/49.0	57.4/60.3
Compressor output, Refrigerant		6.0 kW, R407C	7.5 kW, R407C	9.0 kW, R407C	11.2 kW, R407C	7.5 kW × 2, R407C	9.0 kW × 2, R407C
Pumping capacity (50/60 kHz) (*3)	Max. discharge pressure [MPa]	0.32/0.45	0.33/0.47		Ask us		
	Flow rate [L/min]	40/110	83/140		Ask us		
	Motor output [kW]	0.77/1.2	1.02/1.69		Ask us		
Safety device/function		Short/Over current breaker, Overload protector, High and Low temperature, Refrigerant high and low pressure, Overheat protector for Compressor, Phase-reversal relay, Overheat protector for Compressor, Low water cut off, Warning indicator lamp					
Water bath capacity (at 80% water level)		280 L	315 L		Ask us		
Required primary cooling water rate [L/min] (cooling water temperature: +25°C/+34°C) (*4)		50/64	57/74	75/112	Ask us		
Connecting pipe diameter (circulating fluid in/out, primary cooling water in/out)		Rc1-1/4, Rc1-1/4			Ask us		
Dimensions (W×D×H)		756 × 1020 × 1581 mm	1107 × 823 × 1882 mm		Ask us		
Weight		Ask us					
Power Supply/Operation current		AC 200 V·50/60 Hz/three phase *Ask us for more information.					

(*1)Performance may not be maintained due to environmental temperature, heat load, circulation pipe distance, etc. (*2)Capacity when the ambient temperature at below +30°C. (*3)Capacity when using tap water. Flow rate when the discharge pressure at 0.1 MPa. (*4)The required cooling water flow increases and decreases by the temperature. Please note that if the flow rate does not increase when the temperature is high, it may cause problems.
•Since the water-cooled type requires primary cooling water for cooling, please make sure the specified flow rate is secured. •Standard products cannot use pure water as circulating fluid. •Please ask us when mixing chemicals for water treatment to circulating fluid. •The fee for Delivery and Installing are quoted separately.

Cooling pump CHV-750AS/1500AS/2200AS/3750AS/4500AS

The air-cooled separate type and ideal for cleanroom. The equipped inverter can save energy and realize high accuracy. It can be customized based on the following specifications upon request.

CHV-750AS (Indoor unit)　CHV-750AS (Outdoor unit)

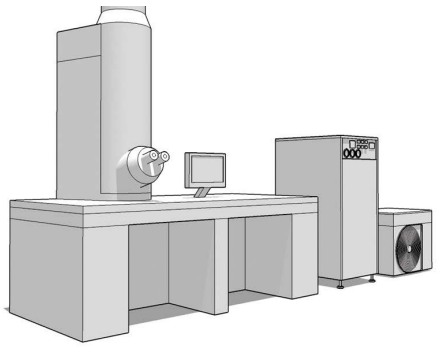
*Plumbing for the indoor/chiller unit and the outdoor unit is required.

Features

- The air-cooled separate type and no noise or vibration in the room
- The size of the equipped inverter is compact and can save energy
- Plumbing for the indoor unit and the outdoor unit is required

Applications

- The temperature control for Transmission electron microscope.



The separate type is ideal for temperature control for precision equipment with no exhaust heat in the room.
(*The chiller unit and the outdoor unit are not placed side by side as shown in the figure, in fact, they installed separately.)

The size of the equipped inverter is compact, and it can save energy and realize low operation noise.

Saves energy up to Max. 60% of operating current. Realizes high accuracy of ±0.1°C. The indoor/outdoor units can realize a significant reduction in noise compared to our conventional products. Supports a variety of installation environments.

Customizable upon request as a special order

Can be customized based on the following specifications upon request. Please feel free to ask us. Cooling capacities other than the notation (see below) and precision temperature control ±0.05°C are available as an option.

Equipped with a Warning indicator lamp

Failure diagnosis can be performed quickly to shorten the time required for recovery.

The wetted parts are made of stainless steel.

Restrains the generation of green copper rust to reduce defect.

