



Hope Deepblue



## X Steam-Fired LiBr Absorption Chiller



Hope Deepblue

**Continental Hope Group**  
**Hope Deepblue Air-conditioner Manufacturer Corp., Ltd.**

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Continental Hope Group  
Hope Deepblue Air-conditioner Manufacturer Corp., Ltd.

## Company Profile

Hope Deepblue Air-conditioner Manufacture Corp., Ltd (Deepblue) was established in 1997. It is affiliated to Hope Group, which has been following its corporate philosophy of "Contributing to the Motherland and Striving for the Best" since its founding and has developed into an ultra-large conglomerate after over twenty years of hard work, with its annual sales revenue approaching RMB 100 billion and its business involving energy development, energy and chemicals, HVAC&R, power electronics, information network, drive control, building, real estate, hotel, food, feedstuff, finance and international trade industries.

Deepblue was founded with an investment of RMB 160 million. It is located in the Western High-tech Park in Chengdu, a national key high-tech development zone, and occupies an area of about 170 mu(1 hectare equals 15 mu). As a national key high-tech enterprise and the largest central air conditioner manufacturer in West China, Deepblue is engaged in R&D, production and sale of products in HVAC&R, and offer all kinds of air conditioners and systematic solutions according to users' different demands.

Deepblue has a strong technology R&D team consisting of renowned experts, scholars and engineers in air conditioner industry. So far it has obtained tens of patents and proprietary technologies and on this basis has developed the Deepblue Green Energy Center, the truly first heat-electricity-cooling tri-generation system with independent intellectual property rights in China, which has been operating successfully for more than six years. Besides, Deepblue developed various advanced air conditioning products including water(ground)-source central air conditioner, LIBr(lithium bromide) absorption chiller and vacuum boiler, bringing comfort and energy saving and environmental protection benefits to its customers.

Thanks to the advanced technologies, state-of-the-art production and test equipment, and scientific management, Deepblue's products has passed ISO9001, ISO14001, CCC, CRAA, CSC and CE certifications, won the "Gold Medal of the Fourth Shanghai Science and Technology Exposition" and "Gold Medal of China Fair of Inventions and Technologies", and included in the National Torch Program and National Key & New Product list, and Deepblue has won a number of awards such as Key Recommended Unit for National Energy Saving Project Construction, Top Ten Most Influential HVAC&R Brand, Top Ten Most Designer-trusted HVAC&R Brand Model Enterprise for Building's Energy Conservation and Emission Reduction, Special Contribution Prize in Building Environment and Facilities Industry, and Leading Enterprise in Waste Heat Recovery. Particularly, Deepblue's water(ground)-source central air conditioner has become the first choice in the industry due to its prominent energy efficiency and high quality.

After more than ten years of rapid development, Deepblue has formulated a nationwide marketing and service network and established powerful and professional marketing and installation teams, which provide pre-sale technical consultancy, production installation and consultancy, lifelong product maintenance, energy saving management consultancy, energy saving project retrofit, and air conditioner and energy operation management services, making customers enjoy satisfactory services during the whole process from R&D, manufacture, inspection to commissioning and after-sale maintenance.

"One Project, One Masterpiece". Deepblue has built an array of important and representative projects across China such as the Beijing Newton Office, Zhejiang World Trade Center, Hefei New City International, Lingbo Xinfeng Resort(five-star), Chengdu Homeland Hotel(five-star), and Hongpailou Commercial Plaza. "Deepblue Fits Top Building" has been a fashion, trend and acknowledgement. Deepblue will continue to work hard and take public prize as its best encourage and endeavour to grow into an industrial leading company.

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## Certificates



CE Certificate



ISO14001 Certificate



ISO9001 Certificate



CRAA Certificate



Chiller(Heater) performance  
test-room certificate



National Torch Program  
Project Certificate



Chinese Energy Conservation  
Product Certificate



High-tech Enterprise Certificate



National Industrial Product  
Production License

## Manufacturing and Test Equipment



Helium Leak Detectors



X-Ray Detectors



Ultrasonic Weld Tester



Machining center

ISO14001 ISO9001 CQC CRAA CE

Hope Deepblue  
Waste Heat Utilization Expert



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- ① Welding robot
- ② Submerged Arc welding machine
- ③ CNC cutting machine
- ④ CNC Drilling machine
- ⑤ Bundle automatic welding machine



## Steam-fired LiBr Absorption Chiller

### Working Principle

Steam-fired lithium bromide absorption chiller is a refrigeration equipment which uses the natural gas, coal gas and fuel oil as its fuel and the combustion heat as its driving power. The LiBr solution is the circulated working medium, with LiBr as the absorbent and water as the refrigerant.

Unit is mainly composed of the high-pressure generator, low-pressure generator, condenser, evaporator, absorber, high-temperature heat exchanger, low-temperature heat exchanger, automatic purge system, combustor, vacuum pump and canned pump, etc.

The diluted solution, transferred by the solution pump, through the low-temperature heat exchanger, condensate water heat exchanger, high-temperature heat exchanger heating after entering in the high-pressure generator. In the high-pressure generator, the dilute solution is heated by the flame there to generate high-temperature refrigerant vapor, and then condensed into intermediate solution. The intermediate solution entered into the low-pressure generator through the high-temperature heat exchanger and is heated by the high-pressure, high-temperature refrigerant steam coming from the high-pressure generator to generate the refrigerant vapor, and then further become concentrated solution.

The high-temperature refrigerant vapor (water) generated in the high-pressure generator is heated the intermediate solution of the low-pressure generator and then cooled into refrigerant water. The refrigerant water, after throttled, pressure reducing, with the refrigerant vapor generated in the low-pressure generator entered into the condenser to be cooled by the cooling water, and become refrigerant water which is correspond with condensing pressure.

