

Panasonic

LCC Series/HCC Series

Hot Water Fired Absorption Chiller



Business scope:

Designs, productions, manufactures, sales, installations, and after-sale services for chillers featuring environmental protection and energy-integrated utilization, for air-conditioning machinery, and for related environmental protection machinery, etc.

Product kinds:

- Central air-conditioning equipment: absorption chiller/heater — sole refrigeration or refrigeration and heating (70~23256kW).
- Commercial air-conditioning equipment: GHP gas heat pump and chiller unit — refrigeration and heating (16HP-50HP).
- VRF variable refrigerant flow unit — refrigeration and heating (4HP-60HP).
- Heating equipment: vacuum boiler — heating and hot water supplying (80,000~6,000,000kcal/h).

Application:

- Central air-conditioning equipment: mainly provide heating and cooling source for large scale central air conditioning system and other places needing chilled or hot water, widely applied in building, hotel, department store, cinema, stadium, factory and oil field, etc.
- Commercial air-conditioning equipment: widely applied in places needing air conditioning equipments, such as small and middle scale department store, hotel, building, entertainment place, hospital, factory, dormitory, residence, school, etc.
- Heating equipment: widely applied in hotel, department store, residence, villa, bath house, advanced swimming pool, etc., where needing heating and hot water, used with absorption chiller, it will be ideal for cooling, heating and hot water supplying.

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Strong Technology and Quality Guarantee



ISO9001 Quality Management System Certificate
ISO14001 Environment Management System Certificate
GB128011 Vocation Health Safety Certificate



CRAA Certificate



ASME Certificate



UL Certificate



CE Certificate



Energy saving Certificate



PED Certificate



JIS B 8202-2009
Technical Standard



China Mechanical
Safety Certificate



China Environment Mark



National new
hi-tech corporation



Core member of
China Coalition for
Decentralized Energy



National quality management
surpassing enterprise



National customer
satisfactory product



Postdoctoral scientific
effort station



Energy-saving
products in government
procurement list

HI-SUPER-ABSORPTION

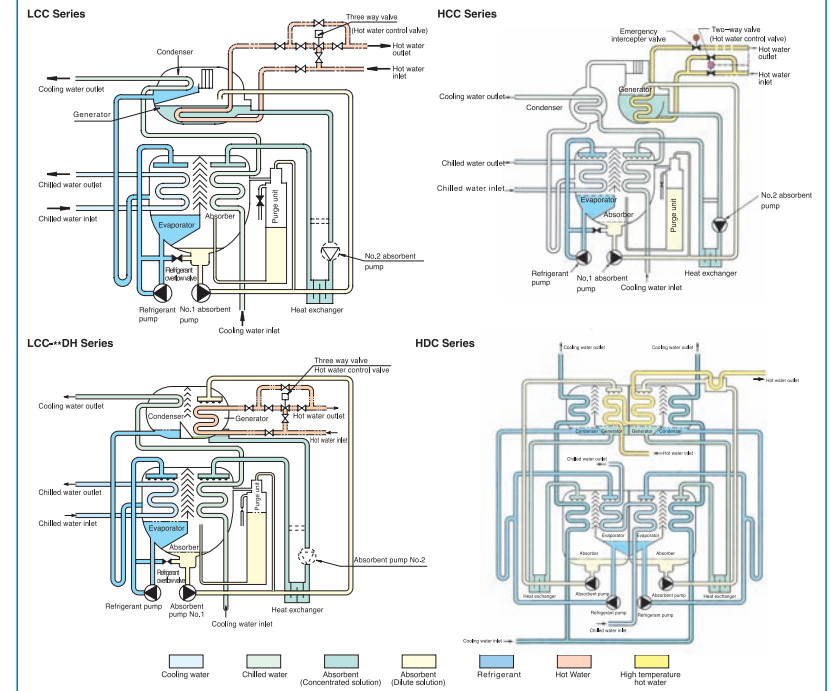
Hot water fired LiBr absorption chiller adopts hot water as the heat source, such as factory waste hot water, the hot water from the city pipe network, and the hot water from the hot-water boiler, to supply the chilled water for the air conditioner or industry. The machine is safe and reliable in operation, and can keep high efficiency operation for long time, and utilize the waste heat as the heat source, which improved the environment, and benefit for the comprehensive utilization of the energy sources.

Application scope

- **Factory air conditioner:** refrigeration room of the factory building.
- **Cooling for technology:** product chilled water for the technology.
- **Annual cooling operation:** the place that need cooling operation for the whole year.
- **Long-term operation:** the place that need the air conditioner continue to operate for long time in a year.
- **High loaded process:** the case that the seasonal average load rate of cooling operation is very high.
- **Regional cooling station:** supply the cooling source for the region.
- **BCHP system:** Building cooling heating & power system.

Utilize the high temperature drainage of the thermal power company as the driving heating source to supply the cooling source. The whole system may realize comprehensive utilization of the energy to increase the thermal efficiency of the system.

Absorption chiller flow diagram



Features

1

Economical operation

Since energy is mainly used for the operation of pump circulating refrigerant and solution, power consumption is minimal.

2

Low noise and low vibration

With fewer mechanical parts than conventional chillers, both noise and vibration are reduced.

3

Advanced high-performance purge system

The chiller's vacuum is maintained longer because the ejector method simultaneously extracts non-condensable gases from inside the upper and lower shells. Purging capacity is overseen by an automatic monitoring function which provides notice of the remaining purging time by means of an illuminated readout.

4

Prevention of crystallization

Crystallization is avoided through the automatic monitoring of absorbent concentrations during the operation of the chillers. This process involves regulating energy consumption in order to reduce absorbent concentrations greater than a specified level.

5

Minimizing start-up and dilution time

The refrigerant recycling circuit permits cooling water temperature of 19°C during operation. The optimum duration of dilution is determined automatically according to the cooling load obtained when the chiller stops.

● Sensor catalog

Temperature sensor	Chilled water inlet temp., Cooling water inlet temp., Chilled water outlet temp., Cooling water outlet temp., Hot water inlet temp., Generator temp., Hot water outlet temp., Condenser temp.
Running time	Chiller running time, Refrigerant pump running time, Absorbent pump running time.
Start/stop times	Chiller start/stop times, Refrigerant pump start/stop times, Absorbent pump start/stop times.

6

Digital PID control

PID (Proportional, Integral and Derivative.) governance permits highly uniform chilled water temperature.

Display	Error display, Running time, Start/stop times.
Fetch signal	Run signal, stop signal, error signal, Start-up confirmation signal, Chilled water pump running signal, Cooling water pump running signal.
Control	Remote start/stop signal, Remote set circuit.

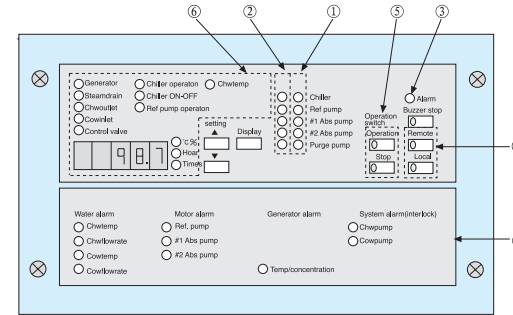
7

Wide range of operation

The chillers can be operated over a wide range of inlet cooling water temperature extending from 19°C up to 34°C this means that energy consumption can be regulated for an optimum operation cycle at any cooling water temperature, resulting in reliable operability and energy savings.

Control panel

Detail section drawing



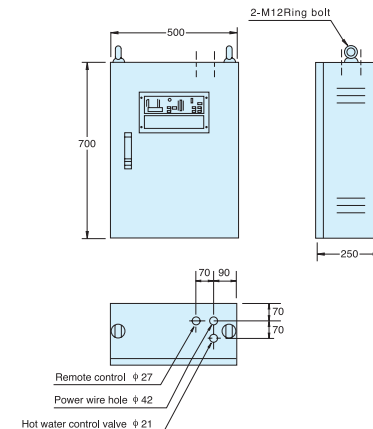
* Note:

There will be a little difference in indication of operating pad with difference type of machine.

Indication lamp

Signal	Name	Colour
1	Operation indication lamp.	Red
2	Stop indication lamp	Green
3	Alarm indication lamp	Orange
4	Local/Remote indication lamp	Red
5	Operation change indication lamp	Red
6	Date indication lamp	Red

Control panel dimension diagram



Specifications

Low temperature water absorption chiller LCC Series

Model Number		LCC—	E01	E02	E03	E11	E12	E13	E14	E21	E22	E23	
Refrigeration Capacity		USRT	30	40	50	75	90	110	135	155	180	210	
		kW	105	141	176	264	316	387	475	545	633	738	
Chilled water system	inlet/outlet temperature	℃	13 → 8										
	Flow rate	m³/h	18	24	30	45	54	67	82	94	109	127	
	Pressure drop	mH ₂ O	4.4	4.2	3.0	3.2	3.3	4.0	4.5	4.0	4.4	8.2	
	inlet/outlet Connection	A	65			100			125			150	
Cooling water system	inlet/outlet temperature	℃	31 → 37										
	Flow rate	m³/h	37	49	61	91	109	134	164	188	219	255	
	Pressure drop	mH ₂ O	4.2	5.0	6.6	5.4	5.7	4.8	5.9	4.7	5.6	9.7	
	inlet/outlet Connection	A	80			125			150			200	
Hot water system	inlet/outlet temperature	℃	88 → 83										
	Flow rate	ton/h	26	34	43	64	77	94	115	132	153	179	
	Pressure drop	mH ₂ O	1.5	1.9	3.2	3.2	3.5	1.6	2.0	1.6	1.7	2.8	
	inlet/outlet Connection	A	65			100			125			150	
	Three-way valve of hot water	Pressure drop	mH ₂ O	5.1	9.0	5.6	5.0	7.3	4.2	6.4	8.4	4.6	6.3
		Connection diameter	A	50		65	80		100		125		
Power supply	Power supply		3 φ 380V 50Hz										
	Total curenecy	A	7.6					9.1					13.6
	Wire area	mm²	4.0										
	Power consumption	KVA	5.8					7.0					10.7
Output of motor	No.1 Absorbent Pump	kW(A)	1.1(3.9)					1.8(5.4)					
	No.2 Absorbent Pump	kW(A)	* * * * *									1.3(4.0)	
	Refrigerant pump	kW(A)	0.2(1.3)									0.4(1.8)	
	Purge Pump	kW(A)	0.4(1.2)										
Overall Dimension	Length(L)	mm	2,220		2,720			3,740		3,840		4,880	
	Width(W)	mm	1,125			1,285				1,445			
	Height(H)	mm	1,900			2,170		2,150		2,340			
	Clearance state	mm	1,500		2,000			3,000				4,000	
Weight	Operating weight	ton	2.5	2.7	3.1	4.1	4.3	5.3	5.7	6.9	7.2	8.4	
	Max. moving weight	ton	2.1	2.3	2.7	3.5	3.7	4.6	4.9	5.8	6.1	7.1	
	Total weight	ton	2.1	2.3	2.7	3.5	3.7	4.6	4.9	5.8	6.1	7.1	
	Moving state		One-Section										
Water maintained in machine	Chilled water system	!	67	82	101	113	127	148	170	216	235	274	
	Cooling water system	!	105	117	130	342	373	427	474	595	650	713	

