MAYA

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WFC - M Series

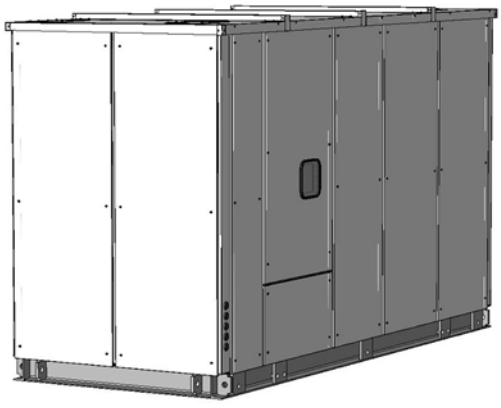
Hot water fired single effect absorption chiller

2

Installation

WFC-M100

Version 0.17



YAZAKI

Contents

1. General Information

1.1 Precautions

Trained and qualified personnel who are familiar with absorption machinery should install the equipment. All precautions in these instructions, on tags and on labels attached to the machine must be strictly observed to ensure the safety of personnel and continuance of the warranty validation.

Each absorption chiller has been evacuated and charged with lithium bromide and water, and tested prior to leaving the factory. After the equipment has been installed, a Yazaki authorized service agent will check the installation and supervise the initial commissioning of the absorption machine.

It is important to note that the warranty applying to the Yazaki chiller will become void if the following restrictions are not fully observed

1. Do not open any service valves since such action will result in loss of vacuum.
2. Always handle the equipment with care and in an up-right position, do not drop or subject the machine to side impact.
3. Before pressure testing the gas lines, make sure the gas train in the Yazaki machine is isolated to avoid damage to the gas valves.
4. Do not attempt to start the system without supervision from the Yazaki authorized service agent.

1.2 Receiving

When the absorption chiller is delivered to site, inspect it for transit damage. Should any damage have occurred, do not proceed with the installation until the Yazaki distributor has been notified and instructions to continue have been obtained.

1.3 Unit Data Plate

Check that the model number, electric voltage of the chiller are consistent with the system design and services available at site before proceeding with the installation.

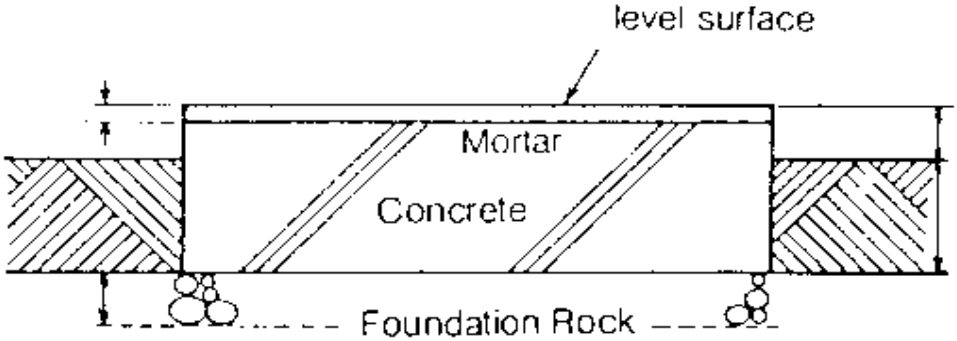
2. Foundation

2.1 General Information

If there should be a leakage from any leak cause on Absorber, Condenser and Evaporator tubes, the leaking tube can be replaced. Therefore it is required to the customer to secure certain maintenance space clearance for replacing the tubes. If the tube replacing space cannot be secured, please be noticed that there would be a cooling capacity decrease as the alternate measures would be to plug the tube and be subject to additional cost for moving the chiller if the customer requires replacing the tubes on a machine without sufficient clearance.

2.2 Foundation

Mount the chiller on a level, non-combustible foundation capable of supporting the operating weight of the chiller. This particularly applies to a unit where installation on a roof is being contemplated. Be sure the roof can support the chiller/heater, cooling tower, pumps and piping. It is additionally important that if the equipment is to be placed on the roof of the building, it should be located in a well-drained area, and at least two meters from the edge. A suitable platform, railing, and/or walkway should also be provided such that the chiller, cooling tower and electrical apparatus can be safely and conveniently serviced. If the machinery is to be placed outdoors at ground level, a proper concrete base with dimensions to fully accommodate the machinery should be constructed as shown. All aspects of foundation and support computations must be in accordance with local codes.

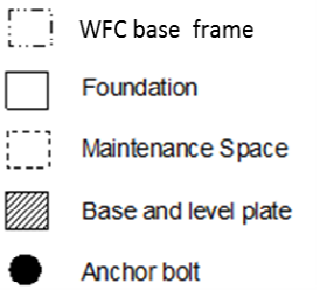


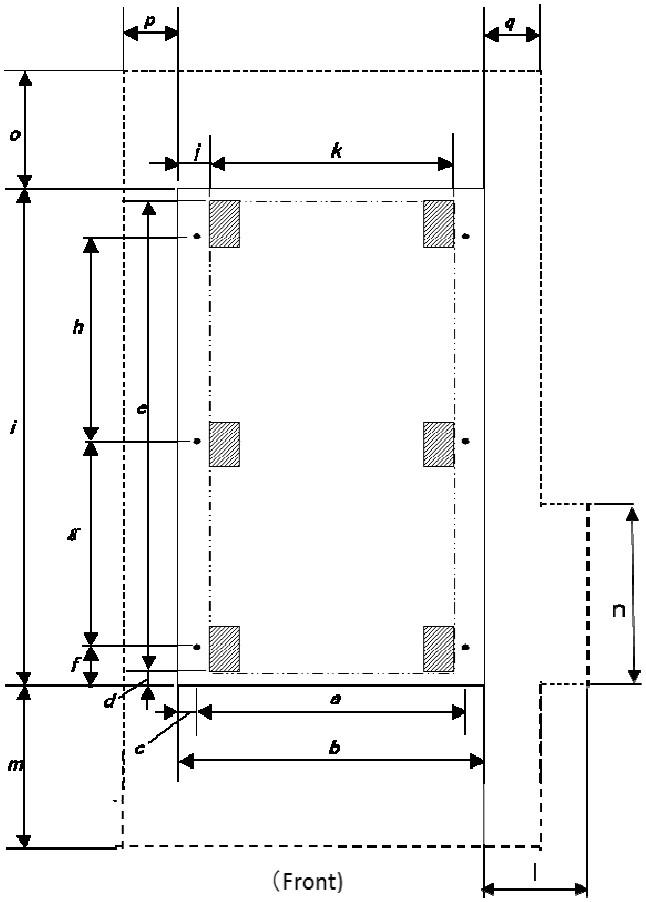
2.3 Foundation and maintenance space

See the below table and reference layouts for foundation and minimum maintenance space

Model	WFC-M100	
a	1590	
b	1890	
c	150	
d	100	
e	3550	
f	295	
g	1580	
h	1580	
I	3750	
j	215	
k	1460	
l	>900	
m	>2800	
n	>1500	
o	>900	
p	>400	
q	>400	

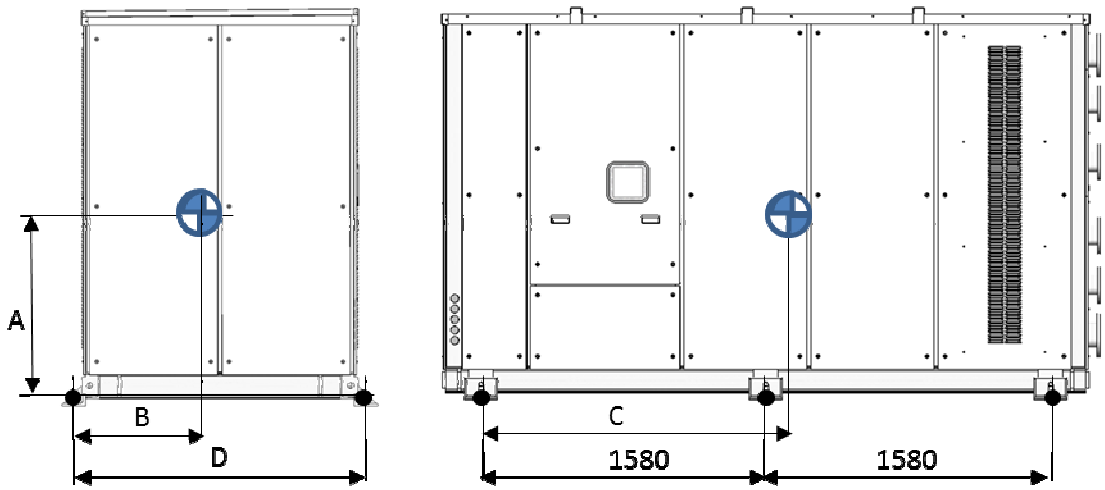
units(mm)





3. Installation (carry)

3.1 Center of Gravity



Model	Center of gravity position			Dimension	Operating Weight (kg)
	A (mm)	B (mm)	C (mm)	D (mm)	
WFC-M100	1,090	770	1,655	1,590	5,640