The liquid coolant of the condenser through the throttle, then enters the evaporator. Due to the low pressure of the evaporator, so that the refrigerant water in low temperature can evaporation boiling, when the coolant water is used pump for conveying, spraying in submerged tube evaporator is immediately, evaporation, absorption evaporator tube inner cooling water heat, so that the inner tube water temperature decrease, achieve the purpose of refrigeration

By the low pressure generator out of the concentrated solution flows through the low-temperature heat exchanger into the absorber, sprayed in the evaporator tube bank, is cooled by the cooling water within the pipe, temperature reducing, absorbed the refrigerant vapor from the evaporator, become a dilute solution. So, the concentrated solution constantly absorbed the refrigerant vapor generated in the evaporator made the evaporator evaporation process constantly. Due to absorbed the refrigerant vapor from the evaporator, to become diluted solution, and then is transferred into the high-pressure generator by the solution pump to boiling and concentrated. Thus completing a cooling cycle.



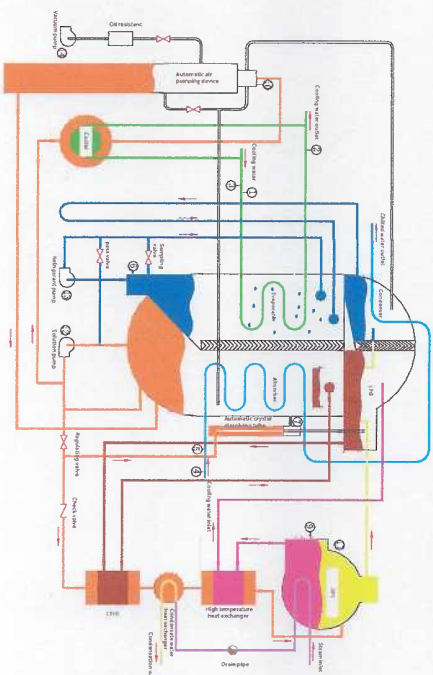


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## Flow Chart(cooling cycle)



- C-Control
  - D-Fault self diagnosis maintenance
  - A-Alarm
  - 5.Sample preservation
  - V-V/low
  - 1.Cooling water inlet temperature(C.D.S.V)
  - 2.Cooling water outlet temperature(C.D.A.S.V)
  - 3.Cold flow(C.D.A)
  - 4.Cooling water inlet temperature(C.D.A.S.V)
  - 5.Cooling Flow(C.D.A)
  - 6.Evaporation temperature(C.D.A.S.V)
  - 7.Soluble crystal tube temperature(C.D.A.V)
  - 8.High level(C.D.A.V)
  - 9.Automatic air pumping device of pressure(C)
  - 10.High pressure(C.A)
  - 11.Solution pump(C.D.A)
  - 12.Refrigerant pump(C.D.A)
  - 13.Vacuum pump(C.D.A)
- Legend:
- Identification water
  - Refrigerant water
  - Chilled water
  - Concentrated solution
  - Dilute solution
  - Intermediate solution
  - Boiler steam
  - High pressure refrigerant vapor

## Features

### — Unique structure

“Cold bulge” type high voltage generator : Avoid brass pull, and convenient repair

Using a unique process, which realized without heating can heat reservation stress goal, avoid high voltage generator without liquid brass pull accidents, and is convenient for inspection

Mechanical and electric-controlled anti-freezing system: multiple anti-freezing measures

There are six anti-freezing measures: the primary spray device in the evaporator is installed at a lower place; the secondary spray device is in linkage control with refrigerant water and chilled water; anti-clogging device; two-stage chilled water flow switch; chilled water circulating pump and cooling water circulating pump are in linkage control. These ensure that faults such as chilled water break, underflow and low-temperature can be identified timely and protective measures be taken automatically to prevent tube freeze-up.

Hybrid automatic purge system with multiple ejectors and fall-head structure: ensuring fast vacuum pumping and maintaining high vacuum.

It is a new and high-efficiency automatic purge system. The ejector is actually a suction pump. Deepblue's purge system adopts many ejectors to accelerate pumping and increase the gas evacuation speed. The fall-head structure can raise the vacuum degree and enable the Unit to reach high vacuum. This feature ensures the inside of the Unit always remain high vacuum so that to prevent oxygen corrosion, extend the life of the Unit, and keep its best operating state.

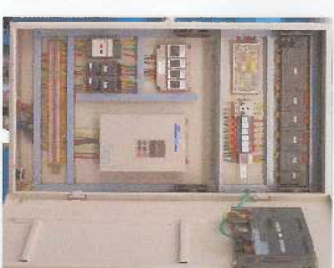
Can d structure design: absorber solution dripping disc and an evaporator refrigerant water nozzle can be disassembled or replaced. Ensure the life period of refrigerationVolume attenuation

Solution series cycle technology, simple and reliable system piping design: Simple operation, reliable

Solution series cycle technology to make concentrated solution further away from the crystal line, avoid crystallization,safe and reliable; the valve less, no solution regulating valve, coolant water spray control valve, high-pressure water agent regulating valve and so on, and potential leakage points less, run or debug without operator adjustment, stable operation.

Hybrid automatic anti-crystallization system combining level difference dilution and crystal melting: preventing crystallization

Unit through its own solution concentration identification system to monitoring solution concentration operation, with electric regulating valve to drive a steam input, allowing the solution run away from the line to prevent operation of concentration crystallization, crystallization failure.All of a sudden power failure or abnormal shutdown, potential dilution system rapid dilution of lithium bromide solution, eliminate abnormal shutdown unit concentrated solution exists, avoid crystallization.





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#### Fine separating device: eradicating pollutio

The concentration of the LiBr solution in the generator is divided into two stages: flash vaporization stage and generation stage. It is in the former stage that pollution is truly caused. The Hope Deepblue Unit separates the refrigerant water during the flash vaporization finely. Only pure refrigerant water is admitted into the next link of the cycle, thus the pollution source is eliminated and refrigerant water pollution is eradicated.

#### Self-adaptive cooling storage device: improving partial-load performance and shortening start/stop time

It automatically regulates the storage amount of the refrigerant water according to the change of external load. And during partial-load operation, it automatically adjusts the solution concentration to make the Unit operating in the best state. The energy saving effect is obvious. In addition, the cooling storage device shortens the start and stop time greatly, thus reducing idle work.

#### Economizer: increasing output energy

The energy enhancer in the LiBr solution, iso-octyl alcohol, is normally insoluble in water, therefore its role as a energy enhancer is limited in conventional structure. The economizer treats iso-octyl alcohol and LiBr solution in a special way to make the Unit's generation and absorption process, thus increasing the energy enhancing ability of iso-octyl alcohol, reducing energy consumption, and achieving energy conservation.