Model		CHV-750AS	CHV-1500AS	CHV-2200AS	CHV-3750AS	CHV-4500AS
Temperature range		+10°C to +25°C				
Control accuracy (*1)		±0.1°C				
Cooling capacity [kW] (*2) (Circulation temperature at 10°C)		3	5	8	18	25
Compressor output, Refrigerant		0.75 kW, R407C	1.1 kW, R407C	2.2 kW, R407C	3.75 kW, R410A	4.5 kW, R410A
Pumping capacity (50/60 kHz) (*3)	Max. discharge pressure [MPa]	0.52			0.59	
	Flow rate [L/min]	22/31			42/55	
	Motor output [kW]	0.4			0.75	
Safety device/function		Short/Over current breaker, Warning and Cut off for low water, Pump overcurrent, Water temperature abnormal, Warning indicator lamp				
Water bath capacity (at 80% water level)		26 L	56 L		110 L	230 L
Connecting pipe diameter (Circulating fluid in/out)		Rc1/2	Rc1		Rc1-1/4	
Dimensions (W×D×H)	Indoor unit	450 × 555 × 896 mm	570 × 677 × 1236 mm		570 × 677 × 1241 mm	687 × 922 × 1657 mm
	Outdoor unit	900 × 320 × 890 mm			900 × 320 × 1540 mm	1196 × 442 × 1563 mm
Weight	Indoor unit	70 kg	110 kg	115 kg	125 kg	160 kg
	Outdoor unit	51 kg	58 kg	72 kg	116 kg	186 kg
Power Supply (three phase AC 200 V, 50/60 Hz) (*4)		15 A	20 A	30 A	50 A	60 A
Operation current		7 A	11 A	16 A	30 A	42 A

(*1)Performance may not be maintained due to environmental temperature, heat load, circulation pipe distance, etc. When the thermal load becomes below approx. 30% of the cooling capacity, the control accuracy changes to ±2.0°C due to the compressor On-Off control. (*2)Capacity when the ambient temperature at below +30°C. (*3)Capacity when using tap water. Flow rate when the discharge pressure at 0.3 MPa.
(*4)Need a step-down transformer outside when used.
•The cooling capacity may not be maintained if the unit is placed in direct sunlight and hindrance of exhausting. •There is a distance limit between the indoor unit and outdoor unit, so please contact us for more information.
•Standard products cannot use pure water as circulating fluid. •Please ask us when mixing chemicals for water treatment to circulating fluid. •The fee for Delivery, Installing, Piping work, and Wiring work are quoted separately.

Cooling pump CH-1500ASO/2200ASO/3750ASO/5500ASO/7500ASO

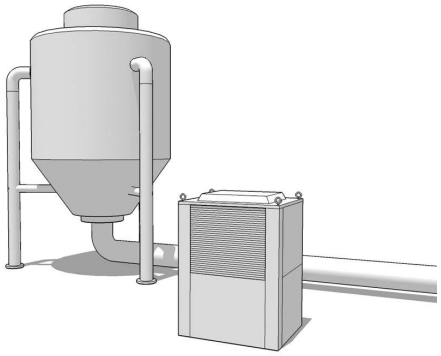
The air-cooled integrated type for outdoors. A higher Compressor output than 7.5 kW is available as an option. Ideal for when it cannot be placed indoors.

Features

- The all-weather unit for outdoors
- Customizable upon request
- Can be operated indoors by the remote control panel

Applications

- Temperature control for the raw material tank, etc. that is installed outdoors



Ideal for when it cannot be placed indoors. It can be used for temperature control for equipment that is installed outdoors.

CH-4500ASO

Can be customized upon request.

This model is the most customizable among the Large CH series. It is customizable based on the following specifications upon request such as Temperature range, Temperature control accuracy, Pump capacity, Stainless steel wetted parts, etc. Also, a higher Compressor output than 7.5 kW is available as an option. Please feel free to ask us.

Model		CH-1500ASO	CH-2200ASO	CH-3750ASO	CH-5500ASO	CH-7500ASO
Temperature range		+5°C to +25°C				
Control accuracy (*1)		±2.0 to 3.0°C, Compressor On-Off control				
Cooling capacity [kW] (50/60 kHz) (*2)	Circulation temp: +10°C	3.7/4.1	5.2/6.4	9.7/10.3	14.9/15.3	19.5/22.0
	Circulation temp: +20°C	4.0/4.7	5.8/7.3	11.2/12.6	17.5/18.5	22.0/23.2
Compressor output, Refrigerant		1.5 kW, R407C	2.2 kW, R407C	3.75 kW, R407C	5.5 kW, R407C	7.5 kW, R407C
Pumping capacity (50/60 kHz) (*3)	Max. discharge pressure [MPa]	0.22		0.25		
	Flow rate [L/min]	60		180		
	Motor output [kW]	0.4		0.75		
Safety device/function		Short/Over current breaker, Overload protector, High and Low temperature, Refrigerant high and low pressure, Overheat protector for Compressor, Low water cut off, Phase-reversal relay, Overheat protector for Compressor, Warning indicator lamp				
Water bath capacity (at 80% water level)		40 L	61 L	66 L	91 L	103 L
Connecting pipe diameter (Circulating fluid in/out)		Rp1		Rp1-1/4		Rp1-1/2
Dimensions (W×D×H)		530 × 900 × 1310 mm	530 × 1090 × 1310 mm	880 × 1260 × 1310 mm	1046 × 1150 × 1905 mm	1200 × 1410 × 1852 mm
Weight		215 kg	240 kg	290 kg	495 kg	590 kg
Power Supply (three phase AC 200 V, 50/60 Hz) (*4)		30 A		50 A	75 A	
Operation current (50/60 Hz)		8/9 A	10/12 A	20/22 A	26/29 A	37/42 A
Standard Accessory		Remote control panel				