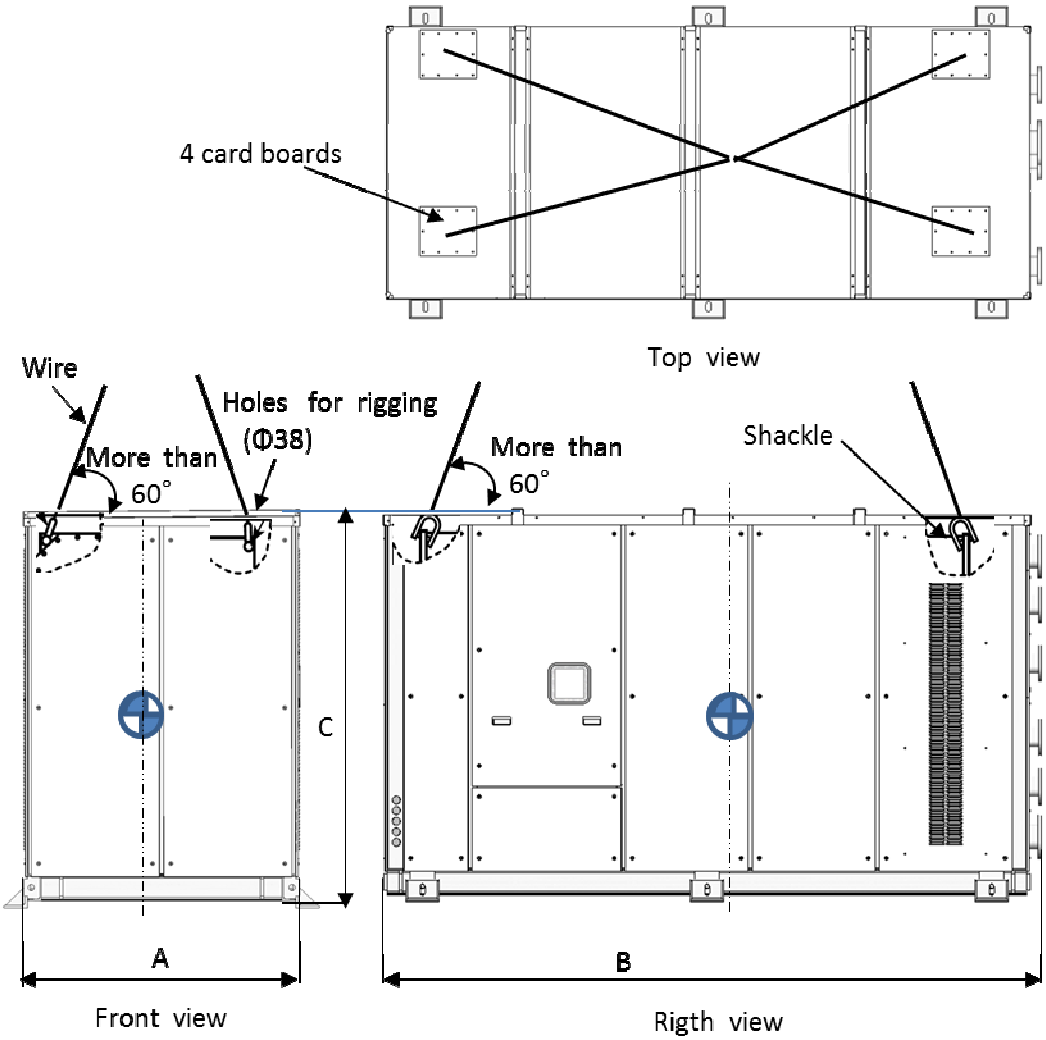
● indicates anchor bolt location.

◒ indicates center of gravity.

3.2 Rigging

Remove the 4 cardboards covers from the absorption chiller top panel, be sure to attach shackle bolts to the tube sheets of CON. Set the wire for rigging the chiller at angles more than 60 degree as illustrated. In order for the absorption chiller to become properly horizontal, the length of the ropes may have to be adjusted. The dry weight and overall dimensions are detailed in the technical specifications of this manual.

After installing the absorption chiller, be sure to attach 4 cover panels, which are included as accessory part, to the rigging holes of the absorption chiller top panel



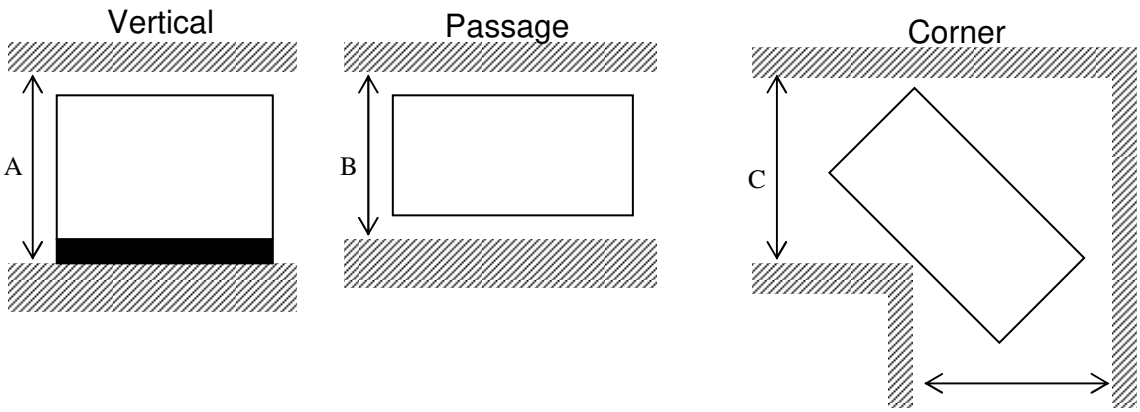
Model / Dimension	WFC-M100	
A(mm)	1,510	
B(mm)	3,654	
C(mm)	2,200	

WFC-M100	
4.87 ton	

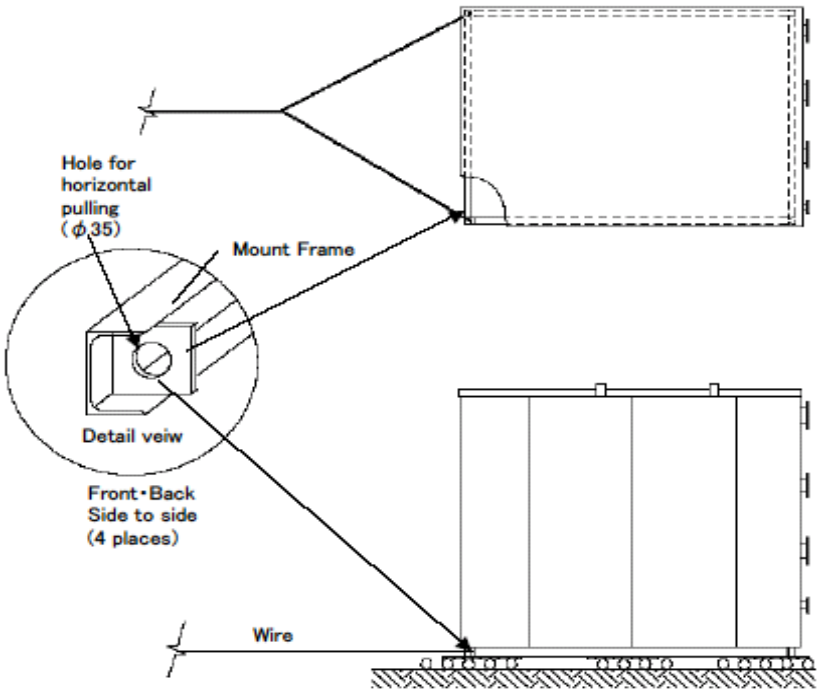
3.3 Access clearance

When installing the chiller indoors, it is required to the customer to secure enough space to access to the foundation considering the chiller external dimension. The following table describes clearance limitations.