- (1) Max. working pressure in chilled water, hot water, cooling water system: 8kg / cm² · G.
- (2) High pressure model is available, dimension and foundation may be changed, so please enquire with the manufacturer.
- (3) Range of chilled/hot/cooing water flow:50 ~ 120%.
- (4) Standard hot water control valve is 3-way valve; it may be changed to 2-way valve on request.
- (5) Standard hot water control valve is electrodynamic type, it may be changed to pneumatic type on request, (operating air pressure is 4kg / cm² · G).

Specifications

E24	E31	E32	E41	E42	E51	E52	E53	E61	E62	E63	E71	E72	E73	E81	E82	
240	270	300	335	375	420	470	525	600	675	750	827	900	992	1,158	1,323	
844	949	1,055	1,178	1,319	1,477	1,653	1,846	2,110	2,373	2,637	2,908	3,165	3,488	4,070	4,651	
13 → 8														12 → 7		
145	163	181	203	227	254	284	318	363	408	454	500	544	600	700	800	
8.6	8.9	8.6	8.4	8.4	8.4	4.2	5.5	10.1	13.6	6.0	11.8	15.0	6.5	6.1	8.3	
150			200							250			300		350	
31 → 37														30 → 38		
291	328	364	407	455	510	571	637	728	819	910	1,004	1,092	1,204	1,063	1,225	
10.9	8.1	8.8	9.3	10.3	7.3	9.7	12.7	8.0	10.7	13.8	10.4	13.0	16.6	9.6	13.3	
200			250			300			350			400				
88 → 83														98 → 88		
205	230	256	285	320	358	400	447	511	575	639	704	767	845	500	580	
3.0	3.1	3.2	2.9	3.1	3.1	4.1	5.4	3.2	4.2	1.4	1.0	1.2	1.5	1.9	2.6	
150			200					250			300			250		
8.3	4.1	5.1	6.3	7.9	4.0	5.0	6.2	3.2	4.1	5.0	6.1	7.3	8.8	3.1	4.2	
125	150				200				250							
3 φ 380V 50Hz																
13.6	14.6		16.0				17.0		27.1			33.3				
4.0								6.0			10.0					
10.7	11.5		12.7				13.5		21.8			26.9				
1.8(5.4)	1.8(6.4)							5.5(16.5)								
1.3(4.0)			1.8(5.4)				1.8(6.4)				3.7(12.0)					
										0.4(1.8)						
0.4(1.2)											0.75(1.8)					
4,880	4,980		5,080		5,220	5,760	6,260	5,630	6,130	6,650	6,530	7,060	7,550	6,940	7,440	
1,445	1,520		1,640		2,020			2,130			2,650			2,825		
2,340	2,630		2,890		3,250			3,860			4,000			4,080		
4,000						4,500	5,000	5,200	5,700	6,200	6,000	6,500	7,000	6,500	7,000	
8.9	10.6	11.1	12.9	13.4	19.1	20.7	21.8	29.4	31.4	33.4	39.5	41.6	44.0	45.0	48.0	
7.5	8.9	9.3	10.7	11.1	15.9	17.2	18.1	23.6	25.4	27.1	25.6	26.8	28.4	25.0	26.0	
7.5	8.9	9.3	10.7	11.1	15.9	17.2	18.1	23.6	25.4	27.1	32.4	34.2	36.3	38.5	41.0	
One-Section											*1			Moving separately		
298	333	354	451	478	648	707	762	1,160	1,250	1,340	1,520	1,635	1,740	1,830	1,940	
785	990	1,060	1,247	1,346	2,022	2,175	2,313	3,110	3,285	3,490	3,080	3,245	3,400	4,510	4,760	

- (5) "A" stands for nominal diameter, unit mm.
- (6) *1: At delivery and hand-over, LiBr solution is stored separately.
- (7) Implementation standard JISB 8622.
- (8) And, the values in above table may be modified without notice.

Specifications

Low temperature water absorption chiller LCC-DH Series

Model Number		LCC→→DH	E01	E02	E03	E11	E12	E13	E14	E21	E22	E23		
Refrigeration Capacity		USRT	30	40	50	75	90	110	135	155	180	210		
		kW	105	141	176	264	316	387	475	545	633	738		
Chilled water system	inlet/outlet temperature	℃	13 → 8											
	Flow rate	m³/h	18.1	24.2	30.2	45.4	54.4	66.5	81.6	93.7	109	127		
	Pressure drop	mH ₂ O	4.3	3.9	7.1	3.8	4.2	4.5	4.8	4.1	4.4	8.2		
	inlet/outlet Connection	A	65			100			125			150		
Cooling water system	inlet/outlet temperature	℃	31 → 37											
	Flow rate	m³/h	33.8	45.0	56.3	84.5	102	124	153	175	203	237		
	Pressure drop	mH ₂ O	4.2	5.1	6.7	5.0	5.6	7.8	8.8	7.4	7.9	5.5		
	inlet/outlet Connection	A	80			125			150			200		
Hot water system	inlet/outlet temperature	℃	95 → 75											
	Flow rate	ton/h	5.6	7.5	9.3	14.0	16.8	20.5	25.2	28.9	33.6	39.2		
	Pressure drop	mH ₂ O	10.0	7.8	9.2	6.9	9.8	5.8	6.1	6.1	6.4	5.9		
	inlet/outlet Connection	A	50			65			80			100		
	Three-way valve of hot water	Pressure drop Connection diameter	mH ₂ O	0.7	1.2	0.7	1.6	0.9	1.4	2.3	1.1	1.5	0.8	
		A	40		50		65		80		100			
Power supply	Power supply		3 ϕ 380V 50Hz											
	Total currency	A	7.6		11.5		13.0		13.1		13.6			
	Wire area	mm²	4.0											
	Power consumption	KVA	5.8		9.0		10.2		10.3		10.7			
Output of motor	No.1 Absorbent Pump	kW(A)	1.1(3.9)					1.8(5.4)						
	No.2 Absorbent Pump	kW(A)	* * * * *					1.1(3.9)						
	Refrigerant pump	kW(A)						0.2(1.3)						
	Purge Pump	kW(A)						0.4(1.2)						
Overall Dimension	Length(L)	mm	2,090		2,590		2,720		3,740		3,840		4,880	
	Width(W)	mm	1,125				1,285				1,445			
	Height(H)	mm	2,065		2,090		2,375				2,485			
	Clearance state	mm	1,500			2,000			3,000			4,000		
Weight	Operating weight	ton	2.7	2.9	3.3	4.4	4.6	5.6	6.0	7.3	7.6	8.8		
	Max. moving weight	ton	2.3	2.5	2.9	3.8	4.0	4.9	5.2	6.2	6.5	7.5		
	Total weight	ton	2.3	2.5	2.9	3.8	4.0	4.9	5.2	6.2	6.5	7.5		
	Moving state		One-Section											
Water maintained in machine	Chilled water system	!	67	82	101	113	127	148	170	216	235	274		
	Cooling water system	!	105	117	130	342	373	427	474	595	650	713		

- (1) Max, working pressure in chilled water, hot water, cooling water system: 8kg/cm² · G.
High pressure model is available, dimension and foundation may be changed, so please enquire with the manufacturer.
(2) Range of chilled/hot/cooling water flow: 50~120%.
(3) Standard hot water control valve is 3-way valve; it may be changed to 2-way valve on request.
(4) Standard hot water control valve is electrodynamic type, it may be changed to pneumatic type on request. (operating air pressure is 4kg/cm² · G).

Specifications

E24	E31	E32	E41	E42	E51	E52	E53	E61	E62	E63	E71	E72	E73	E81	E82
240	270	300	335	375	420	470	525	600	675	750	827	900	992	1,158	1,323
844	949	1,055	1,178	1,319	1,477	1,653	1,846	2,110	2,373	2,637	2,908	3,165	3,488	4,072	4,651
13 → 8															
145	163	181	203	227	254	284	318	363	408	454	500	544	600	700	800
8.6	9.1	9.5	9.1	7.9	7.2	9.9	4.8	10.0	13.4	5.8	11.6	14.7	6.0	5.9	8.0
150			200							250			300	350	
31 → 37														30 → 38	
271	305	338	378	423	474	530	592	676	761	845	932	1,014	1,118	979	1,118
5.8	6.1	6.5	5.4	5.4	6.6	8.9	11.7	8.7	11.7	15.3	9.5	11.9	14.7	8.7	11.8
200			250			300			350			400			
95 → 75														98 → 78	
44.8	50.4	56.0	62.5	70.0	78.4	87.7	98	112	126	140	154	168	185	216	247
5.7	6.0	6.1	6.0	5.8	6.0	8.3	6.5	8.4	7.0	9.1	6.5	8.2	10.3	5.0	6.4
100			125				150				200				
1.6	1.3	1.6	0.8	1.0	1.3	1.7	0.8	1.1	1.3	1.6	0.8	0.9	1.2	1.7	0.9
100			125				150				200				
3 φ 380V 50Hz															
13.6	14.6	16.0				17.0	27.1				33.3				
4.0							6.0				10.0				
10.7	11.5	12.7				13.5	21.8				26.9				
1.8(5.4)	1.8(6.4)						5.5(16.5)								
1.3(4.0)			1.8(5.4)				1.8(6.4)				3.7(12.0)				
0.4(1.8)															
0.4(1.2)											0.75(1.8)				
4,880	4,980	5,080			5,220	5,760	6,260	5,630	6,130	6,650	6,530	7,060	7,550	6,940	7,440
1,445	1,580	1,670			2,020			2,440			2,650			2,825	
2,485	2,535	3,090			3,450			3,910			4,000			4,250	
4,000						4,500	5,000	5,200	5,700	6,200	6,000	6,500	7,000	6,500	7,000
9.3	11.1	11.6	13.5	14.0	19.8	21.4	22.5	30.2	32.2	34.2	40.4	42.5	44.9	46.0	49.0
7.9	9.4	9.8	11.3	11.7	16.6	17.9	18.8	24.4	26.2	27.9	26.5	27.7	29.3	25.0	26.0
7.9	9.4	9.8	11.3	11.7	16.6	17.9	18.8	24.4	26.2	27.9	33.3	35.1	37.2	39.5	42.0
One-Section												*1		Moving separately	
298	333	354	451	478	648	707	762	1,160	1,250	1,340	1,520	1,635	1,740	1,830	1,940
785	990	1,060	1,247	1,346	2,022	2,175	2,313	3,110	3,285	3,490	3,080	3,245	3,400	4,510	4,760