#### Integral sintered mirror

The leak rate of less than  $2.30 \times 10^{-9}$  gram /s better than the national standard of three orders of magnitude, to ensure the life of unit

#### Special treatment technology for transfer tube surface: guaranteeing high-efficiency heat exchange and reducing energy consumption

The evaporator and absorber are hydrophilically treated to ensure the uniformity of the liquid film on the transfer tube surface, thus increasing heat exchange efficiency and reducing energy consumption.

#### Inhibitor lithium molybdate: environmental friendly

Environmentally friendly inhibitor, lithium molybdate, is used in lieu of the heavy metal inhibitor, lithium chromate.

#### Variable frequency control: energy saving technology

The operating condition of the Unit is automatically adjusted through an inverter according to the change of the cooling capacity, enabling the Unit to maintain its optimal and most energy-efficient operation.



tiger electric control valve



canned pump

## 二. Intelligent control system

### Full automatic control function

The AI(V3.0) control system has complete and strong functions: one-key start/stop, timing on/off, safety protection system, auto adjustment functions, system linkage control, expert system, human-machine dialogue and building automation interface etc.

### Unique load-adjusting function

This function automatically regulates the output load of the Unit according to user's actual load, greatly reducing the start time, shutdown dilution time, idle work, and energy consumption

### Unique circulating solution amount control technology

The circulating amount of the solution is regulated by controlling the HPG level, concentration and temperature of the concentrated solution, in stead of by simply controlling the HPG level alone. And the solution pump is controlled by an inverter. All these techniques ensure the Unit operates with appropriate circulating solution amount, improve the operating efficiency, and reduce the start time and energy use.

### Solution concentration limit control technology

AI(V3.0) monitors the concentration of the concentrated solution and controls the circulating solution amount and steam amount in real time, ensuring safe and reliable operation of the Unit at high concentration, improving operation efficiency and preventing crystallization.

### Complete self-diagnosis and protection functions

AI(V3.0) has 34 self-diagnosis and protection functions and can automatically takes protective measures according to fault degrees. This effectively prevents accidents, eases the labor of operators and guarantees long-term stable running of the Unit.

### Intelligent Automatic purge system

AI(V3.0) monitors the content of non-condensable gases inside the unit in real time(during operation) and starts or stops the purge system automatically, or gives an instruction if manual purge is required.

### Unique shutdown dilution control technology

Based on various conditions such as the concentration of the concentrated solution, ambient temperature and current amount of refrigerant water(in cooling cycle), AI(V3.0) can control the run time of each pump during dilution operation, ensuring an optimum concentration after shutdown of the Unit. This not only prevents crystallization, but also shortens the restart time of the Unit.

### Parameter management system

AI(V3.0) is able to display, correct and set 12 key performance parameters of the Unit through the operation interface in real time, and record the operation history.

### Fault management system

AI(V3.0) can provide detail information about failures when they occur, such as their locations and symptoms, and give treatment measures and alerts through the operation interface. In addition, it is capable of sorting and analyzing history failures, which would be helpful for repair and maintenance of the Unit.



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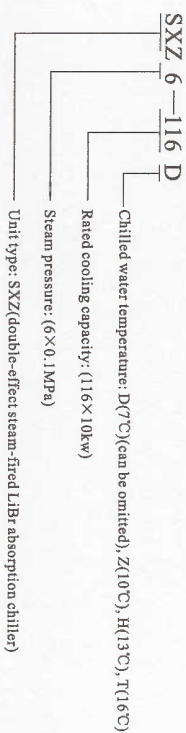
Steam-Fired  
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High-quality Product And Service

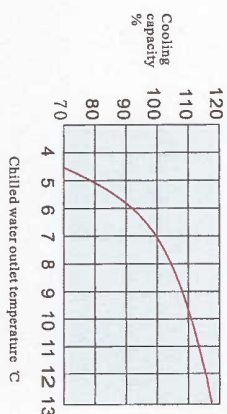
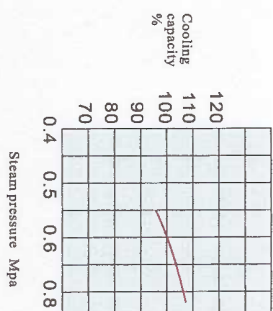
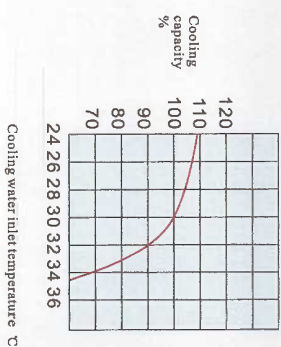
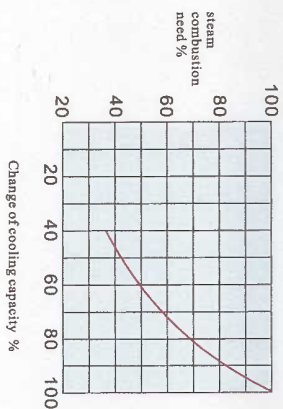


## Model number description



## Technical Parameters

### Performance curve







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Rated parameters

( Steam pressured 0.4MPa )

Model	sxz4-									
	Kw									
	×10 <sup>4</sup> Kcal/h									
Cooling capacity	USRt									
	66									
	99									
Inlet/Outlet temperature	℃									
	Chilled water 12-7									
	Flowrate									
Chilled water	m <sup>3</sup> /h									
	Kpa									
	DN(mm)									
Inlet/Outlet temperature	℃									
	Cooling water 30→36									
	Flowrate									
Cooling water	m <sup>3</sup> /h									
	Kpa									
	DN(mm)									
consumption	Kg/h									
	292									
	438									
Steam inlet pipe diameter	DN(mm)									
	50									
	25									
Condensate outlet pipe diameter	DN(mm)									
	25									
	2.8									
Electric	KW									
	2.8									
	2.8									
Power supply	3-phase\380VAC\50HZ									
	Length (L)									
	mm									
Dimensions	Width (W)									
	mm									
	mm									
Height (H)	mm									
	2000									
	2160									
Shipment	Assembled									
	Total shipment weight									
	t									
Operating weight	t									
	4.4									
	4.9									