	WFC-M100 (mm)	
A	2400	
B	1900	
C	3900	



3.4 Handling

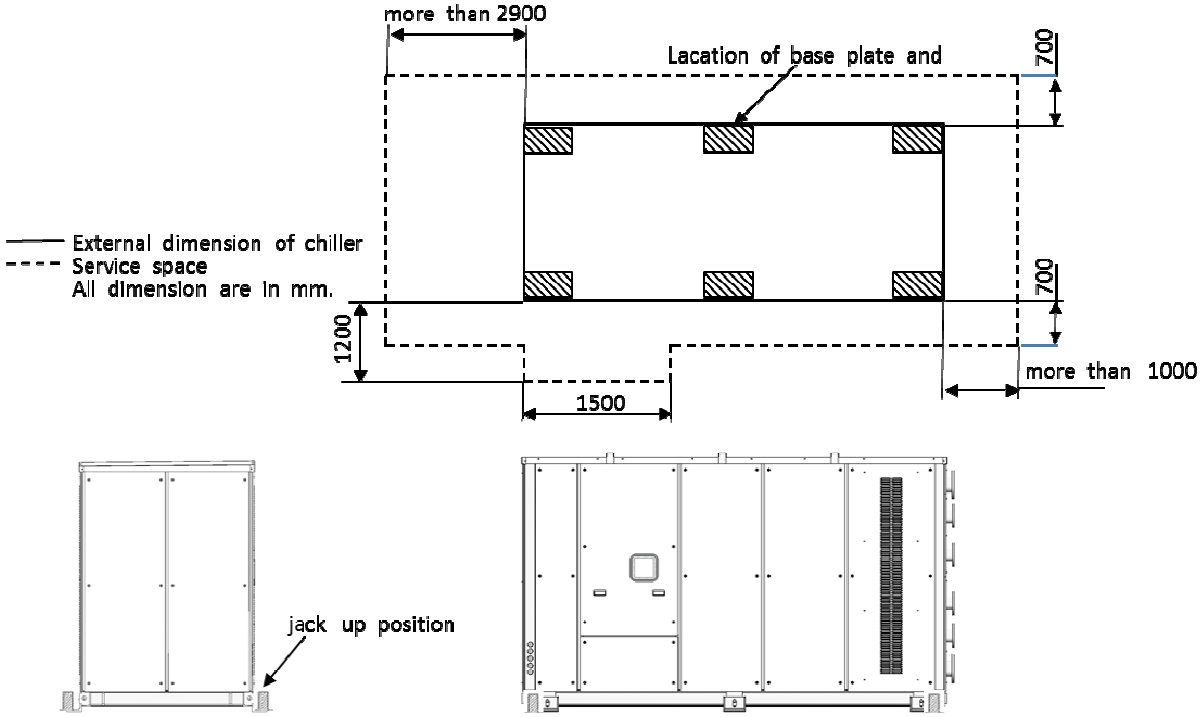


Note)

1. Please add the dimension of carrying board, roller, and duckboard to the chiller dimension.
2. Please place the carrying board, roller, and duckboard under out frame.
3. Please pull the chiller slowly. Pull it sidewise while pulling against each other with the wire when ground about incline.

4. Installation (Fix)

4.1 Leveling and checking the maintenance space

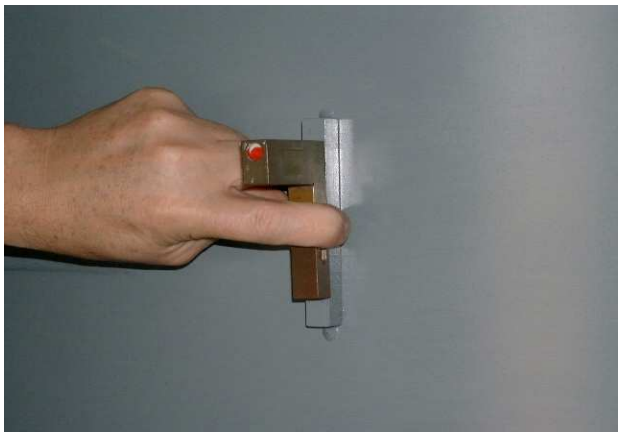


note)

1. Locate the chiller at the same or lower level than the cooling tower.
2. Consider noise when selecting the chiller location.
3. By referring the external dimension and basic diagram, please secure minimal space for equipment maintenance: Length1.0m, Above1.0m, Other 0.7m as well as space for replacing the tube.
4. When installing to the chiller please be sure to construct the base stand (accessory). Construct the hex bolt after putting out the horizontal by the level plate (accessory items).

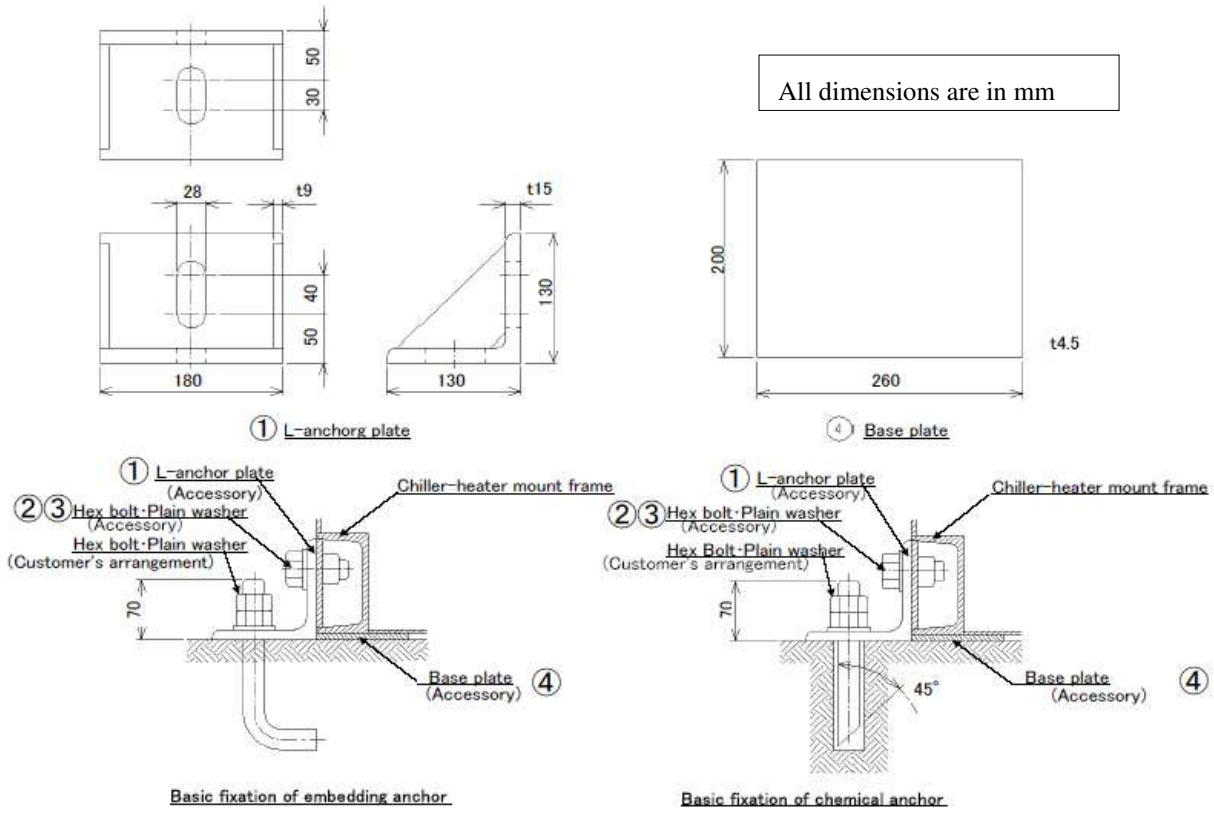
Thin level plates, enclosed in accessory part box, are used for adjusting the level. The chiller should be leveled within 2/1000 “front and back horizontal” and “side to side horizontal” to secure the cooling capacity.

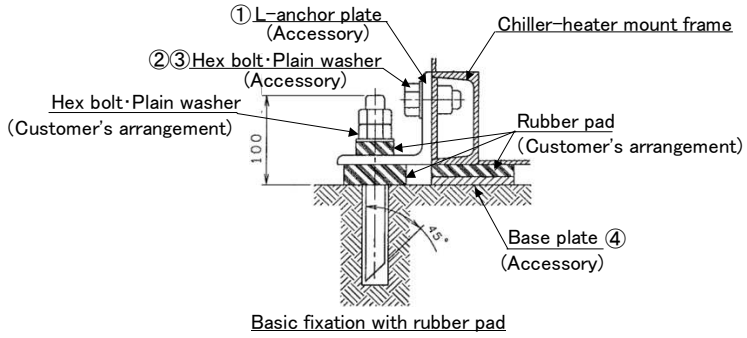
Level the machine with the aid of a spirit level on the level bar located on the upper portion of the front ABS cooling water chamber. Adjust with the level plates for longitudinal and transverse alignment. Should the installation have more than one chiller/heater located side-by-side, it is important that all machines be individually level and level in respect to each other. It is essential that all leveling is complete before any piping connections are attempted.



4.2 Fixing the anchor plate

Anchor plate should be fixed after adjusting the chiller level. All piping connection to the chiller should be done after fixing the anchor plate.