- (5) "A" stands for nominal diameter, unit mm. (6) *1: At delivery and hand-over, LiBr solution is stored separately.
(7) The dimension may vary dependent on the temperature difference, so please enquire with the manufacturer for dimension drawing and foundation drawing, etc.
(8) Implementation standard JIS B 8622.
(9) And, the values in above table may be modified without notice.

Specifications

High temperature water absorption chiller HCC Series

Model Number		HCC—	E24	E32	E42	E52	
Refrigeration Capacity		USRT	320	400	500	630	
		kW	1,125	1,406	1,758	2,215	
Chilled water system	inlet/outlet temperature	°C	12 ➡ 7				
	Flow rate	m³/h	194	242	302	381	
	Pressure drop	mH ₂ O	5.3	5.8	5.1	7.2	
	inlet/outlet Connection	A	150		200		
Cooling water system	inlet/outlet temperature	°C	32➡39.4				
	Flow rate	m³/h	320	400	500	630	
	Pressure drop	mH ₂ O	10.2	7.5	9.3	8.3	
	inlet/outlet Connection	A	200		250	300	
Hot water system	inlet/outlet temperature	°C	130 ➡ 110				
	Flow rate	ton/h	69.1	86.4	108	137	
	Pressure drop	mH ₂ O	2.0	1.8	2.0	1.0	
	inlet/outlet Connection	A	100	125		150	
	Three-way valve of hot water	Pressure drop	mH ₂ O	2.6	4.0	2.6	4.2
	Connection diameter	A	100		125		
Power supply	Power supply		3 φ 380V 50Hz				
	Total curenecy	A	13.6	14.6	16.0		
	Wire area	mm²	4.0				
	Power consumption	KVA	10.7	11.5	12.7		
Output of motor	No.1 Absorbent Pump	kW(A)	1.8(5.4)	1.8(6.4)			
	No.2 Absorbent Pump	kW(A)	1.3(4.0)		1.8(5.4)		
	Refrigerant pump	kW(A)	0.4(1.8)				
	Purge Pump	kW(A)	0.4(1.2)				
Overall Dimension	Length(L)	mm	5,200	5,350		5,800	
	Width(W)	mm	1,670	1,765	1,900	2,115	
	Height(H)	mm	2,815	3,145	3,475	3,770	
	Clearance state	mm	4,500	4,600	4,600	5,200	
Weight	Operating weight	ton	10.6	13.4	16.1	23.4	
	Max. moving weight	ton	9.0	11.3	13.5	10.4	
	Total weight	ton	9.0	11.3	13.5	19.7	
	Moving state		One-Section			Moving separately	
Water maintained in machine	Chilled water system	!	355	440	580	975	
	Cooling water system	!	875	1,175	1,455	2,245	

- (1) Max. working pressure in chilled water, hot water, cooling water system: 8kg/cm² · G.
High pressure model is available, dimension and foundation may be changed, so please enquire with the manufacturer.
(2) Range of chilled/hot/cooling water flow: 50 ~ 120%.
(3) Standard hot water control valve is electrodynamic type, it may be changed to pneumatic type on request, (operating air pressure is 4kg/cm² · G).

Specifications

E61	E63	E71	E72	E73	E81	E82
800	1,000	1,100	1,200	1,322	1,400	1,500
2,813	3,516	3,867	4,219	4,651	4,923	5,274
12 ➡ 7						
484	605	665	726	800	847	907
5.1	9.0	7.1	9.0	11.5	9.0	11.0
250		300			350	
32 ➡39.4						
800	1,000	1,100	1,200	1,322	1,400	1,500
7.4	12.4	12.6	15.9	20.3	16.4	19.8
350		400				
130 ➡ 110						
173	216	238	260	286	303	324
0.9	1.4	1.5	1.9	2.4	1.7	2.0
200					250	
2.6	4.0	2.0	2.4	2.9	3.2	3.7
150		200				
3 φ 380V 50Hz						
27.1		33.3				
6.0		10.0				
21.8		26.9				
5.5(16.5)						
1.8(6.4)		3.7(12.0)				
0.4(1.8)						
0.4(1.2)		0.75(1.9)				
6,100	7,130	6,570	7,090	7,590	7,210	7,710
2,225		2,600			2,745	
4,490		4,660			4,865	
5,300	6,300	6,100	6,600	7,100	6,600	7,100
29.1	33.5	35.0	38.4	41.8	44.8	47.2
12.3	13.9	14.9	16.4	17.9	22.1	23.4
24.2	27.9	28.9	31.8	34.6	37.2	39.8
Moving separately						
1,270	1,470	1,550	1,660	1,770	1,960	2,090
3,285	3,680	4,090	4,155	4,220	5,035	5,305

- (4) "A" stands for nominal diameter, unit mm.
(5) Implementation standard JISB 8622.
(6) And, the values in above table may be modified without notice.

Specifications

High temperature water absorption chiller HDC Series

Model Number		HDC—	E60	E80	E100	E133
Refrigeration Capacity		USRT	198	265	331	440
		kW	698	930	1,163	1,574
Chilled water system	inlet/outlet temperature	°C	12 → 7			
	Flow rate	m³/h	120	160	200	266
	Pressure drop	mH ₂ O	16.2	15.5	10.5	15.6
	inlet/outlet Connection	A	125	150	200	
Cooling water system	inlet/outlet temperature	°C	32 → 38			
	Flow rate	m³/h	237	315	394	524
	Pressure drop	mH ₂ O	8.7	5.6	9.7	5.4
	inlet/outlet Connection	A	200/125 × 2	250/150 × 2	300/200 × 2	
Hot water system	inlet/outlet temperature	°C	130 → 68			
	Flow rate	ton/h	13.3	17.6	22.0	29.3
	Pressure drop	mH ₂ O	8.0	9.8	10.9	9.7
	inlet/outlet Connection	A	65	80		
	Three-way valve of hot water	Pressure drop Connection diameter	mH ₂ O A	1.2 50	2.2 65	1.4 2.4
Power supply	Power supply		3 φ 380V 50Hz			
	Total curenecy	A	13.4	16.4		
	Wire area	mm²	4.0			
	Power consumption	KVA	10.5	13.0		
Output of motor	No.1 Absorbent Pump	kW(A)	1.1(3.9) × 2	1.8(5.4) × 2		
	No.2 Absorbent Pump	kW(A)	* * * * *			
	Refrigerant pump	kW(A)	0.2(1.3) × 2			
	Purge Pump	kW(A)	0.75(1.8)			
Overall Dimension	Length(L)	mm	4,100	5,190	6,230	5,380
	Width(W)	mm	1,920			2,370
	Height(H)	mm	2,700			3,100
	Clearance state	mm	3,400	4,500	5,600	4,600
Weight	Operating weight	ton	12.5	15.3	18.0	23.9
	Max. moving weight	ton	10.4	12.6	14.8	19.0
	Total weight	ton	10.4	12.6	14.8	19.0
	Moving state		One-Section			
Water maintained in machine	Chilled water system	ℓ	731	905	1,070	1,662
	Cooling water system	ℓ	1,171	1,495	1,754	2,636
	Hot water system	ℓ	312	390	453	698

- (1) Max, working pressure in chilled water, hot water, cooling water system: 8kg/cm² · G,
High pressure model is available, dimension and foundation may be changed, so please enquire with the manufacturer.
(2) Range of chilled/hotcooling water flow:50~120t/h.
(3) Standard hot water control valve is electrodynamic type, it may be changed to pneumatic type on request, (operating air pressure is 4kg/cm² · G),

Specifications

E150	E166	E200	E250	E300	E350	E400
496	549	661	827	992	1,157	1,323
1,744	1,930	2,326	2,907	3,488	4,070	4,651
12 ➡ 7						
300	332	400	500	600	700	800
8.0	10.4	16.7	10.2	16.4	12.2	17.2
200			250		300	
32 ➡ 38						
591	654	788	984	1,181	1,378	1,575
7.3	9.3	9.3	9.4	9.1	11.6	16.3
300/200 × 2			350/250 × 2		400/300 × 2	
130 ➡ 68						
33.0	36.5	44.0	54.9	65.9	76.9	87.9
8.2	10.3	9.9	10.9	10.3	10.5	11.0
80	100		125			
3.3	1.5	2.2	1.3	1.9	2.7	1.5
65	80		100			125
3 φ 380V 50Hz						
17.4	19.4				43.0	
4.0					16.0	
13.8	15.5				34.9	
1.8(5.4) × 2	1.8(6.4) × 2				3.7(11.8) × 2	
* * * * *					1.8(6.4) × 2	
0.4(1.8) × 2						
0.75(1.8)						
5,930	6,480	7,490	6,690	7,620	8,585	9,650
2,370			2,920		3,250	
3,100			3,550		3,935	
5,100	5,600	7,000	6,000	7,000	8,500	9,500
26.0	28.1	32.1	41.5	47.2	65.5	72.5
20.7	22.4	25.6	32.6	37.2	45.4	50.0
20.7	22.4	25.6	32.6	37.2	51.8	57.5
One-Section					*1	
1,802	1,934	2,198	3,025	3,421	5,443	5,974
2,859	3,070	3,497	4,792	5,428	6,677	7,343
747	811	906	1,238	1,376	1,558	1,696

- (4) "A" stands for nominal diameter, unit mm. (5) *1: At delivery and hand-over, LiBr solution is stored separately.
(6) The dimension may vary dependent on the temperature difference, so please enquire with the manufacturer for dimension drawing and foundation drawing,etc.
(7) Implementation standard JISB 8622.
(8) And, the values in above table may be modified without notice.