Model	sxz4-									
	Kw									
	×10 <sup>4</sup> Kcal/h									
Cooling capacity	USRt									
	413									
	496									
Inlet/Outlet temperature	℃									
	Chilled water 12-7									
	Flowrate									
Chilled water	m <sup>3</sup> /h									
	Kpa									
	DN(mm)									
Inlet/Outlet temperature	℃									
	Cooling water 30→36									
	Flowrate									
Cooling water	m <sup>3</sup> /h									
	Kpa									
	DN(mm)									
consumption	Kg/h									
	1825									
	2190									
Steam inlet pipe diameter	DN(mm)									
	100									
	40									
Condensate outlet pipe diameter	DN(mm)									
	40									
	5.4									
Electric	KW									
	5.4									
	5.8									
Power supply	3-phase\380VAC\50HZ									
	Length (L)									
	mm									
Dimensions	Width (W)									
	mm									
	mm									
Height (H)	mm									
	2652									
	2740									
Shipment	Assembled									
	Total shipment weight									
	t									
Operating weight	t									
	16.6									
	18.6									





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## Rated parameters

( Steam pressured 0.6MPa )

Cooling capacity	Model	SXZ6-	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698	
		KW	233	350	470	580	700	810	930	1050	1163	1450	1740	2040	2330	2620	2910	3490	4070	4650	5230	5820	6980	
		×10Kcal/h	20	30	40	50	60	70	80	90	100	125	150	175	200	225	250	300	350	400	450	500	600	
Chilled water		USRt	66	99	132	165	198	231	265	299	331	413	496	579	661	744	827	992	1157	1323	1488	1653	1984	
	Inlet/Outlet temperature	℃				Chilled water 12-7																		
	Flowrate	m³/h	40	60	80	100	120	140	160	180	200	250	300	350	400	450	500	600	700	800	900	1000	1200	
	Pressure drop	Kpa	33	33	33	33	36	36	36	52	52	52	52	29	29	29	29	48	48	48	44	44	65	
	Pipe diameter	DN(mm)	80	100	100	125	125	150	150	150	150	200	200	200	250	250	250	250	300	300	350	350	400	
	Inlet/Outlet temperature	℃	Cooling water 30-36																					
Cooling water	Flowrate	m³/h	59	88	118	147	176	206	235	265	294	368	441	515	588	662	735	882	1029	1176	1323	1470	1764	
	Pressure drop	Kpa	82	82	82	82	82	82	82	91	91	91	58	58	58	58	58	51	51	51	63	63	76	
	Pipe diameter	DN(mm)	100	125	125	150	150	150	200	200	200	200	250	250	250	300	300	350	350	400	400	400	500	
Steam	consumption	Kg/h	268	402	536	670	804	938	1072	1206	1340	1675	2010	2345	2680	3015	3350	4020	4690	5360	6030	6700	8040	
	Steam inlet pipe diameter	DN(mm)	40	50	50	65	65	65	65	80	80	80	100	100	100	125	125	125	125	150	150	150	150	
	Condensate outlet pipe diameter	DN(mm)	25	25	25	25	25	25	25	25	40	40	40	40	40	40	40	50	50	50	50	65	65	
Electric	Total power	KW	2.8	2.8	2.8	2.8	3.8	3.8	3.8	4.2	4.2	4.4	5.4	5.8	6.4	6.4	7.4	7.7	8.2	8.7	9.7	12.2	13.2	
Dimensions	Power supply	3-phase/380VAC/50HZ																						
	Length (L)	mm	2900	2980	2980	2980	4020	4020	4020	4640	4640	4658	5740	5740	5770	5840	5920	6720	6720	6800	7600	7830	9160	
	Width (W)	mm	1352	1462	1656	1750	1656	1610	1915	1915	2010	2131	2131	2240	2345	2560	2630	2630	2910	3180	3280	3450	3580	
Shipment	Height (H)	mm	1960	2000	2160	2185	2165	2185	2350	2350	2438	2652	2652	2740	2890	3200	3315	3315	3585	3585	3585	3690	3690	
	Assembled																							
	Total shipment weight	t	3.2	4.4	5.5	6.7	7.8	8.9	8.9	9.8	10.7	11.7	14.1	16.6	19	21.3	23.5	25.9	29.9	34.1	38.4	45.8	52.4	59.8
Operating weight	t	3.6	4.9	5.9	7.2	8.5	9.9	11.1	12	13.3	15.7	18.6	21	23.8	26.3	28.8	33.7	38.4	43	52.3	59.4	68.8		



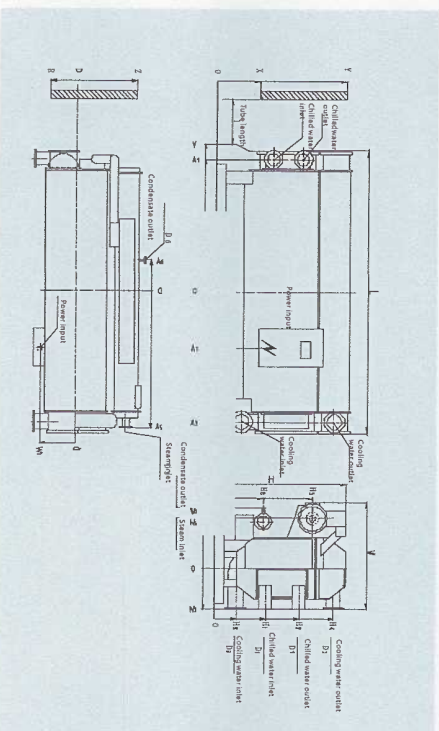
( Steam pressured 0.8MPa )