NO	Items	Quantity	Material	Processing
1	L-anchor plate	6	Rolled steels for general structure	Molten galvanizing
2	M24 hex bolt	6	Rolled steel for general structure	Molten galvanizing
3	M24 plain washer	6	Hot rolled mild steel	Molten galvanizing
4	Base plate	6	Hot rolled mild steel	Molten galvanizing

5. Water Piping Connection

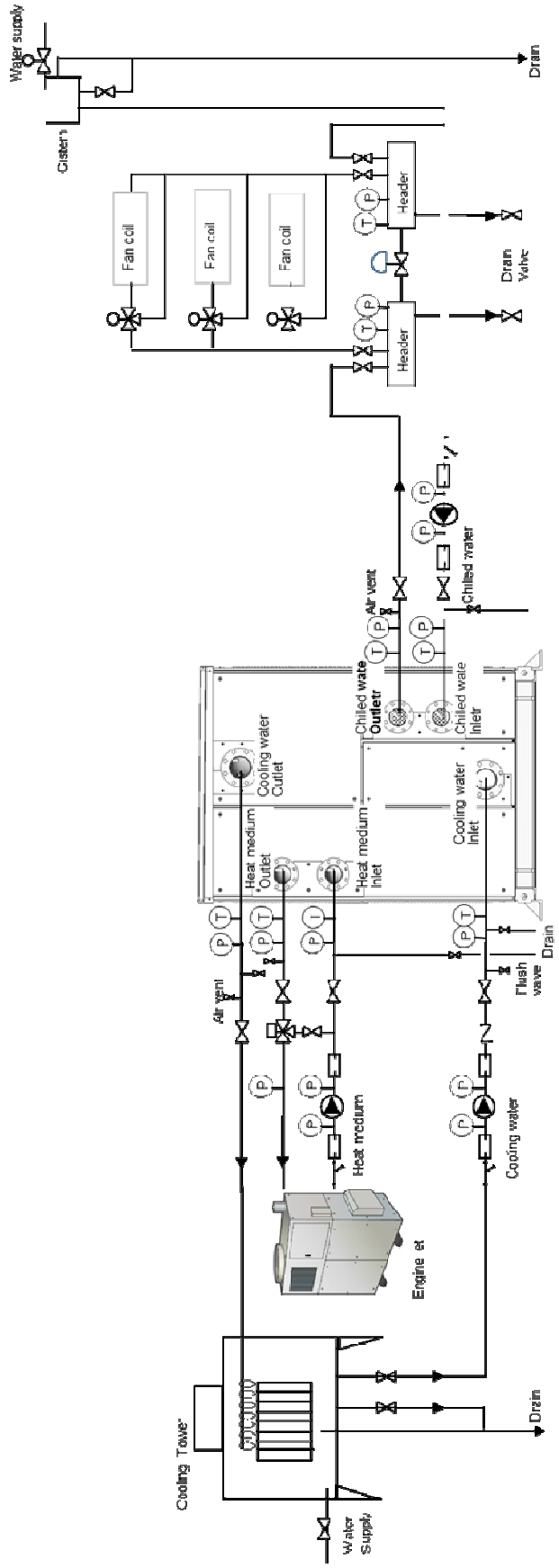
5.1 General Information

After leveling the chiller, chilled water, cooling water and heat medium piping can be installed. All pipes must be installed and connected to the machine ensuring that complete access for service is provided and that all panels, including the top panel, can be easily removed. Adequately support and brace the piping independently of the chiller/heater to avoid strain on the piping connections. Do not secure electrical conduit to any part of the machine.

In a plant room application clearance between the ceiling of the room and top of the chiller must similarly be adequate for the same reasons. Various service procedures of a routine nature require that top of the hermetic vessel be exposed. Failure to provide convenient access will render the service procedures impossible and will lead to extraordinary expenses attendant to dismantling plant.

Access to the rear of the machine is also of particular importance. Accordingly, piping connections must be designed in order for open of ABS water chamber lids and remove of EVA water chamber cover to be possible. See the following typical installation layout sketch. If there is any doubt in respect to the suitability of the intended place of installation, the Yazaki authorized distributor should be contacted for advice.

5.2 System Piping connection (Example)



Symbol	Part name	Symbol	Part name
	Thermometer Well	P	Pressure Gauge (0-1.5 MPa)
	Circulation Pump		3 way valve
	Flexible Joint		Strainer
	Manual Valve		Check Valve

Note

For piping construction

1. The amount of water retained by the chilled water system shall be at least 10 liters per 1 RT. Also, if the chiller unit and air conditioning unit are next to each other and the amount of retained water is small, make sure to continue operating the chilled water pump and air conditioner for about 10 to 15 minutes after the refrigerating unit stops
2. Other than the absorption chiller unit (indicated by the dashed line), all necessary components should be prepared by others. The attachment of various devices indicated in the figure is an example of this.
3. For pipe connection positions and diameters, see the separately provided Specification and External Dimension Drawing.
4. When installing and connecting pipes for the chilled water pumps, cooling water pumps and heat medium pumps always use the push-in method against the chiller unit.
5. When deciding the installation location for the chilled water pump, cooling water pump, heat medium pump and expansion tank (cistern), take the hydrostatic head pressure and pump lift-range into consideration, and ensure the chilled water and cooling water systems of the refrigerating unit are not placed under pressure greater than 785 kPa (8 kgf/cm^2G).
6. Make sure that the quantity of chilled water and cooling water flow is constant. The range of water flow quantity should be 80 to 120% for chilled water, 100 to 120% for cooling water and under120% for heat medium..
7. To open the chilled water chamber cover of the chiller unit, provide a removable short bent pipe at the joint section of the chilled water inlet/outlet pipes (see Figure).
8. If the pipe extraction space is in front of the refrigerating unit, provide at least a 1000 mm straight pipe section at the joint section of the cooling water inlet/outlet pipe in order to open the cooling water chamber cover. If it is not possible to provide a straight pipe section, use a removable pipe (see Figure).
9. If the pipe extraction space is behind the chiller unit, provide at least a 3000 mm straight pipe section at the joint section of the cooling water inlet/outlet pipe in order to open the cooling water chamber cover. If it is not possible to provide a straight pipe section, use a removable pipe (see Figure).

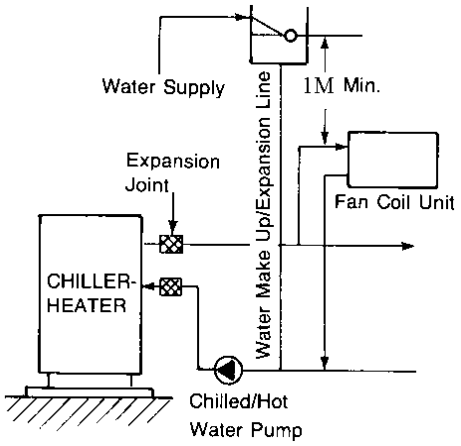
10. Provide a strainer of about 10 mesh on chilled water, cooling water and head medium pipes. The wire diameter must be 0.5 to 1 mm.
11. After filling cooling water , chilled water and heat medium, operate the pumps and then remove foreign material that accumulates in the strainer.
12. Provide an air purge valve at the top of the chilled water, cooling water and heat medium pipes.
13. Provide a check valve at each chilled water, cooling water and heat medium inlet/outlet of the refrigerating unit and also provide a drain valve at the lowest position of pipes that include check valves.
14. Near the chilled water, cooling water and heat medium outlet/inlet of the chiller unit, provide a pressure gauge capable of reading 0 to 1.5 MPa (0 to 15 kgf/cm^{2}G) pressure and a thermometer capable of reading a temperature range of 0 to 100°C.
15. For cleaning of the cooling water system, provide 40A seats and check valves on the pipe between the chiller unit and cooling water outlet/inlet check valves. At the cooling water outlet side only, attach those parts in an upward direction.
16. Prepare a water source for tube cleaning.
17. Provide proper pipe support; do not place pipe weight directly on the chiller main unit.
18. When performing hydraulic testing on the chilled water, cooling water and heat medium pipe systems, use pressure of no greater than 980 kPa (10 kgf/cm^{2}G).
19. When using lining steel pipe for the cooling water pipe, use heat-resistant lining steel pipe.
20. When installing multiple chilled water pumps, cooling water pumps and heat medium pumps in parallel, always provide a check valve at the pump outlet side pipes.
21. When using a variable water volume system using an indoor unit two-way valve, make sure to provide a bypass circuit.
22. Provide a safety valve in a chilled water system closed circuit.
23. When using a vibration isolation table, because of the characteristics of the vibration isolation table, use a flexible tube joint at the pipe joint section.

For piping construction

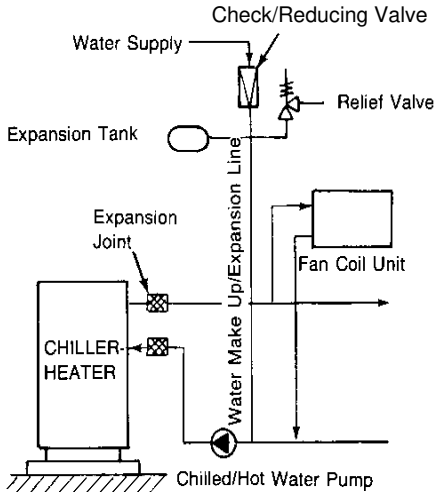
1. The ambient temperature of the location where the unit is installed is 1°C to 40°C. If the temperature of the area drops under 1°C, provide a device (optional) such as heater to prevent freezing in the refrigerant circuit in the unit or pipes. Set the cooling operation ambient temperature to 10 to 40°C.
2. The temperature at the cooling water inlet shall be at least 9°C
3. As an example of prevention of freezing of a chilled water system in winter. Depending on the temperature at the section where the IF sensor is mounted, chilled water pump operation are automatically performed only when the air-conditioning is stopped (see Figure).
4. Only using an IF sensor cannot prevent freezing of all pipes in the system. On a case-by-case basis, consider continuously operating the chilled water pump even while the air-conditioning is stopped. Also, if freezing is expected around the expansion tank, consider using a heater coil.
5. Management of the cold water and cooling water must conform to the guidelines for water quality issued by the Japan Refrigeration and Air Conditioning Industry Association (JRA-GL-02-1994).

5.3 Chilled Water Piping

Water supply and accommodation of expansion of the chilled water circuit is afforded as shown by an open cistern, or closed expansion tank with a check-pressure reducing valve assembly.