Order scope

Item			Standard	Option
Chilled water system	Flow rate		Refer to rated flow rate in catalogue.	Flow limit 50~120%
	Temperature		Details refer to specification in catalogue.	Special inlet / outlet temperature of chilled water
	Water quality		Tap water (according to JRA9001)	Industrial water, well water
	Max. working pressure		8kg/cm ² · G	pressure 1~10kg/cm ² · G pressure 4~18kg/cm ² · G pressure 2~14kg/cm ² · G pressure 5~20kg/cm ² · G pressure 3~16kg/cm ² · G
Cooling water system	Flow rate		Refer to rated flow rate in catalogue.	Flow limit 50~120%
	Temperature		Details refer to specification in catalogue.	Inlet temperature 20 ~ 33℃
	Water quality		Tap water (according to JRA9001)	Industrial water, well water
	Max. working pressure		8kg/cm ² · G	pressure 1~10kg/cm ² · G pressure 4~18kg/cm ² · G pressure 2~14kg/cm ² · G pressure 5~20kg/cm ² · G pressure 3~16kg/cm ² · G
Hot water system	Flow rate		LCC Seies: 0.852T/h · RT HCC Series: 0.23T/h · RT	Flow limit 50~120%
	Temperature		LCC Series: 88/83℃ HCC Series: 130/110℃	The cooling capacity may vary dependent on hot water temperature, so please enquire with the manufacturer.
	Water quality		Tap water (according to JRA-GL-02)	Industrial water, well water
	Max. working pressure		8kg/cm ² · G	pressure 1~10kg/cm ² · G pressure 2~14kg/cm ² · G pressure 3~16kg/cm ² · G
Purge Device	Mode		Liquid injector make noncondensable gas be stored in the slot and palladium pipe exhaust continuously hydrogen,	
Installation place	Place		Indoor	Storage of equipment shall be in accordance with the standard, details refer to factory documents.
	Installation		Body anti-rusting paint (exclusive of heat or cold)	
	Ambient Temperature		Ambient Temperature: 5 ~ 40℃	
	Ambient Humidity		Relative Humidity: below 90%	
Power	Package		One-section, moving separately (See the specification table)	Moving separately
	Frequency, voltage		3φ / 380V / 50Hz	Special voltage
	Voltage regulation		Within ± 10%	
Electric wiring	Electric allocation		Cable wiring Control: cable Power : cable	
Main body safety device			Chilled water freezing protection function Cooling water temperature supervision function Chilled water flow switch Motor protection function	Cooling water flow switch
Capacity control device	Mode		Digital PID control by chilled water outlet temp.	
	Hot water control valve	Type	Three-way valve (LCC,LCC-DH Series)	
			Two-way valve (HCC,HDC Series)	
			Control mode	Electrodynamic type
Control panel	Paint color		Munsell 5Y-7/1 (half smooth)	
	Display		LED digital display, temperature, hour, etc.	
	Outside wiring terminals		Operation indication point a.	
			Stop indication point a.	
		Alarm indication point a.		
		Auxiliary equipment operation point a.		
		Start confirmation point a.		
		Cooling operation indication point a.		
		(All contacts are non-voltage)		
		Other conditions refer to standard data		

Supply scope

Item		Delivery Construction	Customer Construction	Note
① Body	Absorption chiller	○		Reference to the caption below the chart
② Transportation and Installation	From the factory to the building		○	
	From the building to the foundation site		○	
	Installation of chiller		○	
	Testing and adjusting at site	●	○	
③ Electric construction	Operating direction	○		
	External electric allocation	○		Please wire to the terminal inside the control panel
④ Other construction	Cooling water temperature control device		○	Please install and wire for the thermostat used by start-stop fan of cooling tower or for the thermostat of cooling water control valve.
	Foundation construction		○	Exclusive of foundation bolts, weld the frame and washer when fixing foundation bolts.
	External pipe construction		○	Exclusive of coordinate flanges
	Pipe anti-freezing		○	Take anti-freezing of pipe and water into consideration at rest in winter.
	Water quality management of cooling water		○	Install water drainage device in order to have a proper water quality management.
	Heat or cooling insulation construction		○	
⑤ Painting	Hot water and electric allocation valve installation construction		○	Install in the pipe, and wire to terminal inside the control panel.
	Main body primary coat	○		
	Control panel painting	○		
⑥ Others	Assembly power, water, etc. at site		○	
	Power, and water, etc. used during trail run		○	
	Lithium-Bromide solution, refrigerant	○		

Note:

- The absorption chiller:
 - Refrigerator include evaporator, absorber, generator, condenser, heat-exchanger, pump etc.
 - Purge device
 - Capacity control device
 - Hot water control valve, hot water breaker (HCC Series)
 - Safety device
 - Control panel
 - Absorbent and refrigerant
 - Built-in piping and wiring
 - Accessory
 - Operating instruction manual..... 1 set
 - Base bolts..... 1 set
- Extra charge should be calculated separately if required.

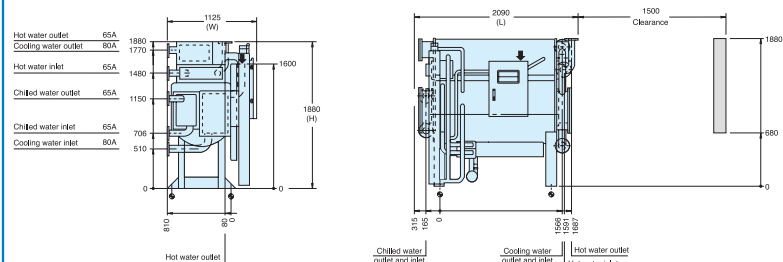
■ Lcc series

● **Note**

1. Overall dimension value (L),(W),(H) is example value.
2. Mark ④ denotes the position of foundation bolts of chiller.
3. Clearance space must be saved for either side of the chiller
4. Mark ① is the power wire hole.
5. Maintenance space must be saved around the chiller

Length direction-----1m	Above-----0.2m
Control panel direction-----1.2m	Others-----0.5m

6."A" stands for nominal diameter, unit is mm.

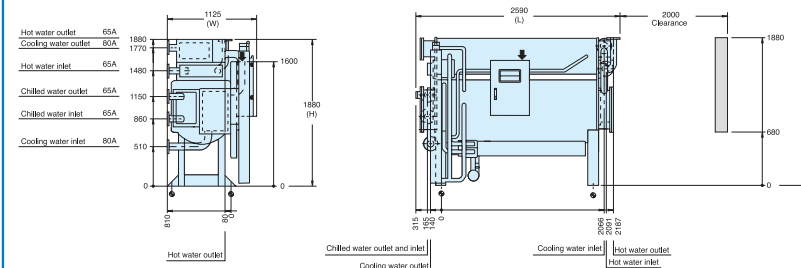


● **Note**

1. Overall dimension value (L),(W),(H) is example value.
2. Mark① denotes the position of foundation bolts of chiller.
3. Clearance space must be saved for either side of the chiller
4. Mark 1 is the power wire hole.
5. Maintenance space must be saved around the chiller

Length direction-----1m	Above-----0.2m
Control panel direction-----1.2m	Others-----0.5m

⑥ "A" stands for nominal diameter, unit is mm.

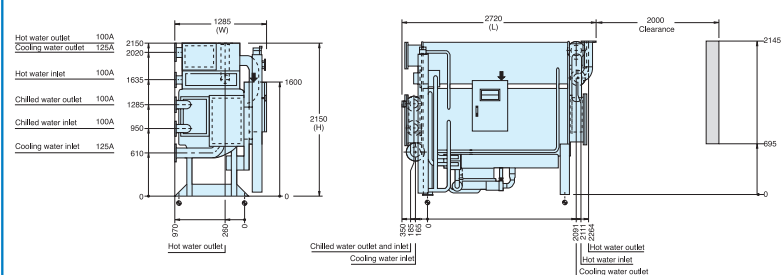


● **Note**

1. Overall dimension value (L),(W),(H) is example value.
2. Mark ⑤ denotes the position of foundation bolts of chiller.
3. Clearance space must be saved for either side of the chiller.
4. Mark ① is the power wire hole.
5. Maintenance space must be saved around the chiller

Length direction.....1m	Above.....0.2m
Control panel direction.....1.2m	Others.....0.5m

①: "A" stands for nominal diameter, unit is mm.

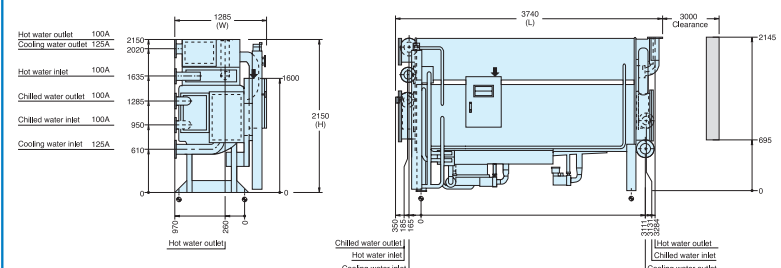


● Note

1. Overall dimension value (L),(W),(H) is example value.
2. Mark ④ denotes the position of foundation bolts of chiller.
3. Clearance space must be saved for either side of the chiller.
4. Mark 1 is the power wire hole.
5. Maintenance space must be saved around the chiller

Length direction.....1m	Above.....0.2m
Control panel direction.....1.2m	Others.....0.5m

6. "A" stands for nominal diameter, unit is mm.