(*1)Performance may not be maintained due to environmental temperature, heat load, circulation pipe distance, etc. (*2)Capacity when the ambient temperature at below +30°C. (*3)Capacity when using tap water. Flow rate when the discharge pressure at 0.1 MPa. (*4)Need a step-down transformer outside when used.
•The cooling capacity may not be maintained if the unit is placed in direct sunlight and hindrance of exhausting. •Standard products cannot use pure water as circulating fluid. •Please ask us when mixing chemicals for water treatment to circulating fluid. •The fee for Delivery, Installing, Piping work, and Wiring work are quoted separately.

Super cool SC-60α

The SC-60α has an additional "cooling capacity increase" over the conventional SC-60! Ultra-low temperature chiller unit with a wide operating temperature range of -60°C to +40°C. Dual refrigeration system provides high cooling capacity in spite of its compact size. Dedicated for fluorine-based heating media.

Features

- Can be stable cooling even in ultra-low temperature range (-60°C to +40°C)
- Temperature control with high accuracy
- Sealed Tank

The pump is risk free from liquid leakage

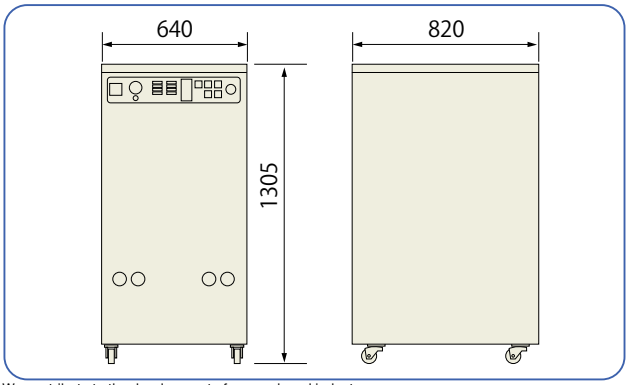
Applications

- Temperature control for Etching equipment
- Temperature control for Optical fiber production

Model		SC-60α
Temperature range (*1)		-60°C to +40°C
Control accuracy (*2)		±0.5°C, Hearer PID Controller
Cooling capacity (*3)		1.3 kW (Circulating temperature: -40°C)
Compressor output, Refrigerant		1.5 kW, R404A, R23
Pumping capacity	Flow rate [L/min]	11 (at 0.15 MPa)
	Motor output [kW]	0.40 *Operated by inverter drive at 60 Hz
Heater output		2.4 kW
Safety device/function		Leakage breaker, Liquid low-level, Refrigerant pressure, Refrigerant overload, Pump overload, Circulating fluid high temperature, Control circuit protection (overcurrent), Phase-reversal relay
Warning Functions (*4)		Low liquid level (Replenishment), Circulating fluid pressure rise, Heater overheat
INPUT/OUTPUT Functions		Safety device actuation signal output, Circulating fluid temp. output, Circulating fluid temp. external setting input, Device operation signal output, Remote operation signal input, Replenishment signal output
Heating medium (Circulating fluid)		Fluorine-based heating medium
Circulating fluid tank capacity		approx. 15 L (Circulating tank + Reserve tank)
Required primary cooling water rate (*5)		cooling water temperature +20°C: 15 L/min, cooling water temperature +30°C: 30 L/min
Connecting pipe diameter		Circulating fluid in/out: Rc1/2 (with valve) Primary cooling water in/out: Rc1/2 (Equipped with the strainer at the input and water control valve at the output.) Tank/Drain: Rc1/2 (with valve)
Dimensions (W×D×H)/Weight		640 × 820 × 1305 mm, approx. 250 kg
Power Supply (three phase AC 200 V, 50/60 Hz) (*6)		30 A
Operation current		approx. 20 A

(*1)The minimum temperature (-60°C) when no-load performance. (*2)Capacity when circulating flow 6 L/min or more. (*3)Capacity varies with the circulating flow rate. (*4)Even if the warning function is activated, the operation continues. (*5)Please note it may cause defect and reduction in the cooling capacity. (*6)Need a step-down transformer outside when used.
- The specifications described when using Galden® HT110 (specified circulating fluid).
- Ambient temperature: +5°C to +35°C (no condensation).
- The fee for Delivery and Installing are quoted separately.