Open System



Closed System

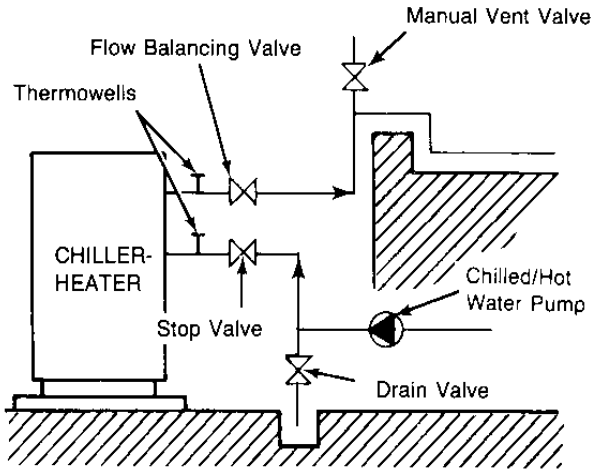
Caution

1. Do not exceed 785kPa in the chilled water circuit of the absorption machine
2. Do not install any valves in the expansion pipe line.

Plan piping with a rising grade of 1/200. And where high points exist in the piping circuit, install purge valves to release trapped air.

A balancing valve should be installed in the chilled water outlet and a stop valve should be installed in the chilled/hot water inlet. Both valves should be placed in close proximity to the chiller.

After thoroughly testing for leaks, insulate the piping circuit ensuring an adequate vapor barrier is obtained. Be sure the insulation allows proper access to all thermometer wells and valves. Be

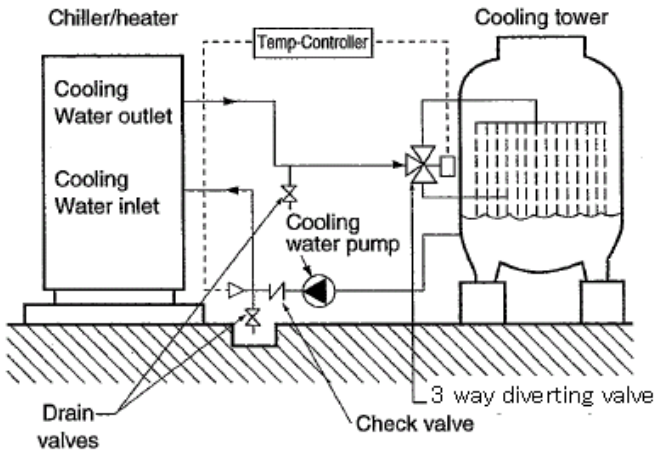


VALVES & THERMOWELLS

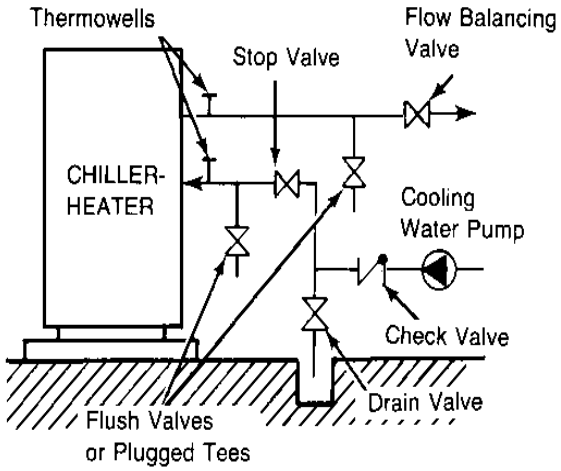
also sure that the chiller panels are not restricted by insulation. If the equipment is installed outdoors and subject to ambient temperatures below freezing, trace heating may be considered. If glycol solutions are contemplated, it is important that inhibitors are in solution to protect copper tubes internal to the absorption machine. It is further most important to understand that cooling capacity of the chiller will be degraded as concentrations of the glycol solutions increase – it must be noted that there is limited flow rate increase allowance for the chilled water circuit.

5.4 Cooling Water Piping

Cooling water to that absorption chiller is required at a temperature of 29.4°C or less during cooling operation. It is also imperative that cooling water less than 24°C is not supplied to the chiller for any prolonged periods (longer than 30 minutes). If such contingency is likely to occur, a mixing valve facility must be installed as illustrated.



A balance valve should be installed in the cooling water outlet and stop valve installed in the cooling water inlet. Both valves should be placed in close proximity to the chiller along with thermometer wells for temperature measurement. Additionally, drain (flush) valves should be installed between the balance / stop valves and the machine to allow chemical washing of the absorber / condenser coils (see sketch).



VALVES & THERMOWELLS

Wherever possible, install the cooling tower at the same level or higher than the chiller. If this is not possible, give careful consideration to the prevention of drain-back and loss of cooling water due to overflow at the cooling tower. Such matters should have already been given due consideration by the design engineer along with proper arrangement to prevent cooling tower fill media damage in the event frequent operating mode change-over occurs on a daily basis.

If it is clearly indicated that none of the aforementioned matters has been adequately catered for, the authorized Yazaki distributor should be contacted for advice. Do not ignore these contingencies; operating the absorption machine with a damaged cooling tower will void the warranty.
In an extended heating season the cooling water should be drained from the chiller.

Caution.
If the cooling water circuit is a closed system, Do not exceed 785kPa

5.5Heat medium Piping

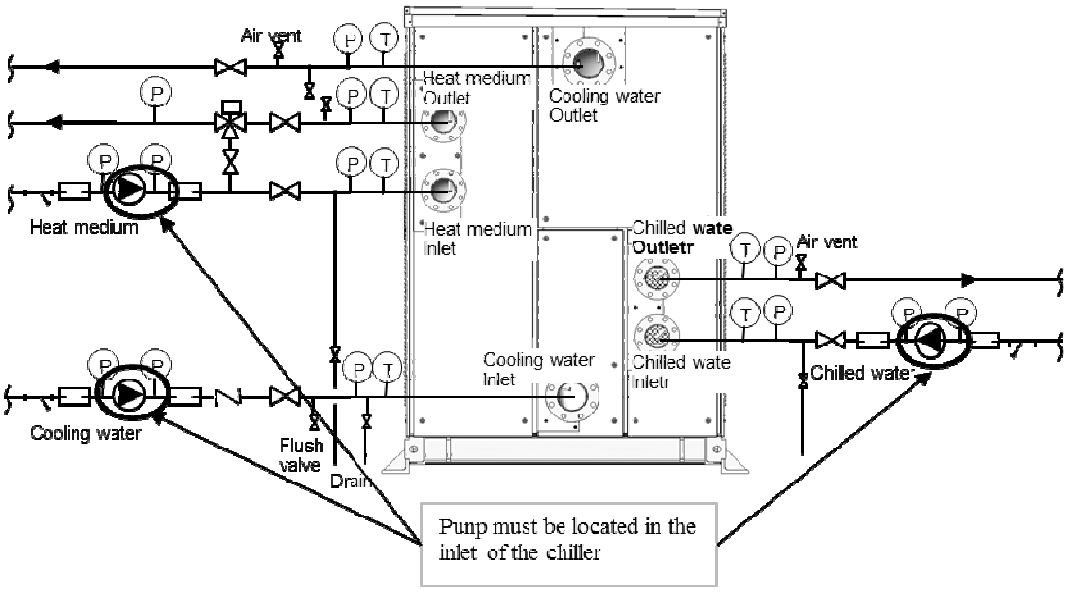
The heat medium pipe work will most likely be a closed system. Accordingly, since temperature of the heat medium may operate as high as 95°C, with a standard inlet 90°C, care should be taken with the expansion device. All considerations with respect to hand valves in the other water circuits also apply to the heat medium circuit.
Depending on the type of system used to source the hot water to operate the chiller, a diverting valve in the heat medium circuit may be required. Should the decision be made to use a three way valve, the approach to control outlined in the following electrical circuit should be adopted.

Caution.
Do not exceed 785kPa in the heat medium circuit of the absorption chiller-heater

5.6 Common notice for Water Piping

Chilled water , cooling water and heat medium pumps should be installed in the inlet of the chiller. If the pumps should be installed in the outlet of the chiller, inside the coil can be negative pressure and generation of cavitation would vary the water flow and create below problems.

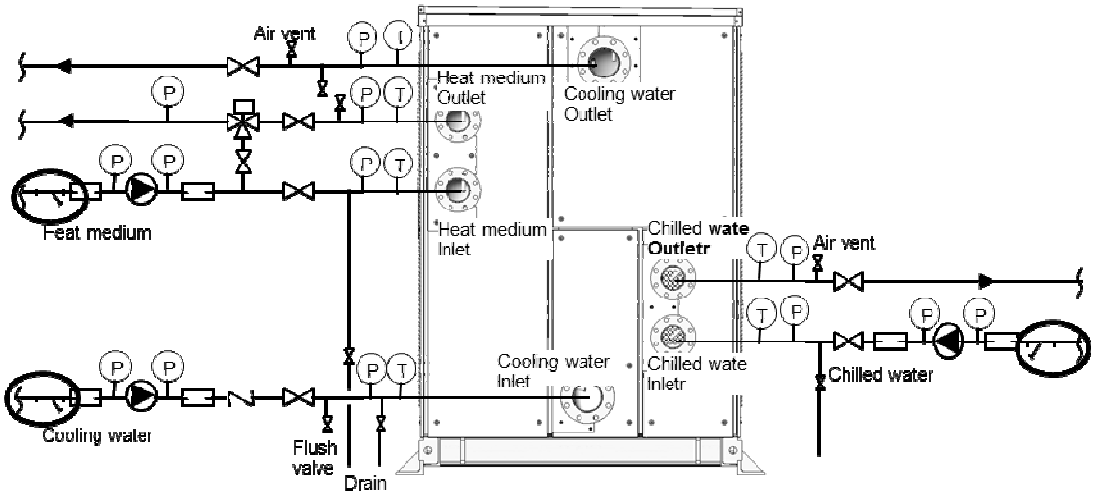
1. Chiller operation would go “ON” and “OFF” due to flow switch activation.
2. Chiller operation would go “ON” and “OFF” due to LT switch activation.