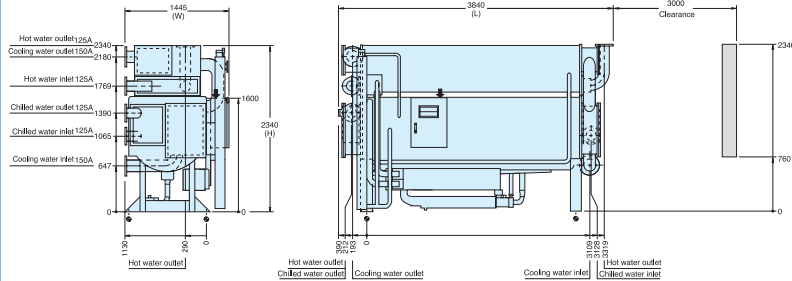


Overall dimension diagram

LCC – E21/E22

Note

1. Overall dimension value (L),(W),(H) is example value.
2. Mark ② denotes the position of foundation bolts of chiller.
3. Clearance space must be saved for either side of the chiller.
4. Mark ① is the power wire hole.
5. Maintenance space must be saved around the chiller.
Length direction-----1m Above-----0.2m
Control panel direction-----1.2m Others-----0.5m
6. "A" stands for nominal diameter, unit is mm.

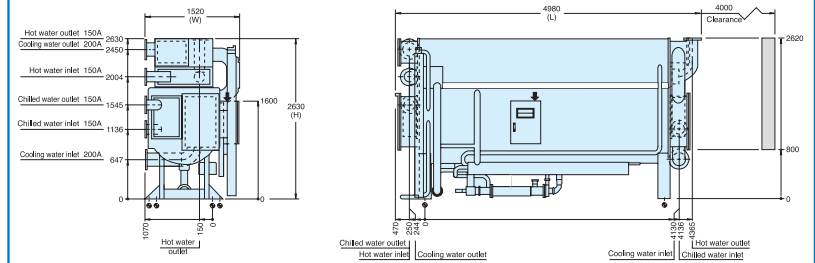


Overall dimension diagram

LCC – E31/E32

Note

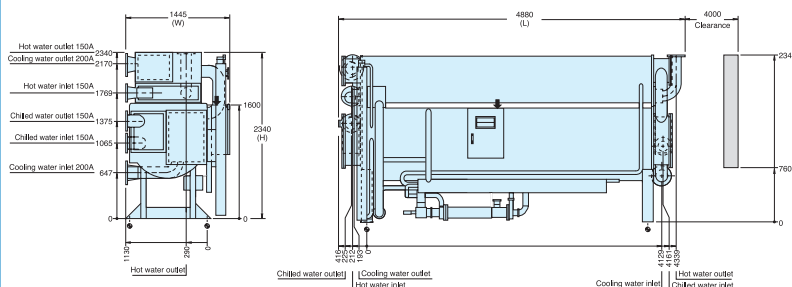
1. Overall dimension value (L),(W),(H) is example value.
2. Mark ② denotes the position of foundation bolts of chiller.
3. Clearance space must be saved for either side of the chiller.
4. Mark ① is the power wire hole.
5. Maintenance space must be saved around the chiller.
Length direction-----1m Above-----0.2m
Control panel direction-----1.2m Others-----0.5m
6. "A" stands for nominal diameter, unit is mm.



LCC – E23/E24

Note

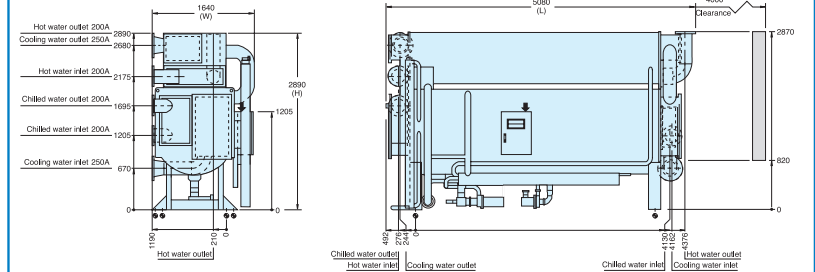
1. Overall dimension value (L),(W),(H) is example value.
2. Mark ② denotes the position of foundation bolts of chiller.
3. Clearance space must be saved for either side of the chiller.
4. Mark ① is the power wire hole.
5. Maintenance space must be saved around the chiller.
Length direction-----1m Above-----0.2m
Control panel direction-----1.2m Others-----0.5m
6. "A" stands for nominal diameter, unit is mm.



LCC – E41/E42

Note

1. Overall dimension value (L),(W),(H) is example value.
2. Mark ② denotes the position of foundation bolts of chiller.
3. Clearance space must be saved for either side of the chiller.
4. Mark ① is the power wire hole.
5. Maintenance space must be saved around the chiller.
Length direction-----1m Above-----0.2m
Control panel direction-----1.2m Others-----0.5m
6. "A" stands for nominal diameter, unit is mm.

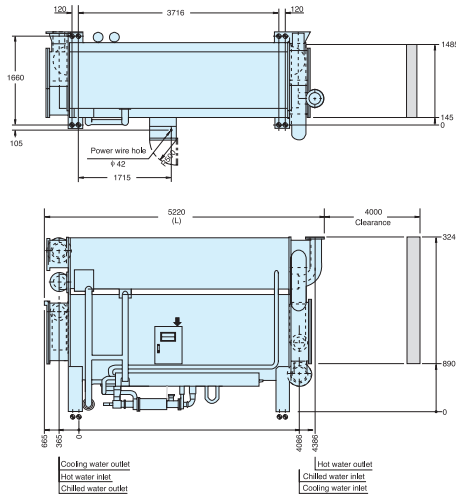
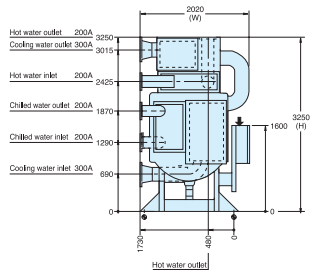


Overall dimension diagram

LCC-E51

Note

1. Overall dimension value (L),(W),(H) is example value.
2. Mark Φ denotes the position of foundation bolts of chiller.
3. Clearance space must be saved for either side of the chiller.
4. Mark 1 is the power wire hole.
5. Maintenance space must be saved around the chiller
Length direction-----1m Above-----0.2m
Control panel direction-----1.2m Others-----0.5m
6. "A" stands for nominal diameter, unit is mm.

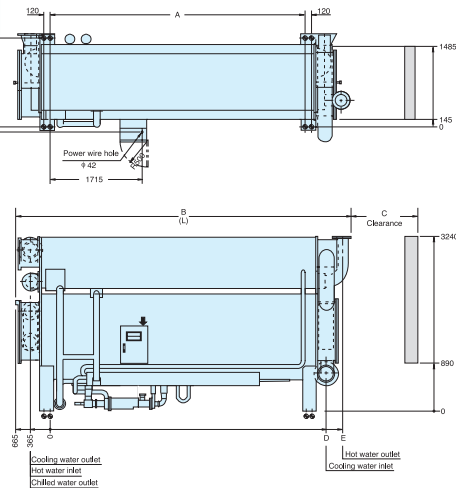
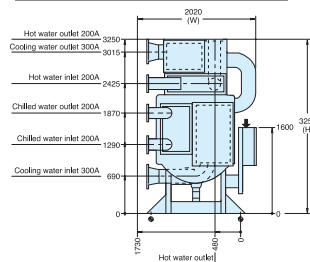


LCC-E52/E53

Note

1. Overall dimension value (L),(W),(H) is example value.
2. Mark Φ denotes the position of foundation bolts of chiller.
3. Clearance space must be saved for either side of the chiller.
4. Mark 1 is the power wire hole.
5. Maintenance space must be saved around the chiller
Length direction-----1m Above-----0.2m
Control panel direction-----1.2m Others-----0.5m
6. "A" stands for nominal diameter, unit is mm.

	A	B	C	D	E
LCC-E52	4258	5760	4500	4628	4928
LCC-E53	4756	6260	5000	5126	5426



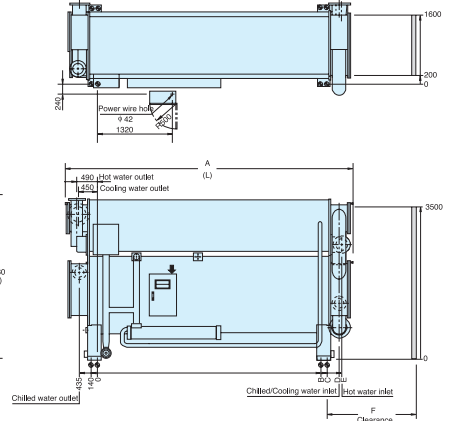
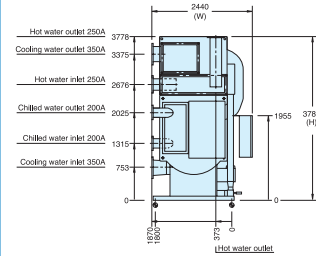
Overall dimension diagram

LCC-E61/E62

	A	B	C	D	E	F
LCC-E61	5630	4188	4328	4818	4675	5280
LCC-E62	6130	4688	4828	5318	5175	5780

Note

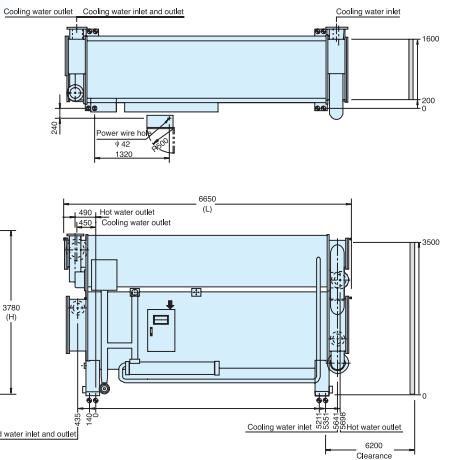
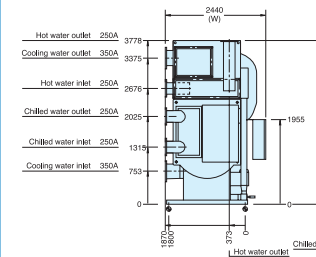
1. Overall dimension value (L),(W),(H) is example value.
2. Mark Φ denotes the position of foundation bolts of chiller.
3. Clearance space must be saved for either side of the chiller.
4. Mark 1 is the power wire hole.
5. Maintenance space must be saved around the chiller
Length direction-----1m Above-----0.2m
Control panel direction-----1.2m Others-----0.5m
6. "A" stands for nominal diameter, unit is mm.