External dimensions



Cooling pump CH-1500AF/2200AF/3750WF/5500WF

Chiller with high cooling capacity even in negative temperature range and circulation from -20°C to +20°C. Dedicated for low-temperature heating media.

Features

- The standard temperature range is -20°C to +20°C
- High cooling capacity at low temperatures
- Various customizations are possible, including Pumping capacity

Applications

- The cooling for Processing machinery, Semiconductor manufacturing equipment, etc.
- Temperature control for Etching equipment

CH-3750WF

For temperature control in low temperature range

This chiller is ideal for low-temperature ranges when constant temperature water controlled at negative temperatures is required.
CH-1500/2200AF are air-cooled type and do not require primary cooling water.
CH-3750/5500WF are water-cooled type and require specified primary cooling water, but they have high cooling capacity and do not exhaust heat to the room.

Customizable upon request

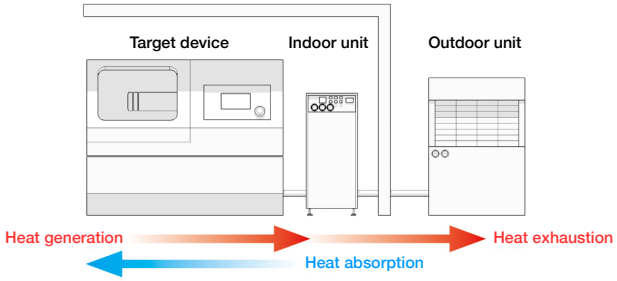
Can be customized based on the following specifications upon request.
★Installation of a heater (improved temperature accuracy)
★Flow rate/pressure change of circulation pump
★Control by switching internal/external temperature sensor
Please feel free to contact us for more information.

Cooling system		Air-cooled		Water-cooled	
Model		CH-1500AF	CH-2200AF	CH-3750WF	CH-5500WF
Temperature range		-20°C to +20°C			
Control accuracy (*1)		±2.0°C, Compressor On-Off control		±2.0 to 3.0°C, Compressor On-Off control	
Cooling capacity		Circulation temperature at -20°C: 0.5 kW	Circulation temperature at -20°C: 1.7/2.3 kW	Circulation temperature at -10°C: 3.8/4.1 kW	Circulation temperature at -10°C: 5.7/6.1 kW
		Circulation temperature at 0°C: 1.5/1.6 kW	Circulation temperature at 0°C: 3.0/3.1 kW		
Compressor output/ Refrigerant		1.5 kW, R404A	2.2 kW, R404A	3.75 kW, R404A	5.5 kW, R404A
Pumping capacity	Max. discharge pressure [MPa]	0.3		0.57	
	Flow rate [L/min]	23/34 (at 0.3 MPa)		40 (at 0.3 MPa)	
	Motor output [kW]	0.4		0.75	
Heating medium (Circulating fluid)		Heating medium for low temp.			
Required primary cooling water rate [L/min] (*2)		-		30 (cooling water temperature: +30°C)	80 (cooling water temperature: +30°C)
Safety device/function		Short/Over current breaker, Phase-reversal relay, Refrigerant high pressure, Refrigerator overload, Compressor heating, Circulating fluid high temperature, Pump overload, Circulating flow reduction			
Connecting pipe diameter (Circulating fluid in/out)		Rc1/2	Rc1	Rc1	
Dimensions (W×D×H)		500 × 555 × 947 mm	570 × 677 × 1291 mm	756 × 1021 × 1582 mm	
Weight		approx. 92 kg	approx. 180 kg	approx. 305 kg	approx. 400 kg
Power Supply (three phase AC 200 V, 50/60 Hz) (*3)		20 A	30 A	30 A	75 A
Operation current (50/60 Hz)		7 A	10 A	18 A	30 A

(*1)There may be a case where the temperature performance cannot be maintained due to environmental temperature, heat load, circulation pipe distance, etc.
(*2)Capacity of water-cooled type varies with the water temperature. Please note it may cause a defect if the flow rate does not increase at high temperature, so please confirm if the required flow rate is secured in advance.
(*3)Need a step-down transformer outside when used.
•The specifications described when using Antifreeze (Show Brine Blue).