Thermowells,Pressure gauge and vavles

T	Thermowell		Expansion piping		Check valve
P	Pressure gauge		Strainor		Drain valve or Flush valve
	Stop valve or Balacing valve		Pump		Vent valve

Chilled water, cooling water and heat medium inlet loop, approx. 10 mesh strainer should be installed before the pumps to avoid pump block and pump damage due to foreign material entering to the pump. After piping construction, flush the loop to remove foreign material. Most mechanical seal leakage is due to foreign material stuck in the pump. In rare case concrete pieces have been known to become stuck in the pump, resulting in damage to the pump impeller.



5.7 Water Quality

Water quality of make-up water and circulating water (chilled water, cooling water, heat medium) shall be controlled in accordance with JRA-GL-02-1994. (Implementation of the analysis of make-up water and circulating water, and water quality control method)

Quality of make-up water and circulating water constitutes a critical point of control by the customer using the subject units. In the course of discussion with the customer, ensure that the following details will be confirmed and controlled by the customer:

Note: Failures caused by the quality of chilled water, cooling water, heating medium (hot water) systems are beyond the scope of warranty prescribed under the warranty terms of the "Warranty Statement."

Since the failures incurred by water quality impairments give rise to serious damage of units, and expenses borne by the customer for the restoration may become substantial, be sure to ensure and coordinate the following details in consultation with the customer. The cooling water in particular normally requires constant make-up water for the evaporation loss during air-conditioning operation, and thus the quality of make-up water and circulating water is indeed critical.

[Matters That Shall be Confirmed before Concluding an Agreement]

Identify the source of raw water for make-up water (service water, well water, industrial water, rainwater, and intermediate water), conduct the water quality analysis to ensure that the subject water conforms to the "standard items" and "reference items" prescribed in the Water Quality Standard (JRA-GL-02-1994) of the Japan Refrigeration and Air Conditioning Industry Association.

If the water quality of make-up water fails to satisfy the standard value specified in the "Table 1. Aroace water quality standards," ask the customer to employ a chemicals injection unit.

As to the water quality control method, jointly study the method indicated in Figure 1 with the water processing and services contractors concerned, and then coordinate with the customer.

In the case of using well water, rainwater, and intermediate water, the residual chlorine concentration significantly varies because of dosing the chlorine for the sterilization process. When a high residual chlorine concentration is the case, such failure as boring of heat transfer tubes may occur. Accordingly, be sure to ensure that the residual chlorine concentration meets the water quality standards given in below

table. Since the chlorine component will readily evaporate, conduct the analysis of residual chlorine concentration on site to collect the sample make-up water.

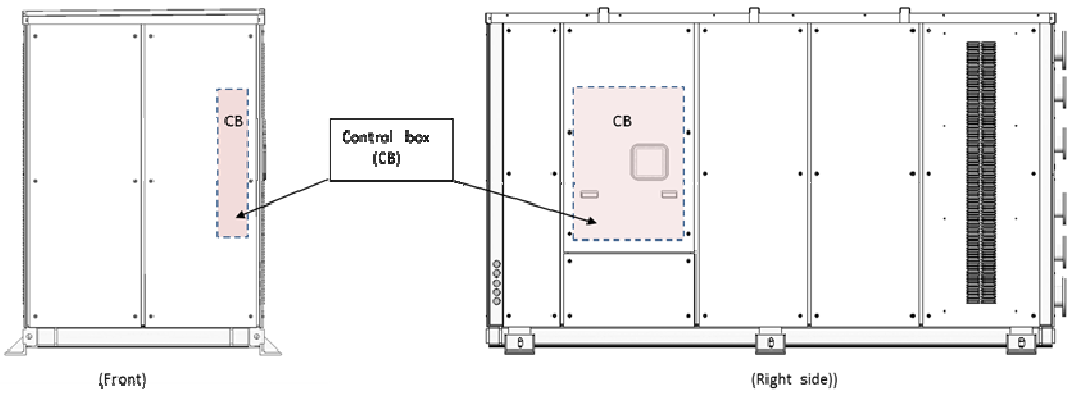
When rainwater is used, the variation of rainfall causes the mixed supply of service water, well water and industrial water. Similarly, the use of intermediate water involves the reuse of waste water, resulting in the wide variation of water components and water quality. Consequently, the water quality control cannot be conducted in the premises Yazaki. Accordingly, explain to the customer that such failures as corrosion and boring attributable to water quality are beyond the scope of warranty by Yazaki, and thus the customer should conduct the water quality control on their own within the range of JRA water quality standards, and that when the water quality is beyond the standard values, the customer should discuss the water quality control method with their water processing contractor and conduct the due water quality control.

	Item		Cooling Water		Chilled Water (20°C or less)		Heat Medium Water		Trend	
			Circulation water	Make-up water	Circulation water	Make-up water	Circulation water	Make-up water	Corrosion	Scale
Standard Items	pH	At 25°C	6.5 ~ 8.2	6.0 ~ 8.0	6.8 ~ 8	6.0 ~ 8.0	7.0 ~ 8.0	7.0 ~ 8.0	○	○
	Conductivity	mS/m at 25°C	80 or less	30 or less	40 or less	30 or less	30 or less	30 or less	○	○
		μS/cm at 25°C	800 or less	300 or less	400 or less	300 or less	300 or less	300 or less	○	
	Chloride ion	mg Cl^- / l	200 or less	50 or less	50 or less	50 or less	30 or less	50 or less	○	
	Sulfate ion	mg SO_4^{2-} / l	200 or less	50 or less	50 or less	50 or less	30 or less	50 or less		
	Acid consumption (pH4.8)	mg $CaCO_3$ / l	100 or less	50 or less	50 or less	50 or less	50 or less	50 or less		○
	Total hardness	mg $CaCO_3$ / l	200 or less	70 or less	70 or less	70 or less	70 or less	70 or less		○
	Calcium hardness	mg $CaCO_3$ / l	150 or less	50 or less	50 or less	50 or less	50 or less	50 or less		○
	Ionic silica	mg SiO_2 / l	50 or less	30 or less	30 or less	30 or less	30 or less	30 or less		○
Reference Items	Iron	mg Fe / l	1.0 or less	0.3 or less	1.0 or less	0.3 or less	1.0 or less	0.3 or less		○
	Copper	mg Cu / l	0.3 or less	0.1 or less	1.0 or less	0.1 or less	1.0 or less	0.1 or less	○	
	Sulfide ion	mg S^{2-} / l	None detectable	None detectable	None detectable	None detectable	None detectable	None detectable	○	
	Ammonium ion	mg NH_4^+ / l	1.0 or less	1.0 or less	1.0or less	1.0 or less	0.1 or less	1.0 or less	○	
	Residual chlorine	mg Cl / l	0.3 or less	0.3 or less	0.3 or less	0.3 or less	0.1 or less	0.3 or less	○	
	Free carbon dioxide	mg CO_2 / l	4.0 or less	4.0 or less	4.0 or less	4.0 or less	0.4 or less	4.0 or less	○	
	Ryzner stability index		6.0 ~ 7.0				-	-	○	○

6. Electric Wiring Connection

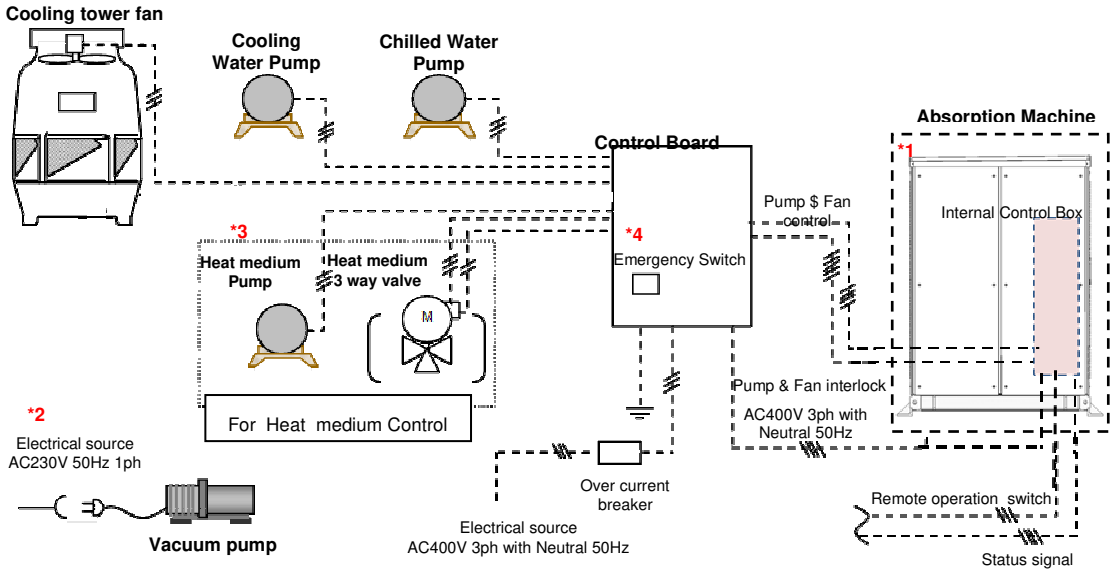
6.1 Electric component layout

Control Box (CB) layout would as following and the terminal block for electrical power supply.