LCC-E63

Note



1. Overall dimension value (L),(W),(H) is example value.
2. Mark Φ denotes the position of foundation bolts of chiller.
3. Clearance space must be saved for either side of the chiller.
4. Mark 1 is the power wire hole.
5. Maintenance space must be saved around the chiller
Length direction-----1m Above-----0.2m
Control panel direction-----1.2m Others-----0.5m
6. "A" stands for nominal diameter, unit is mm.

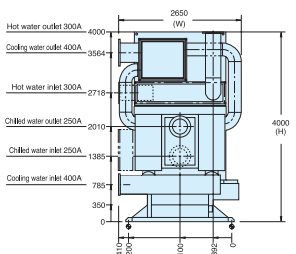
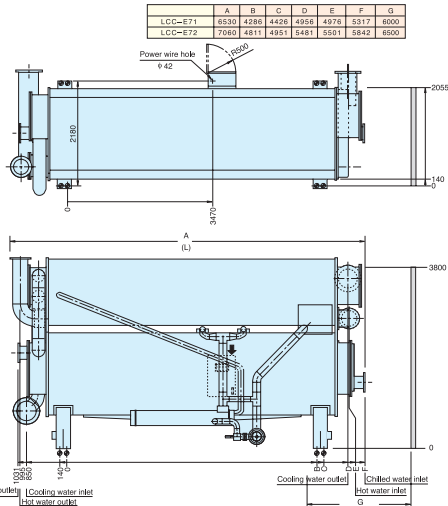


Overall dimension diagram

LCC-E71/E72



Note

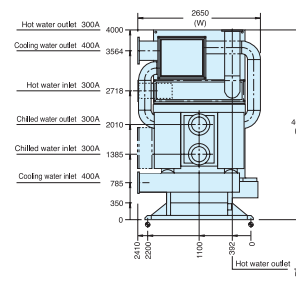
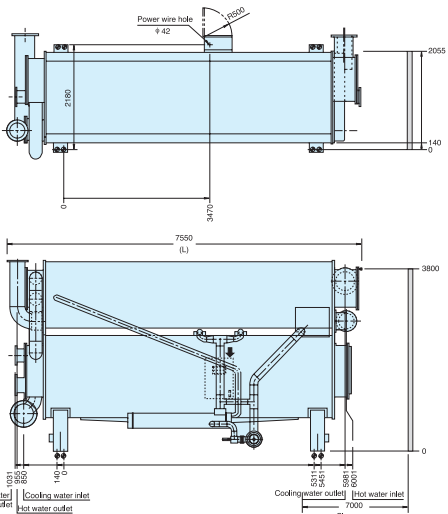
1. Overall dimension value (L),(W),(H) is example value.
 2. Mark  denotes the position of foundation bolts of chiller.
 3. Clearance space must be saved for either side of the chiller.
 4. Mark  is the power wire hole.
 5. Maintenance space must be saved around the chiller
- Length direction-----1m Above-----0.2m
Control panel direction-----1.2m Others-----0.5m
6."A" stands for nominal diameter, unit is mm.



LCC-E73

Note



1. Overall dimension value (L),(W),(H) is example value.
 2. Mark  denotes the position of foundation bolts of chiller.
 3. Clearance space must be saved for either side of the chiller.
 4. Mark  is the power wire hole.
 5. Maintenance space must be saved around the chiller
- Length direction-----1m Above-----0.2m
Control panel direction-----1.2m Others-----0.5m
6."A" stands for nominal diameter, unit is mm.

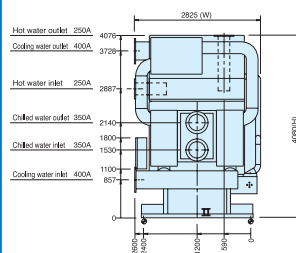
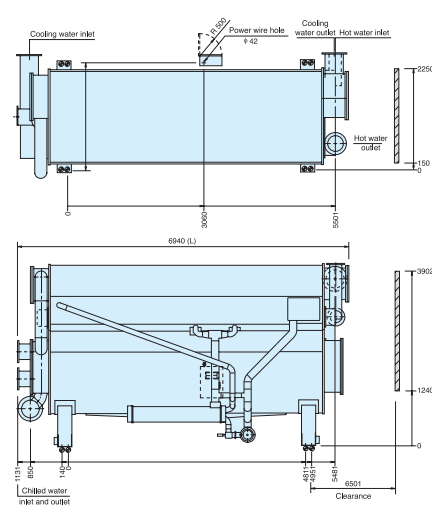


Overall dimension diagram

LCC-E81



Note

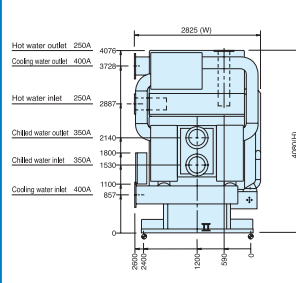
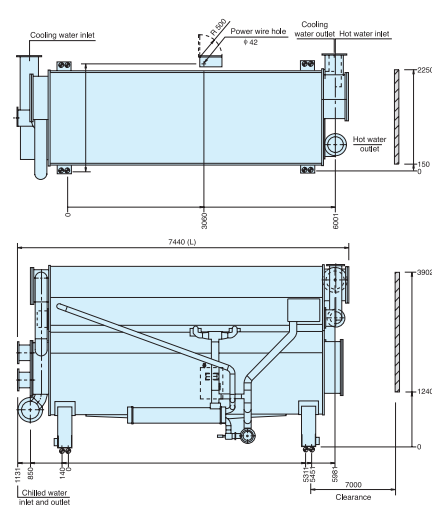
1. Overall dimension value (L),(W),(H) is example value.
 2. Mark  denotes the position of foundation bolts of chiller.
 3. Clearance space must be saved for either side of the chiller.
 4. Mark  is the power wire hole.
 5. Maintenance space must be saved around the chiller
- Length direction-----1m Above-----0.2m
Control panel direction-----1.2m Others-----0.5m
6."A" stands for nominal diameter, unit is mm.



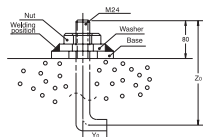
LCC-E82

Note

1. Overall dimension value (L),(W),(H) is example value.
 2. Mark  denotes the position of foundation bolts of chiller.
 3. Clearance space must be saved for either side of the chiller.
 4. Mark  is the power wire hole.
 5. Maintenance space must be saved around the chiller
- Length direction-----1m Above-----0.2m
Control panel direction-----1.2m Others-----0.5m
6."A" stands for nominal diameter, unit is mm.



Installation base diagram

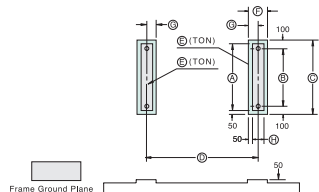


- Base diagram

- Note: 1. There are 450 holes under the chiller for foundation bolts.
2. When fastening foundation bolts, please weld base and washer together with reference to left diagram
3. Please make a drainage ditch around the chiller.
4. Please make the ground water proof in order to maintain the chiller.
5. The base must be smooth and horizontal(The levelness should be below 2mm for 1,000mm).

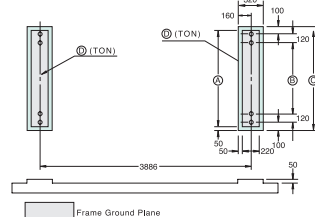
	Y ₀	Z ₀
LCC-E01-E32	80	260
LCC-E41-E63	80	340
LCC-E71-E82	90	440

LCC-E01~E24



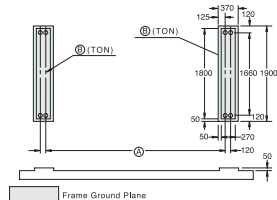
Type	Dimension (mm)	A	B	C	D	E	F	G	H
LC0-F01	860	780	860	1,426	725	245	125	145	145
LC0-F02	860	780	860	1,426	1,35	245	125	145	145
LC0-F03	860	780	860	1,426	1,341	245	125	145	145
LC0-F11	1,020	920	1,120	1,926	2,05	245	125	145	145
LC0-F12	1,020	920	1,120	1,926	2,13	245	125	145	145
LC0-F13	1,020	920	1,120	2,446	2,68	245	125	145	145
LC0-F14	1,020	920	1,120	2,446	2,68	245	125	145	145
LC0-F21	1,180	1,080	1,280	2,916	3,43	270	135	170	170
LC0-F22	1,180	1,080	1,280	2,916	3,4	270	135	170	170
LC0-F23	1,180	1,080	1,280	3,836	4,2	270	135	170	170
LC0-F24	1,180	1,080	1,280	3,836	4,2	270	135	170	170

LCC-E31~E42



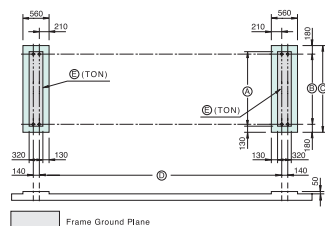
Type \ Dimension (mm)	A	B	C	D
LCC-E31	1,240	900	1,340	5.3
LCC-E32	1,240	900	1,340	5.55
LCC-E41	1,360	1,020	1,460	6.45
LCC-E42	1,360	1,020	1,460	6.7

LCC-E51~E53



Type \ Dimension (mm)	A	B
LCC-E51	3,716	9.55
LCC-E52	4,258	10.35
LCC-E53	4,756	10.9

LCC-E61~82



Type \ dimension (mm)	A	B	C	D	E
LCC-E61	1,900	1,800	2,160	4,188	15,0
LCC-E62	1,900	1,800	2,160	4,686	16,0
LCC-E63	1,900	1,800	2,160	5,211	17,0
LCC-E71	2,300	2,200	2,560	4,286	20,0
LCC-E72	2,300	2,200	2,560	4,811	21,0
LCC-E73	2,300	2,200	2,560	5,311	22,0
LCC-E81	2,500	2,400	2,760	4,811	22,0
LCC-E82	2,500	2,400	2,760	5,311	24,0