145	174	204	233	262	291	349	407	465	523	582	698
1450	1740	2040	2330	2620	2910	3490	4070	4650	5230	5820	6980
125	150	175	200	225	250	300	350	400	450	500	600
413	496	579	661	744	827	992	1157	1323	1488	1653	1984
Chilled water 12-7											
250	300	350	400	450	500	600	700	800	900	1000	1200
52	29	29	29	29	29	48	48	48	44	44	65
200	200	200	250	250	250	250	300	300	350	350	400
Cooling water 30-36											
364	437	509	582	655	728	873	1019	1164	1310	1455	1746
91	58	58	58	58	58	51	51	51	63	63	76
250	250	250	300	300	350	350	350	400	400	400	500
1628	1953	2279	2604	2930	3255	3906	4557	5208	5859	6510	7812
80	100	100	100	125	125	125	125	150	150	150	150
40	40	40	40	40	40	50	50	50	50	65	65
4.4	5.4	5.8	6.4	6.4	7.4	7.7	8.2	8.7	9.7	12.2	13.2
3-phase/380VAC/50HZ											
4658	5740	5740	5770	5840	5920	6720	6720	6800	7800	7830	9160
2131	2131	2240	2345	2560	2630	2630	2910	3180	3280	3450	3590
2652	2652	2740	2890	3200	3315	3315	3585	3585	3585	3690	3690
Assembled											
13.9	16.4	18.8	21.1	23.2	25.6	29.6	33.7	38.1	45.6	52.2	59.5
15.4	18.3	20.7	23.5	26	28.6	33.3	380	42.7	51.9	59	66.4