6.2 System Wiring Connection (Example)

The figure below illustrates a typical electrical system diagram. Refer to following sections for wiring details.

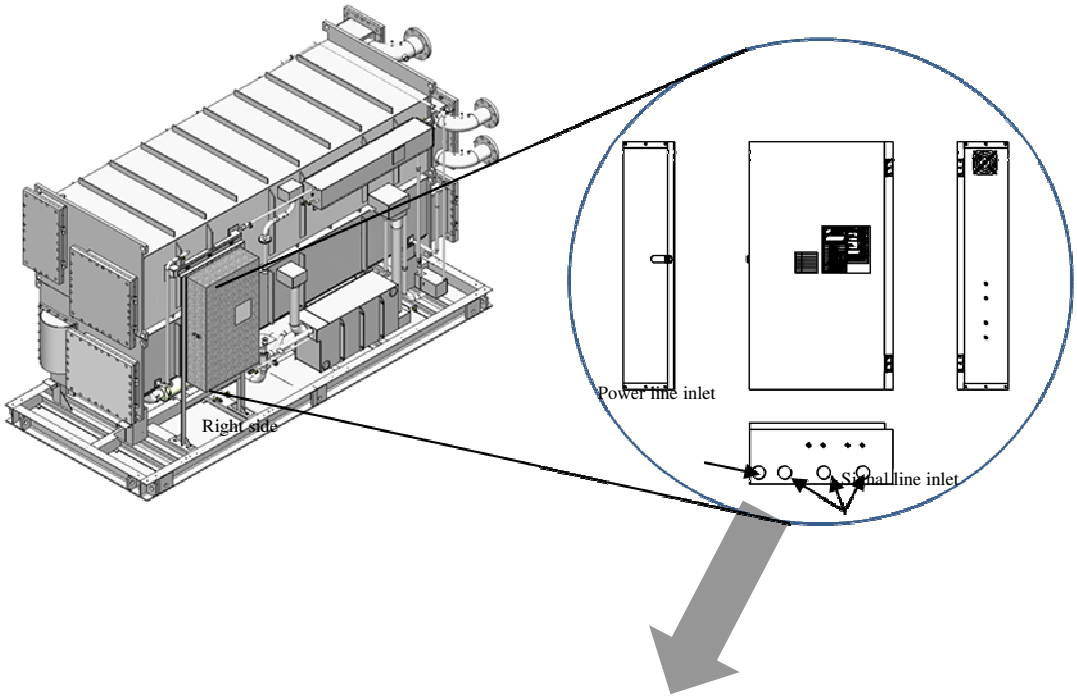


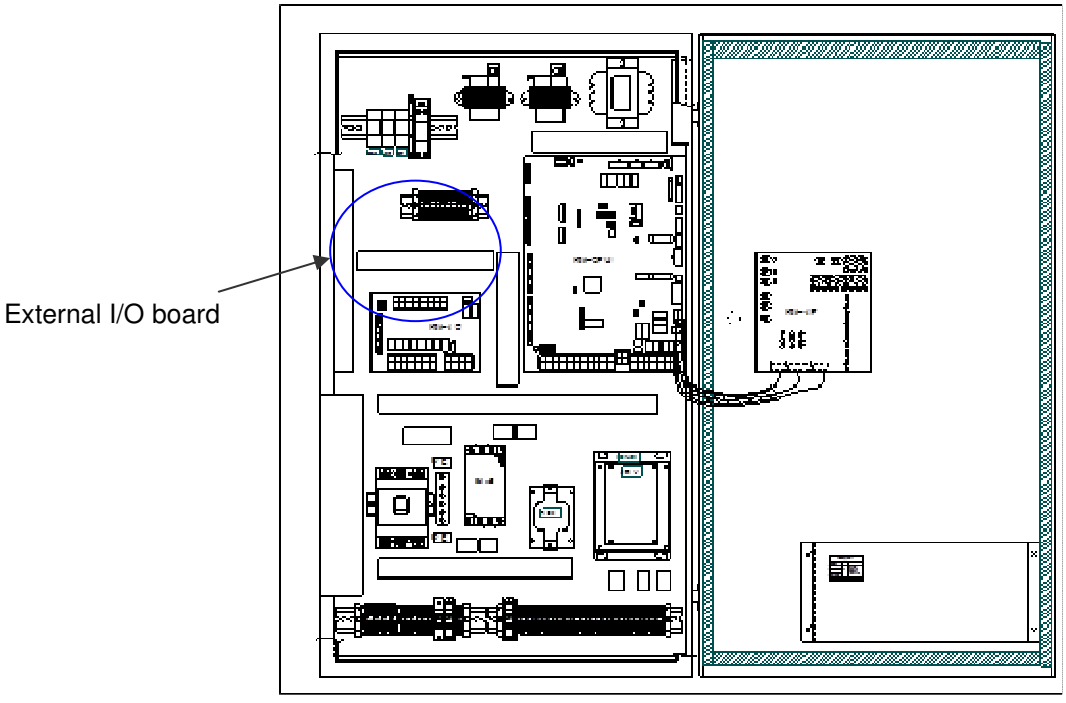
*1.Exept absorption machine (chain line) must be supplied externally by others.
*2.AC 230V 50Hz 1ph. power consent is requirement for maintenance (vacuum pump operation).
*3. The 3 way valve control can be used in situation where the heat medium pump(P3) is under Separate control. *1
*4. Emergency switch (Power shut down switch) must be installed to Control Board.

6.3 Remote Control Wiring Connection (Example)

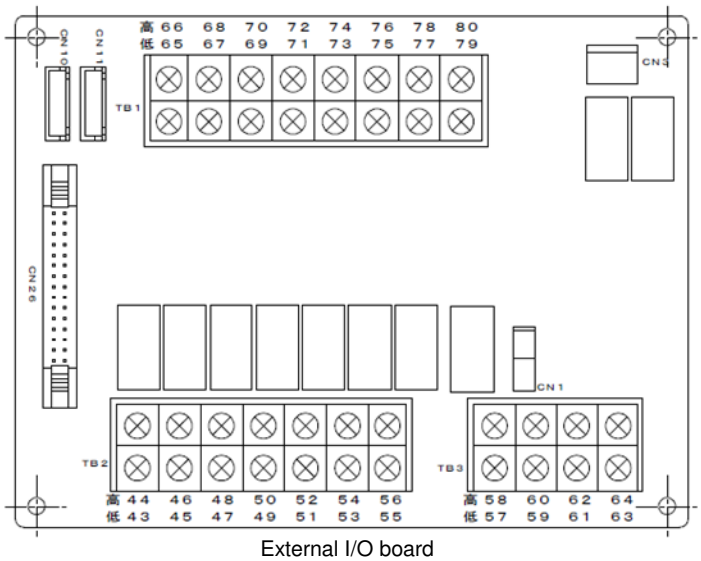
Remote control wiring would be connected to the External I/O board terminal inside the control box.

Open the left upper panel on the right side to access to the control box.