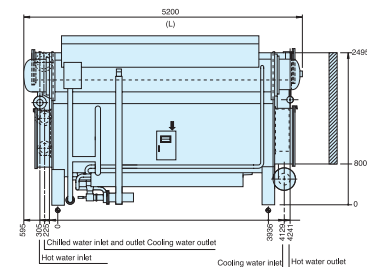
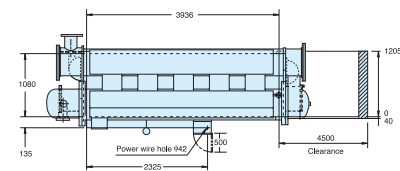
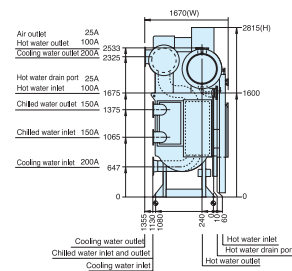
Overall dimension diagram

■ HCC series

HCC-E24

● **Note**

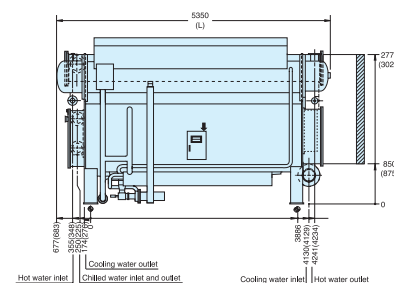
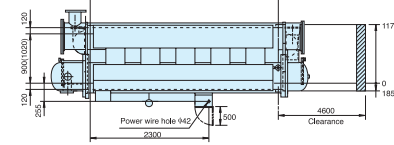
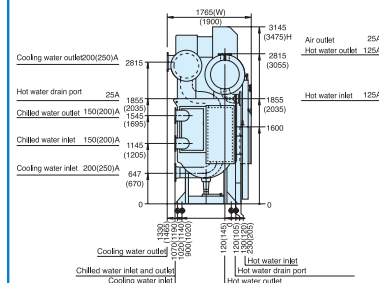
1. Overall dimension value (L),(W),(H) is example value.
2. Mark \oplus denotes the position of foundation bolts of chiller.
3. Clearance space must be saved for either side of the chiller.
4. Mark \uparrow is the power wire hole.
5. Maintenance space must be saved around the chiller
Length direction.....1m Above.....0.2m
Control panel direction.....1.2m Others.....0.5m
6. "A" stands for nominal diameter, unit is mm.



HCC-E32/E42 in()is Model E42

- Note

1. Overall dimension value (L),(W),(H) is example value.
2. Mark \oplus denotes the position of foundation bolts of chiller.
3. Clearance space must be saved for either side of the chiller.
4. Mark \uparrow is the power wire hole.
5. Maintenance space must be saved around the chiller
Length direction.....1m Above.....0.2m
Control panel direction.....1.2m Others.....0.5m
6. 'A' stands for nominal diameter, unit is mm.

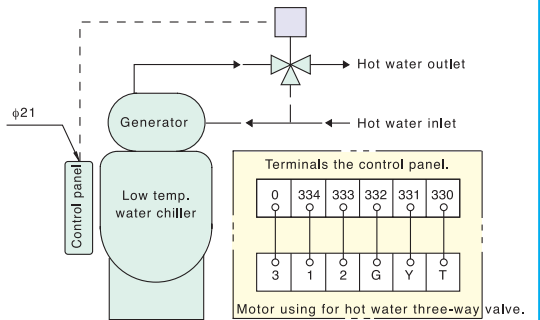


Electric Allocation Essentials

Electrodynamic type

Note:

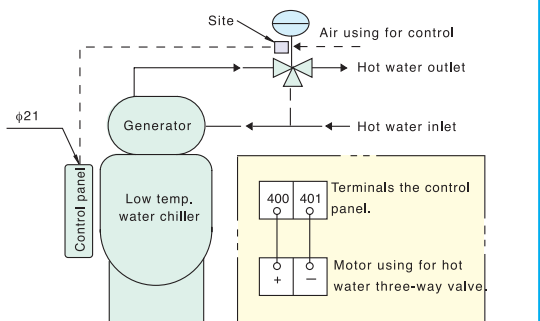
1. The three way valve of hot water is signal delivery.
2. The conductor configuration work which the wires of hot water three-way valve connect to the joint in the control panel is done by your company when operating, please use 600V IV wire over 1.25mm².
-
- | Terminals the control panel. | | | | | |
|------------------------------|-----|-----|-----|-----|-----|
| 0 | 334 | 333 | 332 | 331 | 330 |
| ○ | ○ | ○ | ○ | ○ | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ |



Pneumatic type	
----------------	--

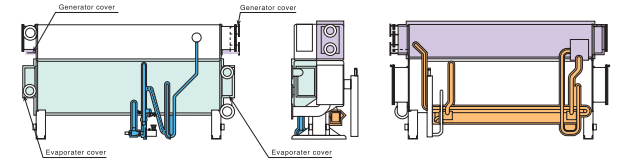
Note: Site

- The three-way valve of hot water is signal delivery.
- The air distribution tube which control the tube interface and the distribution which connect to the joint in the control panel is done by your company please. Please use 600V IV wire over 1.25mm².

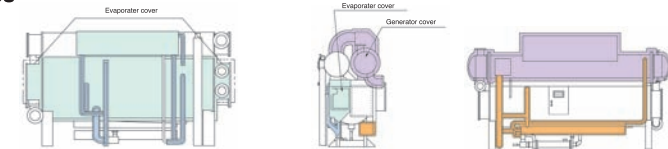


Heat/cooling insulation area

■ LCC/LCC-D series

[illegible]

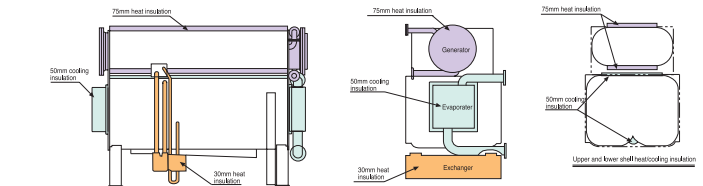
HCC series




TYPE	Kinds thickness	Hot Surface area (m ²)		Cold Surface area (m ²)	
		75mm	30mm	30mm	30mm
HCC - E24	14.8	3.0	7.4	0.4	
HCC - E32	16.0	3.7	9.0	0.5	
HCC - E42	21.6	4.4	10.8	0.6	
HCC - E52	24.6	5.0	12.3	0.6	
HCC - E61	27.7	6.2	15.4	0.7	
HCC - E63	29.7	9.3	22.1	0.8	

TYPE	Kinds thickness	Hot Surface area (m ²)		Cold Surface area (m ²)	
		75mm	30mm	30mm	30mm
HCC - E71	32.2	10.1	23.9	0.8	
HCC - E72	35.5	11.1	26.4	0.9	
HCC - E73	38.7	12.1	28.6	1.0	
HCC - E81	43.7	13.7	32.6	1.2	
HCC - E82	47.5	14.9	35.5	1.3	

HDC series



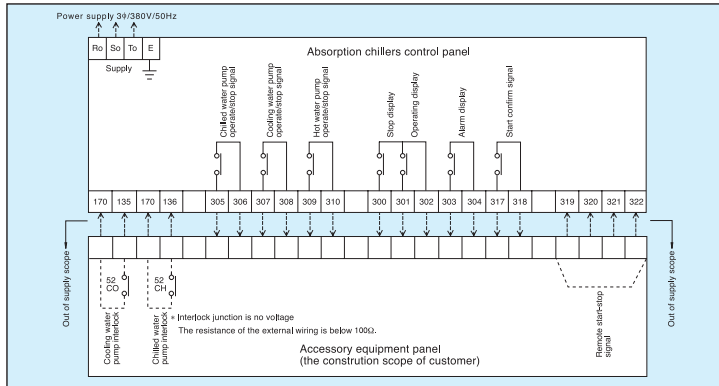
TYPE	Kinds thickness	Hot Surface area(m ²)		Cold Surface area(m ²)	
		75mm	30mm	50mm	30mm
HDC-E60		7.9	5.5	7.6	0.4
HDC-E90		10.0	5.9	8.0	0.4
HDC-E100		12.1	6.3	10.4	0.4

- | | | |
|---|---|---|
|  | <p>Evaporator cover, generator cover are removal</p> <p>75mm thick insulator for hot surface: generator and its cover,</p> <p>30mm thick insulator for hot surface: heat-exchanger/continuous pipes etc,</p> <p>50mm thick insulator for cold surface: evaporator and its cover etc,</p> <p>30mm thick insulator for cold surface: upper of refrigerant pump,</p> | <p>*Refrigerant pump motor and sight glass are no need for insulation</p> <ul style="list-style-type: none"> ● Insulator material of hot, cold surface: vitreous fibre or asbestos. ● The total area includes the area pipes in the machine. ● The machine is coated with rust preventive before delivery. ● Use no-burning material. |
|---|---|---|

- Refrigerant pump motor and sight glass are not needed for insulation
- Insulator material of hot, cold surface: vitreous fibre or asbestos.
- The total area includes the area pipes in the machine.
- The machine is coated with rust preventive before delivery.
- Use non-burning material.