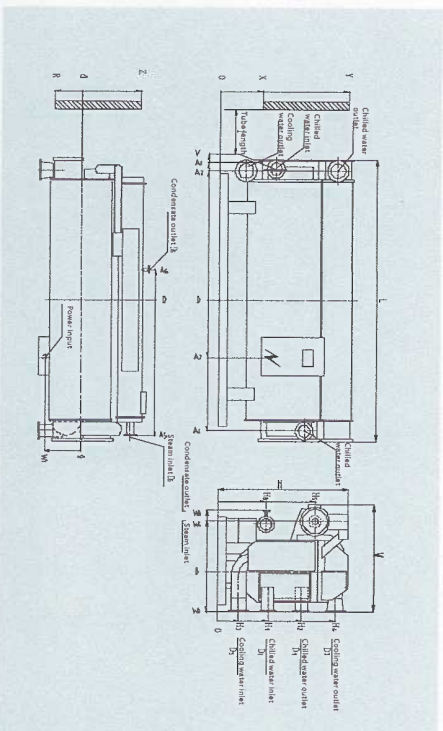


## Pipe connection diagram

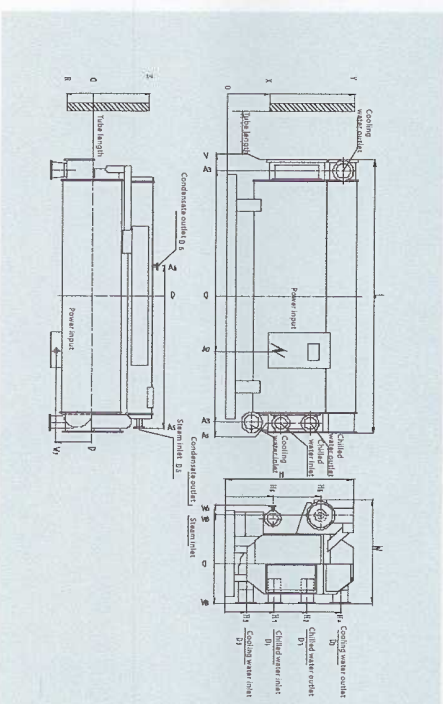
Model : SXZ6(8)-23~58 SXZ4-47



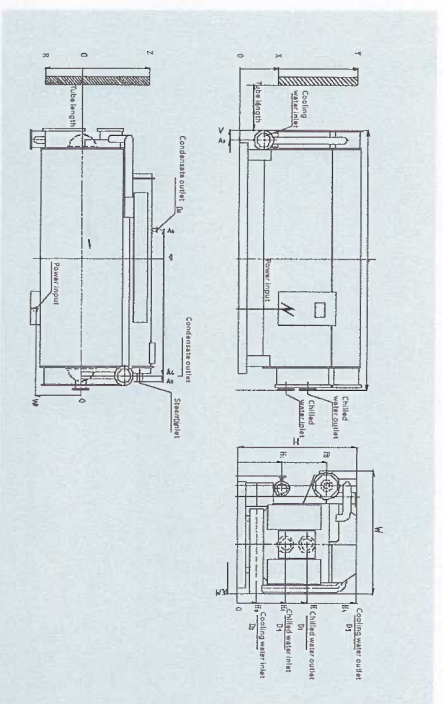
Model : SXZ6(8)-70~145 SXZ4-58~116



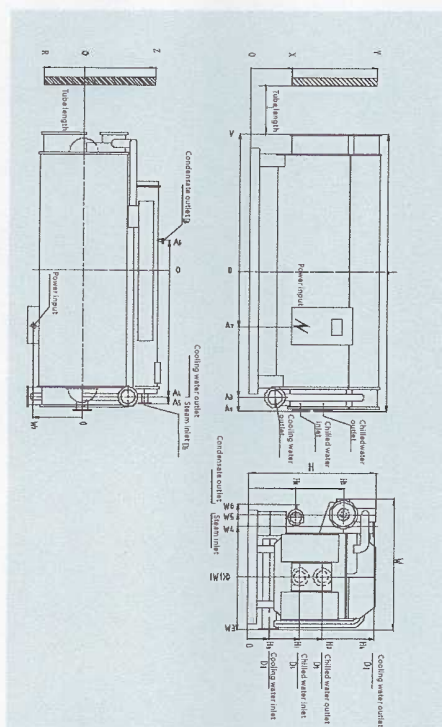
Model : SXZ6(8)-174~281 SXZ4-145~262



Model : SXZ6(8)-349~465 SXZ4-291~407



Model : SXZ6(8)-523~698 SXZ4-465~582



**Table of pipe connection size(SXZ4-)**

Model	SXZ4-	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582
Unit	L	2980	2980	2980	4020	4020	4640	4640	4658	5740	5740	5740	5770	5840	5920	6720	6720	6800	7800	7830	9610
	W	1462	1656	1750	1656	1810	1915	1915	2010	2131	2131	2240	2345	2560	2630	2630	2910	3180	3280	3450	3590
	H	2000	2160	2185	2165	2185	2350	2350	2652	2652	2740	2890	2890	3200	3315	3315	3585	3585	3585	3690	3690
	V	1483	1510	1510	2020	2020	2020	2270	2330	2330	2900	2900	2900	2900	2940	3420	3480	3480	3480	3885	4660
	R	358	390	420	390	420	450	450	469	520	520	560	600	620	650	50	745	900	900	960	1060
	Z	715	960	970	1030	1030	1100	1100	1100	1190	1260	1280	1410	1410	1560	1560	1775	1950	2010	2085	2150
	X	628	628	628	628	728	728	728	720	650	650	810	800	780	910	910	910	910	910	910	910
Chilled water	Y	1810	1955	1945	1955	1980	2135	2135	2160	2440	2440	2500	2700	2830	3070	3070	3070	3250	3250	3250	3250
	I	2440	2440	2440	3440	3440	3440	3940	3940	3940	4930	4930	4930	4930	4930	5930	5930	5930	6930	6930	7930
	A1	1350	1360	1373	1868	1880	1880	2160	2160	2160	2660	2660	2660	2660	2690	3192	3218	3510	3945	3880	4500
	W1	628	667	690	657	690	719	719	739	790	790	829	870	890	920	0	0	0	0	0	0
	H1	956	915	968	915	968	1092	1092	1058	1140	1140	1170	1218	1310	1365	1330	1350	1395	1395	1410	1460
	H2	1365	1410	1420	1400	1420	1542	1542	1535	1717	1717	1775	1911	2060	2120	2080	2132	2100	2100	2270	2330
	D1	100	100	125	125	125	150	150	150	200	200	200	200	250	250	250	300	350	350	350	400
Cooling water	A3	1338	1345	1361	1845	1845	2125	2125	2125	2625	2625	2625	2625	2625	2680	3150	3180	3305	3680	3805	4280
	A4															3150	3180	3175	3550	3800	4300
	W3															795	1095	1120	1120	1180	1220
	W4															1030	1030	1130	1130	1176	1245
	H3	488	560	488	505	465	529	529	529	530	530	537	565	542	553	553	553	560	560	560	560
	H4	1853	1980	1980	1940	1980	2160	2160	2160	2436	2436	2490	2710	2905	3060	3200	3200	3400	3400	3400	3400
	D3	125	125	150	150	150	200	200	200	250	250	250	300	300	350	350	350	400	400	400	400
Steam	A5	1400	1400	1400	1980	1980	2230	2230	2165	2740	2740	2740	2740	2740	2740	3165	3165	3300	3665	3790	4290
	W5	575	660	687	660	687	745	745	744	850	850	889	982	1043	1043	1043	1065	1250	1250	1266	1366
	H5	1495	1495	1495	1770	1770	1770	1770	1770	2154	2154	2154	2154	2150	2215	2215	2215	2360	2360	2360	2340
	D5	50	50	65	65	65	65	80	80	80	100	100	100	125	125	125	125	150	150	150	150
	A6	400	400	400	400	300	300	300	300	300	300	250	250	250	250	250	255	255	255	255	255
	W6	588	665	711	665	711	760	760	792	890	900	924	866	972	955	955	975	1590	1590	1630	1770
	H6	532	630	530	560	530	630	650	650	900	800	764	775	890	795	8500	1000	1020	1020	1020	1020
Electric control	D6	25	25	25	25	25	25	40	40	40	40	40	40	40	40	50	50	50	50	65	65
	A7	920	920	920	950	1000	1000	1000	1000	1500	1500	1500	1500	1500	1500	1600	1600	1800	1800	1800	2000
	W7	600	600	650	650	660	670	670	680	750	760	820	820	820	880	880	880	1025	1025	1085	1085

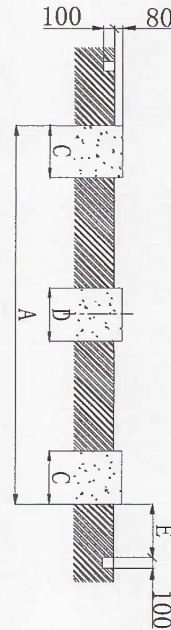
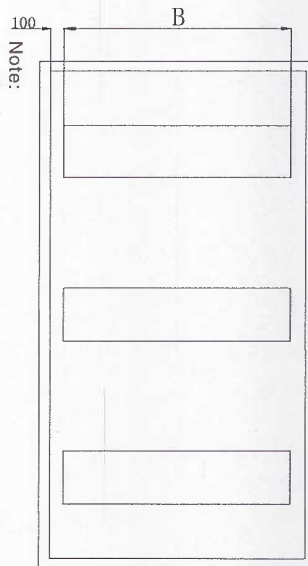