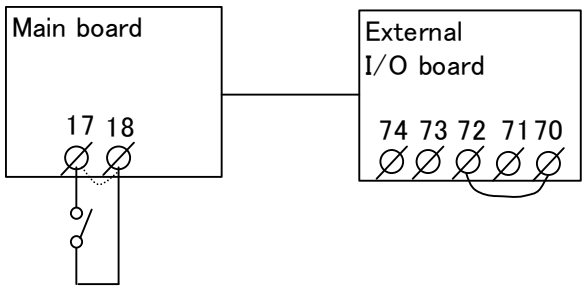


External I/O board view



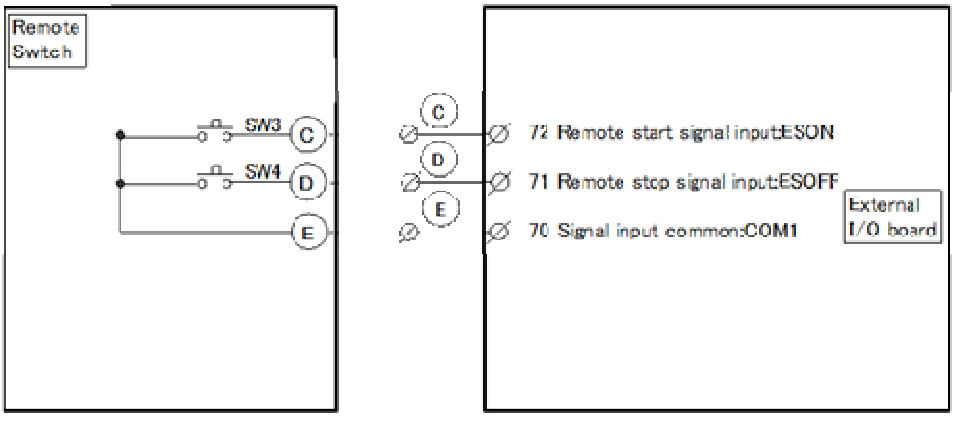
External I/O board

Example1) IRS(Individual operation switch) start and stop

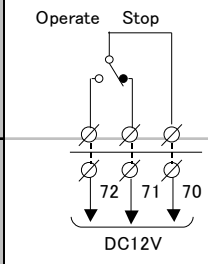
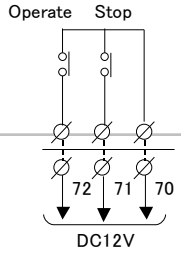
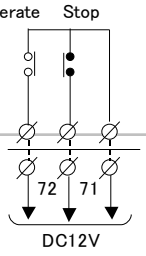
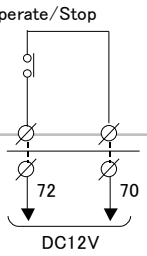
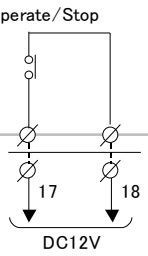
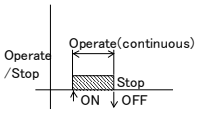
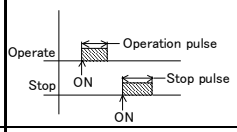
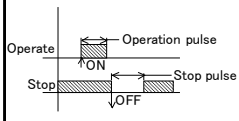
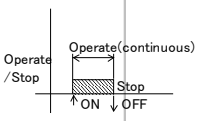


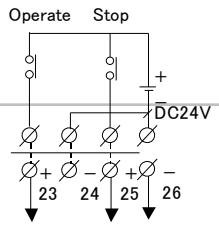
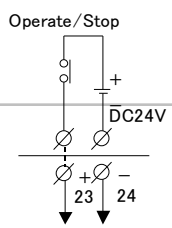
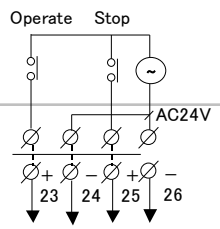
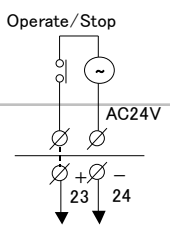
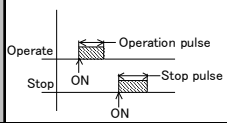
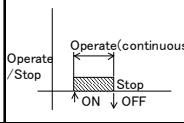
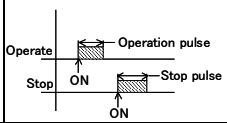
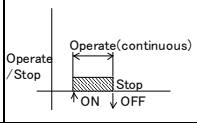
1. Jump terminal 72 and 70 on the external I/O board.
2. Remove the jumper from terminal 17 and 18 on the main board. And connect a switch for external remote operation.

Example2) Remote control switch



Example 3) Remote control from Central monitoring panel

For no-voltage contact					
Method	Method A	Method B	Method C	Method D	
	No voltage Contact c Hold(continuous) signal	No voltage Contact a+a Pulse(instantaneous) signal	No voltage Contact a+b Pulse(instantaneous) signal	No voltage Contact a Hold(continuous) signal	
Wiring connection	External I/O board	External I/O board	External I/O board	External I/O board	Main board
Remote operation panel Aroace control board					
Time chart					
ACT5 Setup	SV response : __(no-response) SV voltage : __(no-voltage) SV series : __(pulse) ESON : __(open)	SV response : __(no-response) SV voltage : __(no-voltage) SV series : __(pulse) ESON : __(open)	SV response : ○(no-response) SV voltage : __(no-voltage) SV series : __(pulse) ESON : __(open)	SV response : ○(no-response) SV voltage : __(no-voltage) SV series : ○(pulse) ESON : __(open)	SV response : __(no-response) SV voltage : __(no-voltage) SV series : __(pulse) ESON : ○(open)
Remarks	Input contact capacity DC12V 40mA	Input signal pulse width 500ms or more, 20s or less Input contact capacity DC12V 40mA	Input signal pulse width 500ms or more, 20s or less Input contact capacity DC12V 40mA	Input contact capacity DC12V 40mA	

	For DC24V with voltage contact		For AC24V with voltage contact	
Method	Method E	Method F	Method G	Method H
	DC24V with voltage Contact a+a Pulse(instantaneous) signal	DC24V with voltage Contact a Hold(continuous) signal	AC24V with voltage Contact a+b Pulse(instantaneous) signal	AC24V with voltage Contact a Hold(continuous) signal
Wiring connection	Main board	Main board	Main board	Main board
Remote operation panel Aroace control board				
Time chart				
ACT5 Setup	SV response : ○(no-response) SV voltage : ○(no-voltage) SV series : __(pulse) ESON : __(open)	SV response : ○(no-response) SV voltage : ○(no-voltage) SV series : ○(pulse) ESON : __(open)	SV response : ○(no-response) SV voltage : ○(no-voltage) SV series : __(pulse) ESON : __(open)	SV response : ○(no-response) SV voltage : ○(no-voltage) SV series : ○(pulse) ESON : __(open)
Remarks	Input signal pulse width 500ms or more, 20s or less Input contact capacity DC24V 40mA	Input contact capacity DC24V 40mA	Input signal pulse width 500ms or more, 20s or less Input contact capacity AC24V 40mA	Input contact capacity AC24V 40mA

Note)
When using method D on the main board jump ESON(terminal No.72) with COM1(terminal No.70)

8. Commissioning Request

7.1 General

After the absorption chiller has been installed, piped, flushed, leak tested and electrically wired as described in these instructions, and in full compliance with all pertinent safety codes, the Yazaki authorized distributor must be contacted to arrange supervision of the initial test-run and plant commissioning. It is essential that personnel representing all trade disciplines involved in the installation be on site on the day of start-up to cater for any final adjustment and alterations necessary to allow the chiller and the system generally to function correctly..

7.2 Start-up Check List

The list above should be copied. The copy moreover, should be completed and forwarded to the Yazaki authorized distributor prior to the request for commissioning. It is expected that any irregularities in the status of the plant will be corrected at the time the list is checked. Complete one copy of the Check List for each Yazaki chiller.

Installation Check and Request for Commissioning

Yazaki Distributor: …….
Project Name: ……Location ……..
Date Installation Completed: ……

Model No. ……Serial No……

Check Items

Absorption machine & cooling tower

1.Unit & cooling tower correctly mounted ☐
2. Levelling bolts properly located ☐
3. Mounting plates properly located ☐
4. Level longitudinal and transverse correct ☐
5. Multiple machines level with each other ☐
6. All unit cabinet panels accessible and free for removal ☐

Water Piping and Valves

1. Chilled water piping installed, supported and aligned correctly ☐
2. Chilled water pump correctly sized and operative. ☐
3. Chilled water stop and regulating valves installed. ☐
4. Thermometer wells installed in the inlet and outlet chilled water pipes. ☐
5. Heat medium piping installed, supported and aligned correctly ☐
6. Heat medium pump correctly sized and operative. ☐
7. Heat medium stop and regulating valves installed. ☐
8. Thermometer wells installed in the inlet and outlet heat medium pipes. ☐
9. Cooling water pipes installed, supported and aligned correctly. ☐
10. Cooling water pump correctly sized and operative. ☐
11. Cooling water stop, regulating and flush valves installed. ☐
12. Thermometer wells installed in the inlet & outlet cooling water pipes. ☐
13. Make-up and fill lines installed to the cooling tower and chilled water circuit. ☐
14. Air vent valves correctly installed. ☐
15. All water pipes cleaned, flushed, filled and leak tested ready for operation. ☐
16.Water treatment apparatus installed, chemically dosed and ready for operation. ☐

Electrical

1. Power supply compatible with the chiller data plate. ☐
2. Power wiring correctly sized, fuse protected and connected to the control box of the chiller. ☐
3. Chilled water pump correctly wired with motor contactor and thermal relay. ☐
4. Heat medium pump correctly wired with motor contactor and thermal relay. ☐
(4.) Heat medium 3 way valve correctly wired With motor contactor and thermal relay.
5. Cooling tower pump correctly wired with motor contactor and thermal relay. ☐
6. Cooling tower fan correctly wired with motor contactor and thermal relay. ☐
7. Correct rotation of each motor confirmed. ☐
8. Transient protection apparatus correctly installed. ☐
9. Singe phase power supply outlet available near the chiller for the vacuum pump. ☐
10. Control wiring between the chiller Control box and field enclosure properly installed, voltage does not exceed ac 30V. ☐
11.Field wiring to facilitate remote heating, cooling selection (optional) properly installed and functional. ☐

On the arranged date of commissioning, it is required that representatives from the organizations involved in the installation be present throughout at site.