Electric wiring diagram

Electric wiring diagram



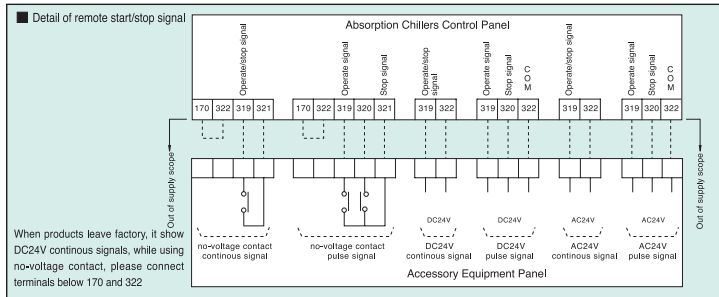
General Survey of External Equipment

① The distribution for accessory equipment:
there will be connected to the next terminals:

Kind	Connected terminals number	Remarks
Interlock Distributor	Chilled water pump interlock	170—136 DC24V10mA
	Cooling water pump interlock	170—135 DC24V10mA
Accessory equipment operating	Chilled water pump operate/stop	305—306 Contact rated:AC250V0.1A
	Cooling water pump operate/stop	307—308 Contact rated:AC250V0.1A
	Hot water pump operate/stop	309—310 Contact rated:AC250V0.1A

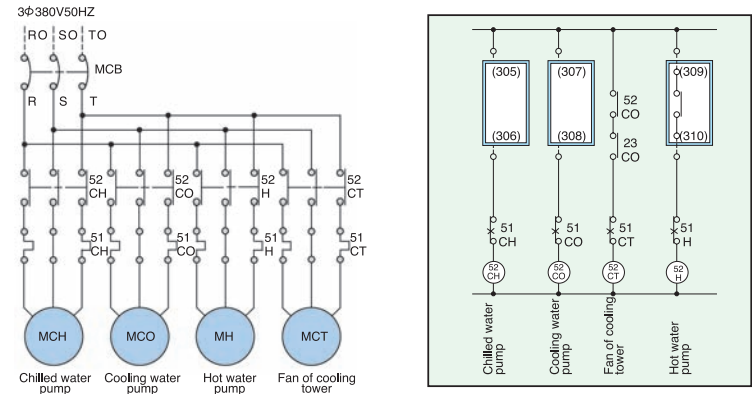
② The distribution which condition indicate contact, contact which condition indicate has four kinds.

Kind	Connected terminals number	Remarks
Stop indication contact	300—302	Contact rated:AC250V0.1A
Operating indication contact	301—302	Contact rated:AC250V0.1A
Abnormal indication contact	303—304	Contact rated:AC250V0.1A
Start confirmation Indication contact	317—318	Contact rated:AC250V0.1A



Accessory equipment electric circuit essential

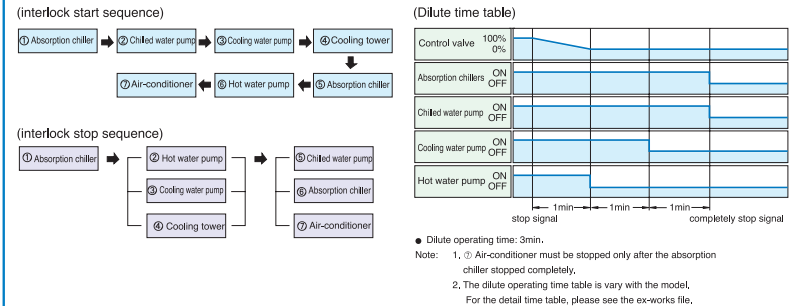
Accessory equipment electric circuit reference example



Note:

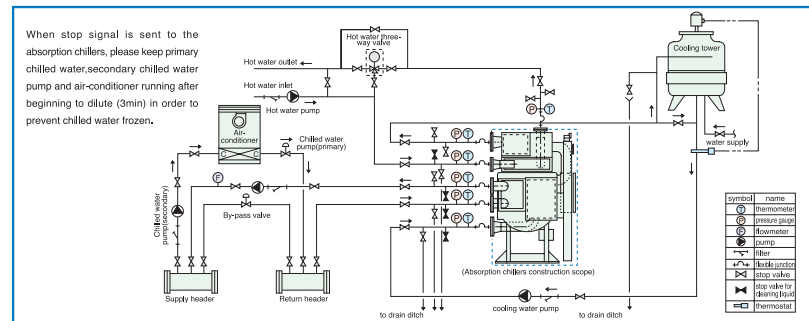
- 23CO (cooling water thermostat) must be installed in the cooling water inlet side.
 - Indicate that terminals are prepared on the control panel of the absorption chillers, so interlocking start and stop of cooling water pump, chilled water pump must be on the side of the absorption chillers.
- * Chilled water pump uses the terminal: 305-306.
* Cooling water pump uses the terminal: 307-308.
* Hot water pump uses the terminal: 309-310

Start/stop sequence of accessory equipment

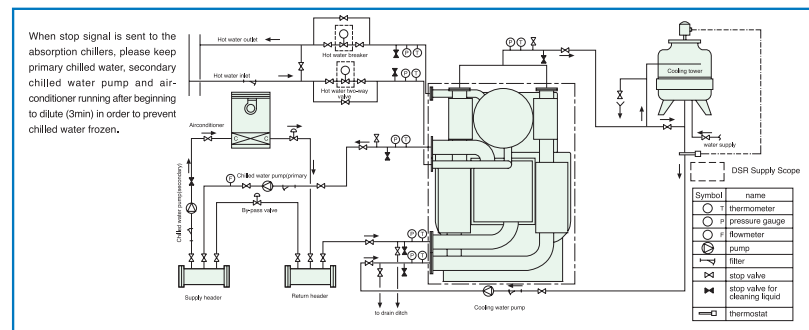
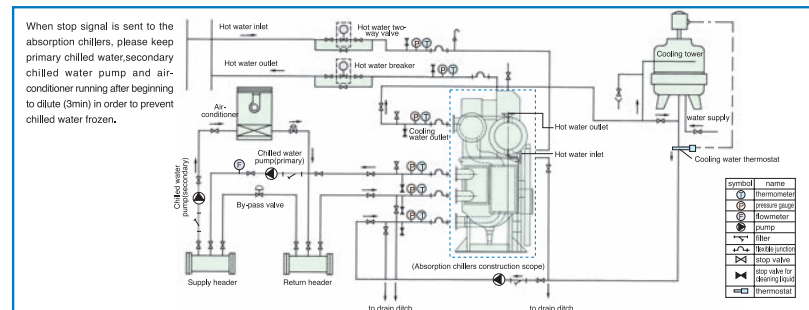


Piping system diagram

● Low temperature water absorption chiller



● High temperature water absorption chiller



Attentions to pipe construction/ Cooling water management essentials

● Attentions to pipe construction

1. Prepare external pipes connecting to the absorption chillers (dashed line) on your own.
 2. Joint position and calibre, refer to overall dimensions diagram and specifications table.
 3. Try to make sure the chilled/hot/cooling water flowrate in conformity with standard value. Please keep the range of chilled/hot/cooling water flow between 50 ~ 120% of specified value to prevent freezing, corrosion and leakage.
 4. Please properly positioned the chilled/hot water pump, cooling water pump, expansion water tank in order to make the pressure on the body not exceed the set value.
 5. Set special chilled/hot water pump and cooling water pump for each refrigerator with their capacity meeting the specifications.
 6. Please make sure to install the flexible junction between the machine and the inlet/outlet of the chilled water pump and cooling water pump, and make sure to have a straight tube on the chilled water inlet/outlet pipe, which length is at least decuple pipe diameter.
 7. Clean and descale the pipes through by-pass pipeline after installing the whole pipe system, then connect with the machine. Please make sure that the cleaning water cannot pass the machine.
 8. The bad water quality could cause corrosion and fouling phenomenon, so please make sure to treat and manage strictly the water quality of chilled/hot water and cooling water system.
 9. Install a cooling water flow regulate valve at the cooling tower inlet in order to manage with the water quality.
 10. Install filter in the chilled, cooling water pipes. (No. 10 filter screen).
 11. Following devices should be equipped around the chilled/hot, cooling water inlet and outlet, exclusive of all kinds of stop valve in order to maintenance and supervise chilled/hot water.
 - (1) Install thermometer and pressure gauge around the inlet and outlet of chilled/hot water and cooling water.
 - (2) Install deflating valve above water tank.
 - (3) Install drain valves at the lowest positions between the absorption chiller and the stop valves of chilled/hot water and cooling water, then pipe to the drain ditch.
 - (4) Install stop valves between the absorption chillers and stop valves of all inlet and outlet to clean the water circuit system with clean liquid.
 12. Be sure to design the location of cooling tower to prevent contamination of cooling water by exhaust gas from flues.
 13. Hot water shutoff valve must be installed in system to prevent hot water entering into stopped chiller.
 14. Please be sure to keep the foundation level (levelness within 2/1000mm) during installation of chiller.
- Note: For the design and construction of the system and the machine room, please follow the national relative requirements of the air-conditioner design code and safety code.

● Cooling water · Hot water quality supervise essentials

Moisture in the cooling water is vaporized and dispersed into the atmosphere when flowing through the cooling tower, therefore cooling tower is continuously concentrated and degraded.

If the cooling water quality degradate, corrosion and dirt accumulation will arise, therefore the unit will be troubled with capacity decline and heat-transfer pipe corrosion. Please install cooling water overflow device to supervise the water quality properly. In addition, proper water quality treatment agent will have better effect. Water quality standard for water used in common air-conditioner and refrigerator, has been formulated by Japanese Industry Association of Refrigerator and air-conditioner. For details reference following table.

● Cooling water · Hot water quality standard

Item	Circulation	Circulation		Hot water system		Trend	
		Circulation water	Feed water	Circulation water	Feed water	Corrosion	Dirt
PH (25℃)		6.5 ~ 8.2	6.0 ~ 8.0	6.8 ~ 8.0	7.0 ~ 8.0	○	○
Electrical Conductivity (25℃) (mS/m)		80 below	30 below	40 below	30 below	○	○
Electrical Conductivity (25℃) (μS/cm)		800 below	300 below	400 below	300 below	○	○
Cl ⁻ (mgCl ⁻ /l)		200 below	50 below	50 below	30 below	○	○
SO ₄ ²⁻ (mgSO ₄ ²⁻ /l)		200 below	50 below	50 below	30 below	○	○
Acid consumption (M alkalinity)		100 below	50 below	50 below	50 below	○	○
Total hardness (mgCaCO ₃ /l)		200 below	70 below	70 below	70 below	○	○
SiO ₂ (mgSiO ₂ /l)		50 below	30 below	30 below	30 below	○	○
(mgFe/l)		1.0 below	0.3 below	1.0 below	0.3 below	○	○
S ²⁻ (mgS ²⁻ /l)		Beyond Measure	Beyond Measure	Beyond Measure	Beyond Measure	○	○
NH ₃ (mgNH ₃ /l)		1.0 below	0.1 below	1.0 below	0.1 below	○	○