**Table of pipe connection size (SXZ6-/SXZ8-)**

Model	SXZ6-	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698	
Unit	SXZ6-	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698	
	L	2900	2980	2980	2980	4020	4020	4640	4640	4658	5740	5740	5740	5770	5840	5920	6720	6720	6800	7800	7830	9610	
	W	1352	1462	1656	1750	1656	1810	1915	1915	2010	2131	2131	2240	2345	2560	2630	2630	2910	3180	3280	3450	3590	
	H	1960	2000	2160	2185	2350	2350	2438	2652	2652	2740	2890	2890	2890	3200	3315	3315	3585	3585	3585	3690	3690	
	V	1458	1483	1510	1510	2020	2020	2020	2270	2330	2330	2900	2900	2900	2900	2940	3420	3480	3480	3885	4050	4660	
	R	358	358	390	420	390	420	450	450	469	520	520	560	600	620	650	50	745	900	900	960	1060	
	Z	655	715	960	970	1030	1030	1100	1100	1100	1190	1260	1280	1410	1410	1560	1560	1775	1950	2010	2085	2150	
	X	628	628	628	628	628	728	728	728	728	720	650	650	810	800	780	910	910	910	910	910	910	
	Y	1760	1810	1955	1945	1955	1980	2135	2135	2160	2440	2440	2500	2700	2830	3070	3070	3070	3250	3250	3250	3250	
Chilled water	I	2440	2440	2440	2440	3440	3440	3440	3940	3940	3940	4930	4930	4930	4930	4930	5930	5930	5930	6930	6930	7930	
	A1	1340	1350	1360	1373	1868	1880	1880	2160	2160	2160	2660	2660	2660	2660	2690	3192	3218	3510	3945	3880	4500	
	W1	628	628	667	690	657	690	719	719	739	790	790	829	870	890	920	0	0	0	0	0	0	
	H1	956	956	915	968	915	968	1092	1092	1058	1140	1140	1170	1218	1310	1365	1330	1350	1395	1395	1410	1460	
	H2	1365	1365	1410	1420	1400	1420	1542	1542	1535	1717	1717	1775	1911	2060	2120	2080	2132	2100	2100	2270	2330	
	D1	80	100	100	125	125	125	150	150	150	200	200	200	200	250	250	250	300	350	350	350	80	
	A3	1338	1338	1345	1361	1845	1845	1845	2125	2125	2125	2625	2625	2625	2625	2680	3150	3180	3305	3680	3805	4280	
	A4																	3150	3180	3175	3550	3800	4300
	W3																	795	1095	1120	1120	1180	1220
Cooling water	W4																	1030	1030	1130	1130	1176	1245
	H3	488	488	560	488	505	465	529	529	529	530	530	537	565	542	553	553	553	560	560	560	560	
	H4	1853	1853	1980	1980	1940	1980	2160	2160	2160	2436	2436	2490	2710	2905	3060	3200	3200	3400	3400	3400	3400	
Steam	D3	100	125	125	150	150	150	200	200	200	250	250	300	300	300	350	350	350	400	400	400	400	
	A5	1400	1400	1400	1400	1980	1980	1980	2230	2230	2165	2740	2740	2740	2740	2740	3165	3165	3300	3665	3790	4290	
	W5	575	575	660	687	660	687	745	745	744	850	850	889	982	1043	1043	1043	1065	1250	1250	1266	1366	
	H5	1495	1495	1495	1495	1770	1770	1770	1770	1770	2154	2154	2154	2150	2215	2215	2215	2215	2360	2360	2360	2340	
	D5	40	50	50	65	65	65	80	80	80	100	100	100	100	125	125	125	150	150	150	150	150	
sweat ing	A6	400	400	400	400	400	300	300	300	300	300	300	250	250	250	250	250	255	255	255	255	255	
	W6	588	588	665	711	665	711	760	760	792	890	900	924	866	972	955	955	975	1590	1590	1630	1770	
	H6	532	532	630	530	560	530	630	650	650	900	800	764	775	890	795	8500	1000	1020	1020	1020	1020	
	D6	25	25	25	25	25	25	40	40	40	40	40	40	40	40	880	50	50	50	50	65	65	
Electric control	A7	550	920	920	920	950	1000	1000	1000	1000	1500	1500	1500	1500	1500	1500	1600	1600	1800	1800	1800	2000	
	W7	600	600	600	650	650	660	670	670	680	750	760	820	820	820	880	880	880	1025	1025	1085	1085	

**Table of base size**

Model	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
I	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
II	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
III	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
IV	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
V	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
VI	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
VII	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
VIII	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
IX	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
X	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XI	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XII	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XIII	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XIV	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XV	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XVI	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XVII	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XVIII	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XIX	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XX	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XXI	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XXII	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XXIII	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XXIV	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XXV	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XXVI	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XXVII	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XXVIII	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XXIX	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698
XXX	23	35	47	58	70	81	93	105	116	145	174	204	233	262	291	349	407	465	523	582	698

**Diagram of base size**



Hope Deepblue

Steam-Fixed  
LiBr Absorption Chiller

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## Model selection guideline

### Model selection

#### Chilled water outlet temperature

The chilled water outlet temperature can be different from that of a standard mode, but shall not be lower than 5°C.

#### Steam parameters

While placing an order, please state the steam parameters including pressure, flow rate and superheat degree

#### Water pressure requirement

The standard design pressure of the chilled water and cooling water systems is 0.8MPa, if the actual pressure exceeds this value, a high-pressure model shall be selected.

#### Configuration of Units

The Unit model shall be selected based on the calculated cooling load of a building. While selecting more than one unit, operating conditions at maximum load and partial load shall be taken into consideration to determine the cooling capacity and the number of the Units.

### Equipment supply scope

Name	Quantity	Description
Main body	1 unit	Including HPQ, LPQ, condenser, evaporator, absorber, solution heat exchanger, automatic purge system, etc.
Steam adjusting valve	1 set	Powered regulating, with high thermal efficiency; Triple-use type includes handhold hot water heater; Including complete set of early equipments and filter etc.
Canned pump	2 units	
Vacuum pump	1 unit	
LiBr solution	Sufficient	
Control system	1 set	Including level/pressure/flow/temperature sensor, program controllers, touch screen, etc.
Inverter	1 unit	
Measuring tools	1 set	Including thermometer, ordinary tools, etc.
Spare parts	1 set	See packing list (can meet 3-year maintenance demand)
Documents	1 set	Including ex-factory certificate, warranty form, packing list, user's manual, auxiliary equipment(s) operation instructions, quality report, etc

### Model selection table

Condition	Type	Feature	Remarks
Heat source	Steam	While placing an order, please state the steam pressure. If the steam is overheating, please note that the steam pressure indicated in the model number is the saturated steam pressure.	
	High-pressure	When chilled/cooling water system pressure $\geq 0.8\text{MPa}$ , a high-pressure water chamber may be adopted. The water chamber has two types: 0.8-1.6MPa, 1.6-2MPa.	
	Large temperature difference	Temperature difference between inlet and outlet of chilled water is 7-10°C.	Please detail requirements while placing an order
Special order	Low-temperature	Chilled water outlet temperature is as low as 5°C to meet special process requirements.	
	Disassembled shipment	The unit can be shipped with the HPQ apart from the main body	
	Marine	Applicable to slightly shaking condition. Sea water may be used as the cooling water	