How to Select a Chiller

❶Check the approximate volume of circulating liquid



Heat Transfer in a Separate type Chiller

A chiller is a unit that circulates a liquid (heating medium) to a target device, etc., and maintains the temperature of the target object at a constant level by taking away the heat emitted by the object (this catalog also introduces hot water circulation units that control the temperature by giving heat to the object).
Therefore, when selecting a chiller, it is important to consider "how much circulating liquid do you want to cool?", "from what temperature to what temperature?", and "in what time?" as the criteria. It is necessary to first confirm the "approximate amount of circulating liquid" that will fit into the target cooling jacket or chiller's water tank (the amount of piping that varies depending on the installation conditions can be ignored here). The capacity of the chiller's water tank varies depending on the model as well as its capacity, so it is fine to just get a rough idea at first. Once you know the amount of circulating liquid, you can use the following formula to calculate the required capacity of the chiller.

❷Calculate the capacity required for the chiller

a. Formula for determining required capacity from cooling time

$$Q\,[kW]=\frac{(T_2-T_1)\times V\times \gamma\times C}{S}\div 0.86\div 1000$$

T_1 : Temperature after cooling [°C]
T_2 : Temperature before cooling [°C]
V : Volume of circulating liquid [m^3]
γ : Density of circulating liquid [kg/m^3]
C : Specific heat of circulating liquid [kcal/kg°C]
S : Time required for cooling [h]

b. Formula for determining required capacity from circulating liquid temperature

$$Q'\,[kW]=(T_2-T_1)\times V'\times 60\times \gamma\times C\div 0.86\div 1000$$

T_1 : Temperature after cooling [°C]
T_2 : Temperature before cooling [°C]
V' : circulating fluid flow rate [m^3/min]
γ : Density of circulating liquid [kg/m^3]
C : Specific heat of circulating liquid [kcal/kg°C]

•If a heating medium other than water is used, it should be calculated as water to estimate the affordability capacity.

[Example a]
Find the cooling capacity required to cool 10 L (0.01 m^3) of circulating liquid (tap water) from +20°C to +10°C in 1 hour. Assuming the density of tap water is 1000 kg/m^3 and the specific heat is 1 kcal/kg°C:

$$Q=\frac{(20-10)\times 0.01\times 1000\times 1}{1}\div 0.86\div 1000\fallingdotseq 0.116\,[kW]$$

[Example b]
Find the required cooling capacity based on the heat load when the flow rate of circulating liquid (tap water) is 6 L/min (0.006 m^3/min), the return temperature of circulating liquid from the object is +22°C, and the inlet temperature of circulating liquid to the object is +20°C. Assuming the density of tap water is 1000 kg/m^3 and the specific heat is 1 kcal/kg°C:

$$Q=(22-20)\times 0.006\times 60\times 1000\times 1\div 0.86\div 1000\fallingdotseq 0.837\,[kW]$$

In practice, to provide a sufficient margin of cooling efficiency (and to absorb the error of ignoring the amount of circulating liquid for piping), a model with a cooling capacity of about 1.2 to 1.5 times the calculated value should be selected.

❸Selecting the appropriate chiller shape for the installation environment

OK
Heat exhaust to Indoor
NG

Air-cooled integrated type
•Simple series
•Compact CH series

Advantage	No primary cooling water such as cooling tower water or piping work for it is required.
Disadvantage	Room temperature rises due to exhaust heat, and condensation may occur depending on operating conditions.
Notes	Air conditioner capacity must not be less than chiller heating values (1.3 to 1.5 times the cooling capacity) (special type is applicable when room temperature exceeds +30°C).

Air-cooled separate type
•Large CH/CHV series

Advantage	There is no heat exhaust to the room.
Disadvantage	It requires piping work to connect the indoor unit and outdoor unit (additional cost).
Notes	Installation distance between the outdoor unit and indoor unit must be within 20 m.

Air-cooled integrated type, Outdoor use
•Large CH series

Advantage	It can be used even if there is no space for installation indoors (remote control panel included).
Disadvantage	Since it is placed outdoors, it requires more maintenance than indoor-installed models.
Notes	Make sure that there is no impact on the surrounding area when exhausting heat outdoors.

Water-cooled integrated type
•Simple series
•Compact CH series
•Large CH/CHV series

Advantage	It is suitable for clean rooms because there is no exhaust in the heat removal process.
Disadvantage	Plumbing work is required to draw primary cooling water (additional cost).
Notes	Tap water (+25°C) or tower water (+34°C) must be supplied to the system in prescribed quantities or more.