## Machine room design and construction

### Delivery and construction scope

Item	Description	Delivery & construction scope	Remarks
Unit	Unit and accessories	<input type="radio"/> Deepblue <input type="radio"/> Customer	Refer to "Equipment supply scope"
Test/adjustment	Ex-factory test	<input type="radio"/>	For both cooling and heating
	Customer jobsite adjustment	<input type="radio"/>	
Transport/assembly	From factory to jobsite	<input type="radio"/>	
	From jobsite to Unit base	<input type="radio"/>	
	Unit in place	<input type="radio"/>	
	Unit assembling (disassembled shipment)	<input type="radio"/>	Customer provides necessary tools such as welding equipment and nitrogen gas
Electrical engineering	Sensors and instruments	<input type="radio"/>	Remote cables shall be laid by customer
	External electric wiring	<input type="radio"/>	To terminals of the Unit control cabinet
	Unit base construction	<input type="radio"/>	
	External piping	<input type="radio"/>	
	Exhaust system	<input type="radio"/>	
Other engineering	Anti-freezing of piping	<input type="radio"/>	Anti-freezing measures shall be applied to water piping when the Unit doesn't work in winter
	Cooling water quality management	<input type="radio"/>	Please install cooling water drainage system or other devices for this purpose
	Heat insulation	<input type="radio"/>	
	LiBr solution	<input type="radio"/>	
Others	Training and instruction	<input type="radio"/>	





Hope Deepblue

Steam-Fired  
18t Absorption Chiller

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## Machine room construction

### Site selection

Thanks to its stable, low-noise, safe and reliable operation, the Unit can be placed in the basement or on the ground floor, intermediate floors or on the top of a building. A separate machine room is also a choice.

The machine room temperature shall be 5℃—40℃.

### Layout

The Unit shall be installed such that there is enough space for maintenance and it is convenient for operation. There shall be a space of at least 1 meter in front of the control cabinet. The distance between the highest point of the Unit and the lowest point of the room ceiling shall not be less than 0.3 meters. The space on each side of the unit shall not be less than 1.2 meters. And the tube-drawing space shall not be less than the length of the heat transfer tubes. If it's impossible to reserve a tube-drawing space leave a door or window in the direction of drawing tubes.

### Drainage

The machine room shall have efficient drainage system: (1) There shall be drainage trenches around the unit which are covered with cast iron grates; (2) all drain pipes and signal pipes in the machine room shall be laid above the drainage trenches and be visible. They are not allowed to be buried in the trenches; (3) If the machine room is in the basement, a sump and immersible pump shall be installed. And an automation device shall be installed as much as possible to drain water automatically.

### Base of the unit

The base shall be designed according to the Unit static and be firm and unsinkable, otherwise the Unit may be damaged.

### Piping system

The piping system shall be designed in accordance with related standards and specifications. The pipes shall run in the air and their arrangement shall be rational. Their support shall be firm. The weight of the piping outside the Unit must not be born by the Unit.

### Water system

Flexible joints must be mounted at the inlets/outlets of the chilled(heat) water, cooling water and household hot water. The inlets of the Unit must have filters which are easy to be dismantled. If the water system static pressure is higher than 30m H<sub>2</sub>O, it is recommended to mount the water pump at the outlet section of the Unit to reduce the pressure born by the Unit. The pipes in front of and behind the Unit shall be easy to be dismantled for cleaning transfer tubes.

### The control system supports multiple communication protocols

Point-to-point interface — PPI protocol  
Multi-point interface — MPI protocol  
Process field bus — PROFIBUS protocol  
Free interface — Customer-defined protocol

## Shipment and installation in place

### Shipment:

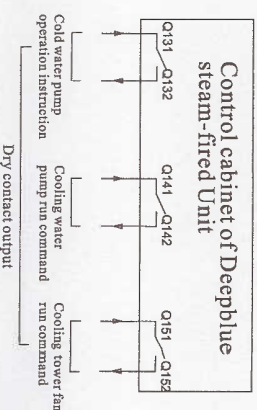
The Unit is generally shipped as a single piece, but it can be shipped in two parts — main body and high-pressure generator—if the transport passage at the service site is not large enough. After the Unit is put in place, Deepblue is responsible for connecting the Unit's internal piping, while the customer provides welding equipment and other aids. Shipment recommendation: the Unit shall be hoisted according to the "Unit Hoisting Specification" provided by Deepblue. The hoisting cable and fixing tools can only be placed at those points marked on the Unit. Deepblue can help the customer go through procedures for transport and insurance.

### Installation in place

A steel plate and a rubber pad shall be placed on the base of the Unit. After the Unit is put in place, it shall be calibrated in levelness with the four hoists (④) on its both sides as the reference points. The levelness of the Unit shall be within 1/1000. There shall be no clearance between the base and the support of the Unit so that the Unit can bear the load evenly.

During the process of hoisting, installation in place and construction, measures shall be taken to protect the Unit. Heavy impact to the Unit or turning of valves is prohibited.

### External linkage control wiring diagram



Note: 1. The capacity of the output relays for the linkage control terminals of above water pumps is AC250V, 5A (resistance load).  
2. Q131, Q132, Q141 and Q151 are numbers of wirings inside the control cabinet.  
3. The chilled water pump and cooling water pump must be in linkage control during operation of the Unit.



Hope Deepblue

Water quality management

With the cooling water vaporizing in the cooling tower continuously, the salt content in the water increases and the water quality deteriorates. This will result in corrosion and scaling in the heat transfer pipes. And algae growing in summer plus dirt and scales raise the thermal resistance of copper pipes, which in turn leads to a great decrease of the cooling capacity.

Make-up water quality requirements

Index	Unit	Make-up water standard	Cooling water standard	Tendency Corrosion	Scaling
Ph (25℃)		6.5-8.0	6.5-8.0	△	△
Conductivity (25℃)	US/cm	<200	<200	△	△
Cl <sup>-</sup>	mgCl <sup>-</sup> /L	<50	<200	△	
SO <sub>4</sub> <sup>2-</sup>	mgSO <sub>4</sub> <sup>2-</sup> /L	<50	<200	△	
Acid consumption(PH4.8)	mgCaCO <sub>3</sub> /L	<50	<100		△
Full hardness	mgCaCO <sub>3</sub> /L	<50	<100		△
Fe	mgFe/L	<0.3	<1.0	△	△
S <sup>2-</sup>	mgS <sup>2-</sup> /L	Undetectable	Undetectable	△	
NH <sub>4</sub> <sup>+</sup>	mgNH <sub>4</sub> <sup>+</sup> /L	<0.2	<1.0	△	
SiO <sub>2</sub>	mgSiO <sub>2</sub> /L	<30	<50		△



System chart

